SUMMARY

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1. GENERAL ASPECTS OF THE STUDY

1.1 CONTEXT OF THE STUDY

The total area of the Cerrados region which is spread out in the Brazilian Center-West Region is approximately 200 million ha (around 5.5 times the area of Japan). This large area originally presented strong acidity mainly due to the problems deriving from the existence of aluminum and the deficiency of chemical nutrients and was considered for a long time to be unproductive from the agronomic point of view. Nevertheless, through appropriate soil correction combined with a compensatory fertilization, these large areas were turned into productive ones. With the implementation of production infrastructure, it is thought that 120 million ha of Cerrados can be incorporated into the productive process. The Government of Brazil giving due attention to this development potential started, in the second half of the 70's, a consistent occupation process of the Cerrados aiming at orienting the Country's development inland and at the establishment of a new agricultural frontier in this region.

In 1979, the governments of Brazil and Japan started, as part of the Cerrados development efforts, the Japanese-Brazilian Cooperation Program for the Cerrados Development (hereinafter called Prodecer). This program is a national mixed, public and private, project aiming at the increase of the food production, the promotion of regional development, the enhancement of world food supply and the strengthening of the economic cooperation between these two countries. Phases I, II and III of Prodecer were already implemented, having ended in March 2001. Following the conclusion of the third phase of Prodecer, the Ministry of Agriculture, Livestock and Supply and JICA – Japan International Cooperation Agency – have jointly decided to carry out the "Study of the Japan-Brazil Cerrados Agriculture Cooperation Programs" (hereinafter called Study). The detailed rules for the execution of the Study are included in the document called S/W (Scope of Works) signed by both countries in October 2000.

1.2 OBJECTIVES OF THE STUDY

Based on the S/W, the Study objectives are as follows:

(1) "Confirmation of the Prodecer results and cerrados agricultural development"

To analyze and to evaluate the Cerrados agricultural development results and the role that the Japanese-Brazilian cooperation, which had Prodecer as the main project, played in the Cerrados region agricultural development process. After confirmation by both sides of

these analysis/evaluation results, a report shall be produced for the record.

(2) "Design of material for information in Brazil, Japan and other countries"

The results confirmed by the Study shall be utilized in Japan to inform how this cooperation, which is an ODA (Official Development Assistance) enterprise, has contributed for the Brazilian and Japanese national interests. In Brazil, where the cooperation was carried out, the results and their multiplier effects shall be informed to the population aiming at deepening the understanding about this subject. For other countries, this information shall be utilized to show how this cooperation contributed to world food supply stability.

1.3 SCOPE OF THE STUDY

This Study mainly focuses on the analysis and evaluation of the impact of Prodecer. However, its contents are diversified covering the analysis of the background of the cerrados development process as well as its future challenges. These are as follows.

a) Context and factors of Cerrados agricultural development
b) Contents and achievements of Prodecer
c) Other Japanese-Brazilian cooperation projects for Cerrados and their results
d) Present conditions of Cerrados agricultural development and project impacts
e) Evaluation of Japanese-Brazilian cooperation for Cerrados agricultural development
f) Future challenges and perspectives for Cerrados development

2. CIRCUMATANCES OF AGRICULTURAL PRODUCTION AND RESULTS OF DEVELOPMENT, IN THE CERRADOS REGION

2.1 CIRCUMATANCES OF AGRICULTURAL PRODUCTION

In 1973, the Plan of Guided Settlement of the Alto Paranaíba (PADAP) was carried out in the Alto Paranaíba region. This was a pioneer program of guided settlement, aiming at the intense development of Cerrados. The Brazilian government designed the Cerrados Development Program (POLOCENTRO) started in 1975. The Japanese-Brazilian Cooperation Program for the Cerrados Development (Prodecer), which started in 1979. And the Brazilian government established "EMBRAPA-Cerrados(CPAC)" as one of EMBRAPA's organization in 1975, and started agricultural research for cerrado region. A large number of producers settled down in the surroundings of Prodecer, on a larger or

smaller scale, coming from that same region or from other places. Their goal was to develop agriculture activities, encouraged by Prodecer success and by the projects development potential. Mainly due to the incentives and influence of these projects, the Cerrados region added to the Brazilian productive process 10 million ha of annual crops and 2 million ha of perennial crops, in a period of a quarter of a century. The total exploited area in this region, including the pasture areas, represents more than 57 million ha, still with high possibility of expansion.

Figure S-1 shows the evolution of percent participation of the Cerrados region soybean, maize, coffee, and cotton production in relation to national production. Among these, the soybean production volume, in the Cerrados region, increased 38 times in the last 25 years, rising from 430,000 tons in 1975, to 16,660,000 tons in 2000. Meanwhile, the cultivation area increased almost 20 times, expanding from 330,000 to 6,450,000 ha in the same period, with a high increment of productivity through the incorporation of new technology. As a result, the percent participation of Cerrados region soybean in relation to the national production jumped from 4% in 1975 to 53% in 2000.

Maize production volume in Cerrados region increased from 4,560,000 tons in 1975, to 12,570,000 tons in 2000, increasing 2.8 times and with its percent participation in relation to the national production jumping from 28% to 40%. Coffee and cotton production in the Cerrados region (traditional crops in Brazil) also increased, representing 50% and 80% of the total national production, respectively.

Soybean (preferential crop for the Cerrados region) showed the region’s agricultural potential through its fabulous production increase, and also induced the increase of other crop productions. Hence, soybean played a leading role in the Cerrados region agricultural development.

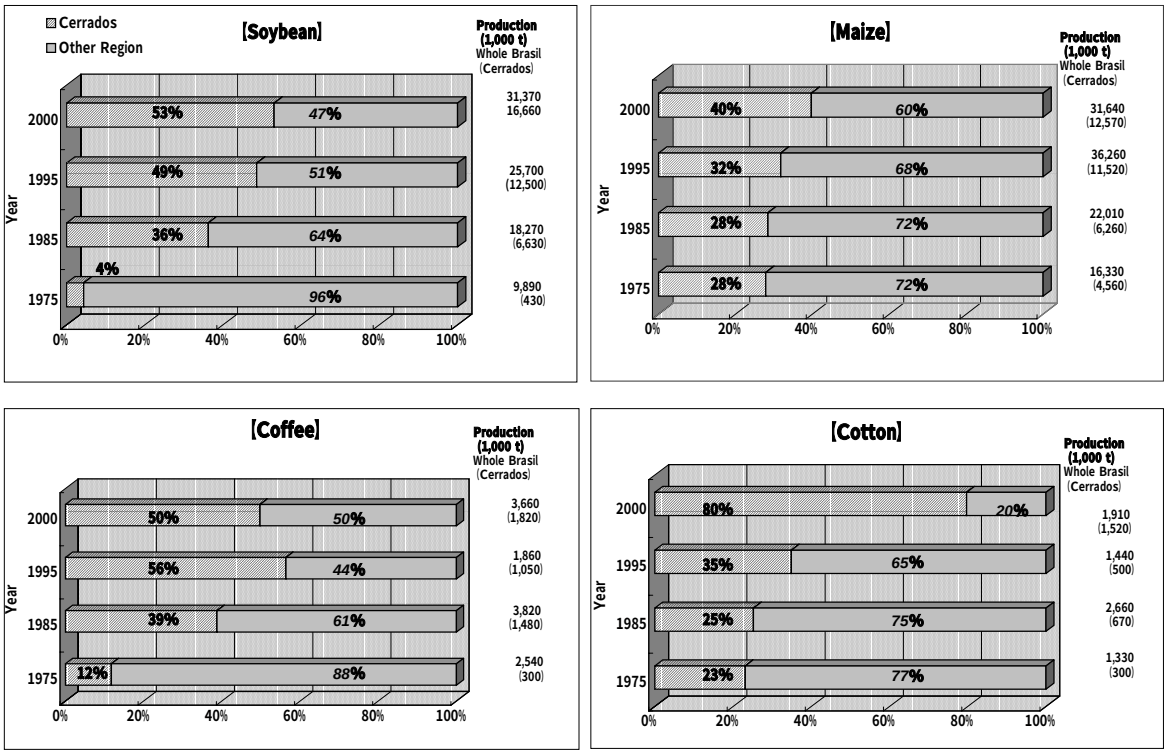


Fig. S-1 ***Evolution of the Soybean, Maize, Coffee and Cotton Production in the Cerrados Region and their Participation in National Production***

2.2 CONTRIBUTION TO THE COUNTRY'S ECONOMY AND AGRICULTURE by AGRICULTURAL DEVELOPMENT IN THE CERRADOS REGION

The change of main crop production areas, migrating from the South/Southeast Regions to the Center-West, North and Northeast Regions, following the opening of the Cerrados region. The national cultivation area and agricultural production area that was concentrated mainly in the South region of the Country has been expanded with new producing areas in the Center-West, Northeast and North regions of Cerrados by the development of agricultural frontiers in the Cerrados region. This production induced the development of poultry and swine husbandry, as well as agro-industry (soybean and cotton processing, meat processing and cooling plants, juice production, etc.), also allowing the development of other related sectors of the economy through the multiplier effect in the machinery, equipment and input sectors, also creating enormous business opportunities in the agribusiness sector.

The value of agricultural products exports in 2000 was US$16.6 billion, equivalent to 24% of the total value of exports of Brazil. The value of the soybean complex exports was US$4.1 billion, equivalent to 25% of the value of all agricultural exports. The soybean complex exports value was approximately US$4.1 billion in 2000. The forecast of

soybean production for 2006 is 50 million tons, and for the soybean complex exports, US$7.3 billion (ABIOVE, 2001). As will be described below, this is based on strong domestic demand from the livestock husbandry sector (mainly poultry and swine raising sectors), and expansion of exports expected from international markets.

Economic and social infrastructure that benefited the whole region was implemented: roads, communication, electric power, in addition to healthcare and educational services to the population with the construction of schools and health centers. A significant number of jobs were generated, considerably increasing the collection of taxes. It can be said that these effects of regional development has contributed to promote interior development which was adovocating by the Brazilian government.

2.3 CONTRIBUTION TO INTERNATIONAL SOCIETY AND MARKETS

The increase of agricultural production and the progress of agro-industry in the Cerrados region has significantly contributed to the stabilization of world supply of food. The soybean production in the cerrados region shares 10% of the world's in 2000, and the whole Brazilian's shares 20% of it. Based on the increases in domestic soybean production particularly in the Cerrado areas, Brazilian soybean exports increased dramatically accounting for a quarter of the world total 56 million tons of soybean exports in 2000. Market prices at the Chicago Board of Trade are now very responsive to the situation in Brazil.

The increases in Brazilian soybean exports were particularly remarkable during the last 5 years. In the past, soybean exports from Brazil increased in the 1970's when the food supply shortages were experienced throughout the globe. The market prices rose greatly during those days. Brazil reacted very flexibly to the market prices back then, and its exports increased from 0.5 million tons in the early 1970's to 3.5 million tons in 1974. Brazilian Soybean exports then returned back to a 0.6 million ton level in 1977 and 1978. It was around 1980 when Brazilian soybean exports again began to increase. The exports fluctuated for the first 15 years after 1980, but during the last 6 years, soybean exports from Brazil increased by 4 times reaching 17 million tons and earned for Brazil the status as a stable and reliable supplier in the world soybean markets.

In the fall of 2000, BSE (mad-cow-disease) problems were causing chaos in Europe. Feedstuff made from bones and meat were prohibited by more countries and livestock producers shifted to soybean and soybean meal for feed. In the past in this type of situation, market prices would have surged. Now, however, without the U.S. having a monopolistic lion's share, major supplying countries such as Brazil and other exporters have contributed to stable market prices. Accordingly, responses of the market were calm

and significant rise in prices occurred only for a short period. Farm prices of soybeans in the U.S. rose from US$4.50 per bushel in November 2000 to US$4.80 next month, only a 10% increase. Prices moved downwards after that.

Apart from this, the growth of the livestock husbandry sector, as a multiplier effect of the soybean and soybean products 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. This situation of stable and increasing supply with downward prices for soybean as well as livestock products is welcomed by the international community. The benefits from this may be much larger than what one can imagine.

2.4 CONTRIBUTION TO JAPAN

Since Japan imports most of its food, the production volume increase due to the agricultural development of the Cerrados region was very significant. Japan imports 96% of its soybean which corresponds to 4.9 million tons per year. The volume of direct export of Brazilian soybean to Japan is only 500,000 tons, which at first seems to show only a small effect from Prodecer. However, the expansion of the Brazilian soybean exports contributes to the stabilization, and even the reduction of international prices of this product, thus greatly benefiting Japan that depends on imports for its domestic supply.

Simulation data indicates that, hypothetically, should the Brazilian soybean production be half its current level, the international market price would rise US$38 per ton above today's level, obliging Japan to spend 22.3 billion yen per year more for the soybean imports. Since, however, the continuity of soybean production growth in the Cerrados region in the next years is expected, international prices will continue to stabilize/drop, thus increasing the benefit for Japan. Japan is also benefiting from the development of a sector by the increment of livestock products, coffee and cotton.

3. RESULTS AND CHALLENGES OF JAPANESE-BRAZILIAN COOPERATION TO THE AGRICULTURAL DEVELOPMENT OF CERRADOS REGION

3.1 PRODECER ACHEVEMENTS AND CHARACTERISTICS

The cooperation between the governments of Brazil and Japan contributed to the agricultural development of Cerrados region through the execution, over more than 20 years, of very important programs, both in technical and financial aspects. In 1979, Prodecer was started in financial aspect. Prodecer was implemented in three stages, and the third one was completed in 2001. Through its colonization method, this program

implemented 21 pilot projects wherein 717 families were settled and 350,000 ha were transformed into productive areas.(Figure S-2) Technical Cooperation was carried out between EMBRAPA-Cerrados and JICA in the period 1977 to 1999, generating agricultural technology and assuring the sustainable development of the Cerrados region.

Since its execution method is appraised highly, it can be utilized as a model for future international cooperation.

The main characteristics of Prodecer are as follows:

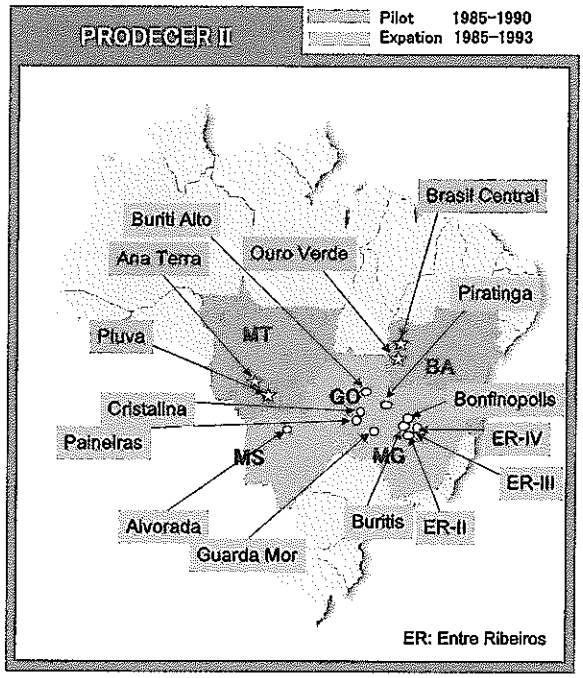
1. A joint program (“*national project”)* between the public and private sectors of both countries.

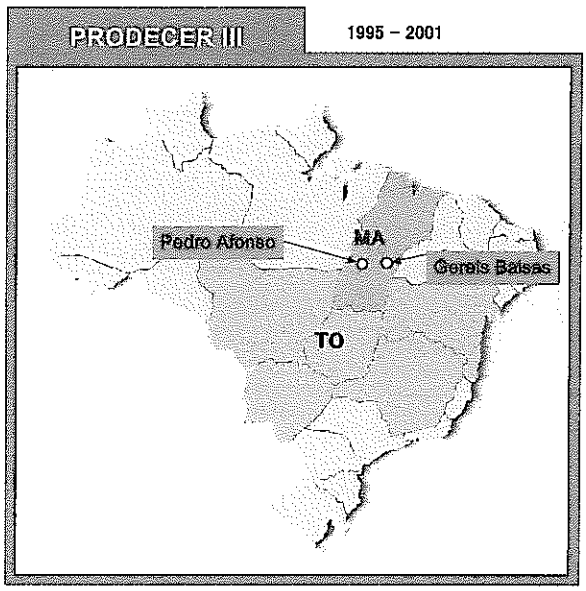
2. A development program of colonization pilot farming settlements supported by cooperatives and implemented in the Cerrados agricultural frontier region. It aimed at the formation of medium-scale farms in the Cerrados region with international competitiveness, and as a principle only landless farmers were settled. These development pilot projects were the catalysts of the Cerrados development process.

3. Detailed planning aiming at efficient implementation, with specific signing of *“Project Agreement*”(P/A) and *“Loan Agreement”*(L/A) for each phase, besides a respective “*Record of discussion”* (R/D). This allowed both governments to jointly solve problems which arose.

4. A bi-national company was created, the Agricultural Promotion Company – CAMPO, for the efficient implementation of the Program. This company had the functions of planning, execution coordination and general supervision.

5. This Program paid great attention to the environment through the implementation of innovative *condominium* or collective type forest preserves and by stimulating modern methods of soil conservation.





Execution of PRODECER Ⅰ、Ⅱ、Ⅲ

	Area(ha)	Produc	Investment: US$ million (100million yen)		
			Brazil	Japan	Total
PRODECER I	60,000	92	25 (51)	25 (51)	50 (102)
MG Iraí de Minas	9,000	26			
Mundo Novo	23,000	48			
Coromandel	6,000	18			
Entre Ribeiros I	10,315	41			
PRODECER II	65,000	165	50 (64)	50 (64)	100 (128)
BA Ouro Verde	16,404	48			
Brasil Central	15,028	38			
MT Ana Terra	18,600	40			
Piuva	16,717	39			
PRODECER II (Expantion	140,000	380	137.5 (157)	137.5 (157)	275 (314)
MG Entre Ribeiros II	10,843	28			
Entre Ribeiros III	5,953	20			
Entre Ribeiros IV	3,984	10			
Guarda Mor	11,916	37			
Bonfinopolis	16,588	49			
Piratinga	20,643	53			
Buritis	17,004	42			
GO Paineiras	8,274	29			
Cristalina	6,115	16			
Buriti Alto	15,615	40			
MS Alvorada	22,001	56			
PRODECER III	80,000	80	55.2 (61)	82.7 (79)	137.9 (140)
MA Balsas	40,000	40			
TO Pedro Afonso	40,000	40			
TOTAL	345,000	717	267.7 (333)	295.2 (351)	562.9 (684)

Fig. S-2 General Aspects of Prodecer

3.2 EVALUATION OF PRODECER

Prodecer has characteristics above-mentioned, and played an important role among the bilateral agricultural development programs in the Cerrados region, and even outside this region. It can be said that Prodecer was the catalyst to the Cerrados development process, with accomplishing direct and indirect results such as: (a) contribution to the world supply of food; (b) socio-economic improvement through the development of the Brazilian inland; (c) development of agribusiness and providing incentives to the regional development; and (d) diversification of grain exporting countries (to Japan, among others).

The evaluation results of Prodecer, influenced multiple and various aspects, 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) 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 he 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.

4. PERSPECTIVES OF THE AGRICULTURAL DEVELOPMENT IN THE CERRADOS REGION IN FUTURE

One of the priority targets of PPA – Pluri-annual Plan of Investment of the Brazilian government –is the development of agribusiness. This will focus on the implementation of inter-modal transportation infrastructure in the Cerrados region, strengthening this region's products international competitiveness through the reduction of costs. Through these measures, the position of the region will expand in the next years as a great agricultural exporter, making a larger contribution to the world supply of food and biomass products. For this, and bearing in mind the need for sustainable development, new agricultural technology oriented to crop diversification should be generated, and the enormous livestock and silviculture potential should be developed.

For the promotion and development of the soybean and other grains agribusiness, the strengthening of the product in the international market is indispensable. The major challenge is the reduction of the production channeling/commercialization costs with special attention to the tendencies and movements of the international market and to the issue of transgenics.

During the 22 years of Prodecer execution, there was a large influx of American and European multinational companies into the Cerrados region, mainly in the grain commerce, processing and export sectors, and in some cases a relatively small number of purchasers were responsible for the purchase of the whole regional soybean production.

However, Japanese companies are currently intensifying their participation in the region, purchasing soybean and cotton, and commercializing fertilizers and agricultural pesticides.

In conclusion, over the last decades, Brazil and Japan have strengthened their economic relationship, which also included private capital investments, through Prodecer and other Cooperation Programs for the Agricultural Development of Cerrados.

For the future, closer bilateral economic exchange is expected through agribusiness opportunities created in the Cerrados region.