Summary

Evaluation conducted by: JICA Overseas Office

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<tr><td colspan="2">Country: Brazil</td><td>Project title: The Technological Development Project for Sustainable Agriculture in the Eastern Amazon.</td></tr>
<tr><td colspan="2">Issue/Sector: Agriculture/General</td><td>Cooperation scheme: Project Type: Technical Cooperation</td></tr>
<tr><td colspan="2">Division in charge: Agriculture Development Cooperation Department</td><td>Total cost: 600 million Yen</td></tr>
<tr><td rowspan="3">Period of cooperation</td><td>(R/D): March 01, 1999 to February 29, 2004.</td><td>Partner Country Implementing Organization: Eastern Amazon Research Center (CPATU)</td></tr>
<tr><td>(Extension) : n/a</td><td rowspan="2">Supporting Organization in Japan : Ministry of Agriculture</td></tr>
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<tr><td>Related cooperation :</td><td colspan="2">Project Type Technical Cooperation: Technological Agro-Industrial Development in the Tropical Rainforest (1990/1999);
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1.1 Background of the Project

Since 1970, transmigration of small farmers and development of large-scale agriculture and livestock activities by the private sector have been promoted in the Amazon region. As a result, the tropical rainforest has faced substantial reduction, and environmental problems such as deforestation and erosion have become ever more apparent. However, the Rio summit in 1992 attracted the world's attention to the importance of forest preservation for the prevention of the effects of greenhouse gases and biodiversity conservation throughout the world. In this context, the Brazilian government has signed international agreements with the aim of conserving the tropical rainforest in the Amazon region.

Nevertheless, vast lands in the Amazon region had already been exploited and have being devastated through shifting cultivation and conversion of forest to pasture. Under these circumstances, research on sustainable agriculture techniques has been conducted, with the aim of reducing deforestation and generating income for the small farmers. Cultivation of tropical fruits and black pepper, as well as mixed cultivation systems of these crop species in the Amazon region, are mainly practiced by Japanese-Brazilian farmers.

Since 1980, local Japanese-Brazilian agro-forestry has been attracting attention as a promising alternative to deforestation in the Amazon. The main reason is the permanent land use and higher income compared to conventional land exploitation options. Efforts have been made to introduce crop species and the practices of Japanese-Brazilian farmers to other small farmers in the Amazon. Sustainable agricultural techniques can help stabilize farming practices and improve living standards, while protecting the natural forest. Therefore, selection of adequate techniques for sustainable agricultural systems, suitable for small farmers, needs to be expanded, with the support of the rural extension agencies.

In this context, in 1996 the Brazilian government requested of the government of Japan a technical cooperation project for the development of sustainable agriculture in the Eastern Amazon region. Following preliminary studies, a Record of Discussion (R/D) was signed in November 1998, and the project started up on March 1, 1999; it terminated on February 29,

2004. The final evaluation team considered that the project had achieved some of the outputs and that the remaining activities should be continued even after the project termination period.
The ex-post evaluation focused on the impact and sustainability of the project following its conclusion, in the period from 1 January 2004 to 30 November 2006. This evaluation assessed whether project outcomes had been achieved or increased following termination of the cooperation project

1.2 Project Overview

The government of Japan provided technical cooperation for CPATU in order to obtain: **(i)** technical strengthening in the field of research and development projects; **(ii)** strengthening of initiatives related to technology transfer to small-scale farmers in the pilot areas; and **(iii)** strengthening of sustainable production systems adapted to local conditions and harmonized with the environmental context.

(1) Overall Goal:

Technologies of sustainable agriculture suitable for the Eastern Amazon are developed.

(2) Project Purpose:

Sustainable agricultural technologies involving selected tropical fruit trees and black pepper are employed in the project's target areas in the state of Pará, adapted to local conditions.

(3) Outputs:

Output 1: Management and cultivation technologies for selected tropical fruit trees and black pepper are developed in harmony with the environment.
Output 2: Sustainable production systems for the target areas involving mixed cultivation systems are developed.

1.3 Inputs

Japanese side:

Long-term Experts	**7**	**Equipment**	**93 millions Yen**
Short-term Experts	**9**	**Local cost**	**60 millions Yen**
Trainees received	**13**	**Others**	**_____Yen**

Brazilian Side:

Counterparts	**29**	**Equipment**	**NA**
Land and Facilities: Provided		**Local Cost**	**R$ 10.4 million (415 thousand Yen)**
		Others	**NA**

II. Evaluation Team

Members of Evaluation Team	JICA Brazil Office Commissioned to: Ms. Clarice Zilberman Knijnik – National Consultant	
Period of Evaluation	October 10, 2006 to January 30, 2007	**Type of Evaluation :** Ex-Post Evaluation

III. Results of Evaluation

3-1. Summary of Evaluation Results:

Three years after project completion, achievement of the overall goal can be evaluated as only partially satisfactory, due to the short time frame for producing measurable project impacts. Activities and experiments are being monitored and evaluated by CPATU in the experimental areas and in pilot area properties. The rating of partially satisfactory achievement is explained by:

(i) the failure to conclude certain activities and to reach some of the results; and

(ii) the cancellation or discontinuation of approximately 20 activities due to a shortage of technical, budgetary and operational resources.

The PDM indicators for the project overall goal for 2006 were achieved in the pilot area (Tomé Açu). However, medium and short-term impacts of the project will be better evaluated through:

(i) establishment of two more pilot areas in other municipalities of Pará state that are not influenced by Japanese and Japanese-Brazilian producers; and

(ii) replication, in 2008-2009, of the socioeconomic research carried out in 2003 involving selected small-scale producers in Tomé Açu, and the research conducted in two other municipalities (2007-2012), to compare with the previous findings.

Studies and interviews with relevant partners indicated that project short-term outcomes and results achieved by 2006 are still contributing to a certain degree towards the project overall goal, which may well be achieved in the coming years.

(1) Impact:

(1.1) Achievement of the overall goal:

An average increase of up to 3% in the cultivation of black pepper using live stakes (Gliciridia) was noted among producers both in the pilot properties and in properties close to the project area. There was also a 3% increase in the total area cultivated with species promoted by the project, applying mixed cultivation systems adapted to local conditions. Therefore, the initial project outcomes were maintained after project termination, despite the technical, budgetary and operational difficulties faced by CPATU.

Visits and interviews were conducted with 48 relevant project partners in Belém and Tomé Açu, including researchers, small-scale producers, governmental partners, NGO's and Japanese-Brazilian organizations**.** Interviews also indicated that small-scale producers who participated in project activities increased their area of mixed cultivation systems adapted to local conditions by more than 3%, on the average, between 2004 and 2006.

Achievement of the project overall goal is supported by the replication of the Tomé Açu experience in two other municipalities of Pará state not influenced by Japanese-Brazilian producers practicing AFS. However, this achievement will be better evaluated by the socioeconomic study to be carried out in 2008-2009.

According to interviews carried out by CPATU researchers, 30% of the research activities and experiments had not yet been concluded or evaluated, in order to better disseminate project results. Nevertheless, 30% of the research activities had been concluded; and the findings are being applied by small-scale producers and partners in Tomé Açu.

The evaluation pointed out that the mixed crop systems selected by the project in the pilot area had increased the number of instances of these systems from nine to thirty. Around 80% of the producers who had not participated in the project expressed interest in adopting mixed cultivation systems.

(2) Sustainability

As indicated previously, it was not possible to evaluate achievement of the project purpose during the final evaluation mission in 2003. Therefore, In the ex-post evaluation process, it was considered necessary to do a special evaluation study on this subject.

After project completion, CPATU was not able to ensure the follow-up of activities, due to insufficient technical, budgetary and operational resources. Considering the difficulties

facing the center, the likelihood of achieving sustainability of project results and impacts in the coming years could be considered low.

By the end of 2009, with the gathering of conclusive results of experiments and monitoring of the pilot area of Tome Açu, it is expected that somewhat better conditions should be created for the continuity of project effects.

Project sustainability could improve in the coming years if the center secures adequate technical, financial and operational resources for completion of activities and reinstallation of experiments, replication of pilot experiments in other Pará municipalities, establishment of new partnerships, and promotion of institutional cooperation agreements for knowledge transfer and rural extension for small-scale producers.

(2.1) Technical Aspects

Technical sustainability was ensured after project completion through actions and the quality of the CPATU technical team and institutional facilities. It should be noted that the factors leading to technical sustainability did not alleviate the lack of continuity of several research activities. Despite the installed capacity available, the necessary financial resources were not forthcoming at the different organizations involved in project implementation.

In 2006, of 44 project activities, 24 were cancelled and 11 concluded; 9 were still underway. The primary reason for cancellation of research was the lack of funding for field monitoring and technical support. Of the cancelled activities, 5 are to be reinitiated in 2007 with external financial support. Among other things, these activities will involve the selection of cupuassu clones that are more productive and resistant to witches' broom disease. BRS cultivation, successfully concluded in 2003, had a follow-up phase in 2006 involving research on the new assai cultivation system.

According to the interviews, 70% of the researchers considered that the budgetary conditions necessary for successful technical continuation of the project were not at hand after project termination; approximately 60% considered that the center was partially sustainable and should be able to perform its technical functions in the coming years.

Of the 29 researchers that took part in the project, 17 are still working at CPATU. Of the 13 professionals trained in Japan, approximately 50% still conduct research activities at the center. The general coordination of the project was not maintained after project completion.

(2.2) Organizational and Financial Aspects:

Following project completion, CPATU continued to face financial and organizational difficulties, just as during project execution. The center has succeeded in maintaining stable budgetary resources during the past few years, with 97% dedicated to salaries, fixed costs and maintenance, and only 3% to investment.

The primary reason for the cancellation or lack of continuity of 24 project activities was CPATU's insufficient resources for field monitoring; funding for travel expenses, and the reinstallation of experiments. Approximately 85% of the researchers considered that the conditions necessary for project continuity, such as administrative and personnel management and budgetary resources, had not been ensured.

The equipment and laboratories donated are generally being used, but there are some budgetary difficulties related to maintenance and replacement of equipment parts that are imported from Japan.

CPATU institutional competencies do not include actions related to rural extension and technical assistance. Thus, the center does not have the structure and organization necessary for these activities. These tasks are the responsibility of other public institutions, such as EMATER and CEPLAC.

Since 2004, the center has been concentrating on the follow-up of activities that can rely on their own guaranteed resources. This orientation has strongly contributed to the low level of continuity of project activities after project termination. It was observed that from 2004 to 2006, researchers secured, through extra-budgetary resources for the follow-up of research

activities on black pepper, new cupuassu and assai cultivation systems.
If the same organizational and financial conditions are maintained in the coming years, this would suggest a new trend leading to decreasing project sustainability.

(2.3) Political Aspects and Systems:

The past decade has witnessed increased promotion of programs for the development of sustainable agriculture adapted to the Amazon region, through activities such as financing of Brazilian small-scale producers (PRONAF); dissemination of successful experiences in community sustainable development, such as the PPG7 pilot projects; and the Sustainable Amazon Plan (PAS).
Political conditions favorable to project sustainability were maintained following project termination, in terms of national policy on rural development. In the medium term, there is a moderate degree of probability of sustainability, given the favorable political context for the development of sustainable agriculture in the region.
On the other hand, CPATU's political conditions after project termination were not favorable to project sustainability, with regard to institutional priorities and budgetary constraints. After 2004, major institutional priorities concentrated on agribusiness initiatives and clean energy alternatives for the Amazon region.
Other external difficulties for project implementation were identified, which could present a certain degree of risk to the long-term sustainability of project outcomes. These were related to certain characteristics of small-scale producers, such as reduced capacity for saving and re-investing in production, obtaining land titles and managing rural properties.

(2.4) Social Aspects, Culture and Environment:

Cattle ranching, forest exploitation and monoculture systems are traditional activities in Pará. Therefore, certain cultural elements pertaining to small-scale producers in Pará could be listed as risk factors for the sustainability of project outcomes in other areas of the state. Additional risk factors are related to subsistence issues faced by rural producers, due to changes in productivity conditions and in costs and market prices, and variations in market demand for more highly valued products.
Behavioral and cultural changes among small-scale producers require longer periods than the project cycle life for findings to generate greater impact. These changes are, therefore, important factors for ensuring the sustainability of project's outcomes in the coming years.
Project sustainability would improve in the medium and long-term through an increase in the execution of rural extension programs, promotion of economic incentives for the adoption of AFS, and improvements in the productive and social infrastructure for small-scale producers.

3.2. Factors furthering the project

(1) Planning Factors:

1. CPATU had previous experience in technical cooperation with JICA, and excellent technical expertise;
2. the participation of long and short-term experts from Japan in project implementation;
3. adequacy of the diagnosis carried out to respond to existing demands;
4. initial selection of at least 05 pilot areas.

(2) Implementation Factors:

1. establishment of five experimental areas and demonstration properties in a pilot area, supporting the development of a preliminary methodology for the replication of pilot experiments;
2. selection of target areas for sampling and validation of project impacts;
3. effective management, blessed with highly qualified technical personnel and adequate installations and facilities;
4. initial dissemination of project results directed at subject matter specialists, small farmers and relevant partners;
5. technical and institutional support of Japanese-Brazilian producers and their

organizations in the pilot area.

3.3. Factors inhibiting the project

(1) Planning Factors:

1. project planning was very ambitious, considering the number of activities for reaching completion in five years;
2. lack of coordination mechanisms regarding other actors relevant to project continuity and replication;
3. lack of balance among time, intensity of efforts and resources for procedures of results monitoring and evaluation, dissemination of lessons learned and good practices obtained;
4. insufficient formal participation of NGO's experienced in technical assistance, missing the opportunity of benefiting from NGO flexibility, capacity to build partnerships, and ability to raise funds from other sources;
5. more than 85% of funding was allocated to Output 1 (research), resulting in insufficient resources for activities of transfer to producers;
6. institutional competencies and the structure of CPATU were not geared toward executing rural extension activities.

(2) Implementation Factors

1. insufficient budgetary, operational and technical resources for project continuity;
2. lack of institutional agreement on partnership, planning and monitoring;
3. reduced institutional capacity for raising new funds from other funding sources, building synergies with other projects, and implementing new pilot experiences in Pará state;
4. insufficient technical assistance and rural extension activities for rural producers;
5. cultural, social and economic factors external to the project, which influence the social and productive infrastructure conditions of small-scale producers.

4. Conclusion:

Concerning sustainability and impact evaluation, the CPATU coordination staff and researchers reported that they had been expecting the approval, in 2004-2005, of a new technical cooperation phase (five additional years) to support the conclusion and validation of research studies, and the signing of new institutional agreements needed for technical transfer and the establishment of other pilot experiments in Pará state.

In this context, the project overall goal indicators for the project pilot area were achieved to a partially satisfactory degree, with regard to the use of new species selected by the project and the adoption of new mixed cultivation systems of fruits and black pepper with live stakes (Gliciridia).

In terms of sustainability, after project completion the degree of sustainability was evaluated as "reduced," even though the issue addressed by the project is considered very relevant for national policies. This low sustainability could have been remedied if CPATU had obtained authoritative guarantees of political priority and adequate resources for the completion of activities, replication of pilot experiences and new institutional agreements related to technical assistance and rural extension.

Insufficient financial resources and operational support for CPATU did not permit follow-up of experiments in pilot properties; it also hindered the reestablishment of experiments.

Projects such as this require more time and resources than originally planned in order to achieve validated results and generate final recommendations. The achievement of medium and long-term results also requires longer periods to obtain better experimental consolidation and adoption by a greater number of stakeholders.

As for the institutional difficulties related to technical assistance and rural extension for small-scale producers in the pilot area, these were partially solved through the permanent support provided by Japanese-Brazilian producers and local associations.

The initial impacts of project outcomes were identified and reported by cooperating partners.

However, a new social and economic evaluation to be carried out by the national counterpart in 2008-2009 will better identify the short term impacts achieved by the project.

5. Recommendations

(1) CPATU should work strategically with top officials of the institution and relevant partners to ensure, for the coming years, synergy with other projects, inter-institutional agreements and resources for project continuity.

(2) This kind of project should consider, among its initial design alternatives, self-financing mechanisms (as such as selling of technical services, royalties for products, seminars, consultancies and support for negotiation of new projects with national and international organizations), as well as networking with relevant partners to improve the participation of governmental and non-governmental organizations in planning, implementation and monitoring activities.

(3) New project design should promote a smaller number of activities to be executed in five years, to allow better resources and time balance among research activities and dissemination to small-scale producers;

(4) CPATU should evaluate the project's impacts until 2009 in the pilot areas and in Pará state, identifying successful experiences and solutions produced after project termination.

6. Lessons Learned

(1) Better projects results could be ensured with the establishment, right from the beginning of the project, of inter-institutional agreements to ensure formal participation of governmental and non-governmental organizations in technical assistance and rural extension activities.

(2) Better political support and strategic partnerships for project implementation could be ensured through more coordination and synergy with other initiatives and NGO's.

(3) This type of sustainable agricultural project requires a longer implementation phase (more than five years) and more national and Japanese financial resources than initially budgeted, in order to achieve final results and short term impacts. Thus, the Brazilian government needs to ensure a higher level of ownership and financial budgeting, right from the beginning of the project.

(4) Project design should include proposals to improve Counterpart's self-financing mechanisms.

7. Follow-up Situation

N/A