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**Agricultural Development Strategies in Brazil  
1950-1970**

by

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AGRICULTURAL DEVELOPMENT STRATEGIES IN BRAZIL  
1950-1970\*

by

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Introduction

During the past 20 years U. S. aid agencies as well as several other international assistance organizations have been importantly involved in agricultural development programs in Brazil. The discussion which follows outlines the agricultural strategy pursued by the Brazilian Government and the aid agencies during this period. In order to keep the discussion relatively short, major emphasis is placed on detailing the programs of the Agency for International Development and its predecessor agencies (AID). An attempt is also made to identify "success areas" as well as issues which have not been adequately treated by past strategies. Several suggestions are presented in conclusion with regard to possible future involvement in agricultural development programs in Brazil by U. S. aid agencies.

Most of the publications and documents reviewed in preparing this paper are included in the attached bibliography (Appendix B). Interviews with a number of individuals closely associated with U. S. sponsored

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\*This study is part of the 1970 Summer Research Project sponsored by the Agency for International Development, Bureau for Program and Policy Coordination. Additional studies of Ethiopia, Turkey, India, Morocco, and The Dominican Republic were also included in the Research Project. Wayne Schutjer and Antonio Gayoso were responsible for the latter four studies.

\*\*Much of the data included in this paper was assembled by John Varley. His assistance was much appreciated.

agricultural activities in Brazil also provide a good deal of information. Where possible, these individuals have reviewed the strategy description for accuracy; they may or may not concur, however, in the conclusion drawn.<sup>1/</sup>

#### Brazil's Agricultural Development Strategy: 1950-1970

It is generally recognized that agriculture played a vital role in helping to create the substantial industrial base found in Brazil in the early 1950's. Exports of sugar, coffee, cotton, and other agricultural commodities provided most of the capital for this purpose [20]. Despite the historical importance of this sector, Brazilian economic strategy during the 1950's placed minor priority on agricultural development. Most attention was directed at further import substitution, industrialization, and inflation control. A number of the policies adopted to treat these three areas, however, had serious adverse effects on the economic incentives for the agricultural sector. The most important of these policies were food-price controls, value-added taxes on agricultural products and inputs, limitations on food exports, protection for a high-priced tractor industry, and import restrictions on other key agricultural inputs [48].

Only feeble attempts were made by the Brazilians to upgrade agricultural services during the 1950's. The attention given in this regard was mainly to improving marketing facilities and transportation systems. Despite this neglect, agricultural production in Brazil increased during the 1950's at an average rate of 4.7 percent per year [46, p. 77]. A good bit of this increase resulted from the continued expansion in the

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<sup>1/</sup> Especially helpful in this regard were Ralph Hansen, John Kaufmann, Richard Newberg, James Robinson, and Philip Schwab.

extensive-land margin. Aside from the buildup of large coffee surpluses and the regional distortions introduced by sugar pricing policy, Brazil did not seriously suffer from its agriculture policies until the early 1960's. Food price pressures, large food imports, stagnant agricultural exports, and a general slowdown in agricultural growth culminated in the food crisis of 1962-1963. Part of the slowdown in agricultural growth was due to further softening of coffee prices and some bad weather. A number of Brazilians became convinced, however, that disincentive product and input prices, plus unavailability of some key inputs were important factors contributing to the poor performance of the agricultural sector. As a result, starting in the early 1960's Brazilian government policies showed a sharp change in attitude toward agriculture.

These policy changes have taken several different forms. The most important has undoubtedly been the huge increase in the amount of institutional credit made available to agriculture during the 1960's. From 1960 to 1968 the dollar value of this credit, expressed in year-end balances, increased from \$606 million to \$1,417 million [1]. As a ratio of gross agricultural product it increased from .18 to .34<sup>1/</sup>. Since interest rates on agricultural credit ranged from 9 to 18 percent per year and inflation 25 to 85 percent per year during the 1960's real interest rates were substantially negative. Inputs purchased with this credit were, as a result, highly subsidized. Although difficult to precisely calculate, it appears that an income transfer of \$100 to \$200 million per year moved from the public sector to the borrowers of agricultural credit in Brazil via these negative interest rates during the

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1/ This latter ratio compares favorably with that found in the U. S. and Taiwan.

1960's. Since only a minority of Brazilian farmers have access to institutional credit, and most of these are located in southern Brazil, credit policy has concentrated this income transfer.

Another major policy emphasis during the 1960's was activating a minimum-producer-price program especially in rice, corn, beans, and wheat. This not only provided some forward pricing advantages to the farmer, but it also -- at least in the case of wheat -- gave farmers substantially higher price incentives. With the exception of livestock, sugar, and coffee, agricultural price ceilings and export restrictions have now been removed.

Some success was also achieved in the coffee diversification program during this period, and with the additional help of bad weather and disease problems, the amount of coffee in storage has been substantially reduced. Adjustments favorable to agriculture have also been made in value-added taxes, and a sizeable investment made in carrying out a land ownership survey. In addition, the Brazilians showed much more interest in the latter part of the 1960's in agricultural sector planning rather than simply reacting to individual crises in agriculture.

In 1970 the Brazilian Government programs continued to emphasize production increases and improved agricultural marketing. Land reform has apparently been down-played and emphasis placed on colonization and opening new lands, especially in the Amazon.

#### AID's Agricultural Development Strategy in Brazil

Between 1940 and 1953, the U. S. Government provided some technical assistance to agriculture in Brazil through several agreements dealing with specific problems or phases of agriculture. Rubber research, a

survey of agricultural institutions in Paraná, and a survey of agricultural colleges in Brazil were examples of these projects. About a dozen U. S. technicians were in Brazil in early 1953 working with these activities. It is probably fair to say, nevertheless, that prior to 1953 U. S. sponsored programs had little central thrust or strategy.

Significant U. S. inputs into agriculture began with the founding in 1953 of the joint U. S. - Brazilian administrative entity Escritorio Tecnico de Agricultura (ETA). This was the Brazilian agency responsible for coordinating most of the U. S. technical and financial assistance directed to agriculture. While U. S. funds moving through ETA were only 10 to 20 percent of the total, an American acted as co-director with a Brazilian of ETA's activities. ETA differed from most servicios set up during this period in other Latin American countries in that U. S. participation was only a small part of total. The Brazilians also had a good deal to say about content and direction of activities, and a number of the agricultural institutions in Brazil through which ETA worked were fairly well established before ETA was formed. That is, some extension activities were already underway, agricultural universities well established, agricultural credit system fairly widespread, and some agricultural research was already being done.

Individual projects were the basis of ETA's programs. Many of these were carried out with state governments, but some were conducted with federal organizations, semi-official or private agencies. Aside from some extension programs, each project was largely autonomous. Procedure wise, ETA received requests for technical assistance and then, on approval, provided some technicians, a little hardware if necessary, and a modest amount of expense money. By 1959, ETA had developed 56 projects spread

throughout the major agricultural areas of Brazil, and employed almost 50 U. S. technicians to assist with the projects [6].

About a third of the effort expended through ETA was directed at sharply expanding agricultural extension capacity in Brazil. In fact, ETA helped establish all of the state extension services outside of Minas Gerais. The remainder of the projects treated a number of agricultural education and research topics, conservation issues, and crop and livestock production problems.

In retrospect, during the 1950's these U. S. Point IV programs in Brazil, in addition to giving extension a major boost, appear to have accomplished the following:

(1) ....helped to significantly strengthen some Brazilian institutional capacity; e.g., agricultural credit, research, cooperatives, and the state secretaries of agriculture.

(2) ....helped to introduce or substantially improve through demonstration some important agricultural techniques; e.g., artificial insemination, extension training programs, livestock rations, and soils research, and

(3) ....helped to train a number of Brazilians who now hold key positions in institutions servicing agriculture. During the 1950's over 600 agricultural participants received training under this program (Appendix A, Table 4). Almost 70 Brazilians served on ETA's staff and a number of others were employed as counterparts for U. S. technicians. For example, in mid-1970 the top three men in the Ministry of Agriculture in Brazil were alumni of ETA training programs.

The highwater mark of ETA's activities as far as U. S. participation was concerned was reached in 1959. The numbers of U. S. technicians

began to decline from that point until the 1962-63 period. ETA, however, continued to sponsor additional projects and added a dozen or more between 1960 and late 1964.

During the period 1962-63, AID substantially changed its development strategy in Brazil. Program lending aimed at stabilization became the main AID instrument. In general, this resulted in much more emphasis being placed on work with national agencies rather than state organizations; e.g., the Central Bank, and the Ministry of Agriculture. Much more emphasis was also placed on influencing national policy through capital loans, and less emphasis placed on technical assistance projects. Allocation of counterpart funds generated by the program loan, individual project loans, and PL 480 became quite important. The major objectives of the new agricultural strategy which evolved were the following:

- (1) to expand and improve the activities of the federal government in research, planning, and administration of agricultural development,
- (2) to rapidly increase the production and marketing of agricultural commodities,
- and (3) to help develop a strong set of agricultural colleges which could support the above objectives.

Most of AID's agricultural activities from 1962 to 1970 can be grouped into five areas: rural credit, fertilizer supply and market development, general agricultural policy, agricultural research, and higher agricultural education.

#### Rural Credit

As already suggested, the Brazilian Government began about 1960 to place major emphasis on sharply expanding the amount of institutional credit available for agriculture. As a result, from 1959 to 1964 rural loans in real terms from institutional sources increased by 50 percent.

Major emphasis by AID on rural credit, starting in 1963-64, helped to accelerate this credit expansion. Funds channelled to the Central Bank by AID for agricultural credit came mostly in the form of counterpart from Program Loan and Fertilizer Loans, totaling the equivalent of \$45 million from 1964 to 1969 [52]. In addition, AID obligated almost one million dollars in technical assistance grants to support growth in the agricultural credit system.

As pointed out earlier, the ratio of agricultural credit to gross agricultural output increased rapidly from 1960 to 1968. Also interesting to note is the fact that the real value of the institutional agricultural loan portfolio in Brazil grew at a rate of 17 percent per year while overall credit in the economy grew at only a rate of three percent [1]. With AID's support, Brazil clearly carried out a major structural change in its credit system during the 1960's in favor of agriculture.

#### Fertilizer policy

Expanding the marketing system for fertilizers during the 1960's has received almost the same attention by AID as increasing rural credit. Two fertilizer import loans of \$15 million (1964), and \$20 million (1966) were major elements in this program.<sup>1/</sup> In addition, a \$14.8 million loan and a \$18.1 million loan guarantee for construction of an integrated fertilizer production and distribution system in the São Paulo area were also part of this fertilizer program.

Over the period 1960 to 1968 the average annual rate of growth in fertilizer use in Brazil exceeded 11 percent [8]. There was, however,

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<sup>1/</sup> Very little of the 1966 loan has been disbursed as of mid-1970. This was mainly due to the requirement that 50 percent of the fertilizer shipments had to be on U. S. bottoms [19, pp. 29-33].

a good deal of year-to-year variation since most of the fertilizer was imported and government input policy took several sharp changes. From 1953 to 1961 fertilizer was imported duty free and at very favorable exchange rates. With this strong price subsidy, increases in consumption of fertilizer during this period averaged almost 15 percent per year. In 1961 the preferential exchange rate for fertilizer was eliminated and food price controls were implemented. The result was a substantial increase in the price of fertilizers in comparison with prices of most major agricultural crops [48, p. 231]. Little or no growth in total fertilizer use occurred until new policies were adopted in 1966.

In April, 1966, the Brazilian Government with AID's encouragement created an agency (FUNFERTIL) which provided credit and subsidized interest charges for fertilizer purchases. Until late 1968 FUNFERTIL underwrote the full amount of the interest charges for fertilizer credit. This was then changed to a subsidy limited to interest charges up to 14 percent. In 1968, over three-fourths of the fertilizer and lime sold in Brazil was subsidized by this agency [8, p. 7]. This highly subsidized credit for fertilizer purchases, plus adjustments upward of the relative prices of a number of agricultural commodities resulted in a very large increase in fertilizer consumed. Taking the subsidies into consideration, the ratio of fertilizer prices to crop prices declined from 166 in 1965 (1964 as 100) to 77 in 1968. As a result, the apparent consumption of chemical fertilizer more than doubled between 1966 and 1968 to nearly 600 thousand tons.

Over two-thirds of the fertilizer consumed in Brazil is used in the Central states, mainly São Paulo. Almost all of the rest is used in the Southern states. As with rural credit, mainly the large farmers

located in the commercialized Central and Southern parts of the country are benefiting from the subsidy programs associated with Brazil's fertilizer program.

There is little doubt, however, that as a result of past policy the market for fertilizer has been sufficiently expanded in Brazil to provide favorable economic possibilities for large-scale internal production. AID's loan guarantee for ULTRAFERTIL's plant in Central Brazil was aimed at partially filling this possibility. The plant came on stream in mid-1970 and it is hoped that elemental nitrogen prices in São Paulo will be reduced by at least a quarter as a result.

#### Higher education

AID's assistance to higher agricultural education in Brazil has been largely made up by four contracts with U. S. universities to provide assistance to some of Brazil's leading agricultural colleges. The first university contract dates back to the early 1950's when Purdue University became associated with the Rural University of Minas Gerais on a very modest scale. This program was broadened in 1958, and the contracts with the University of Wisconsin and the Ohio State University in Rio Grande do Sul and São Paulo inaugurated in 1963. In 1964 The University of Arizona began working in Ceará. An average of about 40 American technicians have been involved in these contracts.

The main objective of these contracts has been to help expand the capacities of Brazilian universities in order to train agricultural technicians required for more rapid development of the country's agricultural resources. In 1960 less than three percent of the students enrolled in higher education in Brazil were studying agricultural topics [46, p. 194]. With strong Brazilian emphasis also being placed on this area, rather

dramatic results have been achieved in the past six years [40]. From 1964 to 1967, for example, enrollment in the four Brazilian colleges assisted by AID increased by over one-third. The number of graduates increased by an even larger percentage. In three of the four colleges graduate training programs have been developed, and a significant number of graduates have started to emerge. As a result, graduate research, especially in the social sciences, is becoming important. Not only are the graduates providing the manpower to staff action agencies, but the research is also developing factual background for making better policy decisions.

AID's participant trainee program has also made a contribution to improving higher agricultural education in Brazil. From 1950 to 1969, 1,821 of a total 7,091 participant trainees were financed by AID for training in agriculture (Appendix A, Table 4). A number of these participants are now associated with agricultural colleges in Brazil.

#### General agricultural policy

Although difficult to assign numbers to, AID placed high priority on helping the Brazilians improve their agricultural development policy. This was rather personalized. It included "nationalization" of the extension service, freeing most farm output prices, easing some rural taxes, liberalizing some export policy, adding-in more product price certainty, and reducing the costs of inputs, in the short run, through subsidized credit. All of these elements have become important in Brazilian policy.

#### Agricultural research

In 1963 USAID contracted with the IRI Research Institute to provide technical assistance to a division of the Ministry of Agriculture,

Escritorio de Pesquisas e Experimentação (EPE) and the Associação Brasileira de Crédito e Assistência Rural (ABCAR) with the purpose of establishing a nationwide program in research and extension. Some 25 to 30 American technicians were employed under this contract. In addition, some attention was given to agricultural research through the four USAID-financed agricultural university institution building contracts discussed earlier.

An agricultural research loan for over \$13 million proposed by USAID in 1968 and restructured in 1970 was an extension and expansion of these on-going grant programs. The main objective of the loan was to significantly crank-up agricultural research capacity in order to further stimulate intensification of Brazilian farming through fertilizer use, adoption of improved varieties of crops, weed and pest control and mechanical improvements.

Major considerations in this loan were (1) to increase EPE's capacity to plan and execute a national research program, (2) substantially expand EPE's cooperative research program with university research centers through additional research training, and (3) increase the input of professional research assistance and research equipment into research on key areas. Although approved by AID, this loan as of mid-1970 had not been signed by the Brazilians.

#### PL 480 Programs

Brazil had imported almost 800 million dollars worth of PL 480 commodities by mid-1969 (Appendix A, Table 5). Only Yugoslavia, India, Pakistan, and Korea have taken larger amounts. PL 480 sales made up almost three-quarters of the total value of U. S. agricultural exports to Brazil during the 1954 to 1969 period.

Almost all of the sales-for-local currency (\$474.2 million) and the dollar sales (\$90.6 million) were made up by wheat. Sixty percent of the local currencies generated by these sales have been lent to various government agencies in Brazil for development projects, twenty percent has gone out in development grants and the remainder spent to cover U. S. expenses (Appendix A, Table 6).

Prior to 1967 less than ten percent of the U. S. owned currencies generated by PL 480 programs in Brazil, however, were spent on agriculture (Appendix A, Table 3). This was mainly made up of grants for local projects and several local currency loans made for agricultural purposes. Since 1967, when PL 480 agreements were shifted to long-term dollar sales, almost all local currencies generated by PL 480 roles have been reallocated within the Brazilian budget for agricultural purposes.

Four-fifths of the PL 480 imports for disaster relief and voluntary relief agencies have gone into school lunch or child feeding programs, and the remaining one-fifth used for special economic development projects.

It is not clear what total impact PL 480 has had on Brazil's agricultural development strategy. On the one hand it lessened some pressure during the 1950's and early 1960's for the Brazilians to seriously address some agricultural problems. But, at the same time it provides Brazil with concessional wheat imports, a large part of which would probably have been commercially imported anyway. Brazil appears unable to substitute internal production for these imports. Only a small part of the local currencies generated by PL 480 in Brazil have been lent or granted for projects in agriculture. There has, therefore, probably been only a little positive contribution in this regard. The availability of PL 480 local currencies has enabled AID as well as Brazilian officials to start

some agricultural projects which would have been very difficult without these funds. To the extent that these funds provided leverage for re-directing attention and additional resources toward the agricultural sector they were likely helpful.

A digression on the Northeast

As early as 1942 the U. S. Institute for Inter-American Affairs supported multimillion dollar programs in the Northeast in public health, minerals exploration, rubber growing, and food production [44]. Some attention was also paid to irrigation. This program, however, was mainly oriented toward easing the immediate repercussions of the war effort. Expanded food production was needed to feed the thousands of U. S. personnel stationed in the Northeast. Aside from some improvements in public health and regional air transportation, U. S. aid programs during this period had little lasting effect on the Northeast.

Starting in 1953, several of EIA's technical assistance projects were located in the Northeast. These included extension and extension training, agricultural credit, work with rubber and cacao, milk pasteurization, work with some plants and animal problems, home economics, and some cooperative activities. Less than five percent of the total U. S. aid effort, however, was directed to the Northeast. From 1949 through mid-1960, only 140 of a total 3,000 Brazilians trained under the Point IV fellowship program came from the Northeast. In the period 1962-63 there was an increase from several agricultural technicians to about 12 assigned to the AID contingent stationed in Recife. Plans were made for them to work closely with SUDENE in developing its activities rather than working on individual projects. These technicians, however, were never wired into SUDENE because of political issues, and by 1964, most

of these technicians had left the Northeast. Until 1970 AID did little more than maintain a presence in agriculture in the Northeast. Some impact on the N. E. did filter down through AID work with national agencies, however.

#### World Bank Activities (IBRD)

By mid-1970 the IBRD had made only one loan directly for agriculture in Brazil -- only six percent of IBRD's total loans to Brazil. This was a \$40 million loan in 1967 for expanding credit for livestock production. Because of the requirements that positive real rates of interest be charged on credit granted from this loan, and detailed farm planning carried out, very little of the funds have been used to date. Almost all of the remainder of the Bank's loans have financed power and communication development, plus some emphasis on transportation systems. A recent study (1970) of the agricultural sector in Brazil by the Bank may, nevertheless, indicate an expanded interest in this topic. Tentatively, the Bank is exploring several irrigation projects in the Northeast, some agricultural credit in the Northeast, and several settlement projects for possible financing. IBRD's tentative projects carry pretty much a large farm flavor.

Aside from helping to provide better transportation systems in rural areas, the Bank has not pursued any particular strategy vis-a-vis agriculture in Brazil.

#### The Inter-American Development Bank (IDB)

Through mid-1970 IDB had lent \$172 million to Brazil for 11 projects which mainly serviced agriculture (Appendix A, Table 7). This was about 12 percent of IDB's total loans to Brazil. Except for one

project of about \$31 million, these loans were aimed at expanding the agricultural loan portfolios of various financial institutions in Brazil. IDB has also placed some emphasis on supporting regional development activities. Since IDB has not attempted to program its overall assistance to a country, but plans largely on a project-by-project basis, it is probably fair to say that they have not followed a pre-conceived strategy for agriculture in Brazil. The general impact, however, has been to support Brazil's drive to substantially increase the amount of agricultural credit.

#### The Food and Agriculture Organization

FAO has been involved in about a dozen agricultural technical assistance projects in Brazil since the late 1950's. About \$10 million have been earmarked by the United Nations Development Programme for these projects (Appendix A, Table 8). Several of these projects have treated fishery development, and two of them regional development in the San Francisco river basin. Some assistance has also gone to a forestry school, a food research center, research on pesticides, agricultural diversification, wheat production, and general agricultural education and research.

#### Summary of Foreign Assistance to Brazilian Agriculture

As can be noted in Tables 1, 7, and 8 in Appendix A, aid agencies have obligated a substantial amount of resources to Brazilian agriculture over the past 20 years.<sup>/1</sup> AID has given or lent over \$100 million

<sup>/1</sup> It should be kept in mind that a good bit of these funds are still in pipeline. As of mid-1970, AID had disbursed only one percent of its 1966, \$20 million fertilizer loan, and the Brazilians have been slow in signing the 1968 agricultural research loan for \$13.4 million. As of mid-1970, the Inter-American Development Bank had moved less than \$40 million of the \$172 million approved for agriculture in Brazil. The World Bank has disbursed less than one million of its \$40 million 1967 livestock loan.

directly for agriculture, IDB \$172 million, IBRD \$40 million, and FAO \$10 million -- a total of \$315 million. In addition, AID has directed the equivalent of almost \$60 million worth of local currencies to agriculture which have been generated by Program Loans or PL 480 (Appendix A, Table 3). Certainly, at least some of these local currencies were net additions to what would have otherwise been used for agriculture. The institutions which have been strengthened, the participant trained and the policies changed through aid agency assistance have also been substantial although difficult to quantify.

The main weight of the aid agencies' programs have fallen on agricultural credit, strengthening various agricultural service institutions, and especially in the case of AID, assisting Brazil with changing some agricultural policy.

Understandably aid agencies have failed to treat successfully a number of issues in rural Brazil. AID, IDB, and FAO contributions to agricultural research facilities, for example, have been very fragmented. While some individual success stories can be found where Brazilian agricultural research has been substantially improved, overall the results have not been impressive. Brazil does not have an agricultural research setup which can reinforce and institutionalize technological change.

Almost no progress has been made on land reform.

Little improvement has been made in rural primary and secondary educational opportunities.

In general, aid agency programs have had little impact on rural poverty. Brazilian agricultural development policy along with aid agency support has had its largest impact on large commercial farmers.

Aid agencies also have been unable to make significant inroads into the immense agricultural problems of Northeast Brazil.

### Current Agricultural Situation in Brazil

By the late 1960's, Brazil had laid an institutional and technological base for rapid agricultural development. Output of agricultural commodities has increased very rapidly the past couple of years. Transportation systems in many areas have been substantially improved, changes favorable to agriculture have been made in taxing systems, much more agricultural credit is now available, coffee production is in much better balance,<sup>/1</sup> input and output pricing policy have been rationalized a good deal, and in general, agricultural commodities in Brazil are competitive pricewise in the international market. The use of fertilizer has been rapidly expanded, the fertilizer marketing system inflated, and competitive internal fertilizer producing facilities built. Higher education in agriculture has been substantially improved, a national extension service organized and well underway, and the Ministry of Agriculture significantly strengthened. Especially in the Central and Southern parts of Brazil major amounts of land have been recently shifted from extensive livestock production to intensive crops. Mechanization plus a number of other technological changes have been widely adopted with this shift. There is some evidence to suggest that the decrease in agricultural growth rate experienced during the early 1960's has been reversed, and that intensive rather than extensive margins are now starting to provide an increasing part of the increased output.

Despite the above-mentioned progress, rural Brazil still has some major problems. Probably the most pressing issue is that development programs to date have had little impact on rural poverty issues. That is, agricultural development has occurred, but rural development has not.

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<sup>/1</sup> The coffee rust which appeared in 1970 may pose a serious threat to coffee production.

Institutional credit and the sizeable income subsidies which have been associated with its use have gone to less than one-third of the Brazilian farmers. Fertilizer and the subsidies tied to its use have gone to an even smaller group, mainly concentrated in the São Paulo area. Likewise, subsidized farm machinery has been suitable mostly for large farms. Educational possibilities for most of the rural poor have not materially improved over the past 20 years. If anything, there is now a substantially larger number of rural children who receive little or no education than was true 20 years ago. Health and nutritional conditions have likewise improved little for the rural poor. While Brazil has set up rather impressive land reform machinery, for various reasons starters and fuel have not been provided.

Another major problem area is closely related to the above discussion. That is, the abject poverty found in the rural areas of the Northeast (N.E.). This area contains the largest rural slum in Latin America, and per capita incomes are only one-fifth that of southern Brazil. Few of the positive aspects of agricultural development discussed earlier have fallen out or trickled down to this area. Despite substantial price and tax concessions, the N.E. sugar industry is still unable to compete with producers in the rest of the country. Very few of the investments induced by special tax concessions have helped the rural area in the N.E.<sup>/1</sup> Very little of the expansion in fertilizer and credit usage and improvements in institutions servicing agriculture occurred in the N.E. Food imports into this area have increased, and little has been realized from the substantial investments in water control systems scat-

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<sup>/1</sup> The size of the annual capital transfer from other parts of Brazil into the Northeast through tax concessions and other policy instruments has exceeded capital transferred by the U. S. annually to Latin America under the "Alliance for Progress."

tered throughout this region. As noted earlier, to this point, aid agencies as well as the Brazilian Government have been unable to significantly treat the rural problems of the N.E.

A final problem area is the relatively poor state of Brazil's agricultural research capability. Only about five percent of the budget of the Ministry of Agriculture is directed to research. The research capacity of the colleges of agriculture and state secretaries of agriculture are likewise generally poorly developed. Brazil has only a couple dozen Ph. D.'s engaged in agricultural research while the U. S. has approximate 20,000.

In the past, Brazil has been able to realize agricultural growth through putting more land into cultivation, adjusting price incentives, providing more credit, stimulating fertilizer use, and encouraging mechanization. A major part of future agricultural growth will likely be determined by creating and adapting, through research, new technologies appropriate for Brazil. The cerrado-soils-problems are a good example of this point. A major part of the soils in the interior of Brazil have soil chemistry problems which sharply limit their economic usage. Problems with pH are common in cerrado soils, major plant nutrients are often lacking, and some micro-plant nutrient problems also exist. While some research on these soils has been done, especially in Central and Southern Brazil, only a handful of technicians scattered throughout Brazil are currently working part time on this issue. The results from research efforts on developing new wheat and rice varieties -- far less complex issues than cerrado soils -- strongly suggest the value of concentrated, sustained research efforts.

Recommendations for Future AID Strategy

During the past 20 years Brazilian agriculture has made substantial advances. AID and several predecessor agencies have been closely associated with major elements in this progress: the extension service agricultural credit, fertilizer, higher education, training of agricultural technicians and administrators, pricing and taxing policy, and development of institutions serving agriculture. This progress, coupled with substantial amounts of funds in pipeline for Brazilian agriculture suggest that a new look at AID's agricultural development strategy in Brazil may be in order.

For purposes of discussion, a series of suggestions follow:

(1) Has agriculture developed in the southern half of Brazil to the point where little further involvement of AID in this area can be justified? If Brazil were two countries and divided at the 18th parallel, could AID justify to Congress giving concessional assistance to the Southern portion [50]?

Per capita incomes in rural areas of the Southern half of Brazil are probably four to five times that of the N.E. In an attempt to ease this, the Brazilians have transferred substantial amounts of capital from the south to the north through various tax concession arrangements and preferential prices for sugar in the N.E. Yet, AID's agricultural program has had most of its impact in the South through fertilizer and agricultural credit.

(2) If AID were to concentrate its agricultural programs in the N.E., what types of activities might this include? A major reason for most of AID's agricultural assistance going to the South has been the lack of institutional absorptive capacity for assistance in the N.E.

Despite diligent efforts on the part of AID officials in the N.E. over the past 10 to 15 years, major channels for capital assistance to agriculture have not opened up. With the benefit of 20-20 hindsight, AID may have made a tactical mistake in trying to channel most of its technical assistance to agriculture through SUDENE in the early 1960's. It might have been better to work on strengthening six or eight different agricultural or rural institutions with the objective of having several of these grow to the point where they could absorb significant capital assistance.

Land reform in the N.E. should remain a priority issue with the Mission, and at appropriate times all support possible should be provided to GERAN and/or other land reform agencies. Much more strength in a number of other agricultural institutions will be needed, however, to make substantial changes in N.E. agriculture. To further institutional development in the N.E., additional technical assistance muscle might be associated with appropriate agricultural credit agencies, the new land reform and colonization agency, several additional colleges of agriculture, the extension service, and/or the state secretaries of agriculture.

(3) Should the emphasis on increasing agricultural output in Brazil be downgraded in AID's programs and higher priority placed on equity issue, especially regional equity? AID has never seriously addressed the rural poverty issue in Brazil.

(4) If AID were to concentrate its agricultural activities in the N.E., what programs in the South might complement this emphasis? Over the next ten years the N.E. will need a large increase in the number of agricultural technicians. Agricultural colleges in the N.E. are poorly

equipped at present to provide high quality people. Would it be possible to establish a program for training a large number of agricultural college students from the N.E., especially at the graduate level in Viçosa, Piracicaba, and Rio Grande do Sul? Could modest amounts of additional money also be provided to these students so that they could do their graduate research in the N.E. with the support of staff from Viçosa, Piracicaba, and Rio Grande do Sul. This would begin to provide research necessary for action agencies in the N.E. Can "sister institution" arrangements within Brazil help to facilitate this process?

(5) In line with the above suggestion, AID along with the U. S. and Brazilian universities involved should begin to discuss the types of relationships which should be considered during the next ten years in AID's higher agricultural education program. At present the contracts with four U. S. universities are all set to expire by 1973. Some preliminary thought has been given to having several of the universities participate in the pending agricultural research loan, but it does not appear that much else has been done.

Would it be desirable to try and arrange for long-term relationships between the universities involved? Could the program now be changed to more mature type arrangements: visiting professors, exchange of graduate students, joint research, community of scholars. Can the U. S. universities now make a contribution of helping to develop research capacity at their host universities as well as sharply expanding the graduate training program.

(6) A good deal of the future expansion of agricultural production onto under-utilized lands in the interior of the N.E. will depend on resolution of cerrado soils problems. Should AID attempt to help develop

a major research center in the Southern or Central part of Brazil to treat these cerrado soil issues? Or, would the Center be located better in the N.E.?

(7) If AID and other international agencies should decide again to heavily support agricultural credit programs in Brazil, some major adjustments should be seriously considered. Briefly, these are a) make arrangements for assuring a positive real rate of interest on agricultural loans, b) if highly subsidized credit continues, re-ration credit so that small farmers can share in the largess, and c) strongly suggest to the Brazilians that more of their agricultural credit should come from voluntary savings mobilized out of the rural area. At present, little or no economic incentive is provided for rural individuals to institutionalize their savings. Especially in the Central and Southern parts of Brazil where rural incomes are significantly increasing, these mobilized savings might provide a large part of future credit needs.

## Appendix A

Table 1: A.I.D. Dollar Financed Technical Assistance and Capital Assistance Project for Agriculture in Brazil, 1953-1969\*

<u>Project Title</u>	<u>Year**</u>	<u>Obligations</u>	<u>Expenditure</u>
(\$1,000 U. S. Dollars)			
<u>Completed Technical Assistance Projects (Grants)</u>			
Technical Assistance Support Activity	1953		1,044
Regional Agriculture	1957		6
Workshop-Womens Rural Life	1958		9
Agriculture Economics & Cooperatives	1962		217
Agriculture Production & Marketing	1964		14
Agriculture Advisory Service	1964		601
Agriculture Service	1965		2,653
Agriculture Research & Extension N.E.	1965		83
Rural Extension Service Improvement	1965		235
Colony & Resettlement N.E.	1965		27
Water Research N.E.	1965		95
Fertilizer & Insecticide Demonstration	1965		210
Land & Water Resources Group	1965		2,132
Food Distribution	1966		58
	<b>TOTAL</b>		<b>7,378</b>
<u>Active Technical Assistance Projects (Grants)</u>			
Agricultural Education	1953	14,138	12,923
Frontier Homestead Program	1963	595	590
Tape Mapping	1963	1,709	1,704
Water Development & Irrigation	1963	133	130
Meteorological Data Collection	1963	49	49
Migration & Resettlement	1963	72	72
Well Testing, Rehabilitation	1963	65	65
Sugar Zone Modernization	1963	863	458
Agriculture Research	1963	9,837	9,454
Improved Price Support	1963	1,328	1,302
Expansion & Improvement of Agriculture	1963	892	830
Establish Nationwide Market News	1963	247	210
Development of Agriculture Cooperatives	1963	1,637	1,621
Fish Production Processing & Marketing	1963	540	441
Natural Resources Planning & Engineering	1969	346	346
	<b>TOTAL</b>	<b>32,451</b>	<b>30,195</b>
<u>Capital Assistance Projects (Loans)</u>			
Resettlement Project	1959	22	22
Fertilizer Imports	1964	15,000	14,493
Food Production	1966	20,000	209
Fertilizer Plant & Distribution	1966	14,800	14,609
Agricultural Research	1970	11,930	***
Agricultural Research	1970	1,420	***
	<b>TOTAL</b>	<b>62,922</b>	<b>29,333</b>
	<b>GRAND TOTAL</b>	<b>102,821</b>	<b>66,906</b>

\*As of June 30, 1969.

\*\*If completed project, year of completion, others years of initiation.

\*\*\*Loan not yet signed by Brazilians.

Source: Agency for International Development, Office of Controller, reports published under number W-253, various issues.

Appendix A

Table 2: Yearly Obligations and Expenditures for Projects in Brazil, Financed by AID, Total and for Agriculture, through Fiscal Year 1969

<u>Fiscal Year</u>	<u>Annual Obligations</u>			<u>Annual Expenditures</u>		
	<u>Total</u>	<u>Agriculture</u>	<u>Percent Agric.</u>	<u>Total</u>	<u>Agriculture</u>	<u>Percent Agric.</u>
	(\$1,000)					
before & thru						
1961	53,348	9,822	18%	42,771	7,934	19%
1962	10,074	2,279	23%	10,364	1,624	16%
1963	23,494	10,224	44%	10,550	1,607	15%
1964*	71,661	8,062	11%	17,669	4,387	25%
1965	119,444	15,749	13%	30,383	10,104	33%
1966	80,219	2,989	4%	56,883	13,955	25%
1967	89,410	40,857	46%	81,374	8,381	10%
1968	74,386	12,437	17%	70,406	9,679	14%
1969	<u>12,435</u>	<u>3,704</u>	<u>30%</u>	<u>54,126</u>	<u>13,591</u>	<u>25%</u>
TOTAL	534,471	106,123	20%	374,526	71,262	19%

\*First year in which loan data was included in projects

Source Agency for International Development, Office of Controller, reports published under the number W-253, various issues. This includes reports on both technical assistance and capital assistance.

Appendix A

Table 3: Use of U. S. Owned Local Currencies and Brazil Owned Counterpart Funds: Total Withdrawal, and Withdrawals for Agriculture 1959-1969

<u>Year</u>	<u>Total Country Purpose Withdrawals</u>	<u>Withdrawals for Agriculture</u>
(In \$1,000 equivalents)		
1959	23,447	1,506
1960	0	0
1961	2,906	0
1962	0	0
1963	507	0
1964	23,303	1,759
1965	102,683	20,040
1966	108,005	5,966
1967	113,235	6,118
1968	112,389	3,776
1969	<u>68,726</u>	<u>20,236</u>
<b>TOTAL</b>	<b>632,201</b>	<b>59,401</b>

Sources: Various Agency for International Development internal publications.

## Appendix A

Table 4: A.I.D. Financed Participant Trainees from Brazil, Total and In Agriculture, 1950-1969\*

<u>Year</u>	<u>Total</u>	<u>Agriculture</u>	
		<u>Number</u>	<u>% of Total</u>
1950-1957	1,264	410	32%
1958	326	86	26%
1959	311	123	40%
1960	292	63	22%
1961	294	50	17%
1962	230	51	22%
1963	281	97	34%
1964	375	46	12%
1965	586	137	23%
1966	578	169	29%
1967	896	220	25%
1968	791	207	26%
1969	<u>867</u>	<u>162</u>	<u>19%</u>
<b>TOTAL</b>	<b>7,091</b>	<b>1,821</b>	<b>26%</b>

\*By Fiscal Year arrival in country of training

Sources: Agency for International Development Office of International Training, "Report on Participant Training," (W-141) published annually. Agency for International Development, Statistics and Reports Division, "Operations Reports" (W-129) published annually.

Appendix A

Table 5: Value of U. S. Agricultural Exports to Brazil under PL 480, Mutual Security Act, and Commercial Sales, 1954-1955 to 1968-1969. (In millions of dollars)

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<u>PL 480 Shipments</u>		\$780.5
Sales for foreign currencies	\$474.2	
Dollar sales	90.6	
Donations for disaster relief and economic development	46.7	
Donations for voluntary relief agencies	105.6	
Barter	63.4	
<u>Mutual Security</u>		\$ 2.2
Total under specific government programs		\$ 782.7
U. S. commercial agricultural exports to Brazil		298.8
Total U. S. agricultural exports to Brazil		1,081.5

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Source: The White House, "Annual Report on activities under Public Law 480: Food for Peace," in draft form, dated June 18, 1970

Appendix A

Table 6: Public Law 480 -- Uses of Foreign Currency in Brazil, July 1, 1954 through December 31, 1969. (In dollar equivalents)

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<u>Total amount in agreements</u>		\$ 503,442
Loans to foreign government for economic development	301,127	
Grants for economic development	111,376	
U. S. uses	90,939	

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Source: The White House, "Annual Report on Activities under Public Law 480: Food for Peace," in draft form, dated June 18, 1970, Table 13, Appendix B.

Appendix A

Table 7: Loans Made by the Inter-American Development Bank for Agriculture in Brazil, 1962-1970

<u>Purpose</u>	<u>Loan Date</u>	<u>Amount</u> <u>(\$1,000)</u>
Agricultural modernization	1962	\$ 4,500
Credit for small farmers	1962	6,400
Credit for small farmers	1963	2,000
Credit for small farmers	1964	2,700
Agricultural credit	1965	20,500
Credit for small agricultural industries	1967	15,000
Livestock credit	1969	26,000
Rural electrification	1969	30,800
Rural development	1970	29,000
Rural credit	1970	<u>35,000</u>
	TOTAL	\$171,900

Source: Inter-American Development Bank (IDB), Tenth Annual Report (Washington, D. C. IDB, 1970).

Appendix A

Table 8: Food and Agriculture Organization Agricultural Development Projects in Brazil, 1959-1969

<u>Project</u>	<u>Date Approved</u>	<u>Funds Earmarked</u>
San Francisco River Basin Survey I	1959	546,680
National Forestry School	1961	1,265,100
Tropical Food Research Center	1963	772,200
Fishery Research and Development	1965	391,200
San Francisco River Basin Survey II	1966	864,700
Pesticides Research	1967	1,074,700
Agricultural Diversification	1968	958,900
Agricultural Education and Research	1969	1,729,900
Wheat Production	1969	1,065,100
Fishery Development	1969	<u>1,203,200</u>
TOTAL		9,871,680

Source: United Nations Development Programme, "Status of Approved Projects in the Special Fund Component," DP/SF/Reports, Series A, No. 53, as of May 31, 1970, various pages.

Appendix B

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