Chapter 6

EVALUATION OF PRODECER

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Prodecer was executed in 3 phases over 22 years, investing US$562,900,000 (approximately 68.4 billion yen) in 21 projects, distributed in 8 Brazilian States, and adding 345,000 ha to the productive sector. This area corresponds to only 3.5% of the total of 10 million ha of annual crops that were opened in the Cerrados region. However, the contribution given by Prodecer to Cerrados region development cannot be represented only by size of the area incorporated. It is not possible to measure Prodecer results only by quantitative aspects such as opened areas and the production volume of grains such as soybean. Prodecer influenced global and multiple aspects such as the development/demonstration of agricultural technology, environmental preservation model, creation of job opportunities, implementation of production/commercial infrastructure, creation of agribusiness opportunities, etc. These concrete results were already analyzed at the regional development level, as well as at the level of the national economy, national agriculture and international market, as direct and indirect impacts of Prodecer in Chapter 5.

The intention of this Chapter is to evaluate Prodecer based on the results of the analysis carried out so far, in order to verify the existing challenges/deficiencies for program sustainable development. For this, at first the PDM (*Project Design Matrix*) is created, followed by evaluation of the degree of target accomplishments and also of the program accomplishments in relation to the investment in the three phases. Then, a summary of the evaluation reports carried out at the end of each program stage is made, and the results and challenges/deficiencies verified in these evaluations are pointed out. Then an attempt is made to evaluate the contribution to Japan and to the international market through a volumetric analysis, using the increase of soybean production in Brazil as example.

6.1 EVALUATION OF PRODECER

6.1.1 Verification of results through PDM

(1) PDM

Table 6.1.1 shows the PDM (Project Design Matrix)[1)] of Prodecer which includes the preliminary conditions, the accomplished investment, the developed activities and the results obtained through these activities, as well as the degree of target attainment.

This PDM is composed of a “vertical logic” that is constantly dislocated: i.e., the activities of a project only start when the pending aspects (preconditions) are solved. These pending aspects are included in the lower part of the table. According to the PDM, Prodecer activities only started after the fulfillment of the prerequisites, solution of pending aspects such as the protection of the Japanese resources against currency exchange losses, establishment of a scheme for financing execution, creation of a

[1)] PDM is a widely utilized matrix to summarize the general aspects of a project are to be analyzed and to include other pertinent information. In the vertical line, the project summary (superior target, project objective, results, activities, investment) are listed, and in the horizontal line, the indicators, accomplishments, external conditions and variation of these conditions, for each phase of the project, are listed. Among these items, the variation of the external condition is considered as a challenge/deficiency of the project.

company for program coordination, etc. The main activities of the program were: the creation of CAMPO and its establishment, selection of producers and cooperatives, implementation of production infrastructure, development/ diffusion of agricultural technology, education to create an awareness about the environment through the implementation of natural preserves, diffusion of the sod seeding practice, etc. The results of the program activities can be seen by the increase of the agricultural production in the Cerrados region, through the opening of new arable areas and the implementation of production/commercial infrastructure. These results are considered as direct results of Prodecer execution.

Among the indirect results are: contribution to international markets through the increase of food supply, contribution to national agriculture and economy through development of agribusiness due to the increase of grain production, mainly soybean in the Cerrados region, etc.

VERTICAL LOGIC OF PDM

The external conditions of PDM are connected through the logic to the project summary. The activities of a project only start after the input of investment, only when the prerequisites are fulfilled. In the Prodecer case, the prerequisites were: protection of the Japanese resources against losses in the currency exchange at the time of the R/D, planning and coordination of the program, acquisition of land, selection of producers, development of agricultural technology, and establishment of a diffusion structure for this technology, etc.

The results are attained through the development of the activities. However, if the external conditions are at the same level of the activities, the results can only be attained if these conditions are fulfilled. The same happens at the higher levels and this relationship is shown in the following figure with arrows. This is the so called “vertical logic of PDM”.

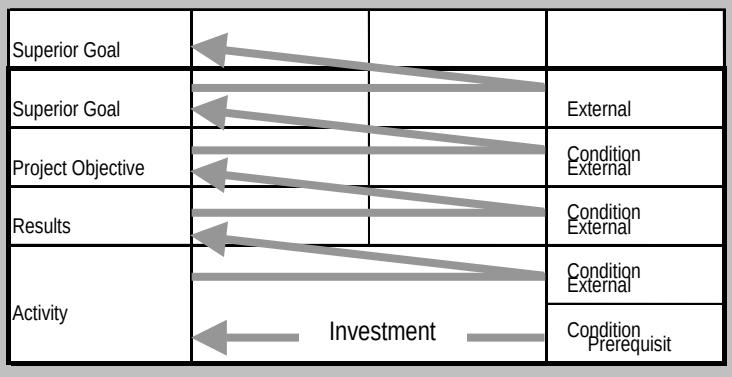


Table 6.1.1 PDM of PRODECER

Project Name: Prodecer I-Pilot:1979-1983; Prodecer II-Pilot:1985-1990; Prodecer II:1985-1993; Prodecer III:1995-2001

Summary	Indexes	Obtained Results	External Conditions	Changes in the defined external conditions
Superior Objective 1. Promotion and stability for the world market food supply, increase of grains production, incentive to agribusiness. 2.1 Development of the country's agriculture due to the increase of the agricultural production. 2.2 Contribution to the economic development. 3. Promotion of regional development. 4. Sustainable agricultural development focussing on the environmental preservation.	1. Volume of supply and production of Brazilian grains to the international market. 2.1 Volume of production of agro-industrial products oriented to soybean by-products. 2.2 Exports value (including processed/industrialized products of the agricultural sector and soybean raw material). 3. Impacts on the regional socio-economic sphere. Employment, population, tax revenue value, number of settlers, inputs commercialization. 4. Preservation of useful resources - typical species, number of individuals. Remaining area of native natural vegetation, number of mini-producers and small-scale producers.	1. Increase of the production and supply of grains in the international market (soybean). (world production / Brazilian production / Brazilian exports) 1980 81,038 / 15,156 / 1,549 (thousand ton) 1990 108,439 / 19,888 / 4,077 (thousand ton) 2000 173,184 / 38,400 / 15,100 (thousand ton) 2.1 Increase of the production of agro-industrial products. (1980 / 1990 / 2000) Production of soybean oil: 2,585 / 2,450 / 4,275 (thousand ton) Production of soybean bran: 10,607 / 10,250 / 17,650 (thousand ton) 2.2 Increase of the value of agricultural sector exports (total of Brazilian exports / agricultural sector / soybean complex) in 2000: 550 / 166 /41 (100 millions US$) 3. Increase of employment / population / tax revenue; expansion of corresponding industry; increase of profits as consequence of the infrastructure implementation; increase of settlers in settlements nearby the PRODECER projects. 4. Preservation of native natural vegetation and of the water resources, administrative stabilization of mini-producers and small-scale producers.	1) No drastic drop in the international prices of grains. 2) Continuity of the grains multinational companies activities. 3) Absence of big changes in the economic policy of the Brazilian government, and the absence of economic crisis. 4) Realization of support programs for small-scale producers. 5) Strengthening of the ecosystem protection system, and of the control system for environmental preservation. 6) No occurrence of climatic anomalies (such as veranico) and natural disasters.	1) Drop of the international prices of grains 2) Repeated changes in the economic policy 3) Lack of structure for the control of arable land and environmental preservation areas. F
Project Objective 1. Development and implementation of agricultural technology in Cerrados. 2.1 Stable / balanced agricultural administration 2.2 Implementation of the efficient production system. 3. Contribution to the exploitation of Cerrados agricultural frontier. 4. Implementation of sustainable agriculture with emphasis on the environmental preservation.	1. Cultivated area (of products) 2.1 Producers administrative conditions 2.2 Production volume by reference area 3. Total of PRODECER exploited areas and total of exploited arable areas in Cerrados. 4. Definition of isolated and shared reservation areas in the Project areas. Cultivated area with crop rotation, agriculture-livestock husbandry integration, and sod seeding. Alterations in the native vegetation through the Study on the Environmental Monitoring.	1. Expansion of cultivated area (1975 / 1985 / 1995 / 2000) (soybean : Cerrados) 326 / 3,399 / 5,723 / 6,449 (thousand ha) 2.1 Generation of high indebtedness, administration depending on resources from "green soybean". 2.2 Increase of production per ha of main products (PRODECER areas: soybean). Phase I: 1,712 / 2,534 (kg/ha) (1981/2000); Phase II: 2,735 / 5,410 (1986/2000); Phase III: 2,307 / 2,454 (1986/2000) 3. Total of exploited areas in Phases I, II, III: 1979 - 2001, 34.5 (10 thousand ha) Arable land in Cerrados (1975 - 2001): 1,000 (10 thousand ha) 4. Percentage of reservation areas: (Phase I, II), 20%; (Phase III) 50%; Diffusion of the sod seeding system and of the contour lines cultivation.	1) Reduction of transportation costs; implementation of the transportation network.	
Results 1. Creation and operationalization of CAMPO 1.1 Planning and adjustment of the development program. 1.2 Evaluation / judgment and acquisition of favorable areas for farmers settlement. 1.3 Selection of the project participants 1.4 Elaboration of the construction basic Plan of the settlement area. 1.5 Agricultural management plan and technical guidance to the settlers. 1.6 Recommendations and supervision regarding to the financing. 1.7 Operation of demonstration farms and of direct administration farms. 1.8 Cooperation for the obtainment of environmental licenses together with the agricultural cooperatives. 2. Selection of agricultural cooperatives to participate in the project. 3. Solidification of the activities of production/commercialization infrastructure implementation by the agricultural cooperatives. 4. Technical cooperation and validating/demonstration tests by the technological research institutions. 5. Technical assistance and rural diffusion/extension of the Japanese-Brazilian cooperation programs for research. 6. Implementation of infrastructure by the Federal and State governments. 7. Stability and increase of the agricultural production in the project areas 8.1 Acquisition/assurance of environmental preservation areas. 8.2 Study on environmental monitoring.	1. Office, experimental field, number of agronomy technicians, number of employees. 1.1 Planning of the development Plan: sizing regarding the agricultural development, development area. 1.2 Guidance and support about the favorable area for the settlement project to the agricultural cooperatives. 1.3 Conditions of the project participants selection: number of settlers, irrigated area, crop to be introduced, used area per family. 1.4 Basic plan of settlement areas construction. 1.5 Agricultural management plan. 1.6 Object and value of financing. 1.7 Conditions about the introduction of excellence varieties. Production, productivity and cultivated product with excellent seeds. 1.8 Obtainment of environmental licenses. 2. Conditions of the selection of agricultural cooperatives that fulfill the selection criteria. 3. Conditions of the implementation of facilities and support to the activities to be carried out by the agricultural cooperatives. 4. Execution of cultivation tests, contracting of guiding agents, elaboration of guiding manuals in articulation/cooperation with the research institutions. 5. Dispatch of experts, donation of equipment, counterpart training number, development and introduction of new technologies and new agricultural management 6. Conditions of the socio-economic infrastructure implementation. 7. Production volume, production value, number of employees, value of the tax revenue. 8.1 Environmental reservation areas. Execution modality. 8.2 Environmental Monitoring.	1. Headquarters, projects related to biotechnology, companies of cultivation and planting: number 1.1 Sizing for agricultural development - exploitation area 345,000 (ha); formation of medium-scale producers. 1.2 Favorable areas for the settlement projects - 21 areas (Obtained results / potential). 1.3 Number of settlers: 717families; Irrigated areas: 19,703 / 42,236 (ha) 1.4 Measurement, organization of demarcation. Land use plan and plan for the infrastructure implementation. 1.5 Elaboration of guiding manuals for producers, generation of agricultural management technology. 1.6 Obtained results in regard to the financing value. 1.7 Obtained results on the crops production: increase of the production of excellent seeds; increase of the production area; crops diversification. 1.8 Obtained results as for the obtainment of environmental licenses. 2. Agricultural cooperatives that participated in the Project. 3. Implementation and control of infrastructure (production / storage / commercialization) by the agricultural cooperatives; acquisition of settlement areas; Assistance as for the service and agricultural administration to the producers. 4. Execution of cultivation tests, elaboration of guiding manuals, rural extension by extension / guiding agents in cooperation with CPAC, EPAMIG, etc. 5. Dispatch of experts, donation of equipment, counterpart training, implementation of the new agricultural administration system. 6. Opening of roads, supply of electric energy, construction of communication lines, implementation of irrigation facilities, construction of schools and hospitals. 7. Increase of the production volume, production value, number of employment posts, tax revenue. Production volume: 667,940 (ton); production value: 32,775 (thousand US$); generation of employment: (direct) 19,130; (indirect) 38,330; tax revenue: 22,592 (thousand US$) 8.1 Collective reservation areas; reservation areas in corridors and boundaries. 8.2 Elaboration of the Environmental Monitoring report.	1) Appropriate and healthy administration of CAMPO and agricultural cooperatives. 2) Assurance, by the Brazilian government, of indemnifying any possible currency exchange losses in the operation regarding to the loan resources, from Japan, to the Brazilian Central Bank. 3) Assurance, by the Brazilian government, of the principal and interest rates on the loan to the PRODECER projects. 4) Implementation of infrastructure in external areas to the settlements carried out according to the planning of the Settlement Project scheme. 5) Utilization of the facilities implemented by the agricultural cooperatives, as planned. 6) Realization, in a solid way, of the settlement area acquisition, recruitment of producers, and assurance of their settlement. 7) Generation and diffusion of technology adapted to Cerrados. 8) Harmonious conduction of adjustments/coordination of various concerned 9) Permanence of the counterpart and technical team that received training. 10) Absence of climatic anomalies and natural disasters.	1) Deficient administration of CAMPO 2) Increase of the settlers' accumulated debts due to the raise of interest rates implemented by the Real Plan 3) Elimination of subsidy to rural credit 4) Securitization of the producers and cooperatives debts. 5) Suspension or delay in the implementation of the irrigation facilities, such as collective canal, due to the financial crisis of the State government, caused by the reduction of the Brazilian federal government budget, in Phases II and III of the Project. 6) Occurrence of desistances among the settlers. 7) Reduction of revenue do to crops damages caused by veranico (brief period of drought during the rainy season).
Activities 1. CAMPO: Creation and operationalization of the Agricultural Promotion Co. 2. Selection of agricultural cooperatives to participate in the project. 3. Implementation of production/commercialization infrastructure and services (to be rendered) by the agricultural cooperatives. 4. Articulation between introduction/inflow and research about adapted/appropriate technology. 5. Generation and transference of technology through the Japanese-Brazilian cooperation Project for research. 6. Implementation of infrastructure by the Federal and State governments. 7. Agricultural production in the project areas.	**Investment / Inputs** Value of the total investment: 562,9 (millions US$); Phase I: 50 (millions US$); Phase II: 375 (millions US$); Phase III: 137,9 (millions US$) **Japanese Side: land, equipment, production/agricultural management cost.** Phase I: 25 (milhões de US$) Phase II: (Pilot) 50 (millions US$) (Expansion) 137,5 (millions US$) Phase III: 55,2 (millions US$) **Brazilian Side:** Implementation of socio-economic infrastructure for the settlement areas. Construction of roads, supply of electric energy, implementation of communication transmission lines and irrigation equipment, construction of schools and hospitals. : 25 (millions US$) : (Pilot) 50 (millions US$) : (Expansion) 137.5 (millions US$) : 82,7(millions US$)		1) Realization, without interruption, of the Japanese-Brazilian support and cooperation. 2) Non occurrence of financial crisis in the Brazilian Federal and States governments. **Basic Premises:** Worrying factors at the negotiation of the R/D (1976). 1) Prevention of currency exchange losses of the resources provided by the Japanese side. 2) Project planning and adjustments/coordination. 3) Acquisition of settlement areas. 4) Recruitment of producers. 5) Generation and diffusion of technology. 6) Procurement of necessary resources.	

(2) Classification of program effects

Through PDM, the observation of Prodecer direct and indirect effects is possible in a multiple and sequential manner, not only in the project areas, but also in the surroundings, in the national agricultural sector, in the country's economy and even in the international market. These Prodecer effects can be classified, in general, as follows: long-term and short-term or temporary.

The long-term effect is one which lasts and is obtained through the opening and correction of agricultural areas, installation of irrigation equipment, etc., in the 21 Prodecer projects. This effect lasts until the present, without lost of function of this investment, and can be considered as "stock effect" (*stock*).

The short-term effect (temporary) is one induced by Prodecer execution itself. It is the effect of the creation of a positive demand, and can be considered as a "fluctuating effect" (*flow*).

1) Fluctuating effect

As "fluctuating effect" of Prodecer, 20,000 direct and 40,000 indirect jobs were created. The necessity of purchasing lime for soil correction and equipment/inputs for agricultural production (fertilizers, pesticides, agricultural machinery, etc.) was also generated. This demand was also expanded to other sectors of the economy. On the other hand, through the resources invested in Prodecer, the interests of producers and cooperatives (constructions, commercial facilities, agricultural attachments, etc.) was also expanded, and that also induced the demand in other sectors. These effects, although classified as temporary, were present in the whole period of Prodecer project implementations, during the three phases. Through the fluctuating effect (i.e., with Prodecer implementation), the invigoration of the local economic activity, the expansion of job opportunities, the strengthening of public finances of municipalities and States, and the consequent improvement of public services rendered to the population were identified.

2) Stock effect

The land cultivated through Prodecer is considered as a "stock effect". At the level of participant producer, the effect is represented by improvements such as expansion of the productive area, increase of productivity, expansion of job opportunities, etc., and at the same time by contribution to the development of regional and national agriculture (productive area, production volume). The increase of soybean and other grain production results in an increase of soybean oil and bran production, invigorating the agro-industrial sector of the country, consequently contributing to the national economy.

These direct and indirect (diffusing) effects of agricultural production will continue for

a long period, as the areas opened and prepared by Prodecer are utilized.

6.1.2 Consolidation of existing evaluations

Prodecer was executed over a long period. During its execution, drastic changes occurred in the country's macro-economic environment, with strong consequences for the program. Thus, for the analysis of the evaluation results carried out in the past, it is important to understand the project results/deficiencies according to the country's economic situation at the time of its execution.

When Prodecer I was concluded in 1982, a deep evaluation was carried out, encompassing fifteen (15) themes such as agriculture, finances, product commercialization, economy, infrastructure, cooperatives, entrepreneurial administration, regional development, economic evaluation, etc. As for Prodecer II, two joint evaluations between Brazil and Japan were carried out. One in 1989, one year before the conclusion of Prodecer PILOT I, and the other evaluation in 1993, at the conclusion of Prodecer EXPANSION. Besides these, another evaluation was carried out in 1994 with regard to Prodecer EXPANSION. Between 1999 and 2000, JICA itself carried out a survey about the Prodecer PILOT III indebtedness problem.

Reviewing the above mentioned reports, a summary divided into "results possible to evaluate" and "future challenges/deficiencies" was designed covering four points of view: development scheme, agricultural technology, producer administration / agricultural economy, and effects.

[Development scheme]

In all the existing reports, a common point was the positive evaluation of the role played by CAMPO and by the participant cooperatives. At the same time, they point out as challenges/deficiencies the need for diversification of CAMPO revenue sources for its administrative stabilization and for the progress of Prodecer. All the reports unanimously state the high significance of Prodecer in the development of Cerrados region agricultural frontiers, as well as made a positive evaluation of its results.

[Agricultural technology]

All the reports evaluated that the technical assistance of CAMPO and of the cooperatives, as well as the technical support of EMBRAPA-Cerrados contributed to the increase of productivity. They also pointed out that the technological difference among producers and the different natural conditions of their properties influenced the performance of each one. The evaluation carried out at the conclusion of the Prodecer I emphasized the necessity of agriculture diversification through the introduction of irrigation.

[Producer administration / Agricultural economy]

In the Prodecer PILOT I evaluation carried out in 1989, the necessity of agriculture diversification and reduction of transportation costs were pointed out as important to improve producer profitability. Since the design of the evaluation report in 1993, the indebtedness problem of Prodecer producers and the high interest rate policy became an object of study.

[Effects]

All the reports appraise the regional development as a positive effect, as well as the increase of cultivation area in the Prodecer implementation region, with the establishment of new farmers with their own resources stimulated by the program success also appraised as a positive effect. These reports also point out the sudden increase of revenue and population in the municipalities where Prodecer was implemented. On the other hand, they also identified the delay in the implementation of the required social infrastructure due to the increase of population.

6.1.3 Prodecer evaluation according to the five evaluation items

Prodecer was evaluated according to the PDM and to the existing evaluation reports, according to the following five evaluation items: efficiency, objective accomplishment degree, impact, adequacy of the initial planning, and sustainability. The PDM and the explanation of the five evaluation items are presented as follows:

Table 6.1.2 Explanation of the 5 Evaluation Items

	Efficiency	Objective Accomplishment Degree	Impact	Adequacy of the Initial Planning	Sustainability
Superior Goal			What type of direct-indirect effects were possible to observe as the result of the project execution?	do the project objective and the "superior goal" still make sense even at the evaluation time?	Challenges to maintain the project effects.
Project Objective		Was the "project objective" accomplished? How much did the "results" contribute to this?			
Results	To what degree was the "investment" converted into "results"?				
Investment					

The evaluation results, according to the five evaluation items, are presented as follows:

(1) Efficiency

1) The development of the project areas and the guidance to Prodecer producers can

be positively evaluated considering their contribution to the development of the Cerrados region, which was considered until that moment very difficult. These were carried out with agricultural techniques, financial resources and investment lines available at the time. The supervision of financing resources to producers and cooperatives by CAMPO assured the transparency of their application. This fact can be positively evaluated as a factor that increased the efficiency of the project execution effect.

2) Three years were spent in discussion of the program execution scheme and structure. Themes such as the governmental support manner, technological development and rural extension method, protection of the Japanese resources against the currency exchange losses, etc., were to be solved before the signature of the R/D. During the discussions, the Prodecer financing system was designed and the L/A (Loan Agreement) and P/A (Project Agreement) were signed. The P/A highly contributed to efficient program execution since it clearly defined the responsibilities of both the Brazilian and the Japanese governments, at various levels.

3) On the other hand, in Prodecer II and III, the initial plan execution was delayed in terms of the construction of collective canals and introduction of irrigation equipment in the projects, lack of maintenance of access roads, etc., due to the scarce budgetary resources of the State governments caused by the economic difficulties faced by the country or by the State itself. These facts can be pointed out as restraining factors to better efficiency in program execution.

(2) Objective accomplishment degree

1) The main objectives of Prodecer were: the opening of agricultural areas, efficient agricultural production, stable administration of property, development/diffusion of agricultural technology, and consolidation of agriculture with emphasis on the environmental protection. Except for the stable administration of the property, the other objectives were practically all accomplished. The technical assistance rendered by CAMPO and by the participant cooperatives and the service of production equipment supply to producers contributed to stable agricultural production. On the other hand, the introduction of good crop varieties and the support activities to producers such as the demonstrative experiments carried out by EMBRAPA-Cerrados consolidated the appropriate agricultural technology for the region, significantly contributing to the increase of productivity in the Cerrados region.

2) However, for the property administration, several producers of Prodecer II and III became indebted, owing high sums. The cause of this problem is not a fault in program execution, but the high interest rate policy introduced by the Brazilian

government macro-economic policy. However, since Prodecer II, the necessity of production diversification is being pointed out, and the situation now is still not uniform and far from ideal, but with small exception, mainly due to the lack of irrigation equipment.

3) The opening and maintenance of access roads to the project and the construction of rural electrification structures were not included for Prodecer financing, and their execution was planned using budgetary resources from the State Governments. The evaluation report of Prodecer I already recorded delays. Prodecer II report (1993) recommended: “In the next project, it is important to make the Brazilian government responsibility clear through the R/D for the implementation of basic infrastructure. If the Brazilian side faces difficulties in assuming this implementation alone due to financial problems, the inclusion of this in the project implementation expenses ought to be analyzed” (page 125).

(3) Impact

Prodecer brought multiple and serial effects by inducing new farmers to establish in the surroundings of the project with their own resources, also in demonstrating on site the regional productive capacity, stimulating these farmers through their own success. Consequently, there was a sudden increase of grain production, mainly soybean. In any sector of the economy, the development of a new product pushes the development of similar products, strengthening the economy. Prodecer can be compared to a new product in the region, and it is positively appraised as a pioneer project.

(4) Adequacy to the initial planning

1) The main superior goal of Prodecer was the increase of the world food supply, also contributing to the national economy and to the promotion of agro-industry. Soybean, the main Prodecer product, was shown to have a great economic effect through its connection with the soybean processing sector, livestock husbandry sector and other related sectors. The value of soybean products exports (soybean in grain, oil and bran) is US$4.1 billion, corresponding to 24% of the total agricultural product exports in 2000. The soybean products exports are expected to reach a value of US$7.3 billion by 2006 due to the increase of national soybean production.

2) The inductive effect of soybean on other related sectors already surpassed the limits of the agro-industry, and became the driving force in the creation of agribusiness that encompasses transport, processing, commerce and export. Furthermore, it is noteworthy that the pioneer cultivation of soybean in the Cerrados region became the basis for the implementation of a more diversified agriculture, and one of the most technological agriculture areas in the country. The creation of these new connections strengthened even more the value and

adequacy of the initial planning of the Prodecer superior goal.

(5) Sustainability

The multiple effects of the Prodecer direct impact on the local communities as well as the indirect impact on the regional and national agriculture and economy, besides the world food supply, were evaluated as positive. For the future, in order to maintain these multiple effects, the sustainable utilization of incorporated arable areas and the maintenance of their diffusing effects are necessary. For this, the great challenge is to solve the producer indebtedness problem and to stabilize CAMPO administration.

6.2 IMPACT OF THE SOYBEAN PRODUCTION INCREASE IN BRAZIL (ON THE MARKET AND ON INTERNATIONAL PRICES)

This section will attempt to verify the level of contribution of soybean to the international market, considering that among the Prodecer crops, soybean is the one that most contributed to the agricultural development of Cerrados. As a manner of verification, economic graphs and volumetric measurement methods will be utilized in order to analyze and to evaluate the merit of the Brazilian soybean production increase to the world.

6.2.1 Economic approach with econometric analysis

(1) Graphical approach for the world supply and demand

The supply and demand relationship of soybeans in the world market is described in Fig. 6.2.1. The supply curve, S, indicates a situation without an increases of soybeans by Prodecer. The crossing point of S with the demand curve, D, is an initial equilibrium point, E, with production of q_1 and price of p_1. In this case, the monetary value of consumer surplus is explained by the triangle area, AEp_1, while the one for producer surplus by the area, BEp_1. The total of consumer and producer surpluses is considered to be the social surplus, the triangle area of AEB.

The world supply curve for soybean has shifted due to substantial increases of production with Prodecer in Brazil from S to S'. A new equilibrium point is E' with increased production at q2 and a lower price at p2. In this situation, consumer surplus is a new triangle area, AE'p2, while producer surplus the area, p2E'B'. The new social surplus is the area AE'B', which is greater than the original social surplus explained by the area, AEB. There is an increase in social surplus by the area, BEE'B'.

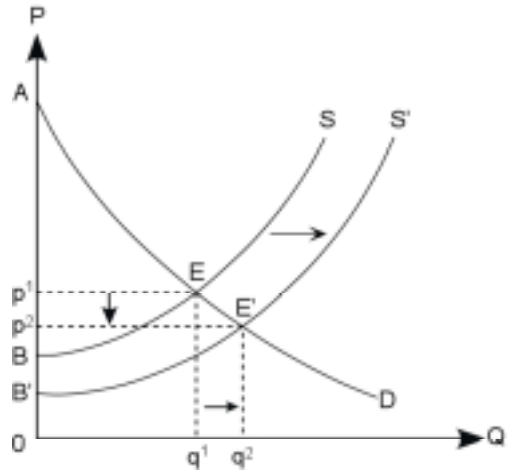


Fig. 6.2.1 Relationship between the Increase of Soybean Production and the Variation of the International Market Price (supply and demand relationship)

(2) Approach through mathematical formula

Representing all this in a mathematical equation, the result is as follows:

$P = \phi(QS)$ ——— Line S, Supply curve before production .....(1)

$P = \phi'(QS')$ ——— Line S', Supply curve after production increace .....(2)

$P = \lambda(QD)$ ——— Line D, Demand curve .....(3)

$VD = \int_{q_1}^{q_2} \lambda\, dx + q_1 p_1 - q_2 p_2$ ——— Consumer surplus .....(4)

$VS = -q_1 p_1 + q_2 p_2 + \left(\int_0^{q_1} \phi\, dx - \int_0^{q_2} \phi'\, dx\right)$ ——— Producer surplus .....(5)

This situation happens to all the agricultural products (including livestock products) that had their production increased after the opening of Cerrados, and the sum of all benefits shall be the object of the development results evaluation. Considering **n** as the number of products which production increased, and representing it in a mathematical formula from the point of view of the producer and consumer surpluses increase through the product item n (i=1,2, · · · n), we have the following:

$VD_g = \sum_{i=1}^{i=n}\left[\int_{q_{i1}}^{q_{i2}} \lambda_i\, dx_i + q_{i1} p_{i1} - q_{i2} p_{i2}\right]$ ––– Consumers surpluses increase total .....(6)

$VS_g = \sum_{i=1}^{i=n}\left[-q_{i1} p_{i1} + q_{i2} p_{i2} + \left(\int_0^{q_1} \phi_i\, dx_i - \int_0^{q_2} \phi'_i\, dx_i\right)\right]$ ––– Producer surpluses increase total .....(7)

(3) Analysis of the soybean price in the international market through volumetric measurement

The analysis of the quantitative volume was carried out through the pendulous analysis method in order to catch the movements of the soybean international market price. To catch these movements, the utilization of the *stock-to-use ratio* variation in the explicative variant is currently common. However, in the present analysis, for the explanation of the variants, the utilization of the production volume variation was used

in order to measure directly the price variation in relation to the production volume variation.

P=f(Qs,Qc:X).....(8)

Where,
P = Soybean international price (actual price in the Chicago market , US$/ton)
Qs = Total volume of the world soybean production, 1000 ton
Qc = Total volume of the world maize production, 1000 ton
X = Other variants

Annual data was used, in a 38 year period, from 1964 to 2001, with the year 2000=100 (actual basis). As for the production volume, the production volume of USA, Brazil and both together were tried. However, the total volume of the world production best adapted to the case.

Apart from this, the analysis including the explicative variant of maize production volume was tried, as option to soybean, though due to its insignificance it was eliminated from the formula.

The *Damy* variant was also utilized (DV) in order to absorb the abnormal movements of prices raise in the international market verified in 2 years, 1974 and 1975. As a result, the following formula was obtained:

$$\mathbf{P_t = 764 - 0.00327Qc_t + 473DV_t} \text{ ..... (9)}$$

(42.7) (0.000421) (77.0)

R^2 = 0.774 Adjusted **R^2 = 0.761** **D.W. = 0.590** **N = 38**

In this mathematical formula, the calculated coefficient (including decimal figures) is important at the 1% level, and the sign of the respective calculation coincides with the expected one. Apart from this, for the definitive coefficient (R^2), a very high numeric value was obtained (80% or more) considering the observation number 38.

In this pendulous analysis, as explicative variant, the export volume and also the soybean stock volume were tested, besides the maize production volume. However, the most significant one was the world production volume.

(4) Influence from variation of soybean production in Brazil on world prices

If the price variation elasticity caused by the production volume variation is measured through the above formula, the result is 0.604 as the average in the period of 38 years, and 1.74 as the average in the last 10 years.

This elasticity indicates that “if the world production volume increases/diminishes 10%, the international price increases/diminishes on average 6% in the last 38 years, and

increases/diminishes 17.4% in average in the last 10 years". Thus, the price impact in the hypothetical case in which the Brazilian production volume is smaller than the present one was measured, utilizing the elasticity (17.4%) in the last 10 years.

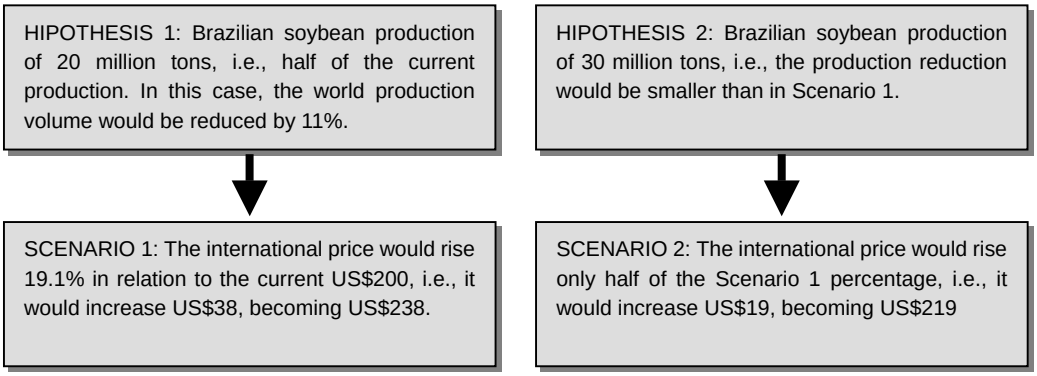
[Hypothesis]

①If, in the last 20 years, the Cerrados region were not opened and the development projects were not implemented, what would be the volume of soybean produced in Brazil as compared with the current production of 40 million tons?

Prodecer, besides opening new arable areas and the regional development, showed the efficiency of research for the soybean genetic improvement, allowing its cultivation in low latitudes regions near the Equator, with high productivity. The production volume in Brazil before Prodecer was 15 million tons and the current volume is 40 million tons.

② Based on this information, the following two SCENARIOS were developed:

TWO DIFFERENT HYPOTHESES AND THE ESTABLISHMENT OF RESPECTIVE SCENARIOS



6.2.2 Evaluation of scenario impacts on Japan imports

The volume of soybean imported by Japan over the last 10 years is 4.9 million tons per year, in spite of the price. This figure is analyzed according to the two established scenarios.

(1) Scenario 1

- The value to be disbursed by Japan would be $186 million or 22.3 billion yen (exchange rate of US$1= ¥$120) higher than currently paid. Observed from another angle, this value could be considered as the return on the investment made.

(2) Scenario 2

- In this Scenario, the value disbursed by Japan would correspond to half of the previous Scenario: i.e., 11.15 billion yen.

Table 6.2.1 Impact of Soybean Production Increase on International Prices and on Japan (2001)

	Current Situation Year 2001	Scenario 1 Less than 50%	Scenario 2 Less than 25%
Soybean production volume in Brazil	40 million tons	20 million tons	30 million tons
Import of soybean by Japan	4,900,000 tons	4,900,000 tons	4,900,000 tons
Benefit of Prodecer	-	¥ 22.3 billion	¥ 11.15 billion

(3) Comparison between scenario and total investment of Prodecer

The amount invested by Japan in Prodecer was US$295.2 million (35.1 billion yen), from the first phase in 1979 until the third phase in 2001. Thus, the investment was returned within 2 years, as can be seen verified through SCENARIO 1 data. Even in SCENARIO 2, the investment was returned in only 4 years.

It is important to observe that the return indicated in both scenarios refers to the annual return and thus this return is calculated over the years.

Since the soybean import in the last 10 years was around 4.9 million tons without much variation, the return to Japan has increased since 1991, proportionally to the increase of soybean production in Brazil. The accumulated value of this return is shown in Figure 6.2.2, reaching a considerable value. The return accumulated over the last 10 years, even when calculated based on prices in 2001, the lowest year, for SCENARIO 1, it reaches at least 200 billion yen. Even for SCENARIO 2, the accumulated value would be 100 billion yen. In both cases, the accumulated return value surpasses by a lot the value invested in Prodecer over the last 20 years.

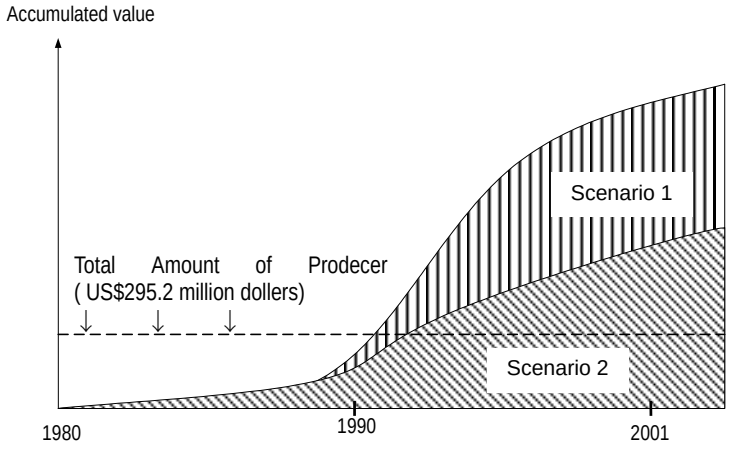
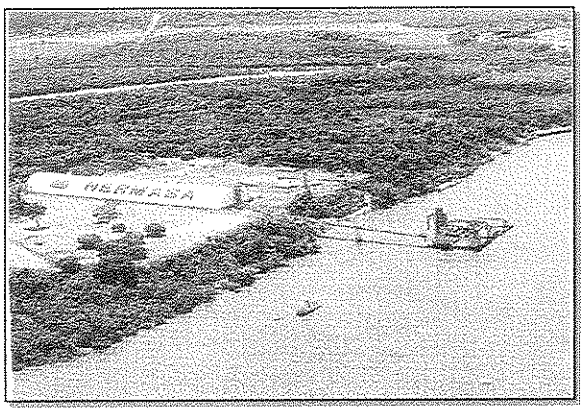


Fig. 6.2.2 Accumulated Benefits to Japan of Prodecer

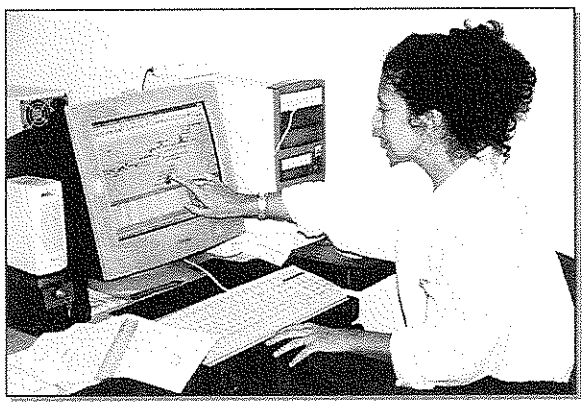
Since the continuous increase of soybean production in the Cerrados region is forecast, it will lead the soybean international price curve to decrease. Thus, the benefit received by Japan will increase even more. As shown in “Formula (6)” previously presented, for the consumer, the benefits are extended to all the product items that experienced

production increased. Japan is importing around 700,000 tons per year of soybean bran, and the decreasing bran price also represents a return to Japan.

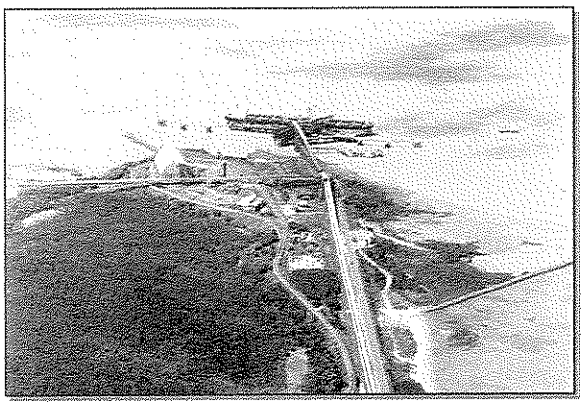
Apart from this, as shown in Section 5.1.1, the growth of the livestock husbandry sector, as a multiplier effect of the soybean production increase, is causing the increase of chicken and swine meat export, also contributing to the stabilization and/or drop of these prices in the international market. Japan that also depends on the import of livestock products, is also benefiting from the development of this sector in the Cerrados region.



- Port of Itacoatiara in the Amazon river
- Volume of export: 1,200,000tons (2000)



- Computer of HERMASA Co., Ltd and operating management system by GPS



- Port of Madeira
- Volume of export : 680,000tons (2000)

The agricultural map of Brazil was redefined with the incorporation of the Cerrados region into the country's productive process. Among several other crops, coffee and cotton are also cultivated, also expanding the benefits of the Cerrados region development.

The imported amount of Brazilian soybean by Japan is still relatively small. Considering that Japan imports approximately 5 million tons per year, the Brazilian soybean represents less than 10% of the total imports; thus, at first glance, the Prodecer contribution to Japan seems to be small. However, as already emphasized, considering the production increase and exports of soybean in Brazil and the consequent stabilization of the supply and drop of international market prices, Japan which is an import dependent country is getting great benefits that surpass by a great amount the investment made so far in Prodecer

6.3 ISSUES OF PRODECER

In conclusion, the main challenges for the sustainable progress of Prodecer are the solution of the producer indebtedness problem and the administrative stabilization of CAMPO. Measures to face these challenges will be discussed and analyzed in this section.

6.3.1 Indebtedness in Prodecer

(1) Background

It is noteworthy that rural indebtedness is a "general problem of all Brazilian farmers," and not just a problem of Prodecer producers. Its origin fundamentally is in the inclusion of the inflation cost in agricultural financing, in the end of subsidies from the Federal Government and in changes of the Brazilian credit policy based on high interest rates, as follows:

① The Government of Brazil started in 1986 to reduce subsidies for agricultural credit, by introduction of inflation cost and actual interest rates as financial burden in rural financing operations. This measure was justified by the financial difficulties faced for the maintenance of official resources to the foster this sector.

② The economic plans created by the Brazilian government in February 1989 and March 1990, known as "Summer Plan" and "Collor Plan", and implemented with the objective to promote macro-economic adjustments based on the reduction of inflation rates, also established high rates of monetary update for rural credit and, on the other hand, reduced the prices of agricultural products. These measures significantly raised the cost of agricultural equipment and inputs

and resulted in a rapid increase of producer debts.

③ With the Real Plan, introduced in 1994, the measures which aimed at the reduction of inflation through high interest rate policies and the overvaluation of the national currency, on the one hand accelerated the increase of the debts and, on the other hand, reduced producer income. The economic-financial situation of rural producers worsened, turning into a condition that became a political problem for the government.

④ With the opening of the market to foreign trade, imports increased. The prices of basic products were reduced, and thus the country's inflation was stabilized. With the "Real Plan", the inflation that recorded 905% per year before July 1997, dropped to 14.7% per year in 1995.

In the period from 1986 to 1994, Brazil went through eight economic plans and five currency changes (see Section 2.1.4). The frequent changes in the country's economic policy disturbed the economy and highly influenced the country's agricultural development, including in the Cerrados region. It is noteworthy that these sudden macro-economic changes not only disturbed the performance of farmers in the whole country, but also the performance of cooperatives, leading several of them to liquidation.

(2) Measures adopted by the Brazilian government in the search for solution to the farmer indebtedness problem

In November 1995, the Brazilian government created a renegotiation model for debt, known as "Securitization", aiming at the solution of farmer debts below R$200,000. In February 1998, another measure called PESA (Special Program for the Sanitation of Assets) was introduced with the objective to renegotiate farmer debts over R$200,000 (for approximately 60,000 farmers in the whole country). Also in 1995, the RECOOP (Program of Revitalization of Agricultural Production Cooperatives) was created aiming at solution of the indebtedness problems of Brazilian cooperatives. These measures which aim at the solution of the agricultural indebtedness problem are still in force, with several alterations, but they did not solve the problems in a definitive manner.

The characteristics and future challenges of the measures introduced by the Brazilian government will be analyzed below, by comparison between initial and present rules.

1) SECURITIZATION: measure for debts under R$200,000

	INITIAL RULES	PRESENT RULES
1. GENERAL ASPECTS	It was introduced through Law no. 9138 of 29.11.95, and regulated by BACEN Resolution no 2238 of 31.01.96, as a measure for the solution of the debts under R$200,000 and contracted before 20.06.95. "Securitization" was a completely new measure and thus attained a high degree of producer participation, accomplishing a partial result.	The application conditions of these measures were improved through the Law no. 9866/99, regulated by BACEN Resolution no. 2666/99 and by the Provisional Measure no. 009 of 31.10.2001, being regulated by BACEN Regulation no. 2919 of 26.12.2001.
2. CONSIDERED DEBTS	The value liable for renegotiation is that calculated in 30.11.95, up to the limit of R$200,000	There is no alteration in the initial rule.
3. RENEGOTIATED TERM	The renegotiation was possible with the repayment term of 7 years and 1 year grace period, and for some specific cases, up to 10 years and 2 year grace period.	Repayment until 28.02.2002 of the equivalent of 32.5% of the corrected 30.11.2001 installment. The recalculated remaining debt to be paid by 2025.
4. FINANCIAL BURDEN	3% per year + update of the debt value by the product price (rice, maize or wheat).	Interest rate of 3% per year. If the repayment occurs by the due time, the update by the "product price variation" is eliminated on each paid installment.
5. BONUS	There was no bonus.	30% of the installment for debts up to R$50,000 (in 30/11/95). 15% for the part of the debt over R$50,000. The right for a bonus is for those borrowers who pay the installment on time. More than 10% for liquidation in advance and for the whole debt until 2006.

The "Securitization" was successful, but there are problems due to excessive strictness of the application conditions. Thus, complementary measures were introduced such as the "bonus for repayment on time" that reduces the installment value if paid on time, prorogation of the participation deadline, integral postponement of the installments due in 1997 and 1998, and partially in 1999 and 2000, besides elimination of the monetary update from the debt, when paid on time.

2) Special Program for Sanitation of Assets (PESA): Measures for Debts over R$200,000

	INITIAL RULES	PRESENT RULES
1. GENERAL ASPECTS	In 26.02.98, BACEN Resolution no. 2471 was released for the solution of the debts over R$200,000. It was a completely new measure in the history of Brazilian agriculture. According to the rule, the producer acquires 20 year government bonds at the current value (discounted at 12% per year) equivalent to the amount of his/her debt, and annually pays only the interest (see BOX 6.1 and 6.2 about the matter).	The application conditions of this measure were improved by Provisional Measure no. 009 of 31.10.2001 (period for participation until: 30.06.2002) which will come into force through a BACEN Resolution that will soon be released. The "punctuality bonus" was introduced to improve the initial rules, but it did not solve the problem in a definitive manner.
2. CONSIDERED DEBTS	Agricultural credit contracted until June 1996, without maximum limit, excluding the R$200,000 already renegotiated through "securitization".	Operations contracted until December 1997.
3. LIQUIDATION OF THE DEBT	With the bond acquired from the National Treasury, that at the end of the term to be reimbursed according to the debt integral value.	Without alteration
4. VALUE OF THE GOVERNMENT BOND ACQUISITION	Acquisition of the bond by 10.37% of the debt total value. The value of the debt, de-capitalized at 12% per year, over a 20 year period.	Without alteration
5. REPAYMENT TERM	20 years.	Without alteration
6. ANNUAL INSTALLMENTS	Annual payment only of the interest.	Without alteration.
7 INTEREST	Debt up to R$500,000 : 8% per year; between R$500,000 and R$1 million: 9% per year, and over R$1 million: 10% per year. Update of the debt (calculation basis) through the IGP-M.	Reduction of 2 percent (as bonus) on the interest for payment on time (Resolution 2666). Through Provisional Measure no. 009/2001, the reduction goes from 2 to 5 percent on the interest, for payment on time. The result is the incidence of interest of 3%, 4% and 5% per year respectively for borrowers who pay on time.
8 UPDATE OF THE DEBT	IGP-M (General Index of Market Prices – calculated by the Getúlio Vargas Foundation).	IGP-M, although with maximum of 9.5% per year. If IGP-M is over 9.5%, the update will be 9.5% per year. If it is under this value, the debt will be updated by IGP-M.
9 GUARANTEES	National Treasury bond plus 50% in mortgage guarantees.	Without alteration.
10. DEADLINE FOR PARTICIPATION	Until 28/12/2001	Until 30/06/2002

Several producers did not renegotiate their debts through “PESA” due to the lack of payment capacity, especially of the annual interest. These interest payments were also suffocating to the producers who had already renegotiated, and to relieve this impact, the “bonus for payment on time” was introduced to reduce the value of interest when paid on time.

Provisional Measure (PM) no. 009 establishes the deadline for participation until June 2002. This is the ninth prorogation since the edition of the Resolution 2471 and shows the difficulty for solving the problem. With the PM, the financial burden was considerably reduced in comparison with the initial rules of Resolution 2471, but the following problems still persist:

① Producer difficulty in making a value equivalent to 10.37% of the total debt available, necessary to acquire the government bond. (Although this value can be the object of financing according to BACEN Resolution no. 2666 of 11.11.99).

② Difficulty in offering additional guarantee to compose the necessary 50% of the debt value.

③ The debt value is not consensual between producer and the Bank.

3) Program of Revitalization of Agricultural Production Cooperatives (RECOOP)

In an economic environment in which the high interest rate policy was in force, the cooperatives had to pay a high cost to purchase production equipment/inputs and to allocate resources to support producers. This worsened the cooperatives’ indebtedness, harming their own administration conditions. On the other hand, producers started to depend on “green soybean” terms to finance their production, due to the difficulty in accessing banking credit, thus reducing the volume of commercial inputs/equipment and products, causing a strong reduction in the cooperatives’ activities.

Under such circumstances, the Government of Brazil released, in 1995, “RECOOP” as a measure for the cooperatives’ revitalization. This program’s objective is to improve the facilities and administrative methods of the cooperatives, as well as to release financial resources for them. RECOOP is composed of an administrative management program and a technological adequacy program, besides concession of financial resources aiming at the recovery of their balance sheet and their return to the international market. RECOOP aims at not only the solution of the cooperatives’ indebtedness problems but also at their revitalization. This program was created through Provisional Measure no. 1715 in 1998, and by June 2001 had benefited 129 cooperatives applying R$372 million. It continues to be in force currently.

(3) Measures for the solution of Prodecer indebtedness problems and related pending items

1) Background

Prodecer was a development program of pilot projects in the country's agricultural frontier region. Since participant farmers did not have land, there was the need of a high initial investment, allocated through loans. Thus, the financing amount of each farmer was high, and, at the time, phases II and III implementation coincided with the introduction of the government financial policy based on high interest rates, transforming the investment made for agricultural development into heavy debts. The indebtedness problem that originated in the debts contracted within the sphere of Prodecer II (starting in 1985) and of the Prodecer III (starting in 1995), became one of the main obstacles to assure stable rural management of farmers. The debts contracted within the sphere of Prodecer I were repaid without problems, since they were contracted in the period before the high interest rate policy implementation.

The *Project Agreement* (P/A) defines Prodecer as an agreement between the two countries in which "the financing conditions to the participant producers shall be better than the best conditions offered to other borrowers using other financing lines, at the time and in the Cerrados region". For this, representatives of the two countries carried out several meetings, at various government levels, including the diplomatic level, searching for means to solve the indebtedness problem of Prodecer producers. This matter was always a meeting theme whenever someone related to the subject visited the partner country.

At the technical-administrative level, four meetings of the Work Group especially created for this purpose were carried out, presided over by the National Secretary of Agricultural Policy of the Ministry of Agriculture, Livestock and Supply (name at the time) of Brazil, soon after the release of Central Bank Resolution No. 2471.Another group was installed in October 1999, with representatives of both sides, presided over by the Executive-Secretary of the Ministry of Agriculture of Brazil, and that held eight meetings to discuss possible solutions for the matter. As a result of these meetings, several measures formalized through Central Bank Resolutions which were tried and will be mentioned afterwards. However, the Ministry of Finance of Brazil has been always opposed measures which can result in burden to the public budget. Thus they do not permit different credit conditions based on two facts: Prodecer cannot be considered a social program for low income producers, and the country cannot offer subsidized interest rates without legal authorization. This position remains currently.

2) Measures adopted by the Brazilian government and its commitment for solution of the problem

Based on the aforementioned background, the main measures and arrangements adopted by the Brazilian government in regard to the indebtedness problem are presented and analyzed below.

Prodecer I	
1979~1983	Starting in 1979, Prodecer I had privileged financial conditions, with fixed interest rates of 12%, although the start coincided with the beginning of the period of high inflation that the country went through. Since all producers paid their debts, even before the due date, there were no problems with Prodecer resources. However, there are some cases of producers who got official agricultural credit loans and are not able to repay them.
Prodecer II	
Beginning of 1990	In the beginning of the 90's, the indebtedness problem started to become visible, leading CAMPO, the responsible organization of the Brazilian Government and the producer organizations to carry out studies and surveys about the situation, each one from their own point of view, searching for solutions. In the same period, the indebtedness problem in the rural sector started to become a nationwide problem, even a political problem, which led Prodecer producers to form relationships with other farmers. Some producers borrowed money from other credit lines after the completion of the Prodecer disbursement period.
23/09/1993	The Federal Government authorized, through BACEN Resolution no. 2017/93, the renegotiation of Prodecer rural financing until 2004, with a two year grace period and annual installments according to the repayment capacity. The debt would be collected by the TR (Interests Referential Tax) with an interest rate of 7% per year. The remaining debt could be liquidated in 2004.
22/06/94	The Federal Government authorized, through BACEN Resolution no. 2080/94, the financial agents to renegotiate rural producer debts due by 31/12/92 that were not prorogued by the definitions in MCR 2.6.9. The debt at the time, with monetary update and interest rate of 1% per year, was renegotiated over 10 years, with two year grace period, and financial burden established by the National Monetary Council. The installments were defined according to the producer repayment capacity.
29/11/1995	The Government of Brazil released a renegotiation measure for debts under R$200,000 through the Law no. 9138, regulated by Resolution no. 2238 of the Central Bank. Several producers of Prodecer II were benefited by this measure. However, the average debt amount at the time already reached R$850,000, thus other measures were necessary to allow the renegotiation of amounts over R$200,000.
26/02/1998	The Government of Brazil announced a new measure of renegotiation for debts over R$200,000, through the "acquisition of government bonds" with the release of BACEN Resolution no. 2471. However, due to the strict conditions to participate in this program, almost no Prodecer producers applied for it, the same happening to other producers nationwide, and thus their participation was very small. On the other hand, in the "Second Meeting of the Work Group of Both Governments Related Organizations Representatives" held on 25.06.98, the Ministry of Finance representative manifested the interpretation that "BACEN Resolution 2471 cannot be applied to Prodecer producers, considering that the Government cannot bear the burden that extrapolates the payment period established in the L/A (Loan Agreement), according to Art. 28 of the Budgetary Guidelines Law (LDO- Law no. 9473 of 22.07.97). Thus, it would become necessary either to prorogue the repayment period established in the L/A or to create a special law to solve this problem.

	After this meeting, the higher efforts of representatives both countries were to search a way to fit Prodecer producers in Resolution no. 2471.
Year of 1998	The Japanese organization OECF (currently JBIC) carried out a survey called SAPS to check the indebtedness situation of Prodecer II EXPANSION producers. The average amount of the debt of the 108 surveyed producers was R$1,020,000 with an average principal value of R$380,000, at the time.
11.11.1999	The Government released Central Bank Resolution no. 2666 with several alterations of the previous rules. According to Article 4 of this Resolution, Prodecer producers became eligible for the rules of Resolution no. 2471. Hence, these producers started to expect solution of their indebtedness problem together with the other Brazilian farmers who would be benefited by the measures of BACEN Resolution no. 2471, since the issue raised by the Art. 28 of the LDO was solved. However, the Ministry of Finance maintains the position that "the Central Bank Resolution is opposed to Art. 28 of the LDO. Since the LDO has supremacy, only the already due installments of the debts contracted with Prodecer resources (and thus already paid by the transferring Bank to the Secretariat of National Treasury with its own resources, since the producers did not pay it) would be included, but the installments to become due would not be included.
30.10.2001	President Fernando Henrique Cardoso implemented flexibility of the Securitization rules and of Central Bank Resolution no. 2471, through Provisional Measure no. 009. Currently, at the National Congress, an amendment to Provisional Measure no. 009 is being discussed. There is negotiation for the explicit inclusion of Prodecer in the rules of this Provisional Measure.
Prodecer III	
Year of 1995	Prodecer III started during the high interest rate period of the Real Plan. The interest rate for fixed investment was established as "TJLP + 6%", resulting in the beginning of the project with an extremely high interest rate of 16.3% (the inflation rate in the same period was 14.7%). The Bank of Brazil realized that there was the possibility of worsening indebtedness problems due to the interest rates and therefore demanded, and managed to get, a guarantee of 50% for the financing risk from the Government of Tocantins, before the beginning of the project. Since the beginning, the main focus of concerned organizations of both countries was how to introduce a "more favorable interest rate" as stated in Art. 9 of the P/A (Project Agreement). The Ministry of Finance maintained the position according that reduction of interest rates would not be possible since the application of TJLP was compulsory by law in financing for projects using foreign resources and that "+ 6%" was the lowest interest rate in force at the time.
23.12.1998	The Government of Brazil released, based on the negotiations between the organizations of both governments and as a special measure for Prodecer, Central Bank Resolution no. 2579. According to this measure, producers would have the option between "TJLP+6%" in force or the "consolidated interest rate," that is the sum of the interest rate on the JICA resources composed of the L/A interest rate + the currency exchange variation with the interest rate on the Brazilian resources calculated by TJLP. At the time, the national currency was overvalued in relation to the U.S. dollar, with the exchange rate stable for 5 years, which created expectations as for the possibility of significant reduction of interest rates with the application of this "consolidated interest rate". However, in January 2000, the Brazilian government devaluated the currency that was controlled since 1994, adopting a fluctuating currency exchange policy according to the market. With this, Resolution 2579 that was considered an efficient measure and went into force, did not have the participation of farmers.
01.06.1999	The Government of Brazil prorogued the repayment term and the grace period of

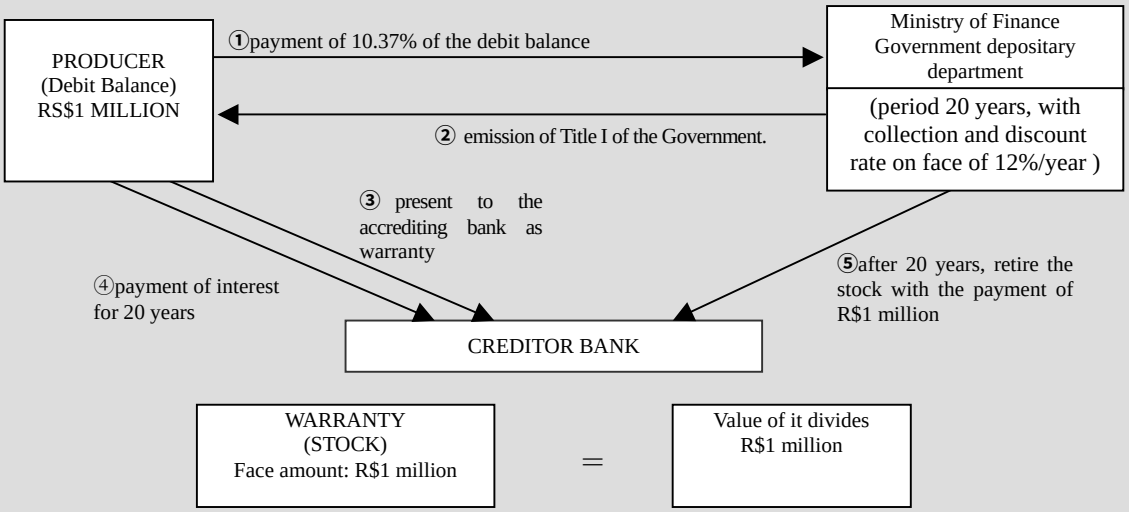
	Prodecer III, through Central Bank Resolution no. 2609. According to this Resolution, the repayment term of the fixed investment was extended from 15 to 20 years, also extending the grace period, without increasing the value of annual installments. The first installment due was prorogued. With this, the situation of producer installment payment default was avoided, thus gaining time to search for a solution for the indebtedness problem.
11.11.1999	The Government of Brazil increased the range of debts covered by Resolution no. 2471, extending the right of participation to those debts with contracts sign before 31.12.97 (the original rule was for contracts signed before 20.06.95), through the Resolution no. 2666. With this measure, almost all the financing contracts for fixed investment of Prodecer III were covered. Through this measure, the concerned organizations of both countries started to orient their efforts to include the indebtedness problem of Prodecer III in the rules of the Resolution no. 2471, which is applies nationwide. At the same time, the great challenge was to avoid Prodecer III producers installment payment default until their indebtedness problems were included in the Resolution no. 2471 and solved.
22.02.2001	The Government of Brazil released Central Bank Resolution no. 2816 that determined the following arrangements of benefit to Prodecer III producers: ① Prorogation of the installment due in 2000; ② Dilution of the installments due in 2001 in the following installments to be due after 2002, and ③ Alteration of the interest rate "TJLP + 6%" in force to a fixed interest rate of 10.75%. This measure avoided the non payment of installments by producers or that they were subject to prosecution through judicial measure, thus attaining the reduction of the interest rate from 15.25% (variable) to 10.75% (fixed). The Ministry of Agriculture, that sent this measure to the Ministry of Finance, agreed to reducing its budget by 16.5 million Reals (approximately US$8 million) to fulfill the Law of Fiscal Responsibility.

As explained, the indebtedness problem of Prodecer II and III producers, although with some few advances and some rare exceptions, did not yet accomplish a definitive solution. A rapid solution for the problem is expected within the program of rural debt renegotiation that the Government is executing nationwide. There are also expectations from the application of the Provisional Measure 009, released on 30.10.2001. Currently, an amendment to this Provisional Measure that would explicitly include Prodecer debts is being discussed in the National Congress.

(4) Relationship of the L/A (Loan Agreement), contracts with transferring banks, and producers

The repayment of contracted financing by the Brazilian side, according to the contracts *(L/A)* are being carried out normally. The contracts signed between the Secretariat of National Treasury and the transferring banks are also being accomplished, with some small operational problems here and there – always solved – with no indebtedness problems at this level. Thus, the indebtedness problems are limited to the relationship between the producer and the transferring banks, and if the measures adopted by the government do not produce the expected effects, the solution maybe private negotiation between the producer and the bank.

MECHANISM OF THE PLAN
(CENTRAL BANK OF BRAZIL RESOLUTION No. 2471)



⑥ Reception of interest (for 20 years) - Guarantee of the face value for 20 years, due to existence of the collection.
Face Value (R$1 million) x IGP(collection) x annual rate of 8~9% = Reception from 80 to 90,000 RS$/year

⑦ After 20 years, the accrediting bank liquidates credit when receiving of National Treasury the face value of the Title I.

OBS:

1) "12%/year discount of the face value " means that calculating the real value of the stock (R$103,700) to 12% per year with compound interest, in 20 years the value will be of R$1 million.

2) ADVANTAGES AND DISADVANTAGES

①NATIONAL TREASURY: There is no payment in the moment. (It will have to operate by interest from 12% per year and to pay the Title after 20 years for the face value).

②DEBT PRODUCER : The period of payment will be prorongued by 20 years and the real interest will be reduced to 8~10%.
(The mortgage of real estate which is 50% of the value of the Title, and the high interest).

③ACCREDITING BANK: Rescue of the "rotten" credit without reduction of the value of the debit balance, could wait for superior income of double interest of the debit balance, in a period of 20 years. Guaranteed for the Title of the Government (the interest is low and the reception long term)

EXAMPLE OF DEBT PAYMENT BY THE STOCK PLAN
(CENTRAL BANK OF BRAZIL RESOLUTION No.2471)

(1) PREMISE

1) Debt of R$ 900,000
2) Established IGP in 7.48% at the 1st year and 7% after the 2nd year.
3) Interests in agreement with BACEN Resolution no. 2471. In other words, divide interest as follows: R$500,000, IGP+ annual rate 8%; from R$500 thousand to R$1 million, IGP + annual rate 9%; and above R$1 million, IGP + annual rate10%

(2) EXAMPLE OF CALCULATION OF PAYMENT

1) purchase value of the Title for the debt producer (face value: R$900,000)
R$900 million x 10.37% R$93,330

2) value of the the 1st year-old interest, to pay to the bank.
Indexation on the main
R$500,000 x (1+0.0748) = R$537,400 (①)
R$400,000 x (1+0.0748) = R$429,920 (②)
Value of the interest
① R$537,400 x 8% = R$42,992 (③)
② R$429,920 x 9% = R$38,692 (④)
interest paid=③+④ = R$81,684

3) value of the interest to pay to the bank, in the 2nd year.
Indexation on the main
①R$537,400x(1+0.07) = R$575,018 (⑤)
②R$429,920x(1+0.07) = R$460,014 (⑥)
value of the interest
⑤R$575,018 x 8% = R$46,001 (⑦)
⑥R$460,014 x 9% = R$41,401 (⑧)
interest paid=⑦+⑧ = R$87,402

4) value of the interest to pay to the bank, in the 3rd year.
Indexation on the main
⑤x(1+0.07) = ⑨
⑥x(1+0.07) = ⑩
Value of the interest
⑨x 8%+⑩x 9%

(3) ANALYSIS

1) For the bank, the producer with one debit of R$900,000 is the same thing as two credits, one with interest of 8% (R$500,000) and another with 9% (R$400,000)
2) For the accrediting bank, the main value will be collected annually by IGP. It also will have guaranteed, all of the years, the real value of the defined interest at the time of contract signing (the value of the interest to be received tied to the index of inflation)

6.3.2 Stability / Consolidation of CAMPO

CAMPO is a Japanese-Brazilian agricultural development company created by JADECO and BRASAGRO, which are investment companies of Japan and Brazil, respectively. In the execution of Prodecer, CAMPO performed a mixed role – as a private company but also as a public one – and, under the guidance of the Ministry of Agriculture, Livestock and Supply of Brazil, coordinated the program, selecting and giving support to participant producers and cooperatives. Furthermore, CAMPO designed rural management plans for producers, also rendering technical support and assistance to them. Another important function performed by CAMPO was the supervision of the financed resources, assuring transparency in their application and appropriate utilization.

Apart from Prodecer, CAMPO revenue comes from: rendering consulting services, soil and leaves analysis, production of seedlings in its biotechnology laboratory, and agricultural production in the Coromandel Farm. However, as already explained in Section 3.3, most of the revenue comes from charges for the services rendered to Prodecer.