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**IMPACT EVALUATION:**  
**AGRICULTURAL SERVICES IN THE DOMINICAN REPUBLIC**

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## Executive Summary

In the mid-1970's the United States Agency for International Development (AID) provided funds and technical assistance for two Agricultural Sector Loans to the Dominican Republic. These loans were to help alleviate chronic problems of rural poverty by providing credit and services to the country's small farmers. Through these instruments it was intended that modern production technologies would be adopted and that improved farm incomes would result. An important part of the effort involved a continuing program of training for professionals and technicians to staff the institutions in the agricultural sector.

The Agricultural Sector Loans enabled the government of the Dominican Republic to increase the volume and number of loans to small farmers during the period of the loans. The loan funds contributed to an ongoing training program that appears effective at different levels; however, the newly trained individuals were not effectively utilized since the existing institutions (with the exception of the Agricultural Bank) were weak and have become weaker. Output of selected food crops which are produced by small farmers increased significantly, and the use of modern inputs increased. The increased credit may have stimulated these impacts, but the evidence is not clear. The direct provision of services by the public sector was ineffective and may have interfered with an evolving private sector.

Sustainability of the loan activities stands out as a major issue; few if any of the project activities are being effectively carried out, and positive gains have not been sustained. Some observers assert that given the nature of the institutions and the structure of economic and political incentives, the loans attempted to do too much for too many with too few resources. These projects highlight the difficulty of promoting development through subsidized credit and services. Furthermore, the loans reflect one of the fallacies of the sectoral approach which was in vogue within USAID at the time the loans were designed. The implementation of that approach was to do a lot of things at once, rather than choosing those project components likely to have large impacts by understanding the linkages between sectoral components.

The principal lesson learned in the USAID projects to develop the "Agricultural Services" is that human and financial resources cannot achieve meaningful impact if inserted into policy and institutional environments in which the resources become compensations for structural deficiencies rather than supplements to indigenous initiatives. USAID resources can only be used to "leverage" policy and institutional reform towards self-sustaining local development.

In the Dominican Republic, the Agricultural Sector Loans

continued a process of providing resources for operating and staffing an inadequate institutional framework in a non-favorable policy environment. Subsequent economic, financial and climatic crises further reduced the Dominican Republic's ability to sustain the projects' activities, and PL480 Title I proceeds had to be used to prevent a complete collapse of some efforts.

Another lesson learned is that credit is not an input to agricultural development; it can only facilitate investment in productive activities when productive options exist as choices for the intended beneficiaries. Except for rice, few productive investments for small farmers were available; the credit component of the loans became a transfer payment to many of the recipients of the loans. This, in turn, manifested itself as a serious repayment problem for the small farmer loans funded by the USAID projects. Lending to small farmers has dropped off significantly since the loans were totally disbursed. Further deterioration is expected as the country attempts to recover from serious external and internal disequilibria; fiscal austerity and international debt repayment problems will plague the country for a considerable period of time.

Finally, the incentives offered by the overall economic and developmental framework must be favorable to the goals of the intended assistance. The Dominican Republic's interest in extracting resources from agriculture and feeding the urban wage worker was the basis for commercial, trade and economic policies which were biased against domestic agriculture. This urban bias in policy was clear at the time the loans were planned; a move to a more neutral structure of incentives could have contributed to a significant positive impact of the Agricultural Services projects.

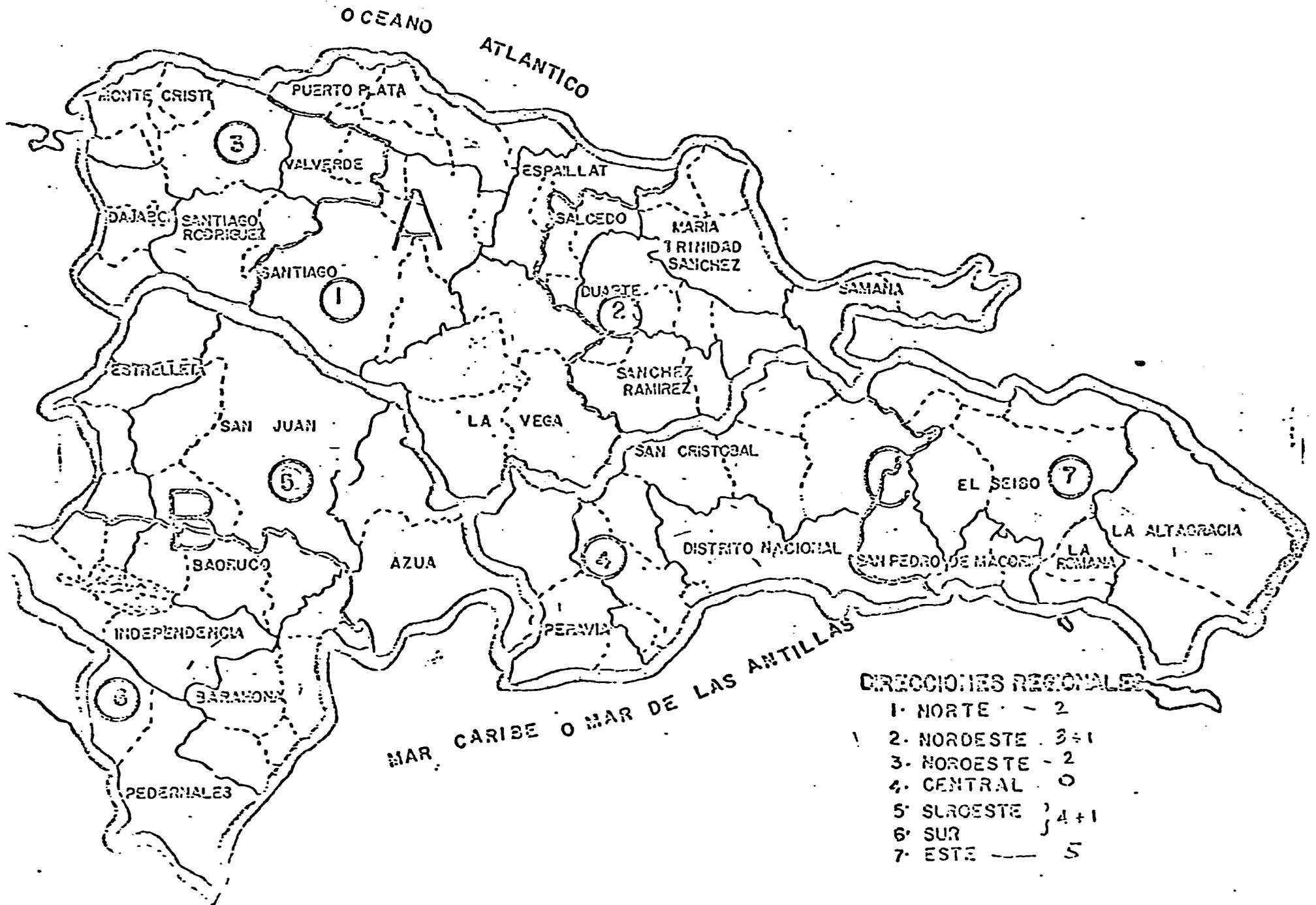
## Preface

The impact evaluation for the agricultural services project in the Dominican Republic was undertaken in the first quarter of F.Y. 1984. Field work by the authors, with the assistance of Dr. Luis E. Perez of the Instituto Superior de Agricultura and of the Dominican Agricultural Foundation, was undertaken in October 1983. David L. Franklin assisted in the formulation of the scope of work at AID/W and at USAID Santo Domingo. Curtis E. Youngblood and Jerry B. Leonard assisted in the compilation and analysis of the economic and econometric data. Mr. Jim Murphrey was the team's expert on agricultural technology and the related institutions.

The methods for the evaluation were based on interviews with informants in the agricultural sector in the Dominican Republic. Current and past political leaders were interviewed regarding the setting, design, execution and perceived impacts from the projects. Service delivery personnel in the private and public sector were also interviewed. These two groups constitute the "informed" sources cited in the report. Extensive USAID and public sector documentation was reviewed and econometric analyses were undertaken or extracted from data presented therein. The main source of information, however, were interviews with many household members in the beneficiary group. It is their views that are synthesized within this report. The approach is essentially a socio-cultural approach rather than a quantitative economics approach.

Many present and former officials within agricultural sector institutions provided candid and complete narratives of their impressions. The authors are most grateful for their time and candor; these background interviews served as the basis for working hypotheses for the field work. Political and civic leaders also provided background information and critical appraisal of preliminary findings; notable for his generosity with his time and information is Don Luis B. Crouch. The USAID Mission provided valuable logistic support and access to documentation. The support of the Rural Development Office and in particular that of Dr. Roberto Castro is gratefully acknowledged. M. Warren and R. Solem of AID, and J. Malinoff and D. Franklin of Sigma One Corporation reviewed and edited the final draft.

As always, the above collaborators are absolved from all responsibility, since the views presented are those of the authors. Finally, the greatest gratitude goes to the rural people of the Dominican Republic, who so graciously received the team into their homes.



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## 1.0 Project Setting

At the time the Agricultural Sector Loans I and II were designed and initiated, the Dominican Republic was characterized by widespread rural poverty. Most rural dwellers had incomes below that necessary to secure an adequate diet. Even though the GDP of the Dominican Republic showed outstanding increases, e.g. 14 percent in 1967 and 23.3 percent in 1973, the per capita increases in food crop production were very small. An estimated 75-80 percent of the rural population was undernourished. Analysis of the 1976/77 National Household Expenditure Survey (ENIGF) indicated that poverty was more prevalent in rural areas than in urban areas, with more than two times as many individuals living in poverty or below in the rural areas than in the urban areas. There was also high rural unemployment and underemployment. An estimated 30-35 percent of the rural labor force was unemployed; another 5-10 percent of the labor force was underemployed, working for low wages or working seasonally. As a result of rural poverty, rural to urban migration was increasing.

The problems of rural poverty, underemployment and poor nutrition may have been exacerbated by policies which sought to provide cheap food for the urban areas. Traditionally, imported foods have provided a major portion of the food requirements of the urban populations. Urban people purchased more processed foods, potatoes, sugar, poultry, meat, fresh milk and vegetable oil than rural people, who principally eat rice, beans, sweet potatoes, cassava and plantains. The cheap food policies, effected through price controls or through the overvalued exchange rate, did not favor the poor, since 78 percent of the poor are rural dwellers and 59 percent are farmers (Musgrove, 1983). For example, during the 1970's, the implicit tax on domestically produced rice averaged 15 percent in relation to import parity.

The Institute for Price Stabilization (Instituto de Establizacion de Precios: INESPRES) was created in 1969 as an effort by the government to regulate the markets for food and agricultural products. INESPRES's statutory objectives are to regulate the prices of agricultural products in domestic markets; INESPRES's interventions are concentrated in the markets for rice, edible oils, maize and sugar. It intervenes in these markets by setting prices at different points in the marketing chain and by buying and selling the products in domestic and international markets. The retail price of the commodities in which INESPRES deals are controlled by a separate official entity--the General Directorate for Price Controls. The Institute is supposed to promote domestic food production, food security and commodity price stability. At the same time, it is to cover its operating expenses from the gross margin between its sales and purchase price for commodities. Retail price controls and the desire to suppress rises in the urban cost of living force INESPRES to offer prices to domestic producers which have been declining in real

terms. This situation has not led to food shortages because rice production increased as a result of the high yielding varieties and the opening of new lands to irrigation. In the case of edible oils and maize, INESPRES had access to dollars at the official exchange rate and to concessionary sales from the U.S. Commodity Credit Corporation and PL480 Title I. The lid on domestic retail prices and access of the official market for foreign exchange and to concessionary imports created incentives for INESPRES to import commodities to fulfill its cash flow requirements and the domestic demand for these commodities.

The agricultural sector and the rural economy evolved in an unstable environment, in part because of the openness of the economy. Sugar, which represents approximately one third of the country's export earnings, is the major commodity affected by a volatile international market. The value of traditional exports, such as sugar, coffee and cacao are principally determined by international prices. Fluctuations in international prices of these commodities cause fluctuations in the earnings from this sector. Additionally, the Dominican Republic imports 20 percent of total food consumption and 100 percent of its petroleum consumption; payments for import loans and other outstanding foreign debts comprise 30 percent of the GNP. Export earnings, on the other hand, account for 15 percent of the GNP.

Climate is also an important determinant of economic conditions in the country. The Dominican Republic lies in a region of great weather variability. Major hurricanes hit the island every fifty years and smaller hurricanes every four years. In spite of high average rainfall, the topography of the island is such that there are several regions where rainfall is unpredictable. The southwest is a semi-arid region and rainfed farming there is quite risky. Irrigation is, therefore, very important to the performance of the agricultural sector. During the period that the agricultural services projects were being designed and implemented, the areas for irrigation were being expanded as part of a substantial land reform effort, and by 1980, 25 percent of the land suitable for irrigation was under some form of irrigation. This, however, represents only 6.6 percent of the land suitable for agricultural purposes.

Ecological factors have influenced sociocultural patterns and the political economy of the Dominican Republic. The erratic patterns of rainfall in the Greater Antilles make the cultivation of most types of crops quite risky. Much of the land in the Dominican Republic was committed to the production of sugar cane and cattle. The allocation of productive resources to sugar cane and cattle also reflected a long term historical pattern of economic relations. Traditional patterns of cultivation have been dominated by plantation agriculture, which is characterized by large estates of sugar cane, bananas and pasturelands.

In this context, food production was marginal relative to

livestock and sugar production. The rural population of the Dominican Republic traditionally has been engaged in small plot food production on poor lands, and in wage work on the sugar cane and livestock estates. Rural wage workers supplemented their incomes by producing food for their own consumption and by the sale of small marketable surpluses of traditional foods to the urban areas.

Small farms (less than 5 hectares) account for most of the domestic production of food. Yet, of the total amount of land available for agricultural purposes (2,660,000 hectares), only 50 percent is devoted to crop production, and small farms represent only 12 percent of the total land. Thirty percent of the land dedicated to food crops is used for rice production and between 75-80 percent of rice lands are irrigated. Irrigated lands (178,300 hectares) are found throughout the country, but are primarily located in the northern regions, which account for 80 percent of the land area dedicated to rice production. An estimated 50 percent of all irrigated lands are under rice production. Only 15-18 percent of the area dedicated to the production of other foods is irrigated, and this represents 25 percent of the irrigated lands. The residual of the irrigated lands, approximately 17 percent, is used for export and commercial crops or for feedgrains and pastures. Approximately 75 percent of total rice production is produced by 25,000 farms of less than 5 hectares in size. An average rice farm is between three and four hectares in size, and in comparison to the average size of farms producing other foods and traditional export crops other than sugar, rice farms are somewhat larger. Farms producing peanuts, coffee, cacao, or tobacco average less than two hectares in area, farms producing red beans average approximately one hectare in size, and farms producing corn, plantains, or cassava average less than one hectare in size. Food crop producers, particularly those that produce traditional crops, are concentrated on small farms.

Problems of environmental degradation, erosion, loss of soil nutrients and increases in soil salinity due to poor land management are chronic. Although there was some public awareness of environmental degradation, there was not a coherent and effective resource management policy.

In the early 1970's a group of Dominican agricultural professionals (many trained at U.S. land grant universities under AID sponsorship) formulated their perceptions of the problems facing the sector. The problems they perceived were twofold: (1) a lack of credit and improved technology for farmers, and (2) institutional constraints to increasing agricultural production and farm incomes. Lack of credit was seen to be a problem because traditional methods of production were still being used by farmers in many regions of the country. It was felt that credit could provide the means to obtain improved technological packages in the form of improved seeds, pesticides, mechanization

and fertilizers. This process would then increase production and incomes.

This group of professionals saw the institutional constraints to increasing agricultural production as a lack of human capital, inadequate physical infrastructure, and insufficient planning and marketing research. The lack of human capital was manifested in shortages of trained agricultural workers in the public sector at all levels, from the offices of the Ministry of Agriculture (Secretaria de Estado de Agricultura, SEA) to field technicians. There was also a lack of organization within the SEA that effectively made it impossible to design, fund and implement any field programs which would benefit farmers.

There were also organizational deficiencies within the Agricultural Bank (Banco Agrícola, BA). There was very limited lending to small scale producers and this restricted the capital available for small scale producers to improve production. In the 10 years prior to project implementation, credit to the agricultural sector had been growing at a very slow rate in real terms (2.8 percent per annum). Most of it was going to the larger farms; credit through the BA had actually declined. Interest rate ceilings and loan collection problems were decapitalizing the BA, which had become dependent on external donor financing for its lendable funds. In 1974, formal credit markets provided 55 percent of the agricultural credit, and of this, 59 percent was provided by the BA. Interest rate ceilings aggravated other institutional arrangements, which prevented the formal financial markets from capturing and mobilizing rural savings, which later were believed to be substantial as measured by the size of the informal credit markets.

Physical infrastructure to support increased agricultural production did not exist. Roads, transport, and storage facilities would have to be improved. Facilities to support a vigorous program of agricultural research were also needed.

Efforts were already underway to provide institutional resources for more planning and marketing research activities. USAID had funded the education and training of students at U.S. land grant universities and at institutions such as the Instituto Superior de Agricultura (ISA) in Santiago. One objective of this program was to train a body of agricultural specialists who could conduct analyses and advise the government on agricultural policies.

## 2.0 Project Description

### 2.1 Agricultural Loan I

In 1974, an AID loan of \$12,000,000 dollars to the Dominican Republic was extended for purposes of increasing agricultural

production, rural incomes and employment. The means by which the loan was to accomplish this purpose was principally through expansion of credit availability to small farmers (\$9 million). Additional means were intended to strengthen the Secretaria de Estado de Agricultura (SEA), to provide educational opportunities and vocational benefits to small farmers, and to improve the capacity to build and improve roads.

The direct beneficiaries of the loan program would be the small farmers receiving credit, improved inputs, technical assistance and vocational training. There would also be indirect beneficiaries who would benefit from better market information, cheaper inputs, improved roads, increased food availability, and the employment opportunities generated by the expanded credit system.

The target group was the small farmer, a small farm being defined as less than five hectares. Between 1971 and 1981, the number of farms of less than five hectares in size increased from 234,943 to 314,665 (Annex 3, Table 2). Approximately 40 percent of the total amount of funds lent by the BA went to farms of this size in 1975. These funds were distributed among approximately 42,000 farms. Over 50,000 farms were smaller than one-half hectare in size and were deemed too small to make effective use of credit.

With the agricultural sector loan provided by AID, credit would be extended to the small farmers by reorienting the lending policy of the BA. In addition to the funds from the agricultural sector loan, the government was to provide nearly \$19 million in additional lendable funds for a small farmer credit line. The BA would place a ceiling on loan amounts extended to large farmers, thereby increasing available credit to small farmers. The Central Bank was to offer favorable rediscounting rates to the commercial banks in order to provide an incentive for commercial banks to extend credit to larger farmers. It was intended that through these efforts, 32,500 new loans would be made to small farmers in a three year period. Project funds were also to be used for expanding field offices and credit delivery personnel. The central government guaranteed the loans in the small farm credit line so that in principle the Bank assumed no risk in lending to small farmers.

Another objective of the loan was to improve the capability of the SEA to carry out programs in the areas of marketing and farm management. In particular, these programs would be concentrated on improvements in agricultural research and extension services.

## 2.2 Agricultural Sector Loan II

In 1976 the Agricultural Sector Loan II of \$15 million was approved. Its purpose was to increase small farmer productivity,

expand the range of services provided by the public sector to small farmers, strengthen agricultural planning capacities, establish farm production support systems, and establish a rural development program.

The thrust of this second loan was clearly in the area of institution building. In addition, the target group was redefined to include the rural poor while retaining an emphasis on the small farmer. While the scope of the second loan appears to be broader than the first, it was largely devoted to the institutional build-up of the SEA. Also, the emphasis on credit seen in the first loan was not as predominant, but it was still an important component; \$7 million dollars were provided for small farmer credit, including the SEA supervised credit scheme.

Both loans were intended to enable the SEA and BA to administer the loans, to conduct market and production research, to carry out farm surveys, to collect and analyze agricultural statistics, and to generally improve the planning and policy analysis capabilities of these institutions. Programs in agricultural vocational training for extension agents and small farmers were to be established. Programs were also to be established to train agronomists, agricultural engineers and economists, and other professionals. Finally, the loans would facilitate investment in physical infrastructure, particularly research station facilities and feeder roads.

### 3.0 Project Impacts

The credit component appears to have been effective in delivering additional funds to small farmers, particularly rice farmers on irrigated lands, but also to other small farmers under less favored resource conditions. The impact on productivity arising from the additional subsidized credit is not clear, yet output and yields of rice, beans and other food crops produced by small farmers did increase during the period of the loans (Annex 3, Table 1). Whether these impacts on production and productivity were attributable to credit and the other project components or to other factors independent of the AID financed projects is also uncertain. What is certain is that neither the credit program nor the institutional strengthening activities proved to be sustainable. The major long-term impact rests on the human capital component. This impact will be realized if the highly trained professionals can be retained within the agricultural sector, even though at the present time most have left (or have been expelled) from the public sector institutions. The other service components were generally ineffective and non-sustainable, and as such they may have interfered with the development of a private agricultural services sector.

### 3.1 Credit

Given the importance of credit as the driving force of the project (more than half of the total of both loans was allocated to credit), it is important to review the performance and possible impacts of this component in some detail. From a process point of view, the BA was effective in expanding and delivering credit to small farmers. Credit to the sector as a whole expanded at a rate faster than in the previous years. From 1974 to 1978, total credit to the agricultural sector expanded by 21 percent in real terms, with the BA expanding by 27 percent and commercial sources by 4 percent (Annex 3, Table 5). AID funds represented about a third of the expansion in public sector credit. The BA made in excess of 33,000 new loans (exceeding the loan's target of 32,500 new loans each year), with most of these going to small farmers; the average loan size declined in real terms from around RD \$700 to around RD \$400. At the end of 1978, the small farmer credit lines represented 41 percent of the number of loans, with an average loan size of RD \$289; 83 percent of the BA's total portfolio was being allocated to small and medium sized farmers (Roach, 1979).

Operationally, the BA was efficient as well as effective in its credit delivery procedures in that it significantly expanded its branch office network and kept the increase in general expenses below the rate of growth of its portfolio and its client base (Roach, 1979). This expansion was not without its problems; the loan approval period grew from 30 to 60 days, causing serious delays for farmers, and delinquency and repayment problems increased for the small farmer credit line. For example, Roach reports that at the end of 1978, 62 percent of the loans associated with Agricultural Sector Loan I funds were delinquent. Nevertheless, the financial and management systems of the bank are considered adequate.

Within the operations of the Bank, the concessionary terms of the AID loans and the arrangements with the central government allow the Bank to be compensated for the losses arising in the implicit and explicit interest rate subsidies in the program. BA rates have traditionally been half of formal market rates, and were 2 to 3 percentage points below those necessary to cover operating and lending expenses. The strong subsidy element in the credit may be at the root of the loan recovery problems and of the poor service which evolves when non-price rationing systems are used to allocate the scarce funds in the presence of excess demands. The subsidy component in the interest rate (negative real rates through most of the project period) creates incentives for credit demand for non-profitable uses or for consumption rather than investment (Scobie and Franklin, 1977). These excess demand conditions create the need for screening mechanisms in the loan approval process which in turn cause delays in effective delivery of the funds. Faced by such conditions, farmers with profitable investments will then turn to

other sources of credit, even if interest rates are substantially higher. This appears to be (and has been) the case for the small farmer credit lines created by the two AID loans.

Many of the farmers who did use the agricultural loans complained about delays in receiving the funds and many reported not receiving the loan funds for which they had qualified. In some cases, the delays forced farmers to use the money for purposes other than those for which it was intended. For example, one farmer wanted a loan to purchase inputs for his cassava crop. Because the loan came after the planting date for cassava, he used it to buy calves. If lack of credit was a constraint, such delays that cause farmers to invest the money in less profitable alternatives are less likely to improve farmer incomes or output. Several farmers interviewed did not borrow any money from the BA, even though they had qualified for the loans. The reasons given were that the risks associated with borrowing were perceived as too large, given the expected return.

The need for credit by small farmers was overestimated in the design stage of the loan, because alternative sources of credit had not been considered. These sources include loans from relatives, neighbors, intermediaries, landlords, and store owners. These loans are usually made in small amounts. A farmer may be qualified to borrow up to RD \$800 from the BA and only secure RD \$350, making up the difference in small loans from other sources. Farmers report these smaller loans are more manageable and the repayment provisions are less restrictive. The rate of interest may vary with the source of the loan. A farmer who had been granted but had not received a RD \$500 loan from the BA borrowed RD \$250 for two months at 10 percent annual interest from a local lender to carry him over until the BA paid him. The loan from the BA carried an annual interest rate of 9.5 percent to be repaid in eight months. The farmer did this so that he could buy his inputs immediately, thereby eliminating the risk of price increases, and begin to plant his crop. He also reported that dealing with the BA was time consuming, while his transaction with the local lender was done quickly. Consequently, he felt that the smaller loan with the higher rate of interest and very short term was still very useful for him.

The above notwithstanding, substantial increases in lending to small farmers were achieved as a result of the two AID financed projects. The case of rice and beans are illustrative. Rice growers are generally within the target group of the loans since 75 percent of all rice is grown on farms of less than 5 hectares. Most of the rice is grown under irrigated conditions, and there was substantial technical innovation underway already when the loans were designed. Rice farmers as a group could be considered the producers with the highest potential within the projects' target group. Rice production grew at an average annual rate of 9 percent between 1971 and 1981 (Annex 3, Table 1). During the same period, bean production increased by 7.6

percent annually, although yields, areas sown, and production varied appreciably from year to year. Bean producers have very small farms, and most beans are produced under rainfed conditions. Bean farmers are prototypical of the lower end of the target group. Lending to rice farmers and bean farmers increased in volume and number of loans during the project period. The number of rice loans increased by almost 9 percent, and the number of bean loans increased by almost 75 percent. Rice yields and rice farmers' incomes increased during the loan period in spite of declining real prices for their production. Published analyses (Capellan and Reynoso, 1982) and our own econometric work failed to attribute any independent impact of the credit subsidy on rice production on yields. No similar data were available for beans. Knowledgeable informants claim that the improvement of rice production came as a result of technical innovations which were already underway and that bean production increased as a response to increased prices. In the case of rice, productivity increases in the seven years before the first loan averaged 8.7 percent per year and in the seven years since the first loan yield increases have averaged only 1.7 percent per year. An alternative view is that the credit enabled these farmers to respond to the technological or price incentives. Whether either view holds, an important aspect of the program is that it was not sustainable without external concessionary financing. Credit to small farmers has dropped off dramatically since 1980; total loans are down by 33,986 and the average loan size is up to RD \$400 from RD \$269 in 1980 (Table 5, Annex 3).

Sustainability was not built into the credit system for small farmers because the subsidies on interest and the central government guarantees on uncollectable loans eliminated the need for Bank or SEA personnel to analyze the economic viability of the intended use of the funds. This must lie at the root of the poor repayment experience through the end of 1978. Since then, the ability of farmers to repay their debts must have deteriorated as a result of Hurricane David in 1979. Regardless of the causes for poor repayment, the small farmer credit system served more as an income transfer scheme than as a development oriented investment.

Interviews with farmers in all regions of the country in October of 1983 indicated that credit has not been the binding constraint in the small farmer sub-sector, and that other uses of the loan funds might have provided longer lasting developmental impacts. The BA seems to remain effective as a credit institution; what appears to be lacking are pricing and credit policies that mobilize domestic resources into productive uses. Except for rice, it appears that the remainder of the loans' objectives have not yet been met since there were no worthwhile technological packages to be promoted, and had there been, the extension service was not effective. It has also been suggested by knowledgeable observers that the public sector's involvement in the provision of subsidized inputs (seeds and mechanization)

interfered with the development of these services through the private sector. At the present time these services are not being provided effectively by the public sector, and the continuing fiscal crisis for the central government implies a further deterioration in its ability to provide these services.

Furthermore, the structure of economic incentives facing agriculture was inconsistent with the stated objectives of the loan programs. Contrary to the assumptions underlying the loans, domestic pricing and exchange rate policies did not favor small producers in several instances (Larson, 1982; Franklin, 1983). Since the mid-1970's, the overvaluation of the exchange has increased from approximately 20 percent to 80 percent. This is a tax on exportables and a subsidy for imports which discourages the production of export crops as well as the production of import/competing crops, e.g. domestic foods are placed at a competitive disadvantage with imported foods.

For example, in the case of peanuts (mani), farmers have sold their peanut harvests to either of two privately owned processing plants that contract with small farmers and provide them with an elaborate package of technological services which include land preparation, seeds, fertilizers, pesticides, and small loans for operating costs. The farmer was contracted to sell to the processor at a prearranged price, and the prices for peanuts are fixed by the government at levels well below import parity. Consequently, in spite of the attractiveness of the services provided, farmers have declined to plant peanuts. Franklin (1983) estimated that the country could enjoy a comparative advantage in producing and exporting peanuts if farm level prices were set at import parity; that is, domestic resource costs were RD \$0.38 for rainfed peanuts and RD \$0.73 for irrigated peanuts for each U.S. dollar of value produced.

### 3.2 Training and Institution Building

The loans helped to provide training at professional, technical and farmer levels, but failed to contribute to the development of self-sustaining institutions. During the first phase of Loan I, 27 students were sent to ten U.S. universities for advanced training in fields such as agricultural engineering, agricultural economics, agronomy, soil sciences, plant pathology, and forestry. Technical training also took place in Dominican institutions, and there was a series of courses in rice production given to farmers at the rice research facilities in Juma. These included five to eight short courses conducted each year for groups of approximately 40 farmers. The Secretaria de Estado de Agricultura (SEA) has also given similar courses in environmental awareness at selected sites throughout the country.

Short term training in rice production was effective, but other short term training did not appear to make a lasting impact. Some areas of emphasis where training was conducted show

promise, such as appropriate technology for and coffee and cocoa development, although these two activities are being carried out with World Bank financing. Courses and informal training in various non-technical areas such as organization of the rural sector, rural administration, development of agricultural services, etc. were undertaken. Little or no evidence of impact could be found during the field work. It is believed that these efforts were not directed at a high enough level within the agricultural institutions.

Several programs in professional training were started prior to the loan programs. There were students in several U.S. universities pursuing advanced degrees in agricultural fields. Consequently, a good portion of the loan programs was to create a means for utilizing the services of these trained individuals by building and improving the agricultural institutions. There were several institutions involved; however, the SEA and the BA were the two institutions designated to implement the programs generated by the two agricultural loans. The BA had a viable functioning institutional infrastructure, but the SEA was broken up into a series of fragmented offices each under the direct control of the Secretary of State for Agriculture, who was directly responsible to the President. Both were politicized to the extent that they were charged with and responsible for carrying out the policies of the President. The BA had a commercial infrastructure with individuals in key decision-making positions who were skilled and trained in managing a corporate structure. Hence, the policies initiated from higher level positions were channelled through a well coordinated administrative system. This feature is understandable because a great deal of the professional education of banking personnel includes training in office management, policy planning and execution, and development of administrative skills. The BA was quickly mobilized to carry out the new lending policies in the form of small farmer credit because they had an institutional infrastructure with well trained personnel already in place. The SEA, on the other hand, did not have a well defined functioning corporate structure. Professionals whose training and education were concentrated primarily in the technical areas of agriculture presided over the SEA's bureaucratic structure. Individuals placed in key positions were there largely because of their political alliances and not necessarily due to their professional capabilities or administrative skills. The result was an institution with few or no effective channels of communication among its members and without a capacity for planning or implementing agricultural policies or programs.

This is not to suggest that there were no capable or dedicated professionals within the SEA; such was not the case. Many of the former Ministers and high level functionaries are successful entrepreneurs and politicians today. The problem was that there was not an effective organization of professional divisions or a viable means of generating or defining an

agricultural policy within the SEA. The individuals in key administrative positions had little preparation or formal training in the effective management of a large bureaucracy. Effective decisions and policy planning were a function of the talent of certain individuals and not a product of a well defined institutional infrastructure. Hence, changes in policies and the policy-making procedures would occur along with changes in personnel. Some awareness previously existed of these shortcomings of the SEA. Several issues in improving its capacity in program coordination and planning were also addressed in the loan packages. However, there were several institutional problems which were overlooked and never addressed. No provision was made for courses or programs to enable these professionals to work effectively in a bureaucracy by developing administrative skills. Also, no civil service structure or system of tenure exists for any of the functionaries in any of the government offices. Failure to provide a tenure system for government personnel creates a decidedly unstable system when there is a change in government or administration; individuals in support positions, such as secretaries, administrative assistants, etc., are subject to change as well, and individuals become dependent on others for their job security. This dependency too often creates a top-heavy bureaucratic organization in which the decision-making process is on an individual basis rather than on a cooperative or coordinated basis. Thus, individuals in key positions often recruit support personnel based on friendship or family ties rather than on the basis of job qualifications or administrative skills.

In addition, a professional in the public sector earns a salary that is approximately one-half of what his/her professional counterparts earn in the private sector. Low salaries weaken the infrastructure even further as professionals can become susceptible to bribes and other remunerative compromises. These low incomes also contribute to an unstable situation when professionals leave their public sector post for those in the private sector. In some cases, professionals may stay in the public sector but often obtain outside income to supplement their meager government salary. Also, with low salaries as compensation, the top professionals tend to move to the private sector in time, leaving the weaker ones to carry out public policy.

The problems of lack of a civil service system, the absence of training in office management, and low salaries still exist in the SEA. Additionally, the size of the SEA bureaucracy doubled through the recruitment of new personnel, creating a large institution with numerous personnel but no continuous financial support for implementing programs. The institutional infrastructure must be constructed and developed before professionals are placed in the institution. The training programs for the development of human capital were planned and underway before the institutional framework was ever designed.

It seems puzzling that the Agricultural Sector Loan II came so quickly on the heels of the first loan, as only a brief attempt was made to evaluate the impacts or problems of the first loan. It appears that it was quickly recognized that the loan programs outlined in the Agricultural Sector Loan I could not be implemented without the additional funds to develop a viable infrastructure. Unfortunately, the infrastructure of the SEA that resulted was flawed and dysfunctional since in essence the second loan simply created activities for the staff to operate. Apparently, the highly motivated and trained technical professionals were to learn management techniques through on-the-job training. If this was intended, no provision was made to formalize such an effort.

The loan seems to have had some positive and some negative impacts on the Secretariat of Agriculture. The loan was divided into many small parts that appear to have been designed to give almost all of SEA departments and activities a "little-bit-of-the-pie", to help them with budget support. As a result the loan was used to fund activities within the SEA, including the establishment of many new project related positions (hundreds of new positions). For example, the CENCERI project alone has approximately 60 technicians, with 18 in the National Office, while the others are located in the field. This added phenomenon is a direct additional strain on the SEA budget. The AID support has stopped, but the SEA still employs the people. SEA has increased from about 7000 employees in the mid-1970's to over 11,000 employees now. With this large increase in the number of staff, partially caused by USAID loan funded assistance, the 1984 proposed SEA budget indicates that a very high percent of the budget will have to be used for personnel. This leaves very little remaining for program support for the employees to carry out the essential programs. The continuing prospects for fiscal austerity suggest that this problem will worsen before it improves.

### 3.3 Research and Extension

There was little evidence that useful research has or is being conducted; the research situation has deteriorated to alarmingly low levels. Few farmers mentioned receiving assistance from the extension staff. It appears that the extension staff is basically a government representative that advises farmers on where to obtain inputs. This is not surprising since the level of funding for adaptive research amounted to only \$1.25 million from the second agricultural sector loan. Overall, research and extension activities represented less than 5 percent of the project resources. Agricultural research activities represent less than 1 percent of the total public sector budget for agriculture.

The staff of the research department of SEA is qualified to

carry out a successful applied research program in technology testing and adaptation. This department reflects the lack of institutionalization seen in other elements of the public agricultural sector--lack of funds, lack of communications and documentation, and lack of planning and evaluation. Efforts being undertaken by the department are irrelevant to the problems of the small farmers of the country.

### 3.4 Agricultural Economics, Planning Evaluation, Data Collection and Data Processing

Some of the support services within the SEA improved due to the loan assistance; approximately one-sixth of the project resources were for agricultural economics, planning evaluation, data collection and data processing. The departments of economics, planning evaluation, data collection and processing have become well organized and were doing a creditable job of offering the sector essential agricultural services during the period of the loans. However, much of that capability has been lost during the past year or so; the lasting impact therefore appears to be very low.

The loans contributed to other ongoing USAID and AID/Washington funded planning and analysis activities. As a whole, these activities contributed to the development of capabilities in data collection, processing and analysis. They all failed to develop a capability in policy formulation and analysis (Riordan et al., 1982). This effort, too, was not sustainable; for example, the production of publications which were of high quality and value has ceased since 1979. Normative plans and budgets are still being prepared, but there are few current data and almost no analyses available.

### 3.5 Rural Infrastructure

The principal activity under this loan component was to improve the capacity of communities to identify and execute small, "self-help" infrastructure projects, e.g. roads, canals, etc. This effort was not effectively realized due to a lack of coherent and continuous strategy on the part of SEA in outreach and promotion, and it was not well coordinated with other SEA activities. Little meaningful impact was realized by the rural infrastructure program save for the construction of a hundred miles or so of new rural roads. Total project resources included about \$4 million from both loans and counterpart funds for this activity.

### 3.6 Input Distribution

This project was to facilitate the distribution of modern inputs of production to increase yields and farmers' incomes. The use of improved seed, fertilizers, insecticides, and fungicides increased significantly during the loan assistance period;

credit available to more farmers allowed them to purchase the inputs. The distribution system of the inputs changed drastically. The private distributors opened outlets in more remote areas, the BA and SEA opened more sales outlets (Centro de Ventas) and the Centro de Servicios Integrados (CENSERI - Integrated Service Centers, principally sales outlets) Program put several Centros de Ventas in operation. Input sales increased as a result and the purchased inputs business became highly competitive.

There exists informed debate as to whether the loans stimulated the rice seed industry production and distribution systems. Two large private seed companies, as well as the SEA rice center, are now producing seed. Some claim that the private sector seed industry development was due in part to the research, technical assistance, and bank credit availability to more small farmers. There are other claims that such a development would have taken place without any stimulus from the two loans. Undoubtedly, the loans shifted the demand for seeds in a positive direction; certainly the additional credit or the institutional support was not deleterious, and may have facilitated an ongoing development process.

The private sector has developed a sorghum seed industry that is now serving an increasing number of small farmers that produce sorghum. It would be difficult to discount any effect from the loans in this outcome for the same reasons given above. Credit would increase the demand for improved seed so long as the use of improved seeds in any given crop were profitable. Thus, the question remains--were there profitable activities in which the small farmer could invest the proceeds of their loans? If the answer is yes, then the impacts must have been positive.

A wide variety of products and suppliers now compete for agricultural inputs sales. Although this expanded availability of input is helping the small farmers gain access to what they need at more attractive prices, little impact has come from the loan except to provide farmers more credit to buy more inputs. The Centros de Ventas (sales outlets) of SEA and the CENSERI Centros de Ventas had almost no impact. Their volume of sales is very low and few farmers reported buying items from the public sector sales outlets. Most small farmers indicated that they bought their inputs from the private company outlets, because they received better advice and assistance relative to the use of the products.

As indicated earlier, higher levels of technology are being applied to only certain crops: rice, sorghum, and some vegetable crops, and these are produced with "packages" of relatively high technological levels. The technology being applied to traditional food crops such as plantain, corn, beans, etc. is amazingly rustic and traditional. The loan seems to have had little or no impact on the traditional crops in relation to input

use.

Mechanization is a special case of possible deleterious impacts from the project activities. During the loan assistance years, mechanization did not appear to improve at the level of the small farms. In fact, the situation deteriorated due to the establishment of the SEA Mechanization Service Center (PROSEMA). The farmers were told that the SEA and the Agrarian Institute (IAD) would provide land preparation assistance and loan funds were used to buy equipment that was to be used for that purpose. Many of the tractors were not workable due to lack of spare parts, gasoline, tires, etc. When the tractors were used to prepare the small farmer's plot, they often arrived weeks late, forcing the farmer to plant late, and sometimes requiring a shift to a different, and less productive crop because of late land preparation. The involvement of the loan supported SEA machinery program has promoted a farmer dependency on the government; the SEA and IAD mechanization program squeezed out the private sector. Now that government agencies are not providing the needed and promised services, the private sector mechanization services are beginning to reappear. In our own field visits, many farmers complained that the services were unreliable and unavailable. The failure of this project can be traced to the establishment of an enterprise which was too large and did not have a continuing source of funds to sustain its services. An unfortunate by-product of this program was that it stifled an excellent opportunity for the private sector to respond. There were individuals within the PROSEMA project areas who had tractors and could have provided the services to the farmers for fees but were forced out of developing this area of commerce by the cheaper services being offered by PROSEMA. Development of the private sector in the form of entrepreneurs providing tractor services might have alleviated the recurring cost problems experienced by the government and possibly improved some rural incomes in the process. Currently, the operating budget for PROSEMA for 1984 is RD \$1.6 million, which is only sufficient for reaching 11.4 percent of the rice producers with the subsidized service.

In the case of beans, virus-free seeds were the principal, if not the only, component of the technological package to be promoted by the loan projects. During the loan period, the percentage adoption of this input increased from 11.8 percent of producers to 28.3 percent of producers. It has been reported, however, that farmers' confidence in the system has dropped off since in recent years the seeds proved to be of low quality, particularly in regard to germination rates due to deterioration in storage and transporting. Availability was not uniform in respect to demand across the country, and there was low recuperation of credits extended in the form of seeds so that the system could not be sustained. Some high level informants report that the private sector had been more effective at delivering clean seed and that the public sector activities inhibited the

performance of the private sector. At the present time, about half of the eligible farmers receive seeds through the public sector agencies.

### 3.7 Summary of Impacts

The Agricultural Sector Loans enabled the government of the Dominican Republic to increase the volume and number of loans to small farmers during the period of the loans, but the number and real value of the loans dropped dramatically at the end of the project. The loan funds contributed to an ongoing training program that appears effective at different levels; however, these newly trained individuals were not effectively utilized because the existing institutions (with the exception of the BA) were weak and have become weaker. Output of selected food crops which are produced by small farmers increased, e.g. rice increased by 21 percent and beans increased by 5 percent, and the use of modern inputs increased. Increased credit may have stimulated these impacts, but the evidence is not clear. At the same time the output of all traditional food crops (except for cassava) declined. Some of the decline must be attributed to the devastation from Hurricane David in 1979. The direct provision of services by the public sector was ineffective and may have interfered with an evolving private sector; any positive gains have not been sustained.

During the principal period of project activities under the two loans (1976-1980), per capita agricultural output and per capita food production remained almost constant. These two indicators dropped in 1977 and recovered to their original levels in the 1978 to 1980 period. The real rural wage increased by 21 percent (Quezada, 1980). Food grain self-sufficiency increased by 7 percent and the real value of food imports increased by 52 percent (Larson, 1982). The share of agriculture in national income declined from 17.6 percent to 16.7 percent while per capita GDP grew by 6 percent. Estimates of the prevalence of second and third degree malnutrition (by the weight-for-age criterion) ranged from 11 percent to 24 percent in 1976, depending on the region (National Planning Office, 1978). For 1982, the national estimate is 12.1 percent, with some regions as high as 20 percent. If there has been improvement in nutritional status, it has been slight. Measured unemployment has remained around 20 percent. At the present time, the country is suffering from a severe macro-economic crisis of multiple origins, including high fiscal deficits arising from the maintenance of a large bureaucratic apparatus and inefficient public institutions.

The agricultural sector loans probably had little impact (positive or negative) on the broad based problems of the Dominican Republic. Had the planning and analyses activities within SEA remained viable, they could have contributed to the necessary policy analyses which are needed to direct the agricultural sector towards a more efficient use of domestic

resources. An opportunity to develop effective institutions which are now desperately needed was wasted.

#### 4.0 Lessons Learned

The lessons learned in the AID projects to develop the "Agricultural Services" in the Dominican Republic are not new, but they are worth repeating. The principal lesson is that human and financial resources cannot achieve meaningful impact if inserted into policy and institutional environments where the resources become compensations for structural deficiencies rather than supplements to indigenous initiatives. AID resources cannot be the driving force in a country's entire agricultural sector; they can only be used to "leverage" policy and institutional reform towards self-sustaining local development. In the Dominican Republic, the Agricultural Sector Loans continued a process of providing resources for operating and staffing an inadequate institutional framework in a non-favorable policy environment. In several cases, AID funded projects depended on each other for support and collaboration rather than on autonomous initiatives. Subsequent economic, financial and climatological crises further reduced the host country's ability to sustain the projects' efforts, and PL480 Title I proceeds had to be used to prevent a complete collapse of some efforts.

In the context of public sector institutions, the provision of advanced technical training without also providing training to managers and administrators can lead to either of two deleterious outcomes. Either the trained, technically oriented, professionals are promoted into management and administrative positions for which they are not competent or they are relegated into low level assignments by bureaucrats who hold the high level posts for political reasons. Both of these outcomes have occurred in sequence at the Ministry of Agriculture (SEA) in the Dominican Republic. Such conditions have minimized the impact of the AID funded training programs.

Another now widely known lesson worth repeating is that credit is not an input to agricultural development; it can only facilitate investment in productive activities when productive activities exist as choices for the intended beneficiaries. Except for rice, few productive investments for small farmers were available, and even with rice these were being repressed by the country's urban industrial bias in the structure of economic incentives. Signals that this was the case could have been seen in the recurring decapitalization of the BA and in the very slow growth of private agricultural credit in the decade prior to the loans. In these conditions, the credit component of the loans became a transfer payment to many of the recipients of loans. The inefficiencies were further aggravated when supervised credit schemes were used; these only add to resource misallocations when there are no viable technologies in which the small farmers can invest (Scobie and Franklin, 1977).

Credit subsidies and product or service subsidies all create resource misallocations unless there has been clear identification and targetting to economic externalities that require correction with public actions. In the case of mechanization, seed multiplication, and other services in the Dominican Republic, there was no evidence that public intervention or subsidies were required. Rice innovation on small farms had been proceeding rapidly in the absence of the loans because there existed proven technologies to be adopted. Public intervention stifled an evolving private sector; perhaps, the development assistance should have been channeled through the private sector with some form of public overview.

Finally, and importantly, the incentives offered by the overall economic and developmental framework must be favorable or at least not counter to the goals of the intended assistance. The Dominican Republic's interest in extracting resources from agriculture and feeding the urban wage worker were clear and longstanding; the country's basic commercial, trade and economic policies were biased against domestic agriculture.

The public sector's role in the markets for rice, edible oils and maize has distorted the structure of incentives facing domestic producers. In the case of rice and edible oils, the prices faced by domestic producers have been below import parity at the parallel exchange rate. For example, rice prices could have averaged 10 percent higher during the last eight years at a relatively small impact on the cost of living and nutrition of urban consumers, with significant improvements in domestic supplies and rural incomes. USAID was actively involved in the design and financing of INESPRES and continued to provide resources throughout the loan period and therefore had leverage to improve the structure of incentives. The urban bias in policy was clear at the time the loans were designed and USAID continued to assist INESPRES in depressing agricultural prices through the provision of PL480 Title I commodities. USAID could have leveraged INESPRES into a more neutral structure of incentives; such a move could have contributed to a significant positive impact of the Agricultural Services projects.

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal:</p> <p>To improve the economic standards of the rural poor</p>	<p>Measures of Goal Achievement:</p> <ol style="list-style-type: none"> <li>1. Real per capita GDP arising in agricultural sector increases 5 percent per year by year 8 of Program.</li> <li>2. The number of persons employed in full and part time positions in rural areas increases 5 percent between 1976 and 1980 (adjusted for rural population increases).</li> <li>3. Real income of small farmers owning .5 to 50.0 hectares increases by 5 percent between 1976 and 1980.<sup>1/</sup></li> <li>4. The percent of inhabitants of rural areas existing at or above minimum acceptable levels of calorie intake increases from 25% in 1974 to 30% by the end of FY 1980.</li> <li>5. One percentage point decline in the projected rate of rural to urban migration by the end of FY 1980.</li> </ol> <p><sup>1/</sup> Baseline farm income data to be generated by sector analysis survey, mid 1976.</p>	<ol style="list-style-type: none"> <li>1. GODR National Income Accounts</li> <li>2. SEA and agriculture census data</li> <li>3. SEA farm surveys, sector analysis</li> <li>4. Health Secretariat nutrition data</li> </ol> <p>Population census data</p>	<p>No exceptionally adverse short term climatic developments.</p> <p>GODR domestic pricing policies will not disfavor small farm producers.</p> <p>Prices will provide adequate <u>incentives</u> to small farmers.</p> <p>Access to markets will continue to improve for small farmers.</p> <p>Rate of population increases is lower than rate of increase in GDP arising from agricultural sector.</p> <p>Rate of growth of the economy is sufficient to expand rural employment opportunities.</p> <p>Rural Dominicans will be willing to modify their dietary practices in favor of a more nutritious balance of the small farmer crops emphasized in this project.</p>

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>PROGRAM SUB GOAL:</u></p> <p>To increase the level of agricultural productivity, with particular regards to the needs of the small farmer</p>	<p>Measures of Sub-Goal Achievement</p> <p>Increases between 1976 and 1980 in annual productivity (per hectare yield) among farmers with plots ranging from .5 to 50 hectares as indicated below: *</p> <ul style="list-style-type: none"> <li>3 percent for rice</li> <li>4 percent for corn</li> <li>7 percent for cassava (yucca)</li> <li>3 percent for beans</li> <li>7 percent for plantain</li> </ul> <p>*See page 16</p>	<p>SEA quarterly surveys and Agricultural Census data, sector analysis and farm surveys</p>	<p>Assumptions for achieving sub-goal targets:</p> <p>Prices of domestic and imported farm inputs will increase by no more than 10 percent per year.</p> <p>Small farmers will be receptive to improvements in technology.</p> <p>There will be a strong, positive demonstration effect in rural communities of the technological improvements undertaken by the first farmers to adopt them.</p> <p>The supply of credit made available to small farmers through institutional sources will continue to increase at a rapid rate.</p>

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Overall Project Purpose:</p> <p>To expand the range of public activities undertaken in the agricultural sector, with emphasis on those providing services to the small farmer.</p> <p>Specifically:</p> <p>Purpose I:          To strengthen the agricultural sector planning, coordination and evaluation capability of the Secretariat of State for Agriculture (SEA) and to involve other professional agriculturalists in the agricultural development process and, in this respect, to increase the supply of agricultural technicians.</p> <p>Purpose II:          To establish an integrated small farm production support system to provide improved technological, production, educational, and marketing resources and services.</p> <p>Purpose III:          To establish a viable and comprehensive rural development effort within SEA.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status. (EOPS)</p> <p>See purpose, output and input matrices prepared for each purpose.</p>	<p>National Income accounts</p> <p>SEA annual reports</p> <p>SEA annual budgets</p> <p>Agricultural census data</p> <p>SEA quarterly surveys</p> <p>GODR foreign trade statistics</p> <p>Annual on site inspection tours</p> <p>SEA training center records</p> <p>Enrollment and graduation records of national institutions of higher education with programs in agriculture.</p>	<p>Assumptions for achieving purpose</p> <p>Political and economic conditions will exclude an abnormal movement of trained personnel out of public sector agriculture.</p> <p>Continued GODR interest in program objectives.</p> <p>Continued GODR revenue capability to support program objectives.</p> <p>Mutuality of interest among members of commodity coordinating groups.</p> <p>Rural communities receptive to community development concept.</p>

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose: (I.)</p> <p>To strengthen the agricultural sector planning, coordination and evaluation capability of the Secretariat of Agriculture (SEA) and to involve other professional agriculturalists in the agricultural development process and in this respect to increase the supply of agricultural technicians.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> <li>1. SEA will be budgeting annual financial resources to the Technical Subsecretariat of Agricultural Sector Planning as follows: SR.D.400,000 for analysis and planning SR.D.400,000 for data processing and utilization</li> <li>2. New, qualified professionals employed in positions of responsibility in SEA's Technical Subsecretariat of Agricultural Sector Planning 43 analysis and planning 33 at computer center and documentation center.</li> <li>3. Annual revisions of SEA's two consecutive five year plans based upon data gathered on a quarterly basis</li> <li>4. Delivery of agricultural information and policy recommendations based upon current economic conditions to the Consejo Nacional de Agricultura (CNA)</li> </ol>	<ol style="list-style-type: none"> <li>1. GODR and SEA annual budgets</li> <li>2. SEA reports</li> <li>3. SEA reports</li> <li>4. CNA reports</li> </ol>	<p>Assumptions for achieving purpose:</p> <p>Political and economic conditions will exclude an abnormal movement of trained personnel out of public sector agriculture</p> <p>Continued GODR revenue capability to support program objectives</p> <p>GODR has and will continue to have an interest in medium and long term agricultural planning</p> <p>Legitimacy of planning function will be recognized and supported by key national agricultural policy makers</p> <p>Evaluation will be adopted as an important element of SEA's programming procedure</p>

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<p>(Project Purpose I, cont.)</p>	<p><u>EOPS</u></p> <p>5. National institutions of higher education have capacity to support expanded enrollment in the following disciplines at undergraduate level.</p> <table border="0"> <tr> <td><u>1976</u></td> <td><u>EOPS</u></td> </tr> <tr> <td>26</td> <td>125 veterinary medicine</td> </tr> <tr> <td>60</td> <td>220 farm management</td> </tr> <tr> <td>20</td> <td>180 extension services</td> </tr> <tr> <td>0</td> <td>25 forestry</td> </tr> <tr> <td>0</td> <td>25 fisheries</td> </tr> </table> <p>National institutions of higher education have capacity to graduate annually the total number of students indicated in the disciplines listed below with bachelors degrees.</p> <table border="0"> <tr> <td><u>1976</u></td> <td><u>EOPS</u></td> </tr> <tr> <td>16</td> <td>25 veterinary medicine</td> </tr> <tr> <td>10</td> <td>50 farm management</td> </tr> <tr> <td>5</td> <td>40 extension services</td> </tr> <tr> <td>0</td> <td>5 forestry</td> </tr> <tr> <td>0</td> <td>5 fisheries</td> </tr> </table> <p>6. Six Agricultural research projects being carried out annually by the SEA in cooperation with professionals from the participating institutions of higher education (UASD, UNPHU, ISA).</p>	<u>1976</u>	<u>EOPS</u>	26	125 veterinary medicine	60	220 farm management	20	180 extension services	0	25 forestry	0	25 fisheries	<u>1976</u>	<u>EOPS</u>	16	25 veterinary medicine	10	50 farm management	5	40 extension services	0	5 forestry	0	5 fisheries	<p><u>Verification:</u></p> <p>5. Enrollment and graduation records of national institutions or higher education with programs in agriculture.</p> <p>6. SEA records and observations.</p>	<p><u>Assumptions:</u></p> <p>Adequate supply of qualified students desiring to pursue agricultural subjects</p> <p>Ongoing demand for graduate professional agriculturalists</p> <p>Cooperation in research will exist between SEA and universities</p>
<u>1976</u>	<u>EOPS</u>																										
26	125 veterinary medicine																										
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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																
Outputs: (Purpose I)	Magnitude of Outputs																		
1. Technical Subsecretariat for Agricultural Sector Planning personnel trained	<table border="0"> <tr> <td></td> <td>Short</td> <td>Long</td> <td></td> </tr> <tr> <td></td> <td><u>Term</u></td> <td><u>Term</u></td> <td></td> </tr> <tr> <td>1.</td> <td>83</td> <td>-</td> <td>Persons trained locally</td> </tr> <tr> <td></td> <td>6</td> <td>-</td> <td>" " overseas</td> </tr> </table>		Short	Long			<u>Term</u>	<u>Term</u>		1.	83	-	Persons trained locally		6	-	" " overseas	1. SEA reports	Qualified personnel available for training
	Short	Long																	
	<u>Term</u>	<u>Term</u>																	
1.	83	-	Persons trained locally																
	6	-	" " overseas																
2. Expansion in national agricultural data bank storage capacity	2. Amount of stored Ag. data increased by 200 percent.	2. SEA reports	Construction activities will not be delayed as a result of labor disputes, weather, material shortages or other unforeseen developments																
3. Establishment of National Documentation Center	3. Center consisting of book depository, seminar room, office, workroom and storage room established.	3. Observations and SEA annual reports	Domestic rate of inflation will not exceed 15 percent per year																
4. Reading rooms established (for dissemination of research and analysis)	4. Reading rooms established in 3 SEA regional offices.	4. Observation																	
5. Ag. Research Council established and coordinated. Initial research projects in agri. sciences undertaken by Ag. professionals in universities.	5. Six joint research projects underway, and 100,000 budgeted for funding research under cooperative program annually.	5. SEA reports and university records																	
6. Curricula, facilities, and staff at Agri. schools of participating universities in place and capable of supporting required student output.	6. Necessary curricula developed for 24 selected courses of study.	6. University records, observations																	

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Narrative Summary	Objectively Verifiable Indicators			Means of Verification	Important Assumptions
Inputs: (Purpose I)	Implementation Targets			SEA Annual reports	Assumptions for providing inputs:
1. <u>Annual Disbursements by Subelement</u>	<u>1st. Year</u>	<u>2nd. Year</u>	<u>3rd. Year</u>	SEA annual budgets	
Econ. Anal. and Planning	415,000	395,900	249,100	USAID project files	Qualified personnel available.
Data Collection & Evaluation	383,600	331,400	225,000	USAID audit reports	No untimely delays in receipt of materials purchased overseas as a result of strikes, shortages, etc.
Professional Education	373,000	376,000	251,000		
Total	1,171,600	1,103,300	725,100		
2. <u>Inputs by Source</u>	<u>USAID</u>	<u>GODR</u>			
Personnel	281,500	749,500			
Equipment and Supplies	80,000	96,000			
Vehicles	-	36,000			
Vehicle Operation & Maintenance	-	43,200			
In-Country Travel & Per Diem	2,800	37,400			
Training	424,000	29,700			
Technical Assistance - Long Term	200,000	-			
Technical Assistance - Short Term	224,000	-			
Project Operations	239,200	72,800			
Contingency	48,500	65,400			
Other	-	370,000			
Total	1,500,000	1,500,000			

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose: (II)</p> <p>To establish an integrated small farm production support system to provide improved technological, production, educational and marketing resources and services.</p>	<p>Conditions that will indicated purpose has been achieved: End of project status.</p> <p>A. Production Technology Development and Distribution</p> <p>1. SEA increasing its annual support of the project elements as follows:            from *SR.D. 560,000 to 650,000 farm production surveys            from *SR.D. -0- to 350,000 improved seed            from *SR.D. -0- to 200,000 rural development projects            from *SR.D. -0- to 800,000 training (cursillos)            from *SR.D. 200,000 to 1,500,000 marketing.</p> <p>2. Trained professionals and semi-professionals in positions of responsibility in the management of the system at SEA.</p> <p>3. The system will have the capacity to provide the number of small farmers indicated with the services specified annually:            from *-0- to 50,000 improved seed            from *10,000 to 16,500 credit            from *35,600 to 40,000 ag. extension service            from *1,200 to 2,200 training (cursillos)</p> <p>4. Linkages exist between SEA and International Agriculture Research Centers such that research results are being forwarded to the Dominican Republic where they are being evaluated, adapted and disseminated.</p>	<p>1. SEA annual reports, budget</p> <p>2. SEA personnel staffing pattern</p> <p>3. On site evaluations, SEA reports</p> <p>4. SEA reports</p>	<p>Assumptions for achieving purpose:</p> <p>Political and economic conditions will exclude an abnormal movement of trained personnel out of public sector agriculture.</p> <p>Continued GODR interest in program objectives.</p> <p>Continued GODR revenue capability to support program objectives.</p> <p>Mutuality of interest among members of commodity coordinating groups.</p> <p>Existing research results are adaptable to Dominican Republic.</p>

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: (II)(cont)	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <p>5. National coordinating commodity groups (which include small farmer representation) are operational for 5 commodities.</p> <p>6. SEA assigning trained staff to training programs as follows:            5 in administrative positions            40 at training centers.</p> <p>B. Farm Services</p> <p>1. <u>X%</u> increase in marketed portion of small farm production of "selected crops" by 1980.<sup>1/</sup></p> <p>2. Increase from X to Y in number of small farmers marketing Z% or more of their production of "selected crops" by 1980.<sup>1/</sup></p> <p>3. Increase from X to Y in amount of total production of "selected crops" entering domestic commercial channels by 1980.<sup>1/</sup></p> <p>4. Expansion of small farm credit availability into 14 additional rural municipalities by 1980.</p> <p>5. Increase in the number of small farmers with plots under 50 hectares receiving production loans of \$R.D.2,000 or less by 10% in selected areas.</p> <p><sup>1/</sup> These percentages will be determined based on findings of the Sector Analysis Survey and IICA Marketing Study in mid-1976.</p>	<p>5. SEA reports, observations.</p> <p>6. SEA reports.</p> <p>1. Agricultural Census, Farm surveys</p> <p>2. Agricultural Census, Farm surveys</p> <p>3. Agricultural Census, Farm surveys, Marketing Data (INESPRE)</p> <p>4. AgBank, SEA reports</p> <p>5. AgBank, SEA reports</p>	<p>Assumptions for achieving purpose:</p>

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																																					
<p>Outputs: (Purpose II)</p> <ol style="list-style-type: none"> <li>1. Training of SEA personnel</li> <li>2. Sample soil surveys</li> <li>3. Soil fertility trials</li> <li>4. Soil classification analysis</li> <li>5. Soil terracing and conservation</li> <li>6. Adaptive research trials underway</li> <li>7. Production/distribution of improved seed</li> <li>8. Distribution of Production Packages</li> <li>9. Expanded Farm Survey System underway</li> <li>10. New vocational training centers established; additional farmers trained</li> <li>11. Suitably located, adequately staffed, marketing centers</li> <li>12. Marketing and price information distributed to producers</li> <li>13. Standardize weights and measures</li> <li>14. Satellite offices of Ag-Bank in operation</li> </ol>	<p>Magnitude of Outputs:</p> <ol style="list-style-type: none"> <li>1. <u>SEA personnel trained:</u> <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">Long term</td> <td style="padding-right: 20px;">Short term</td> <td></td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">136</td> <td>trained in-country</td> </tr> <tr> <td style="text-align: center;">17</td> <td style="text-align: center;">87</td> <td>trained overseas</td> </tr> </table> </li> <li>2. 40 sample soil surveys undertaken</li> <li>3. 40 soil fertility trials</li> <li>4. Hectares of soil classified increases from 229,000 to 420,000.</li> <li>5. 3 conservation trials set up</li> <li>6. Adaptive research trials in small farm priority crops by the end of FY 1980 as follows: <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;"><u>1976</u></td> <td style="padding-right: 20px;"><u>1980</u></td> <td></td> </tr> <tr> <td style="text-align: center;">15</td> <td style="text-align: center;">45</td> <td>Rice</td> </tr> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">15</td> <td>Corn</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">30</td> <td>Cassava (Yucca)</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">45</td> <td>Beans</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">15</td> <td>Plantain</td> </tr> </table> </li> <li>7. Improved seed produced/distributed by the end of FY 1980 <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">100,000</td> <td>quintales of rice</td> </tr> <tr> <td style="padding-right: 20px;">24,000</td> <td>quintales of corn</td> </tr> <tr> <td style="padding-right: 20px;">5,000,000</td> <td>cuttings of cassava</td> </tr> <tr> <td style="padding-right: 20px;">54,000</td> <td>quintales of beans</td> </tr> <tr> <td style="padding-right: 20px;">4,000,000</td> <td>rhizomes of plantain</td> </tr> </table> </li> <li>8. Distribution of 100,000 packages</li> <li>9. Enlarged sample for quarterly survey, four annual area specific surveys, special surveys and one sector analysis survey</li> </ol>	Long term	Short term		-	136	trained in-country	17	87	trained overseas	<u>1976</u>	<u>1980</u>		15	45	Rice	10	15	Corn	5	30	Cassava (Yucca)	5	45	Beans	0	15	Plantain	100,000	quintales of rice	24,000	quintales of corn	5,000,000	cuttings of cassava	54,000	quintales of beans	4,000,000	rhizomes of plantain	<ol style="list-style-type: none"> <li>1. SEA annual reports</li> <li>2. Field examination, SEA records</li> <li>3. Field examination, SEA records</li> <li>4. Field examination, SEA records</li> <li>5. Field examination, SEA records</li> <li>6. SEA records</li> <li>7. SEA records</li> <li>8. SEA records, observations</li> <li>9. SEA reports, observations</li> </ol>	<p>Assumptions for achieving outputs:</p> <p>Qualified personnel available for training</p> <p>Weather will permit development and multiplication of improved seeds</p> <p>Domestic rate of inflation will not exceed 15 percent annually</p> <p>Participation of cooperating agencies as planned</p> <p>Construction activities will not be delayed as a result of labor disputes, weather, material shortages or other unforeseen developments</p>
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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Outputs:</p> <p>15. Group lending office established in AgBank</p> <p>16. AgBank accounts computerized and administration regionalized</p>	<p>Magnitude of Outputs:</p> <p>10. Establishment of three new vocational education training centers and completion of vocational training for 6,700 selected small farm leaders by 1980.</p> <p>11. At least 5 farm service centers established.</p> <p>12. Weekly posting of summaries of daily marketing news and forecasts at centers, and distribution of marketing news to farmers through 490 extension agents.</p> <p>13. Standardized weights and measures for marketed produce in use at all marketing centers.</p> <p>14. 14 satellite offices of AgBank/Supervised Credit Programs in operation.</p> <p>15. Two officers</p> <p>16. All accounts computerized and regionalization based on seven regional offices.</p>	<p>10. SEA reports and observations</p> <p>11. SEA reports and observations</p> <p>12. SEA records</p> <p>13. SEA records</p> <p>14. AgBank and SEA records, observations</p> <p>15. AgBank records</p> <p>16. AgBank records</p>	<p>Assumptions for achieving outputs:</p>

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Narrative Summary	Objectively Verifiable Indicators			Means of Verification	Important Assumptions																														
Inputs: (Purpose II)	Implementation Targets			SEA annual reports	Assumptions for providing inputs:																														
1. <u>Annual Disbursements by Subelement</u>	1st. Year	2nd. Year	3rd. Year	SEA annual budgets	Qualified personnel available																														
Prod. Tech. Dev. & Distribution	5,071,400	3,071,300	2,577,300	USAID project files	No untimely delays in receipt of																														
Vocational Education	813,100	641,300	645,600	USAID audit reports	materials purchased overseas as																														
Farm Services	4,398,000	3,566,100	2,815,900		a result of strikes, shortages,																														
Total	10,282,500	7,278,700	6,038,800		bad weather, etc.																														
2. <u>Inputs by Source</u>	<table border="1"> <thead> <tr> <th data-bbox="760 678 847 707">USAID</th> <th data-bbox="1000 678 1087 707">GODR</th> </tr> </thead> <tbody> <tr> <td data-bbox="716 723 847 751">Personnel</td> <td data-bbox="956 731 1087 759">2,390,225</td> </tr> <tr> <td data-bbox="187 745 650 773">Equipment &amp; Supplies</td> <td data-bbox="989 753 1087 781">463,473</td> </tr> <tr> <td data-bbox="187 769 650 797">Vehicles</td> <td data-bbox="989 778 1087 806">472,275</td> </tr> <tr> <td data-bbox="187 794 650 822">Vehicle Operation &amp; Maintenance</td> <td data-bbox="989 802 1087 830">433,927</td> </tr> <tr> <td data-bbox="187 819 650 847">In-Country Travel &amp; Per Diem</td> <td data-bbox="989 827 1087 855">432,200</td> </tr> <tr> <td data-bbox="187 844 650 872">Training</td> <td data-bbox="989 852 1087 880">62,400</td> </tr> <tr> <td data-bbox="187 868 650 897">Technical Assistance - Long Term</td> <td data-bbox="989 877 1087 905">45,000</td> </tr> <tr> <td data-bbox="187 893 650 921">Technical Assistance - Short Term</td> <td data-bbox="1033 901 1087 930">5,700</td> </tr> <tr> <td data-bbox="187 918 650 946">Project Operations</td> <td data-bbox="989 926 1087 954">929,400</td> </tr> <tr> <td data-bbox="187 943 650 971">Construction/Remodeling</td> <td data-bbox="989 951 1087 979">306,500</td> </tr> <tr> <td data-bbox="187 968 650 996">Credit</td> <td data-bbox="956 976 1087 1004">3,392,000</td> </tr> <tr> <td data-bbox="187 992 650 1020">Contingency</td> <td data-bbox="989 1001 1087 1029">532,800</td> </tr> <tr> <td data-bbox="187 1017 650 1045">Other</td> <td data-bbox="956 1025 1087 1053">2,334,100</td> </tr> <tr> <td data-bbox="187 1042 650 1070">Total</td> <td data-bbox="694 1083 847 1111">11,800,000</td> <td data-bbox="941 1083 1087 1111">11,800,000</td> </tr> </tbody> </table>		USAID	GODR	Personnel	2,390,225	Equipment & Supplies	463,473	Vehicles	472,275	Vehicle Operation & Maintenance	433,927	In-Country Travel & Per Diem	432,200	Training	62,400	Technical Assistance - Long Term	45,000	Technical Assistance - Short Term	5,700	Project Operations	929,400	Construction/Remodeling	306,500	Credit	3,392,000	Contingency	532,800	Other	2,334,100	Total	11,800,000	11,800,000		
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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose: (III)</p> <p>To establish a viable and comprehensive rural development effort within the Secretariat of Agriculture (SEA)</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> <li>1. SEA allocating \$R.D.2,000,000 annually for rural development program, 10 percent of which is budgeted for projects in the field</li> <li>2. Necessary personnel trained and in positions of responsibility: 490 rural development agents.</li> <li>3. Extension Division within SEA has the capacity to plan and administer labor intensive rural infrastructure and community development projects: 490 at any given point in time 490 per year</li> <li>4. An average of 245 projects being submitted per year for funding by communities with a local contribution of at least 10 percent of total project costs.</li> <li>5. Extension Division will have a portfolio of 50 active applications for projects at any given time.</li> </ol>	<ol style="list-style-type: none"> <li>1. SEA annual reports and annual reports</li> <li>2. SEA reports</li> <li>3. SEA reports, observations</li> <li>4. SEA reports, observations</li> <li>5. SEA reports, observations</li> </ol>	<p>Assumptions for achieving purpose:</p> <p>Political and economic conditions will exclude an abnormal movement of trained personnel out of public sector agriculture</p> <p>Continued GODR interest in Program objectives</p> <p>Continued GODR revenue capability to support Program objectives</p> <p>Rural communities receptive to community development concept</p> <p>GODR will continue support for concept beyond Loan termination</p>

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Outputs: (Purpose III)</p> <ol style="list-style-type: none"> <li>1. Part-time employment generation</li> <li>2. Trained personnel</li> <li>3. Infrastructure projects in place</li> <li>4. Local self help community development committees formed</li> </ol>	<p>Magnitude of Outputs:</p> <ol style="list-style-type: none"> <li>1. 10,900 part time jobs created as a result of the rural community development program</li> <li>2. 10,900 workers trained and following SEA personnel trained, in self help community development concepts and techniques:                1 administrative employee                490 field agents (50 new, 440 existing employees)</li> <li>3. Self help community development projects undertaken:                300 water supply projects                40 market centers constructed                125 kilometers of farm to market roads constructed                200 hectares terraced</li> <li>4. 440 local self help community development committees formed</li> </ol>	<ol style="list-style-type: none"> <li>1. SEA annual reports</li> <li>2. SEA annual reports</li> <li>3. SEA annual reports, observations</li> <li>4. SEA annual reports, observations</li> </ol>	<p>Assumptions for achieving outputs:</p> <p>Qualified personnel available for training</p> <p>Domestic rate of inflation will not exceed           percent annually</p>

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Narrative Summary	Objectively Verifiable Indicators			Means of Verification	Important Assumptions
<b>Inputs: (Purpose III)</b>	<b>Implementation Targets</b>			SEA annual reports	Assumption for achieving inputs:
<b>1. Annual Disbursements by Subelement</b>	<u>1st. Year</u>	<u>2nd. Year</u>	<u>3rd. Year</u>	SEA annual budgets	Qualified personnel available
Rural Area Development Agent Program	453,600	373,200	373,200	USAID project files	No untimely delays in receipt of materials purchased overseas as a result of strikes, shortages, bad weather, etc.
Rural Infrastructure Development	424,800	887,600	887,600	USAID audit reports	
<b>Total</b>	<b>878,400</b>	<b>1,260,800</b>	<b>1,260,800</b>	Observations	
<b>2. Inputs by Source</b>	<u>USAID</u>		<u>GODR</u>		
Personnel	-		585,000		
Equipment and Supplies	-		176,400		
Vehicles (motorcycles)	-		40,000		
In-Country Travel & Per Diem	-		19,000		
Training	-		62,900		
Project Operations	-		191,700		
Infrastructure	1,700,000		300,000		
Contingency	-		325,000		
Other	-		-		
<b>Total</b>	<b>1,700,000</b>		<b>1,700,000</b>		

Derivation of Estimated Yield and Production  
Increases by 1980, Based on Distribution of Improved Seed and Plant Materials

Crop	Estimated Area in Crop (Ha.)	Estimated Area w/Imp. Seed by 1980 (Ha.)	Current Average Yield (MT/Ha)	Estimated Imp. Yield (MT/Ha)	Estimated Yield Increase by 1980	Est. Annual Production Increase by 1980 (MT)
1. Rice	74,968	25,200	2.6	3.20	3%	15,120
2. Beans	29,200	17,738	0.85	1.02	3%	3,016
3. Corn	61,135	25,500	1.8	2.25	4%	11,475
4. Cassava	34,455	10,500	11.0	16.5	7%	57,750
5. Plantain	63,231	1,500	4.6	6.9	7%	3,450

## Annex 2:

### Small Farmers and Food Production In the Dominican Republic

#### A. Methodology

The contentions of this report are derived from data obtained from primary and secondary sources. The data which provide the basis of this annex come from field interviews with farmers, agriculturalists and other people in urban and rural areas of the Dominican Republic. The bulk of the time spent in the field was concentrated on interviews and discussions with small farmers and their families. Over 250 small farmers were visited at their homes and worksites throughout the country.

Interviews in the field afford two important points of view for a problem: those observations made by the interviewer and the viewpoints expressed by the people interviewed. Both points of view can be misleading and must be evaluated carefully. It should be mentioned that the Dominican rural dwellers were very open and frank when discussing their problems and the observations lead us to conclude that the rural dwellers have not been previously sought out to any extent.

This series of field interviews is not intended to be and is not offered as a representative sample of Dominican farmers. However, it is a cross-section of rural dwellers found throughout the country, one which provides useful information as well as a means of understanding the farmers' points of view. For example, throughout the interviews, the views expressed by farmers in one region were invariably restated by farmers in other regions. It should be noted that the information provided by these rural dwellers was very consistent. To cite specific examples, most people (over 90 percent) reported their economic conditions to be worse than they had been previously. A similar percentage of respondents stated that a lack of water was their greatest agricultural problem.

Since the field sites were visited by car, it should be noted that the individuals interviewed lived relatively near to a road. However, every effort was made to talk to many different kinds of farmers; impoverished and well-to-do individuals were sought out as well as those in between these extremes.

All household members were interviewed; women were interviewed in equal numbers as men. Children were also sought out; frequently, the physical appearance of children provided the most useful clues for assessing the economic status of farm households. Sadly, it is noted that most children appeared to be severely undernourished and were very poorly clothed.

## B. Background

### 1. Geographical Factors

The topology of the island of Hispanola interacts with prevailing marine climatic conditions and creates three climatic zones. In the two major mountain ranges of the Dominican Republic, the Cordillera Septentrional in the north and the Cordillera Central in the central regions of the country, medium to high annual levels of rainfall occur, producing forested unarable land. This pattern continues along the northern or windward side of the island and down through the fertile valley between the two major Cordilleras. These high and regular levels of annual rainfall also contribute to availability of large amounts of ground water for agriculture.

The southwestern slopes of the Cordillera Central and the regions beyond to the west and to the south are more arid, with irregular, low to medium levels of annual rainfall and less amounts of ground water. On the eastern side of the Cordillera is another region, which owing to the absence of a high mountain range such as the Cordillera Central, experiences levels of annual rainfall which are lower than the levels occurring in the northern central regions, but are more regular than rainfall patterns in the southwestern region.

The country is crisscrossed by a number of rivers which provide water for crop production, but which are not used for transportation to any extent. There is a greater concentration of waterways in the north central and eastern regions.

Several patterns of deforestation are found throughout the mountain regions of the country. Previously, there existed a lumber industry which harvested and exported hardwoods but this industry has depleted the supplies and is no longer active.

The present pattern is one of overuse of the forest resources with the rural residents cutting trees for firewood. This is a pattern of deforestation which has created severe drainage and run-off problems throughout the country and has been particularly acute along the southwestern slopes of the Cordillera Central, causing seasonal and increasing soil salinity in farm lands.

These three geographical areas roughly correspond to three diverse agricultural zones. Within each zone are found differing patterns of crop production and farm and community organization. Land availability for agricultural production is scarce. Prime areas of production have been taken over by the larger farmers and smaller farmers have filtered into peripheral areas less ideal for agricultural purposes.

The Cibao, the north central region which is a large fertile

valley, is an area of diverse food and cash crop production. It is the region with the greatest available amount of ground water, and consequently, irrigation development. The largest number of small farmers in the country are concentrated here, and the Cibao has been the most active area of agrarian reform and land redistribution.

The eastern region is one dominated by large sugar plantations and cattle ranches. Food production is found throughout the region, but it is pursued on farms which are located in areas peripheral to the large agrobusiness concerns.

In the southwest of the Dominican Republic, the pattern of production differs greatly from that of the other two regions. In the Cibao and in the eastern regions, farmers can potentially produce enough to feed their families on a small farm of less than five hectares. The farmers in the arid regions around the towns of Neiba, Pezderales, Jimani, San Juan de la Maguna and Elias Pina are severely restricted by lack of water, soil erosion, soil salinity and other conditions. Land requirements for production are greater and the climatic conditions more perilous. Not surprisingly, one encounters a greater evidence of poverty in this region.

To summarize the geographical and environmental considerations, there are three diverse agricultural zones, the north central (essentially the Cibao Valley), the east and southwest. The Cibao is extensively settled, with the largest number of farmers and rural communities; it also enjoys a regular, medium to high level of annual rainfall, the greatest availability of ground water for agricultural use, and has been the most active site of small farmer relocation through the agrarian reform programs. The eastern region has a lower, medium to low, but regular level of annual rainfall, less available ground water but less extensive patterns due to the presence of large agrobusiness sugar farms and cattle ranches. The southwestern region is more sparsely populated, has less available ground water, an irregular, medium to low, annual level of rainfall, more extensive environmental degradation and consequently greater levels of poverty.

The pattern of land use and agrarian culture in the Dominican Republic is best understood in terms of how the physical geography has interacted with the culture. In order to do this, an awareness of the ethnohistorical background of Dominican agriculture is necessary.

## 2. Ethnohistorical Factors

The Dominican Republic was originally settled by the Spanish. The country has had a long history of unstable political conditions since its independence in 1844 and has had foreign intervention up until very recent times.

The ecological factors described above have influenced sociological patterns and the political economy of the Dominican Republic. The erratic patterns of rainfall throughout the Greater Antilles make the cultivation of most types of crops quite risky. An exception is sugar cane which grows well in the island environment. This crop has emerged in response to continuing demands in the world market for sugar and rum. Traditional patterns of cultivation have been dominated by plantation agriculture characterized by large sugar cane, banana, and cattle producing operations owned by individuals or families. This type of agriculture is highly dependent on sources of cheap labor. Since the indigenous population, the Tainos or Caribbean Indians, had died out by the 1500's from the ravages of disease, massacres and exploitation, slaves were brought from Africa to fill these labor needs.

Slaves were given small plots of land to cultivate their own food by the plantation owners. This pattern of land use continued until the slave revolts of 1792 and the subsequent Haitian invasions. The liberated slaves who constituted this rural labor force became small peasant farmers who had certain privileges to the land on which they lived. However, they were still linked to the large plantations since they had to pay rents with their labor and produce. This exploitation probably caused Dominicans to avoid working as sugar cane cutters. The greater portion of sugar cane cutting eventually was taken over by poor immigrant laborers from Haiti. The prevailing pattern which resulted was one in which the peasants produced food crops on small parcels of marginal land (or at the fringes of marginal land) on the large estates and supplemented their meager farm incomes by working as seasonal laborers on the large sugar cane and livestock plantations.

A rural society emerged in which there were rural wage earners and an aristocracy comprised of plantation owners. As the rural population increased, patterns of rural migration increased; landless and disinherited peasants moved into areas which offered greater economic promise.

The urban areas were either exporting sites or staging centers for agricultural commodities to be transported to processing or export centers. The commercial centers that sprang up around the industrialization and export of sugar and its products, most notably rum, provided employment for rural migrants. A new class of entrepreneurs and merchants emerged who exported these products and imported a variety of goods. Because food production was small-scale and marginal to the large-scale of cultivated export crops, it was cheaper for the merchant class to import foods to feed the growing urban population. Wheat, for example, is not grown on the island and is imported cheaply, and a large portion of the urban population were European immigrants who consumed bread as a primary staple. The traditional farm

diets consisted mainly of yuca (manioc), bananas and plantains. The greater use of imported grains in the urban diet suited the palate and cultural tastes of this population group.

The class structure that emerged was essentially a landed gentry with a landed peasantry and a landless labor force in the rural areas, and a class of merchants within an urban labor force. All were closely tied economically to the export of sugar and sugar products. When Trujillo seized power in the 1930's he confiscated many of the estates belonging to the landed aristocracy. However, the influential families survived by either supporting Trujillo's regime or by managing commercial and export interests.

The impact of this shift from colonial plantation agriculture had little beneficial effect on the rural and urban poor. Some free education and supplemental food programs were started. However, rural to urban migration was tightly controlled and the seasonal influx of Haitians to work in the cane fields was shut off by the military. This action created a closed rural society with little opportunity for the landed peasantry to improve household production or for the landless labor force to seek better wage earning opportunities. The rural dwellers were thus compelled to follow their same pattern of marginal production. They were encouraged to have large families to increase the available labor force.

The death of Trujillo in 1961, along with the subsequent expulsion of the Trujillo family and the revolution in Cuba, changed conditions considerably. The large sugar cane estates of the Trujillo family were taken over by the government and the rich farm lands in the Cibao Valley were divided into parcels for redistribution among farmers. The agrarian land reforms were to promote social stability in the rural areas. The production of food was still taking place on small marginal farms, and there was still a cadre of influential land owners who had survived Trujillo's oppressive tenure. These individuals controlled the import and export trade and exercised great influence on government policies. However, the threat of a Cuban-type revolution in the Dominican Republic still loomed; hence, reforms for the rural poor had to be made.

Political power in the Dominican Republic shifted from the army to the presidency of Joaquin Balaguer. Much of this power was wielded by a group of urban agro-businessmen who had strong economic interests in maintaining an export-oriented agricultural system and who maintained strong links to the outside, primarily, the United States.

This group exercised control through the military and through the church; members of influential families held important positions in the Catholic hierarchy. Urban instability and other factors prompted a U.S. military intervention in 1965.

This intervention supported the economic status quo, and as a result, there was little or no change in the socio-economic conditions facing the rural poor.

In 1981 some 2.7 million people constituting 385,000 farm families lived in rural areas. Of these, 315,000 lived on farms smaller than 4.9 hectares, 63,000 on farms between 5 and 50 hectares, and 7,000 on farms larger than 50 hectares (Table D.2). While the number of farm families increased by 80,000 between 1971 and 1981, this increase occurred entirely in the small farm category; the number of medium and large farms did not change (Tables D.1 and D.2).

Even though families on small farms accounted for about 80 percent of all farms in 1971 and 1981, they cultivated only 12 to 13 percent of total hectares. Large farms constituted about 2 percent of all farms, but cultivated over half of the total hectares (Table D.1 and D.2).

### C. Small Farmers and Rural Dwellers

The basic unit of agricultural production in the Dominican Republic is the farm domestic group, which usually consists of a farmer, his wife and their children. The most frequently encountered case is that of a farmer, his wife and five children. Households are either located at the farm site or at some distance away. Families may even live in an urban area and commute to the fields daily. The fields may be worked by the farmer and additional labor hired on a part-time basis (this is the usual pattern), the fields may be worked exclusively by the farmer and his family members, or the farmer may own a small farm and arrange for a share-cropper.

There are three factors which determine the choice of commodity to be grown: (1) what was grown previously, (2) what can be grown, and (3) what will provide the maximum return either in terms of food for the family unit or income from sale. Most farmers express reluctance to venture into production of a crop which is different from the traditional pattern. The Dominican farmer is quite averse to taking risks and continually tries to reduce uncertainties. Most appeared skeptical about new technologies, but at the same time they expressed appreciation for the technicians and professionals from the SEA.

The women in the farm households contribute a considerable amount of labor to crop production. The great majority of women interviewed in the southwestern region report helping their husbands in the field at least three times weekly. Older children are relegated to the care of younger siblings; the usual pattern is for the girls to care for them. Boys above the age of 10 to 12 may work with their fathers or in the fields of neighbors for wages, or as part of a reciprocal labor agreement.

Table D.1. Farm Size Distribution, 1971

Farm Size (Hectares)	Farms		Hectares	
	Number	Percent	Number	Percent
<4.9	235,000	77.1	350,000	12.9
5-49.9	63,000	20.6	814,000	24.9
>50	7,000	2.3	1,556,000	57.2
Total	305,000	100.0	2,720,000	100.0

Source: Oficina Nacional de Estadística, ano 1971

Table D.2. Farm Size Distribution, 1981  
(Rural Population = 2.7 million)

Farm Size (Hectares)	Farms		Hectares	
	Number	Percent	Number	Percent
<4.9	315,000	81.7	324,000	12.2
5-49.9	63,000	16.5	867,000	32.6
>50	7,000	1.8	1,469,000	55.2
Total	385,000	100.0	2,660,000	100.0

Source: Oficina Nacional de Estadística, ano 1981

In the south central region, women provide the bulk of labor in harvesting coffee. One reason for this pattern is that the coffee harvest occurs at a time of the year when many men are harvesting their own crops, thus there are more women available than men. Coffee harvesters are paid in accordance with the quantities that they harvest, so that women are not necessarily paid less than men and they do not represent a cheaper source of labor to the farmers. The fact that female labor dominates in the coffee harvest may well be that it is not a physically demanding type of labor and it is something which women have traditionally done.

The productive organization of small farms varies considerably. Three distinct productive styles can be distinguished: (1) households producing only food which is consumed by its members, (2) households producing their own food and cash crops, and (3) households producing only cash crops. The pattern of production encountered is a household producing its own food plus cash crops. The food crops include yuca, plantains, bananas, avocados, papaya, onions, and beans. The cash crops are peanuts, cacao, coffee, tobacco, and sorghum.

Farm families which only produce food for their own consumption are the poorest. The reason they do not sell is due to the absence of surpluses. In the Cibao and in the eastern regions these families live on very small farms and at least one member of the family is engaged full time as a wage earner.

The overwhelming majority of small farmers produce food for their own consumption and sell portions for cash. Also, most seek wage employment during some portion of the year. The level of marketed surplus varies from farm unit to farm unit; however, it was observed that farmers in the Cibao sold the greater portions of their crops and consumed less of their own produce.

Although the most frequently encountered pattern of small farm production is one in which a farmer has several commodities planted, some of which he consumes outright and some of which he sells, there are those who sell almost all of their own crops for cash. These are usually farmers who grow a single commodity, and as such, they represent small-scale commercial farming enterprises. Rice farmers generally are the most commercialized of the food crop producers and usually consume only a very small portion of their production. Many have small household gardens in which they may grow bananas, yuca, other fruit or corn, but most prefer to purchase their food at a local store.

The more commercialized a farming operation, the greater are its requirements for labor. Farmers have traditionally depended on their children to provide this labor and while this pattern is still seen, it is less prevalent now than in the past. The following two cases contrast the differing patterns of familial labor use: Emilio S. is a banana farmer living outside

of Azua. He is 56, and has 5 wives and 19 children. "Everyone works. If they don't want to work I will kick them out. I don't hire workers because that is why a man has children." Enrique Z. lives in a house on the farm outside of Dajabon where he is employed. He earns RD \$3 per day. He is allowed to grow vegetables around his house. He has a wife and six children. "Sometimes my oldest son helps me with my work. He is 19 now and wants to go to town to find work. It will be difficult for me when he goes." Most small farmers, however, contract and pay for labor on a daily basis. The daily wage may be as low as RD \$2 or as high as RD \$7.50, depending on the skills required.

There are two resident labor forces in the rural areas of the Dominican Republic. One is formed by landless Dominicans; the other by Haitian immigrants. The Haitians are paid lower wages and consequently live under more impoverished conditions. They may live in camps owned by a large commercial farm where they are employed seasonally or they may live in a community among other Dominicans. There does not appear to be any conflict among these rural laborers, albeit the Haitians appear to be quite endogamous and prefer to speak their French Creole instead of learning Spanish.

One of the most remarkable features observed in these communities was the degree of malnutrition among the Haitian children. The differences are striking because the Haitian children are so poorly nourished in comparison to the Dominicans. As one Haitian woman told us, "We live a miserable existence. It is all misery. Our men are frequently cheated for their wages. We never have enough to feed or clothe our children. If we complain we will be deported, and if we are deported we starve for sure in Haiti. It is even worse there."

Another group of agricultural laborers lives in the urban areas. Many of these people report that they were small farmers who moved into the towns following the hurricanes. An effect of the hurricanes and subsequent assistance programs was the elimination of many of the smaller, more marginal farmers; they migrated to the towns where they were resettled under temporary arrangements. It appears that these temporary arrangements were improvements from their previous conditions, since they have stayed in the towns. Many now sell their labor in the rural areas while maintaining a residence in the towns.

The capital needs of small farmers for production have traditionally come from their wage earnings, selling their surplus crops and from small loans from relatives, neighbors and others. Most farmers interviewed reported little point to increasing their indebtedness by obtaining commercial credit. Several farmers simply noted that the loans created greater financial burdens. The financial burden of which most farmers complain is the loss of time required to carry out the loan transactions. "If I go to the bank I have to wait. Then, I have

to come back. Then I have to wait again. The loans are never available when you need them and it is easier to get the money from someone else." A few express fear about the uncertainty of their production sending them into further debt. "If I lose my crop, I lose my crop. But if I have a loan to repay too, then I could lose everything."

The rice farmers of the Cibao also complain about time losses in obtaining commercial loans. Most rice farmers report the pattern of not utilizing the full amount of the loans for which they had qualified. The most common complaint heard throughout the Cibao concerned the inefficiency of the BA exacting costs in time lost for the farmers. Also, most rice farmers in the Cibao report using noninstitutional credit along with that of the BA, reporting it as cheaper, more readily available and more dependable.

The marketing system used by small farmers selling produce other than rice, peanuts and other commodities purchased by government enterprises, e.g. INESPRES, is one dependent on "intermediaries". From the farmer's point of view the intermediary is frequently depicted as being an exploiter, although the intermediary must pay his own transportation costs and make small loans to farmers. The farmers have an elaborate and effective information network and are keenly aware of what their produce sells for in outside markets. These outside markets may be located in the local towns or in the capital or other major cities.

#### D. Conclusions

The production of food crops in the Dominican Republic is complex. Food production as an activity pursued by small farmers has been a marginal activity to the production of large-scale cash crops on plantations. It is difficult to characterize a Dominican small farmer; their economic viability, their household organization and their productive capacities vary from region to region and fluctuate with the commodities grown.

TABLE 1AVERAGE ANNUAL GROWTH RATE FOR OUTPUT OF SELECTED  
COMMODITIES IN THE DOMINICAN REPUBLIC (1971-1981)

<u>Commodity</u>	<u>Average Annual Growth Rate</u>
Rice	8.99
Milk	2.72
Poultry	9.54
Maize	4.67
Sorghum	18.36
Beans	7.60
Plantains	- 0.05
Coffee	5.51
Cacao	- 0.99
Tobacco	12.02
Beef	5.15
Sugar	- 0.10

SOURCE: Larson, 1982.

Table 2

## Distribution of Farm Sizes in 1971 and 1981

Farm Size (hectares)	1971		1981	
	Number of Farms	Total Area (hectares)	Number of Farms	Total Area (hectares)
Less than 5	234,943	349,649	314,665	324,125
5-50	62,796	814,095	63,358	866,867
Greater than 50	7,081	1,555,562	7,039	1,469,005
<b>Total</b>	<b>304,820</b>	<b>2,719,306</b>	<b>385,060</b>	<b>2,659,997</b>

Annex III

Table 3

Number of Farms by Crop, Dominican Republic,  
1971

CROP	NUMBER OF FARMS
Rice	29,142
Corn	84,250
Red Beans	37,589
Peanuts	37,535
Sugar Cane	3,444
Plantains	88,082
Potato	1,238
Onion	1,054
Coffee	94,287
Cocoa	33,686
Tobacco	34,851
Cassava	63,003
Sweet Potato	32,340
Canning Tomato	1,084

Source: Oficina Nacional de Estadística, República Dominicana en Cifras, Vol. 9, 1980, p. 51.

TABLE 4

BUDGET SHARES FOR FOOD AND SELECTED  
COMMODITIES IN THE EXPENDITURE PATTERNS  
OF CONSUMERS IN THE DOMINICAN REPUBLIC  
(1976-1977 ENIGF)

I t e m	Household Expenditure Level (RD\$/Month)			
	100	200	400	800
	Percent of monthly expenditure			
ALL FOODS & BEVERAGES	61.0	71.7	61.0	44.2
Cereals	22.2	19.0	12.4	7.1
Rice	17.7	14.6	8.8	4.5
Bread	0.3	0.9	1.1	1.0
Roots and Tubers	5.7	4.6	9.8	1.5
Cassava	3.7	2.9	1.6	0.7
Sugars	3.0	2.7	2.0	1.3
Beans	7.2	5.5	3.2	1.7
Vegetables	2.5	2.9	2.6	2.0
Fruits	2.7	5.5	5.7	4.1
Plantains	1.1	2.8	3.1	2.2
Meats & Poultry	2.3	7.3	9.7	8.3
Poultry	0.7	1.9	1.7	1.1
Eggs	0.5	1.0	1.1	0.8
Fish	1.3	1.9	1.7	1.1
Milk & Dairy	1.4	3.3	4.2	4.0
Fats & Oils	6.5	7.6	6.0	3.9
Other Foods	2.6	2.8	2.3	1.6
Non Alcoholic Beverages	2.0	2.8	2.4	1.6
Accumulative Percentage for Number of Individuals below the expenditure Level:				
URBAN	13	40	74	91
RURAL	31	70	91	99

SOURCES: Del Rosario (1982); Musgrove (1983a, b).

Table 5

## Banco Agrícola Loans By Land Area

1975

Tareas	Number	%	Value	%
1-10	2,022	3.7	899.9	1.2
11-50	29,526	54.7	16,610.8	21.3
51-100	10,895	20.2	14,460.6	18.5
101-250	2,426	4.5	5,225.6	6.7
251-500	732	1.4	4,224.4	5.4
501-1,000	274	0.5	3,839.6	4.9
1,001-5,000	143	0.3	7,700.1	9.9
5,001-10,000	6	--	57.6	0.1
10,001-	2	--	1,278.0	30.4
Unspecified	<u>7,944</u>	14.7	<u>23,737.8</u>	
Total	53,970		78,034.4	

1980

Tareas	Number	%	Value	%
1-10	3,076	4.4	5,920.1	3.1
11-50	26,069	36.9	30,195.9	16.0
51-100	23,160	32.8	32,195.9	17.3
101-250	5,361	7.6	20,934.4	11.1
251-500	3,310	4.7	19,566.9	10.4
501-1,000	1,380	1.9	20,622.1	10.9
1,001-5,000	1,747	2.5	18,640.7	9.9
5,001-10,000	93	0.1	2,169.2	1.1
10,001-	66	0.1	578.5	0.3
Unspecified	<u>6,366</u>	9.0	<u>37,465.0</u>	19.9
Total	70,598		188,736.1	

1981

Tareas	Number	%	Value	%
1-10	7,696	21.0	33,790.9	22.6
11-50	10,020	27.4	35,741.3	23.9
51-100	3,158	8.6	11,383.5	7.6
101-250	1,852	5.1	5,340.6	3.6
251-500	812	2.2	3,608.4	2.4
501-1,000	3,425	9.4	15,368.7	10.3
1,001-5,000	7,866	21.5	38,729.9	25.9
5,001-10,000	21	--	56.6	--
10,001-	14	0.4	246.4	0.2
Unspecified	<u>1,622</u>	4.4	<u>5,080.8</u>	3.4
Total	36,612		149,347.1	

Value in thousands of RD\$

Source: Memoria del Ejercicio 1975, 1980, 1981, 1982  
Banco Agrícola de la República Dominicana

Annex III

Table 6

**Total Banco Agricola Loans**  
1974, 1975, 1979 and 1980

	Rice	Beans	Total Crops
<b>1974</b>			
Number	11,425	3,737	39,071
Value	22,101	1,216.1	44,587.9
Tareas	988,890	158,087	2,523,503
<b>1975</b>			
Number	13,066	3,965	45,588
Value	34,691.8	1,486.3	55,099.6
Tareas	1,096,960	180,579	2,523,503
<b>1979</b>			
Number	12,435	6,535	59,126
Value	55,506.6	8,123.4	121,186.2
Tareas	1,310,044	509,607	5,192,302
<b>1980</b>			
Number	12,079	5,228	64,014
Value	59,363.3	7,684.6	145,456.2
Tareas	1,658,370	322,494	5,413,412

Value in thousands of RD\$

TABLE 7

PRODUCTION, CONSUMPTION, IMPORTS AND MARKETED  
QUANTITIES OF RICE IN THE DOMINICAN REPUBLIC  
(thousands of metric tons)

Year	Domestic Production	Consumption	INESPRE Sales	INESPRE Domestic Purchases	Imports	Imports as % of con- sumption	INESPRE Sales as % of Con- sumption
1973	177.3	217.6	88.6	63.6	29.6	13.6	40.7
1974	197.0	244.1	197.4	149.0	72.4	29.7	80.9
1975	210.6	259.5	197.6	138.9	49.4	19.0	76.1
1976	210.8	247.1	203.1	143.6	31.6	12.9	82.2
1977	200.9	251.8	215.1	175.6	64.4	25.6	85.4
1978	227.8	222.3	191.2	188.0	10.4	4.7	86.0
1979	258.1	274.4	252.4	218.4	0.0	0.0	92.0
1980	254.1	291.3	260.8	230.5	40.5	13.9	89.5
1981	258.5	257.7	236.7	221.6	62.9	24.4	91.8
1982	254.4	281.7	223.8	214.1	0.0	0.0	79.4

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SOURCE: INESPRES. "Plan Operativo, 1983".

TABLE 8

## RICE PRICES IN THE DOMINICAN REPUBLIC

Year	Producer Price for Paddy RD\$/MT(a)	INESPRE Import Price C.I.F. RD\$/MT	Ratio of INESPRES Miller's Price to INESPRES Import Price at:		INESPRE Price to Millers RD\$/MT	INESPRE's Import Price at parallel Exchange rate RD\$/MT	Int'l Price C.I.F. US\$/MT	Import Parity Price at parallel Exchange rate RD\$/MT	Consumer Price RD\$/MT	Real Consu Price RD\$/MT
			Official Exchange Rate	Parallel Exchange Rate						
1973	187	662.4	0.47	0.41	315	749.8	624.1	706.5	375.0	279
1974	198	446.0	1.02	0.89	458	508.4	458.7	522.9	464.0	305
1975	253	352.8	1.30	1.10	458	416.3	402.1	474.5	568.8	327
1976	248	291.1	1.55	1.29	452	349.0	321.3	385.2	564.4	301
1977	269	291.1	1.55	1.27	452	355.1	480.4	586.1	573.2	271
1978	276	320.8	1.41	1.13	452	401.6	379.5	475.1	564.4	257
1979	242	453.6	0.99	0.81	452	554.9	498.1	610.2	557.7	233
1980	282	473.6	1.12	0.89	529	597.7	527.4	665.6	665.8	238
1981	318	450.9	1.26	0.98	566	578.9	560.2	719.3	720.0	240
1982	318	410.7	1.36	0.94	566	605.3	406.1	589.9	720.0	223

a) Source: INESPRES, "Plan Operativo, 1983", and Larson, 1982.

b) Source: World Bank, "Commodity and Price Trends, 1983 Edition", U.S. Gulf-Port Price, plus \$20/ton for Insurance and Freight.

Annex III

Table 9

Percentage of Regional Allocation of Land to Food Crops

Region	Arroz	Habichuela	Yuca	Platano	Mani
Norte	2.8	9.2	24.2	13.7	6.2
Norcentral	16.7	9.8	14.2	12.8	3.6
Nordeste	37.2	4.5	8.4	7.1	4.9
Noroeste	23.8	6.8	11.9	14.7	30.9
Central	4.3	9.6	15.3	6.2	5.6
Sur	0.4	10.3	3.3	22.7	3.7
Suroeste	10.2	44.3	18.3	16.9	38.9
Este	4.6	5.5	4.4	5.9	6.2
	100.0	100.0	100.0	100.0	100.0

Calculated from Table 1, "Consideraciones Sobre el Presupuesto de la Secretaria de Estado de Agricultura Para el 1983"

Distribution of Irrigated Lands

Irrigation District	Region	Irrigated Area (hectares)	Number of Users	Area Per User
Yaque del Norte	North-NW	44,755	6,427	6.96
Yuna-Camu	North-NE	44,203	11,353	3.89
Yaque del Sur	South	38,744	14,116	2.74
Ozama-Nizao	Central-East	15,917	4,019	3.96
Maguana	Southwest	26,813	7,147	3.75

From "Informaciones Basicas del Sector Agropecuario 1979", p. 52, Table 7

## Annex III

Table 10. Premium of the U.S. Dollar in the Open Market  
Dominican Republic, 1960-1982

Year	Premium (%)
1960	5.0
1961	12.0
1962	8.0
1963	11.0
1964	10.0
1965	5.0
1966	8.0
1967	10.0
1968	11.0
1969	10.0
1970	14.7
1971	14.0
1972	11.9
1973	13.2
1974	14.0
1975	18.0
1976	19.9
1977	22.0
1978	25.2
1979	22.5
1980	26.2
1981	28.4
1982	45.5

Source: Banco Central, Boletín Mensual, various issues (1975-1982); Academia de Ciencias de la República Dominicana, Economía Dominicana 1976, 1977; pp. 292 (1960-1974), graph. Quoted in Larson, 1982.

## Annex III

Table 11. Urban and Rural Wages and Price Indices  
Dominican Republic, 1960-1979

	Wages In Food Industry, (Pesos/Month) <sup>1</sup>	Farm Wages (Pesos/Day) <sup>2</sup>	Wholesale Price Index <sup>3</sup>	Consumer Price Index <sup>3</sup>
1960	45.3		83.1	95.0
1961	46.5		77.6	90.0
1962	60.0		84.9	93.8
1963	52.5		91.5	100.0
1964	75.8		92.9	100.6
1965	69.7		100.0	99.7
1966	62.8	2.00	94.9	98.3
1967	47.7		97.7	100.2
1968	53.7		104.2	101.9
1969	61.7		100.0	100.0
1970	59.6		100.2	103.8
1971	59.5		100.1	108.3
1972	63.3		102.9	116.8
1973	57.2		118.4	134.4
1974	65.3	2.50	141.3	152.1
1975	101.8		176.3	174.1
1976	114.4	2.28	165.2	187.8
1977	113.5		187.6	211.8
1978	-		185.6	219.3
1979	-	3.50	202.7	239.5

Source: Oficina Nacional de Estadística. (ONE) Republica Dominicana en Cifras, various issues.

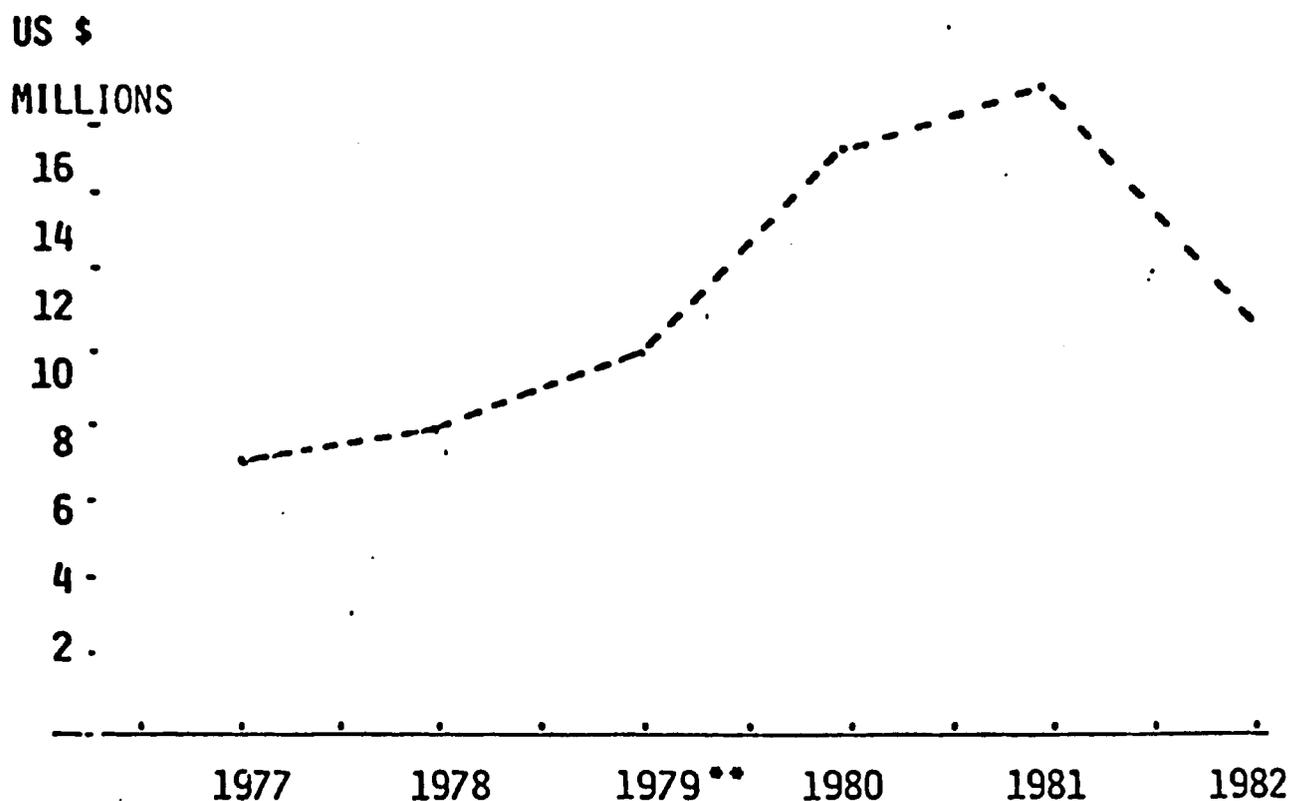
<sup>1</sup>Food Industry refers to the codes 311 and 312 of the Standard and International Industrial Classification, which excludes beverages. This industry generates most of the jobs in the manufacturing sector: 82 percent in 1964, and 73 percent in 1977. ONE, *ibid.*

<sup>2</sup>This is the minimum wage since there were no time series on actual rural wages. Farm workers usually receive some in-kind benefits, such as one or two meals a day and take-home produce. Datum for 1976 is from Secretaria de Estado de Agricultura and AID, Empleo Rural, 1977a, p. 48.

<sup>3</sup>The base year for the calculation of the price indices was changed in 1978 to a 1976/1977 base. The price indices for 1979 presented in this table are based in 1969 and were obtained by using the change in the Consumer Price Index from 1978 to 1979 on the new series.

Table 12

IMPORTS OF PESTICIDES •  
DOMINICAN REPUBLIC  
(U.S. \$, C & F LEVEL)



• INCLUDES HERBICIDES, INSECTICIDES AND FUNGICIDES.  
C&F LEVEL.

••• ESTIMATED.

SOURCE: NATIONAL STATISTICS OFFICE AND SECRETARÍA  
AGRICULTURA.

IMPORTANCIA RELATIVA DEL SECTOR AGROPECUARIO Y RITMO DE CRECIMIENTO

(En millones de RD\$)

A Precios de 1970

AÑOS	PBI (1)	Incremento Porcentual	Agropecuario			Agrícola			Ganadería			Sivicultura y Pesca		
			PBI (2)	% (2)/(1)	Incremento Porcentual	PBI (3)	% (3)/(1)	Incremento Porcentual	PBI (4)	% (4)/(1)	Incremento Porcentual	PBI (5)	% (5)/(1)	Incremento Porcentual
1970	1,485.5	9.0	345.2	23.2	2.8	232.8	15.7	6.3	103.1	6.9	26.6	9.3	0.6	-33.5
1971	1,647.0	10.9	363.5	22.1	5.4	247.0	15.0	6.1	107.7	6.5	4.4	9.0	0.5	- 2.5
1972	1,816.2	10.4	377.3	20.8	3.7	253.9	14.0	2.8	113.7	6.3	5.7	9.9	0.5	10.0
1973	2,052.7	12.9	410.1	20.0	8.7	279.3	15.6	10.0	118.3	5.8	4.0	12.5	0.6	25.9
1974	2,175.9	6.0	410.2	18.9	0.0	279.1	12.8	- 0.1	118.8	5.4	0.4	12.3	0.6	- 1.5
1975	2,288.9	5.2	399.9	17.5	-2.5	262.8	11.5	- 5.8	125.5	5.5	5.6	11.6	0.5	- 5.6
1976	2,442.9	6.7	429.3	17.6	7.4	286.8	11.7	9.1	130.7	5.4	4.1	11.8	0.5	1.7
1977	2,564.6	5.0	436.7	17.0	1.7	286.3	11.2	-0.2	140.0	5.5	7.2	10.4	0.4	11.0
1978	2,620.0	2.2	456.9	17.4	4.6	293.8	11.2	2.6	151.9	5.8	8.5	11.2	0.4	7.5
1979	2,746.1	4.8	461.7	16.8	1.1	287.9	10.5	-2.0	156.4	5.7	3.0	17.4	0.6	55.4
1980 *	2,899.6	5.6	483.3	16.7	4.6	296.6	10.2	3.0	168.2	5.8	7.5	18.5	0.6	6.1
70/80**	6.9		3.4			2.5			5.0			7.1		

\* Preliminar

\*\* Tasa de crecimiento acumulativa anual

FUENTE: Boletines de Cuentas Nacionales del Banco Central de la República Dominicana.

--DOMINICAN REPUBLIC

PRODUCTION BY COMMODITY, VALUE AND INDICES OF AGRICULTURE AND FOOD PRODUCTION, ANNUAL 1973-82

COMMODITY	PRICE WEIGHT	AVERAGE 1969-71	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
	DOLLARS	-1,000 METRIC TONS-										
RICE, PADDY	158	204	205	260	218	292	277	339	345	369	325	374
CORN	74	45	38	33	32	35	35	40	50	40	44	50
SORGHUM	141	14	9	17	17	18	19	25	23	25	35	38
BEANS, DRY	270	26	20	43	30	38	32	38	33	36	43	41
PIGEON PEA	190	25	27	13	14	15	15	16	17	17	19	--
POTATOES	80	23	26	22	17	22	18	23	18	25	23	23
CASSAVA	54	173	200	142	170	171	185	185	160	140	160	160
SWEETPOTATOES	72	87	97	65	49	84	78	85	80	81	80	82
YAMS	79	29	31	28	28	29	29	31	18	17	18	15
ONIONS	160	8	11	11	8	9	5	13	9	13	15	15
SUGARCANE	7	8,986	10,092	9,796	9,334	10,930	11,091	11,848	11,200	10,275	10,544	10,100
TOBACCO	666	23	43	38	22	35	29	57	53	49	40	33
PEANUTS, IN SHELL	185	75	82	73	50	40	40	45	40	48	37	30
MANGOES	17	153	159	161	163	165	167	169	172	175	180	160
AVOCADOS	64	122	127	128	128	130	131	133	140	145	150	150
BANANAS	34	276	310	315	318	310	310	315	290	310	320	320
PLANTAINS	31	530	530	615	500	610	550	610	550	600	625	600
PINEAPPLES	77	13	18	18	18	19	19	20	18	20	25	25
COFFEE	493	39	46	51	53	62	44	61	44	60	67	51
COCOA BEANS	558	37	37	38	33	34	33	34	36	32	34	38
BEEF AND VEAL	613	32	39	39	37	42	36	38	39	43	46	48
PORK	472	11	17	18	19	21	23	23	23	12	1	1
POULTRY MEAT	812	18	27	30	36	37	33	38	37	73	70	64
MILK	143	284	330	340	320	340	325	340	340	350	350	355
EGGS	903	21	21	21	22	22	23	23	24	31	34	34
AGGREGATES OF PRODUCTION												
		-BILLION DOLLARS AT CONSTANT PRICES-										
CROPS		239.4	267.9	274.0	240.1	283.9	265.4	316.6	295.3	300.3	298.9	292.1
LIVESTOCK		99.2	120.0	124.4	126.6	134.1	127.1	134.5	135.1	169.5	166.3	163.4
LIVESTOCK FEED DEDUCTION	.10	-9.9	-12.0	-12.4	-12.6	-13.4	-12.7	-13.4	-13.5	-16.9	-16.6	-16.3
TOTAL AGRICULTURE		328.7	375.9	386.0	354.1	404.6	379.8	437.7	416.9	452.9	448.6	439.2
TOTAL FOOD		294.2	324.6	335.6	313.3	350.7	338.8	369.6	359.9	390.7	389.0	392.1
INDICES OF PRODUCTION												
		(1969-71 = 100)										
CROPS		100	112	114	100	119	111	132	123	125	125	122
TOTAL AGRICULTURE		100	114	117	108	123	116	133	127	138	136	134
TOTAL FOOD		100	110	114	106	119	115	126	122	133	132	133
PER CAPITA AGRICULTURE		100	105	105	93	103	94	106	98	103	100	95
PER CAPITA FOOD		100	101	102	92	100	94	100	94	100	97	95
INDEX OF POPULATION												
1969-71 POPULATION= 4,065,000		100.0	109.0	112.2	115.5	118.9	122.5	126.1	129.8	133.4	136.9	140.5

Source: USDA

Resultados de 1982  
Sistema de Vigilancia Nutricional

Región	POBLACION MENORES DE 5 AÑOS				NIÑOS VIG.		ESTADO NUTRICIONAL								
	TOTAL	URBANA	RURAL	%	TOTAL	%	NORMAL	%	D I	D II	%	D III	%	T	
Región I *	102,819	34,641	69,178	66.6	8,217	11.7	4,251	52.4	2,566	31.6	1,082	13.3	218	2.7	3.0
Región II	184,916	80,144	104,772	56.7	20,614	19.7	12,147	58.8	6,245	30.8	1,859	9.0	263	1.3	8.9
Región III	108,097	23,366	78,731	72.8	14,051	17.8	7,726	55.0	4,604	32.8	1,448	10.3	272	1.9	6.1
Región IV	45,896	24,362	21,534	46.9	3,267	16.1	1,387	40.0	1,383	40.0	598	17.2	69	2.0	5.1
Región V	87,988	48,323	43,165	49.1	16,930	39.2	10,107	59.7	4,842	28.6	1,625	9.6	256	1.5	6.1
Región VI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Región VII	39,151	15,579	23,572	60.2	6,266	27.0	3,454	54.3	2,245	35.8	570	9.1	91	1.4	5.1
Total	569,867	232,915	340,952	59.8	69,545	20.4	39,072	56.2	21,985	31.6	7,182	10.3	1,309	1.9	6.1

Fuente: Departamento de Nutrición, SESPAS, Sistema de Vigilancia Nutricional, 1983.

Desnutrición Pre-Escolar Medida en Varias Encuestas

Table 16  
Annex III

GRUPO	Normal	1er. Grado	2do. Grado	3er. Grado	Tamaño De la Muestra	Total Desnutridos
Santo Cerro y Barranca (1962)	60.9	18.5	15.2	5.4	-	39.1
Puerto Plata (1967-68)	63.4	24.2	7.0	5.4	3199	36.6
Jarabacoa (1976)	48.5	30.8	16.5	4.2	3181	51.5
Barahona (1967-68)	69.6	20.8	7.7	1.9	4092	30.4
San Pedro de Macoris (1967-68)	58.6	26.4	13.5	1.5	1246	40.4
Los Minas (1967-68)	61.0	28.5	9.3	1.2	1167	39.0
San Cristobal (1967-68)	48.0	35.5	12.7	3.8	320	52.0
Encuesta Nutricional Nacional (1969)	24.6	48.6	22.8	4.0	1100	75.4
Encuesta Nutricional Nacional (1974)	41.5	40.0	16.5	2.0	2007	59.5
CARITAS (1976)	34.0	42.0	20.0	4.0	12335	66.0
Participantes Programas Alimenticios (CARE 1976)	51.8	37.8	9.2	1.2	1128	48.2
No participantes (CARE 1976)	49.9	39.4	9.1	1.6	820	50.1
Las Tablas (1977)	53.0	30.0	17.0	-	13	47.0

Normal = 90% de NAS Referencia de Peso/Edad

1er. Grado = 75 - 89.9% de Nas Referencia de Peso/Edad

2do. Grado = 60 - 74.9% de Nas Referencia de Peso/Edad

3er. Grado = Menos de 60% de Nas Referencia de Peso/Edad

## ANNEX 4 METHODS AND APPROACH

The impact evaluation of the Agricultural Services Loans I and II to the Dominican Republic was undertaken in three phases. A first phase consisted of a thorough review of extensive documentation provided by AID/W, The World Bank, Sigma One Corporation and USAID. These documents included project papers, interim evaluations, agricultural sector reports, World Bank Mission reports and several economic and agricultural policy analyses based on econometric techniques. The documentation served as the basis for identification of issues and working hypotheses. A second phase consisted of a refinement of hypotheses through interviews of key personnel at USAID and at various levels within public sector institutions in the Dominican Republic. Included in this refinement phase were a series of interviews with key informants who had been high level officials within the government during the design and execution of the loan projects, or are persons known to be highly knowledgeable and influential within the agricultural sector or the government. A third phase consisted of two weeks of field work for verification of the principal issues. The field work included site visits to all of the agricultural production regions of the country. Efforts were undertaken to interview farm households at all points of the welfare and resource endowment spectrum. Rural household members were interviewed by a team consisting of an anthropologist, an agricultural economist, and a sociologist. The team members then sought to achieve consensus regarding the interpretation of the responses provided by the household members. At the same time, an Agriculturalist visited the production areas to obtain information on the functioning of product and factor markets and the role of the public institutions in these.

The impressions from these site visits were compiled into field reports and debriefings. These then served as the basis for a careful search of the documentation and secondary data for corroboration or rejection of specific interpretations and conjectures. Where the data permitted, or the analyses were available, econometric methods were used to measure the impacts. For example, time series analyses of rice yields revealed no significant impact from the subsidized credit per se. In other instances, the econometric results of other scholars were used as input into the analysis, e.g. Roe et al, 1982; Quezada, 1981; Capellan and Reynoso, 1982. For policy analyses purposes, international prices were used as references for measuring the effects of distortions. The following methodological definitions were used for computing the economic criteria used.

1. Import parity price is the world market price for a commodity gross of all costs and freight placed in Santo Domingo. In some cases it is converted at the official

exchange rate, in others at the appropriate parallel market rate.

2. Real exchange rates were calculated using the consumer price index, the IBRD world inflation index, and the following formula:

$$E_i^* = E_{72}^* \frac{CPI_i^S}{CPI_{72}^S} \frac{CPI_{72}^W}{CPI_i^W}$$

where  $E_i^*$  is the real exchange rate in year  $i$ . Overvaluation =

$$\frac{E_i^* - E_i}{E_i} \times 100 \text{ where } E_i \text{ is the nominal exchange rate in year } i.$$

3. The nominal protection rate (NRP) =  $(p_{\text{producer}} - p_{\text{border}}) - 1$ . Net protection = NRP minus the percent overvaluation of the exchange rate.

Domestic resource cost (DRC) is the value of domestic resources committed to the production of output from one area of land divided by the value added in world prices. This result is then divided by the real exchange rate; the result is a unitless number. A value less than one indicates a comparative advantage; a value greater than one indicates a comparative disadvantage. The DRC coefficient for a commodity is given by the following equation:

$$DRC = \frac{d - v}{(p_b \cdot y - m)X} \quad \text{where}$$

$d$  = value of the domestic resources used in production of the commodity (RD/unit of land)

$v$  = value of any joint product (RD/unit of land)

$p_b$  = border price of the commodity (\$/unit of output)

$y$  = realized yield of the commodity (output/feddan)

$m$  = value of the traded inputs used in the production of the commodity (\$/unit of land)

$X$  = real exchange rate (RD/\$)

## GLOSSARY

ENIGF	National Household Expenditure Survey
INESPRE	Instituto de Establizacion de Precios (Institute of Price Stabilization)
SEA	Secretaria de Estado de Agricultura (Ministry of Agriculture)
BA	Banco Agricola (Agricultural Bank)
ISA	Instituto Superior de Agricultura (Superior Institute for Agriculture)
CENCERI	Centro de Servicios de Integrados (Integrated Service Centers)
PROSEMA	SEA Mechanization Service Center
IAD	The Agrarian Institute
USAID	Mission of the Agency for International Development to the Dominican Republic
Tareas	unit of land area which equals one-sixteenth of a hectare
Arroz	rice
Habichuela	field beans ( <u>Phaseolus Vulgaris</u> )
Yuca	cassava ( <u>Manahot Esculenta</u> )
Platano	plantains
Mani	peanuts
RD \$	Dominican Republic Pesos (1 RD \$ = 1 US \$ at the official exchange rate); at the time of the study the unofficial exchange rate was RD \$1.8 to US \$1

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