

Ex- Post Evaluation Study Final Report

**“The Technological Development Project for
Sustainable Agriculture in the Eastern Amazon”**

**Embrapa Eastern Amazon
CPATU/EMBRAPA**

**Japan International Cooperation Agency
JICA Brazil**

January 2007

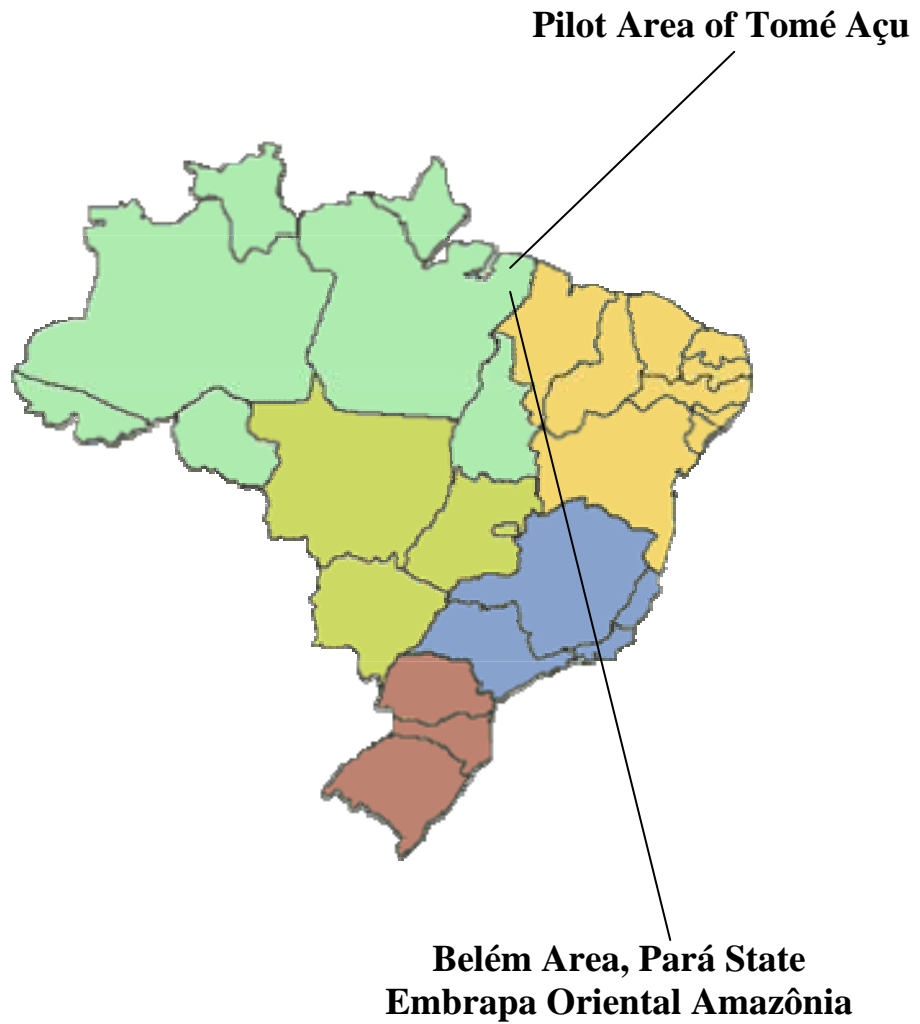
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Contents

	Page
Location Map of the Project	7
Pictures	9
List of Abbreviations	11
Executive Summary	13
Chapter 1 Outline of the Ex-Post Evaluation Study	27
1.1 Objectives of the Evaluation Study	27
1.2 Members of the Evaluation Study Team	27
1.3 Period of the Ex-Post Evaluation Study	27
1.4 Evaluation Study Methodology	27
Chapter 2 Overview of the Project	29
2.1 Background of the Project	29
2.2 Summary of the Initial Project Plan	31
2.3 Summary of the Final Project Plan	31
2.4 Summary of the Final Evaluation of the Project Report	33
Chapter 3 Project Achievements	35
3.1 Project Implementation Framework	35
3.2 Project Achievements	36
3.3 Present Situation of the Project	37
3.3.1 Summary of the Current Project Situation	40
Chapter 4 Evaluation Findings	43
4.1 Project Impact	43
4.1.1 Impact at the Overall Goal Level	43
4.1.2 Impact at the Purpose Level	45
4.1.3 Impact not Anticipated at Project Termination	47
4.1.4 Impact of Project Effects	47
4.2 Sustainability	49
4.2.1 Technical Aspects	49
4.2.2 Organizational Aspects	49
4.2.3 Financial Aspects	50
4.2.4 Political and Systems Aspects	51
4.2.5 Social, Cultural and Environmental Aspects	52
4.2.6 Sustainability of Project Effects	52

Chapter 5	Factors Contributing to Project Effects	57
5.1	Factors Promoting Project Effects	57
5.1.1	Planning Factors	57
5.1.2	Implementation Factors	57
5.2	Factors Inhibiting Project Effects	58
5.2.1	Planning Factors	58
5.2.2	Factors Related to Execution	59
Chapter 6	Conclusion	61
Chapter 7	Lessons Learned and Recommendations	63
7.1.	Lessons Learned	63
7.2.	Recommendations	63
7.2.1.	Recommendations to CPATU	63
7.2.2.	Recommendations to JICA	64
Annex		65
	Project Evaluation Grid	67
	Activities' Project Development Matrix Evaluation (PDMe)	77
	Project Development Matrix Evaluation	91
	List of Interviewed Personnel	97
	Organization Chart	101
	Third Party Evaluation	105

Location Map of the Project



Pictures



Plantation of black pepper with alive support (*Gliricidia*)



Mix-cultivation of black pepper and chestnuts



Inter-cultivation of fruit trees of açaí, cupuaçuzeiro e bananeiras

List of Abbreviations

CPATU – EMBRAPA Eastern Amazon Research Center
SAF - Agro-Forestry System
EAO – EMBRAPA Eastern Amazon (ex-CPATU)
EMBRAPA – Brazilian Agricultural Research Corporation
MDA – Ministry of Agrarian Development
MAPA – Ministry of Agriculture and Supply
INCRA – National Institute of Colonization and Agrarian Reform
EMATER – National Enterprise for Technical Assistance for Rural Development.
CEPLAC – Executive Commission of the National Plan for Cacao Planting
SUDAM – National Superintendence for the Development of the Amazon Region
ADA – Amazon Development Agency (ex-SUDAM)
MMA- Ministry of the Environment
SCA - Amazon Cooperation Secretariat of the MMA
IBAMA – Brazilian Institute for the Environment and Renewable Natural Resources
PPG7 – Pilot Program for the Protection of the Brazilian Rainforest
PDA - Demonstration Projects A (PPG7)
PROAMBIENTE - Sustainable Development Program of the Amazon Rural Family
Production **ACTA** – Japanese-Brazilian Cultural Association of Tomé Açu
POEMA – Amazon Poverty Reduction and Sustainable Environment Program of UFPA
UFPA – Federal University of Pará
UFRA – Federal University of the Rural Amazon
PLANTAR – NGO Plantar
BASA - Amazon Bank S.A
FNO - Northern Region Development Fund
BB – Banco do Brasil
PRONAF – National Program for Strengthening Family Farming
SAGRI – State Agriculture Secretariat of Pará
CAMTA – Mixed Agriculture Cooperative of Tomé Açu
PPA - Multi-Year Government Investment Plan
MRE – Ministry of External Relations
ABC - Brazilian Cooperation Agency
JICA – Japan International Cooperation Agency
RD – Record of Discussions
M/M – Minutes of Meetings
NGO – Non-Governmental Organization
PDM – Project Design Matrix
PDMe – Project Design Matrix – Evaluation

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Summary

Evaluation conducted by: JICA Overseas Office

I. Outline of the Project	
Country: Brazil	Project title: The Technological Development Project for Sustainable Agriculture in the Eastern Amazon.
Issue/Sector: Agriculture/General	Cooperation scheme: Project Type: Technical Cooperation
Division in charge: Agriculture Development Cooperation Department	Total cost: 600 million Yen
Period of cooperation	(R/D): March 01, 1999 to February 29, 2004.
	(Extension) : n/a
	(F/U) : n/a
Partner Country Implementing Organization: Eastern Amazon Research Center (CPATU)	Supporting Organization in Japan : Ministry of Agriculture
Related cooperation :	Project Type Technical Cooperation: Technological Agro-Industrial Development in the Tropical Rainforest (1990/1999); Project Type TCTP Project: International Training Course in Agro-Forestry Technologies (2006/2010).
1.1 Background of the Project	
<p>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.</p> <p>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.</p> <p>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.</p> <p>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,</p>	

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

終了時評価調査結果要約表

評価実施部署：JICA ブラジル事務所

I. 案件の概要	
国名：ブラジル	案件名：東部アマゾン持続的農業技術開発計画
分野：環境	援助形態：技術協力プロジェクト
所轄部署：地球環境部	所轄課：森林・自然環境保全第2チーム
協力期間	協力金額：600,000,000 円
R/D: 1999年3月1日から 2004年2月29日 (F/U):無し	先方関係機関：ブラジル農牧研究公社東部アマゾン農林研究センター 日本側協力機関：農林水産省
他の関連協力	チーム派遣：アマゾン農業研究協力（1990～1999）国際アグロフォレストリー技術コース（2006～2010）
<p>1.1. 協力の背景と概要： ブラジル国アマゾン地域は、1970年代以降、国家の政策として農牧業を含む小規模農家の移住や民間企業による大規模農家開発が奨励されてきた結果、熱帯雨林が著しく消失し、森林破壊、訴状試食などの様々な環境破壊が発生した。92年リオ環境サミット実施により世界に於ける生物多様性保護と温室効果対策の重要性が確認され、ブラジル政府は世界に対しアマゾン地域に於ける熱帯雨林保全について責任を負うことを了承した。一方持続的農業の推進は荒廃地回復とともに小規模農家への所得向上の手段としても開発されてきた。熱帯果樹とコショウの並行した栽培が過去数十年にわたりアマゾン地域で日系農家により実施されており、80年代から日系農家によるアグロフォレストリー活動は在来的農業（集約的農業、畜産及び木材採取）に比べアマゾン生物多様性維持に有望な選択肢となるとして注目を浴び始めていた。日系農家と同様のアグロフォレストリー活動及び栽培種の生産が他の生産者によっても試みられており小規模農家によるアグロフォレストリーシステム導入は農家の定着・所得向上・アマゾン森林保全に貢献可能である。小規模農家のニーズに適応したアグロフォレストリーシステムの選定には農業普及機関の支援により可能である。こうした状況を踏まえてブラジル政府は1996年日本政府に対し東部アマゾンに於ける持続的農業に係る技術協力を要請した。事前調査実施後1998年R/D署名し、プロジェクトは1999年3月1日から2004年2月28日まで実施された。協力成果は終了時評価調査団により部分的に達成と判断された。これは多数のプロジェクト活動の完遂にはプロジェクト実施期間、技術・資金リソースの投入が不足したためである。終了時評価は本件協力のインパクト及び持続性を主に考慮し、評価対象期間は2004年1月1日から2006年11月30日までとした。本件調査は協力終了後もプロジェクトの効果が維持拡大されたかについて確認するものである。</p> <p>1.2. 協力内容 本件協力では日本政府は(1)プロジェクト開発及び研究部門での技術交流強化(2)試験地における小規模農家への技術移転に係るイニシアチブの強化(3)現地条件に適合し環境と共存した持続的生産システムの強化、に向けた技術協力プロジェクトを実施した。</p> <p>(1) 上位目標：東部アマゾン地域に適した、持続的農業が開発される。 (2) プロジェクト目標：パラ州のプロジェクト対象地域において、現地の実情にあった選定熱帯果樹及びコショウを含む持続的農業技術が開発される。 (3) 成果（アウトプット）： 1. 選定熱帯果樹及びコショウについて自然と調和した（環境保全型）栽培技術が開発される。 2. 熱帯作物の混植など、プロジェクト対象地域に適した持続的生産システムが開発される。</p>	

1.3. 投入:	
日本側:	
長期専門家派遣: (7)	機材供与: 9,300 万円
短期専門家派遣: (9)	ローカルコスト負担: 6,000 万円
研修員受入: (13)	その他:
相手国側負担:	
カウンターパート配置: (29)	土地・施設: 試験圃場、実験室、プロジェクト オフィス ローカルコスト負担: R\$10.4 millions
II. 評価調査団の概要	
調査者:	ブラジル事務所: 駒沢カズアキ所員 ローカルコンサルタント (CLARICE Z. KNIJNIK 氏)
調査実施期間:	2006 年 10 月 13 日~2007 年 1 月 30 日
	評価種類: 在外事後評価
III. 評価調査の概要	
3.1. 評価結果概要	
<p>本件協力終了3年を経過し、上位目標は部分的に達成した。全面達成でないのは本件協力が対象としている分野の広範さに比べ評価対象となる年月が少なかったためである。諸活動・試験は実施機関（東部アマゾン農業研究センター：CPATU）により試験場・試験地域でモニタリングが始まっており、プロジェクト目標は(1)一部活動が完遂していないこと、(2)試験活動結果が完結していないものがあること、一部再試験の必要があること、技術・資金等理由により活動停止している項目があることを除いて達成した。PDM 指標では2006年にトメアスの試験地域で達成した。一方短期・中期的なプロジェクトインパクトは(1)更に2箇所の試験地域設置(2)2003年実施多農家経済調査の2008/2009年向け再調査、等の実施により更に確実な評価が可能となるであろう。ステークホルダーに対して行なった調査・インタビュー等により、プロジェクト成果及び2006年度までに見られた効果は上位目標・プロジェクト目標達成に貢献していると判断する。</p>	
(1)インパクト:	
(1.1)上位目標	
<p>プロジェクト試験地および近隣地域においてコショウ生木栽培の耕地面積に3%の増大が見られ、またプロジェクト導入種及び混植技術による栽培面積も3%増加した。従って2003年以降の実施機関による技術・資金面での困難に関わらずプロジェクト効果は維持拡大している。中・長期的インパクト達成については関連公共機関とNGOの共同活動による農業普及、人材育成、製品販売、農業融資及び公共基礎インフラの整備が必要である。上位目標の達成にはトメアスの経験を日系農家によるアグロフォレストリー農業の実施されていないパラ州の2市に普及されることが要求されているが、この部分については2008-2009年の農家経済調査によってより解明されるであろう。試験地においてプロジェクト終了から今回調査までにアグロフォレストリーシステムを導入した農家は9戸から30個に拡大した。同システムに参加していない農家の80%が同システムへの参加意欲を表明した。</p>	
(1.2)プロジェクト目標	
<p>ベレン及びトメアスにおいて研究者、農民、日系団体、NGO関係者等ステークホルダー48名にインタビューを行なった結果本件協力に参加した農家については、2004年から2006年の間に本件技術協力成果を取り入れた混植農地に3%の増加を見た。トメアスにおいて短期的に達成した成果では、CPATUにおいて研究活動の30%が完遂していない一方30%は完遂したこと、達成した研究成果についてはトメアス地域で小規模農家などに活用されていることが確認された。</p>	

(2) 自立発展性:

上記の通り、2003年度の終了時評価調査団による完全なプロジェクト目標達成の評価不可能であった。プロジェクト終了後 CPATU は技術・資金・運営リソースの不足によりプロジェクト活動の全面持続ができなかった。従って、ここ数年の間は自立発展性は低いまま推移することとなろう。2009年終わりにいたって、トメアス試験地域の私権活動及びモニタリングの成果発現が強化され、プロジェクト成果の維持がより容易になる条件が整うことと理解する。自立発展性の強化は CPATU による資金・人員・活動体制の強化によるところが大きい。これにより試験活動を再開し、パラ州内試験知己を増加させ、他のアマゾン地域持続開発と連携を行い、関連機関との共同活動を強化し、プロジェクト地域の小規模農家への農業普及体制を強化することによって自立発展性は強化できる。

(2.1) 技術的視点：技術的持続性については CPATU の組織的活動と同技術陣の活動・品質により維持されたが、技術的能力は維持しているものの関係機関間に予算が行き渡らないことがあり、一部研究活動の維持がなされないことがあった。2006年において当初予定されていた44活動のうち24がキャンセルされ、11が完遂し、9が実施中であった。キャンセルの主な理由は現地モニタリング及び評価費用の不足、技師等の日当ほか活動経費の不足、資料購入費の不足、技術・予算の不足など様々である。キャンセルされている活動のうち5つは2007年度にも CPATU 外部予算の獲得により再開の予定である。インタビューに応じた研究者の70%がプロジェクト活動継続のための条件が確立されなかったと述べた一方、60%が CPATU は協力成果を部分的にはあるが維持発展できると回答した。本件協力に参加した研究者29名のうち17名が現在も CPATU に勤務しており、日本で研修を受けた13名のうち50%が研究活動を継続している。プロジェクト専属部署は協力終了後解散された。

(2.2) 組織・資金面：プロジェクト終了時からの資金難が継続している。CPATU の予算は過去数年について予算の97%が給与・運転経費などに使用されてしまい、投資活動には3%しか残らない状況にある。研究者の85%がプロジェクト活動継続のための十分な運営、人事管理、予算管理が行なわれなかったと表明した。供与機材とラボ施設は現在でもほぼ全面的に稼働しているが、日本製機材については故障時の部品補給に困難が生じている。CPATU は農業普及に係る職能及び組織は持っておらず、これら活動は農業普及公社 (EMATER) 及び CEPLAC (カカオ生産委員会) が行なうべきとしている。2004年以降 CPATU は予算が獲得できた活動については継続しており、2004/2006年度活動の一部については外部資金を獲得して実施している。同資金が今後得られなくなった場合等は持続性は低下を見込む。

(2.3) 政治・政策システム面：近年アマゾン地域に於ける持続的農業プログラムが小農支援プログラム (PRONAF)、PPG7プログラムのコミュニティ普及、アマゾン持続計画 (PAS) など強化拡充の傾向にある。国家政策としてはプロジェクト終了後もプロジェクト成果維持拡大にプラスの農業開発政策が維持された。中長期的には本件協力成果の持続発展性は国家政策との整合性により強化されるであろう。CPATU はプロジェクト終了時点では予算緊縮がなされており、2004年以降は農業ビジネス及び代替エネルギーに政策的プライオリティを移行している。小規模農家に対するこれらプロジェクトの自立発展性を低下させるリスクとして、土地所有権の不在、弱体な貯蓄・投資能力、農業運営・生産システムに係る知識の不足、生産・販売・加工に関する支援の不足、技術支援能力の不足などがある。

(2.4) 社会・文化・環境面：パラ州においては伝統的に畜産、探索農業及び森林伐採が行なわれており、これはプロジェクト協力成果を試験地外の小規模農家に拡大する上での障害となりうる。生産条件の変化、生産コスト・販売時の産品価格変動、市場のニーズ変化により小規模農家の生活に困難が生じプロジェクト成果の維持にマイナスとなる危険性は存在する。プロジェクト成果が小規模農家に受け入れられるためにはプロジェクト実施期間よりも長い年月が必要である。プロジェクト成果の持続性拡大は中長期的には農業普及プログラム拡充、小農投資インセンティブ、生産インフラの向上により達成できるであろう。

3.2. インパクト及び自立発展性強化に貢献した要因

(1) 計画面について

- ・ 実施機関はすでに JICA との協力経験があり、国内外で優秀な技術を発揮していた。
- ・ プロジェクト実施において日本長期・短期専門家の活躍があった。
- ・ ニーズ確定が適切であり、政治・組織的支援が得られた。
- ・ 特色の違う試験地が 5 ヶ所以上選定された。

(2) 実施プロセスについて

- ・ 試験地 5 ヶ所及び展示ファーム 5 箇所が試験地域に設置され、試験的な経験の拡大に向けた事前的方法論の獲得に貢献した。
- ・ プロジェクトインパクトの実証及びサンプリングに向けた適切な地域の設定がなされた。
- ・ 適切なプロジェクト運営、機構支援及びプロジェクト実施がプロジェクト終了まで継続され、適切な施設設備・優秀な人材配置に恵まれた。
- ・ プロジェクト成果の波及が優秀な農民等ステークホルダーになされた。
- ・ 試験地域において日系農家・協会により適切な支援が行なわれた。

3.3. インパクト及び自立発展性強化を阻害した要因

(1) 計画面について

- ・ プロジェクト計画が数量・内容共に雄大に過ぎた。5 年のプロジェクト実施期間及び投入量に見合ったものとなっていなかった。
- ・ プロジェクト成果維持に向けた監視・調整メカニズムが不足していた。
- ・ 成果のモニタリング及び評価、プロジェクト教訓などの周知、グッドプラクティクスに関する情報伝達などについて適切な資金・時間配分・努力がなされなかった。
- ・ NGO の参加が少なく、これら期間の普及活動経験、調整能力、柔軟性及び迅速性など活動能力を活用できなかった。
- ・ 85%以上の資金が本件協力の第 1 段階（研究活動）にさかれたため、活動 2.1 及び 2.2.（農業普及）に支障を来たした。
- ・ カウンターパート機関に農業普及機関としての職能と能力が欠落していた。

(2) 実施面において

- ・ プロジェクト活動継続には予算・事業・技術リソースが不足していた。
- ・ プロジェクト活動実施維持のための多機関間調整・計画・モニタリング・内外調整が不足していた。
- ・ 実施機関による新規予算獲得能力、他の関連プログラム・プロジェクトとの連携能力、パラ州におけるプロジェクト成果拡大の能力が不足していた。
- ・ 小規模農家に対する実施機関の普及能力が不足していた。
- ・ プロジェクト外部要因としての小規模農家生産・社会支援インフラが不足していた。

4. 結論

協力テーマが国家農業優先政策・アマゾン地域持続的開発に合致しているに関わらず持続発展性は高くないが、これは実施機関により関連セクター上部機関等から認知を受ければ短期的にも向上するであろう。実施機関は 2004 年から更に 5 年間の技術協力プロジェクト実施を期待していたが、採択に至らなかったことも影響したとの意思表明をしている。CPATU 本件協力スタッフ及び研究員は 2004 年～2005 年にかけて本件協力新規フェイズ(5 年間)の採択を期待しており、研究活動完遂及び検証と技術移転に向け多新規組織協約・新規試験地設定を期待していた。こうした状況においてプロジェクト試験地域においてプロジェクト上位目標はコショウ生木栽培(グリシジア)及びアグロフォレストリー等の面について暫時達成しつつある。協力テーマが国家農業優先政策・アマゾン地域持続的開発に合致しているに関わらず持続発展性は高くないが、これは実施機関により関連セクター上部機関等から認知を受け、試験事業の経験拡大及び技術支援・農業普及に向け多新規組織的契約による資金が得られれば向上するであろう。資金不足等により活動表継続が不足し、研究成果拡大のための試験活動開会も見送られた。本件協力のように多種多数の農業研究項目及び小農普及を行なうプロジェクトには今回よ

りも多額の投資、長い実施期間が成果実証を得るために必要である。中長期的なインパクト計測にも今回よりも長いスパンで検束する必要がある。試験地における小規模農家普及支援等の不足は日系人農家及び協会の活動で部分的にカバーされた。プロジェクト成果のインパクトについてはステークホルダー間で確認されたが 2008/2009 年の実施機関による新たな農家経済調査でさらに鮮明になるであろう。

5. 提言

実施機関は関連セクター上部機関及び主要関連機関と戦略的に連携し、他の関連活動、機構関連形、プロジェクト継続に必要な予算確保を達成すべきである。

持続的農業プロジェクトは自助努力による予算獲得(技術サービス、製品ロイヤリティ、セミナー、コンサルティング及び国内・国際協力プロジェクト交渉)、主要関連機関との連携、公共機関・NGO との共同活動計画、実施、成果維持、モニタリングおよび評価を行なうべきである。

持続的農業プロジェクトは5年間における活動項目は現実的な数に止め、研究活動と普及活動間の予算バランスを考慮するべきである。

実施機関は2009年にパラ州全域及びプロジェクト試験地域のインパクト調査を行い、グッドプラティクスやプロジェクト成果の小規模農家への普及に当たり生じた問題の解決策について提示するべきである。

6. 教訓

公共機関、NGO など重要機関がプロジェクト参加するためにプロジェクト開始時期から連絡・連携を構築すること。

プロジェクト開始時から多組織間合意をとっておくこと。上部機関からの政治的支援を、他の類似プロジェクトやNGO との連携が可能となる。

多様な研究活動と小規模農家への技術普及の要素を持つ持続的農業プロジェクトは5年間の実施機関では完遂不能である。より長期間かつ多額の資金等投資が必要である。また、プロジェクト開始時よりブラジル政府はオーナーシップを持ち適切な予算手配を行なう必要がある。

プロジェクト実施後もプロジェクト活動が継続できるよう実施機関による独自の資金リソースを構築しておく必要がある。

7. フォローアップ状況

本件協力については、フォローアップは行っていない。

Chapter 1 - Outline of the Ex-Post Evaluation Study

1.1 - Objectives of the Evaluation Study

The aim of this study is the evaluation of results achieved following the conclusion of the “**Project on Technological Development for Sustainable Agriculture in the Eastern Amazon,**” which was carried out between 1 March 1999 and 29 February 2004, having as the Brazilian counterpart the EMBRAPA Eastern Amazon Research Center (CPATU).

The ex-post evaluation will focus on the impact and sustainability of the project following its conclusion, in the period from 1 January 2004 to 30 November 2006.

The evaluation will assess whether the project outcomes were achieved or increased even after the end of the Japanese cooperation. The main issues that guided this evaluation were the following:

- A.** To what degree were the overall goal and purpose of the project achieved after the final evaluation, and by November 2006?
- B.** What are the positive and negative impacts observed after project termination?
- C.** Was project sustainability ensured after the end of Japanese cooperation?
- D.** What are the main factors that promoted or restrained the achievement of outcomes?
- E.** What are the main lessons learned that could be considered in the planning and implementation phases of similar new projects with Japanese cooperation?

1.2 - Members of the Evaluation Study Team

The evaluation was carried out by the Brazilian and Japanese counterparts.

Japanese Team: Mr. Masahiro Kobayashi, Coordinator of Japanese Technical cooperation in Brazil;

Mr. Shinji Shibata, Vice-Coordinator of Japanese Technical cooperation in Brazil; Mr. Kochi Otsuka and Mrs. Naho Goto, Deputy Coordinators of Japanese Technical cooperation in Brazil; Mr. Kazuaki Komazawa, Executive Adviser to JICA; Mrs. Clarice Zilberman Knijnik, independent consultant.

Brazilian Team: Mr. Sotto Pacheco Costa, Coordinator of International cooperation at EMBRAPA;

Mr. Jorge Alberto Gazel Yared, General Coordinator of CPATU/EMBRAPA.

1.3 - Period of the Ex-Post Evaluation Study

The ex-post evaluation study was carried out in the period from 15 October 2005 to 31 January 2007.

1.4 - Evaluation Study Methodology

The evaluation study was based on the following methodological proceedings:

1 – verification and comparative analysis between the current situation of project execution and the PDMe of 17 November 2003, related to the evaluation mission, in particular in the pilot area in Tomé Açu;

2 – consulting: (i) with the Brazilian and Japanese parties, (ii) the reports on the execution of project activities by CPATU and JICA, and (iii) the confirmation of the final evaluation indicators regarding purpose, general objective and overall goal;

3 – proposing guidance instruments for the evaluation study: (i) project evaluation schema and (ii) project results evaluation chart, based on the PDMe,

4 – consultation with the General Coordination of CPATU and EMBRAPA on the reference instruments for the project post-evaluation;

5 – gathering, analysis and interpretation of information in order to obtain answers to the main questions of the Evaluation Grid, with the drafting of a narrative summary of results achieved by the project based on the PDMe;

6 – presentation of the preliminary version of the ex-post project evaluation report, for comments; and

7 – approval of the final version of the evaluation report.

This evaluation was mainly based on **(i)** interviews with key informants regarding the continuity of project implementation at CPATU and the pilot area in Tomé Açu; **(ii)** consulting of technical documents, reports and records; and **(iii)** field visits and interviews with former CPATU participants, relevant partners and small rural producers involved in the project in the 2004-2006 period.

Chapter 2 – Project Overview

2.1 – Background of the Project

2.1.1 – Framework of the Technical cooperation

(1) The Amazon and the challenge of sustainable development

Since the 70's, due to Brazilian national development policy, the Amazon Region has been subjected to national public policies aimed at population settlement, given its very low population density; the region is also recognized to be a region of importance to the world, because of its biological diversity.

The regional development programs in the seventies had as a basic premise the incorporation of the Amazon region, with its large “empty areas,” into the national territory. With the opening of new roads and the official human resettlement projects in the seventies, the settlement of producers in the Amazon was supported, in particular in southern Pará (Marabá and Transamazonica) and the southern Amazon region (Rondonia and Mato Grosso).

The positive impact of agrarian reform in general could be considered not very significant in terms of its economic benefits. The family-based small producers in the region have faced serious problems for the sustainability of their agrarian activities. These difficulties could be classified into three groups, according to an MDA study (2005):

- (i) insufficient entrepreneurial, technical and managerial capacity; spatial fragmentation of the productive chain; and enterprises with insufficient planning, scale, technology and financial resources;
- (ii) lack of conditions to participate in the market – inappropriate products, productive lines not coordinated, lack of information and trade partners, and expensive trade – which reduces the producer's revenue;
- iii) insufficient support of economic and infrastructural instruments and other public policies.

In the nineties, Brazilian institutions became more aware of the need to adapt to market dynamics and adopt good management practices, in an attempt to find better solutions to the great challenges facing a future sustainable Amazon region.

The relevant biodiversity losses in the region came to the attention not only of Brazilian society but also of the international community. The so-called “mobilization” led to changes in the proposals for sustainable development policies for the Region. Thus, instead of being based mainly on economic growth, public policies had to aim at sustainable development

(2) Environmental Policy and Development in the Amazon

In the seventies, environmental problems worsened; pollution became a major concern in Brazil. After the participation of the Brazilian delegation in the United Nations Conference on the Human Environment in Stockholm in 1972, effective measures began to be taken toward environmental conservation in Brazil.

The establishment of the Special Secretariat on the Environment (SEMA) occurred in 1973, aiming at the implementation of national environmental policy. Later were established the Ministry of the Environment and the Legal Amazon (MMA) and the Brazilian Institute on the Environment and Renewable Natural Resources (IBAMA), both charged with dealing with environmental issues in Brazil.

Considering the high level of degradation in the region due to its previous rural settlement process, the ministry has been giving emphasis to the development of policies and programs for sustainable development in the Amazon.

Within the context of Amazon development, degradation can be observed in two areas: environmental degradation and degradation related to agriculture. In the Amazon, the main land

uses which have been causing both types of degradation, are cattle ranching, migratory agriculture and logging.

The alternatives identified by research for the recovery of degraded ecosystems after several uses are mainly based on forestry recovery, less intensive integrated systems and intensive integrated systems. The choice of alternative is based on the type of ecosystem and the financial capacity of the producers.

Significantly, among the alternatives for the regeneration of degraded areas, in the last decade scientists as well as producers in the Amazon and other regions of Brazil have recognized the importance of agro-forestry systems.

(3) EMBRAPA and the Eastern Amazon

EMBRAPA, linked to the Ministry of Agriculture, was established on 26 April 1973. Its objectives have always been related to the implementation of solutions on sustainable development in rural areas, through the generation and transfer of technology to several sectors of Brazilian society.

EMBRAPA coordinates the National System on Agriculture and Cattle Ranching Research (SNPA), comprising public agencies at the state and federal levels, universities, private companies and foundations, which in partnership carry out research in several geographic areas and fields of scientific knowledge.

Technology generated by SNPA has changed Brazilian agriculture in recent decades, through dissemination among Brazilian rural producers. Besides, special research programs have been able to generate or improve technologies, increasing the efficiency of family-based agriculture and incorporating small rural producers into agribusiness.

(4) Tomé Açu - the Main Pilot Area of the Project

During at least the past two decades, agro-forestry systems have emerged in various parts of the Amazon, as agribusiness. Tomé-Açu, in Pará, established through the settlement of Japanese immigrants in the thirties, from the seventies on has become a relevant hub of market-oriented agro-forestry systems.

In the 50s, rural producers in Tomé-Açu started to cultivate black pepper; and its production proved to be suited to the demands of Brazilian as well as external markets. Initially, black pepper cultivation was based on a monoculture system. It became the main product in the municipality, bringing income generation as well as jobs to the region.

However, in the seventies and eighties fusariosis disease brought serious losses to rural producers with black pepper plantations. These losses forced the rural producers to diversify their activities, leading to the implementation of agro-forestry systems.

The experience of the rural producers in Tomé Açu demonstrates that small producers in the eastern Amazon can introduce changes in the configuration of their production systems, according to variations in the market or environmental conditions.

(5) Cooperation between JICA and CPATU over the past 20 years

In the above-mentioned context, a technical cooperation program between JICA and CPATU was established. The technical cooperation program was aimed at improving agricultural production in the eastern Amazon through the technical strengthening of CPATU, with a view to technology transfer and sustainable agriculture.

The Program had its first project implemented between 1977 and 1985. The second project aimed to promote research and the development of agroindustrial production in Pará, with special support to the northeastern region of Pará state, where Tomé Açu is located.

The third project was carried out between 1998 and 2004, aiming at technological development for sustainable agriculture in the eastern Amazon, promoting initiatives in the fields of research, technological development and capacity-building of researchers.

2.2 - Summary of the Initial project Plan (1998 – 2002)

The agreements between the Brazilian and Japanese governments for the implementation of technical cooperation for the “Technological development for sustainable agriculture in the eastern Amazon” started in 1996, following the request of the Brazilian Government to the Japanese Government with this aim, and were concluded in November 1998.

In order to implement the project, on 27 November 1998 an MD was signed by the Brazilian Government, represented by the Brazilian Cooperation Agency and EMBRAPA, as well as the Japanese Government, represented by JICA.

The project, “Technological Development for sustainable agriculture in the eastern Amazon,” was executed by EMBRAPA’s Research Center in the Eastern Amazon (CPATU) over a five year period, from 1 March 1999 until 29 February 2004. It is important to stress that initially this cooperation aimed to support 44 research studies on technologies for sustainable agriculture. The studies included selected tropical fruits and black pepper, adapted to local conditions in Pará state.

During implementation, two Japanese missions were sent for project evaluation. The intermediate evaluation mission was carried out in May 2002 and the final project evaluation took place in November 2003.

The intermediate mission in May 2002 agreed with CPATU to give more emphasis in project activities to the certification and dissemination of research findings. In this context, between May 2002 and November 2003, the cooperation emphasized the validation and “rural extension.” These initiatives would promote the use of new agro-forestry practices and of cultivation of black pepper by the small producers in the region.

The final project evaluation was done between 9 and 23 November 2003, having Mr. Kazuo Nakagawa as coordinator of the evaluation team. Together with the Brazilian authorities, they drafted a final evaluation report; an MD was signed during the meeting. The initial project results were widely recognized, as mentioned in the final evaluation report.

Given the evaluation process, with some changes in the contents of certain initial project activities, the Japanese experts and Brazilian partners used as their reference the 2002 intermediate evaluation matrix.

2.3 – Summary of the Final Project Plan (2002/2006)

The final project plan is presented below.

(1) Super Goal

Agriculture management techniques for small-scale farmers are improved and stabilized in the eastern Amazon, and the tropical rainforest is conserved through rational land use.

(2) Overall Goal

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

(3) Project Purpose

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

(4) Project Outputs

Output 1: *Management and cultivation technologies for selected tropical fruit trees and black pepper are developed and harmonized with the environment.*

Output 2: *Sustainable production systems for the target areas, involving mixed cultivation systems, are developed.*

(5) Project Activities

Activity 1.1: Selection of clones and progenies of high productivity and selection of low-level grafts of the selected fruits.

1.1.1 - Selection of cupuassu trees (*Theobroma grandiflorum*) of high production and resistant to “witches’ broom fungus” (*Crinipellis pernicioso* (Stahel) Singer).

1.1.2 – Selection of *graviola* (*Annona Muricata*), *acerola* (*Malpighia glabra*) and *assai* (*E. oleracea*) trees of high production.

1.1.3 – Selection of low-level grafts (from the cacao tree and from the group of *Graviola* trees).

Activity 1.2: Development of a method of control of the main diseases and plagues in the selected fruits.

1.2.1 – Development of an integrated control method for “witches’ broom” in *cupuassu* trees.

1.2.2 – Research on the control methods for the main plagues in the *graviola*, *acerola* and passion fruit trees.

Activity 1.3: Transfer of research technology on the management and cultivation of selected tropical fruits.

1.3.1 - Transfer of research technology on the management and cultivation of *graviola*, *acerola* and *cupuassu* trees.

1.3.2 – Research related to the pruning of *graviola* and *cupuassu* trees.

1.3.3 – Research related to the biology, large-scale raising and open fields raising technique of pollinator insects for *cupuassu* trees.

Activity 1.4: Development of a biological control of fusariosis.

1.4.1 – Method of biological control obtained.

1.4.2 – Evaluation of compatibility of black pepper grafts with resistance to fusariosis.

1.4.3 – Evaluation of tolerance to fusariosis of recently introduced cultivations.

Activity 1.5: Development of technology for the cultivation of black pepper resistant to fusariosis.

1.5.1 – Evaluation and verification of the introduction of live stakes in the cultivation of black pepper.

Activity 2.1: Testing and evaluation of the sustainable production system, involving mixed cultivation systems with different kinds of tropical plants and the establishment of demonstration farms.

2.1.1 – Testing and evaluation of the sustainable production system, involving selected tropical fruit trees and black pepper.

2.1.2 – Establishment of demonstration farms with mix-cropping and/or inter-cropping systems for small-scale farmers.

Activity 2.2: Transfer of sustainable agriculture technologies to smallholders in pilot areas.

(6) Inputs:

Japanese side:

Long term experts	7
Short term experts	9
Trainees received	13
Equipment	93 Million Yen
Local cost	60 Million Yen
Others	N/A

Brazilian side :

Counterpart	14
Land and Facilities	Provided
Local cost	R\$ 10.4 million (456 thousand Yen)
Other	N/A
Other equipment	N/A

2.4 - Summary of Final Evaluation project Report (2003)

In general the results achieved are considered satisfactory, since CPATU is committed to conclude the pending activities within the short term; other activities require a longer period of monitoring. Furthermore, the Japanese mission made recommendations to CPATU/EMBRAPA to ensure follow-up of these post-termination activities.

Below are highlighted the relevant comments of the Japanese mission in its final evaluation, carried out in November 2003.

(i) On the achievement of indicators related to the verification of outputs:

During the final evaluation period, some indicators in the PDMe still require better definition. Difficulties were observed in gathering data about these indicators in the final evaluation and/or by the end of the project. One of the reasons was the insufficient interval between the implementation of activity 2.2 and project termination.

Thus, the socioeconomic study would have to be carried out by the Brazilian party (CPATU/EMBRAPA) in 2008, with a pre-established and implemented baseline in 2003.

(ii) On the achievement of indicators for the verification of project purpose:

Given the insufficient time, one research study will be carried out in 2008 by the Brazilian counterpart (EMBRAPA). These results will allow the evaluation of the achievement of the project purpose.

The degree of achievement of the project purpose was not mentioned in the final evaluation.

The evaluators recommended monitoring of the acceptance by small producers of (i) enlarging of the cultivation of black pepper using the “live stake” system, and (ii) integrated systems of *cupuassu*, using banana as a method leading to “provisory shadow.”

(iii) Results partially achieved by the project:

Even though some activities were found to present certain delays, the committee recognizes that these activities will have to be concluded by EMBRAPA, even after the end of the technical cooperation with JICA, in order to achieve the project purpose. This commitment will ensure that the project can be considered satisfactory at its conclusion, according to the planning records.

In general, the project has achieved its expected initial results. The necessary conditions for the evaluation of the degree of achievement of the purpose and overall goal were not obtained. Besides the short deadline, the evaluation difficulties were also caused by the lack of data and information on monitoring during project execution

Chapter 3 - Project Achievements

3.1 - Project Implementation Framework

The project was implemented by CPATU, especially through its research and development unit, with the support of CPATU experimental areas in Pará, more specifically in Tomé Açu.

The current administrative and institutional framework of CPATU remains similar to what was in place during project execution, but a communication and business coordinating group was recently created. Enclosed please find the organizational chart.

The center has an external advisory board chaired by EMBRAPA's executive director, having as co-chair the general coordinator of CPATU. Nine institutions of relevance to the agricultural development of the state of Pará are members of this board.

Some modifications were introduced at the center and at EMBRAPA between 2004 and 2007. They are related to institutional needs for adaptation to new scenarios in the development process in the field of agriculture and cattle ranching in Brazil. These changes reflected the guidelines of the Pluriannual Action Plan (PPA) of the Federal Government for the 2004-2007, in the first term of office of President Luis Inácio Lula da Silva (2003/2006).

Within CPATU, a master plan for the center was drawn up and new guidelines were established, according to which research and projects should have financial resources ensured by other sources or by the federal treasury. This issue strongly affected follow-up on implemented activities or those not yet concluded by the CPATU/JICA project, due to the lack of the center's own resources.

Given this new scenario, technical researchers could no longer count on external (Japanese) resources for the follow-up of activities started through the cooperation. As a result, technical researchers started to concentrate their efforts on research that had domestic funding previously ensured or to seek subsidiary support by using external sources allowing the common utilization of funds, as such as that involving similar themes, field work or follow-up of experiments.

Due to the lack of coordination for project continuity, each technical researcher has been responsible for the development of cooperative initiatives. The continuity of action has depended on the proactive initiative of individual researchers, with the support of the center managers. Furthermore, it has also relied on a process of partnership with other actors in the experimental areas, especially in Tomé Açu.

The CPATU has around 510 staff members, spread around Belém and nine other experimental centers. It has 30 specialized technical personnel, 360 assistants and 123 researchers. Currently, out of the 29 researchers who worked in the project (1999-2003), about seven were retired and five had transferred to graduate school. Thus, 17 specialized researchers (50%) still remained in the research field.

The center has eight laboratories that support project research and development, as well as making it possible to provide consultancy activities to private enterprises, NGO's and rural producers. The lab's infrastructure has supported the continuation of project activities.

The experimental center in Tomé Açu has played an important role in the continuation of activities since it was established in five project demonstration areas in that municipality. This center has assured technical follow-up of experiments and promoted partnership actions with the decentralized local offices of EMATER, CEPLAC and rural cooperatives.

By 2004-2006, project implementation structure for the "**Agricultural Research Component**" included technical resources, infrastructure and the institutional participation of CPATU-Belém and the experimental center in Tomé Açu. For the "**Technological Dissemination and Training Component**," the project had the technical support of EMATER,

CEPLAC, the Municipal Agriculture Secretariat and the Mixed Agricultural Cooperative in Tomé Açu (CAMTA), as well as ACTA.

Also identified among the participants in project implementation in Tomé Açu were the local offices of Banco do Brasil and the Banco da Amazônia, which are among the main financial agents of agricultural production for small-scale farmers.

In addition, five experimental fields were implemented during 1999-2003 to promote better conditions for execution of project initiatives, such as (i) cultivation of black pepper with live stakes, (ii) cultivation of cupuassu trees and (iii) mixed plantating of fruit trees with cupuassu trees.

At the same time, the project selected target properties of up to five producers with a Japanese-Brazilian background or from the region (local small-scale farmers). In 2003, the project selected a group of the 36 small-scale farmers in Tomé Açu, in order to facilitate follow-up and monitoring actions of expected results and effects.

A certain decline in operational, financial and technical conditions for implementation of the project after its termination (2003) brought certain negative consequences at the level of achievement of results during the project continuity period (2004-2006).

3.2 – Project Achievements

Project achievements may be presented along three main axes for the purpose of this evaluation:

- (i) technical strengthening in the field of research and development projects;
- (ii) strengthening of initiatives related to technology transfer to the small farmers in the pilot areas; and
- (iii) strengthening of sustainable productive systems adapted to local conditions and harmonized with the environment context.

As listed in the terminal evaluation report, the **main project results** partially achieved by 2003 are presented below.

(1) Of the 44 project initiatives on research and experimentation, around 40% were concluded and 30% were about to be concluded. Thus, 30% were not implemented by the project.

The following results stand out.

- (i) New clones of black pepper and cupuaçu were identified; for other fruits the results will only be available after 4 or 5 years.
 - (ii) Grafts were selected for the development of technology for the reduction of grafts for cupuaçu and graviola trees, which are still to be developed.
 - (iii) A fungicide was selected for control of “witches’ broom” in cupuaçu trees.
 - (iv) Verification of the efficacy of the clone for fusariose control in black pepper cultivation, which will later be field tested.
 - (v) The cultivation of black pepper with live stakes for small producers was almost completely developed, and is to be transferred in the future.
 - (vi) The system of sustainable production, with the mixed cultivation of tropical fruits and black pepper by small producers, is in its final phase of development.
 - (vii) Sample areas were established for experimentation, as well as for training courses.
- (2) Ten manuals and reports on the findings of project research were published.
- (3) The formal training of 13 researchers at the center in Japan, who are still working in this field in research and development projects at the center.
- (4) The active participation of Japanese experts (short and long-term) in the center allowed the training of Brazilian professionals, with technology transfer, in areas of relevance to the center; indirectly, other institutions and rural producers benefited from this initiative as well.

(5) The dissemination of knowledge and development of technologies generated by the project for each of the six activities (subprojects) allowed the publication and/or presentation in national or international seminars of 152 studies.

(6) The strengthening of installed capacity in the center's laboratories and the equipment for support of the research.

(7) The strengthening of the eastern Amazon center as a national and international center of excellence in the issues of research supported by the project.

(8) The project provided more visibility to the center among small producers and associations of rural producers in Pará and throughout the Amazon region.

(9) To a certain degree, the center has been playing a relevant role in the dissemination of agroforestry systems among small-scale producers and farmers' associations, expanding opportunities for reduction of deforestation and for sustainable development in the Amazon region.

A group of **nine recommendations were made** by the final evaluation mission, such as to conclude the experiments and initiatives of the project plan, execute socioeconomic studies to evaluate impacts, and ensure the participation of public officials in the technology transfer.

The mission also recognized that EMBRAPA did not have the organizational structure and institutional mandate to carry out activities of a systematic rural extension program. CPATU was responsible for the execution of research programs and the dissemination of findings to other stakeholders. EMATER and CEPLAC had institutional competencies to provide technical assistance programs to rural farmers.

As suggested by intermediate mission, CPATU carried out a socioeconomic study of small-scale producers, in August 2003. This study was only published at the end of 2005, and will be considered a baseline for the follow-up study of outcomes and initial effects following project termination, to be done by 2009.

Due to the fact that the experiments in the selected small-scale farmer's properties were implemented in 12 to 18 months, just before project termination in late 2003, only preliminary findings for certain activities were forthcoming.

In order to be approved by CPATU, several experiments should have continued for 5 to 8 years. The following examples, and others evaluated in 2003, illustrate the need for follow-up of the research, in order to reach final technical conclusions or to introduce new factors for reestablishment of the experiments.

(i) By 2002, the new black pepper clones selected for increasing plantation productivity had been tested in producers' areas, and it was found that some clones are susceptible to fusariosis disease after four years. It was found that the clones presented symptoms of virus, although there was no fusariosis in the initial period. Therefore, the local department of the Ministry of Agriculture did not approve the new clones.

(ii) By 2003, some experiments with black pepper involving more appropriate grafts to control organic decomposition of roots had presented difficulties due to the low effectiveness of the grafts, associated with the high level of unconformity between grafts rack and grafts.

3.3 - The Present Project Situation (2004-2006)

The project was conceived with an excessive number of activities, according to the intermediate evaluation in 2002 and final evaluation in 2003. During its implementation few modifications were made, adapting the project to the needs of technical and institutional strengthening of the center.

After project termination, CPATU tried to continue with some research activities, experiments and agreements to transfer technology to small-scale farmers and other stakeholders in the sector.

In the past five years, the CPATU budget faced financial difficulties, just as it had during project implementation, with the same level of funding for costs and investment expenditures. Certain new institutional and operational orientations introduced at EMBRAPA fomented **(i)** an increase in institutional financing of priority areas for research; and **(ii)** assurance of additional funding from other sources.

According to 90% of the specialized technical personnel interviewed, the lack of resources from the Japanese cooperation for continuation of project activities should be considered a main restriction on the accomplishment of initial impacts and the sustainability of project initiatives. CPATU was expecting the approval of a new Japanese technical cooperation project, to be implemented in 2005-2009. The new follow-up project would be useful for completing the activities.

The specialized researchers at the center remained more committed to fundraising to continue their research projects, among which some project research lines could be identified. Between 2004 and 2006, Thirty thousand U.S. dollars in grants were provided to develop three black pepper projects. This amount was evaluated as very low in comparison to the funding needed for project continuity.

In the interviews, it was noted that in many cases conclusive findings of technical research related to certain problems faced by small producers in Tomé Açu had still not been obtained by CPATU. This is due, for instance, to a lack of permanent follow-up on research, difficulties faced in experiments that were not dealt with in new ones, and the small number of laboratory experiments applied in the field.

Currently, of the 29 researchers that took part in the project, 17 are still working at CPATU. The renovation of staff at the center has occurred due to retirement and civil service examinations. Therefore, specialized researchers who will retire were already transferring knowledge to the new staff.

Since 2004, project continuity has lacked the active participation of a general coordination. The follow-up initiatives were therefore under the responsibility of technical researchers at the research and development unit at CPATU.

A post-evaluation PDM is enclosed, showing the current stage of research and experiments undertaken by the project between 2004 and 2006. Analysis of the evaluation matrix of project achievements after project termination shows the following progress.

(i) Of the 44 agreed upon activities in the project development plan, 37 were related to the achievement of Output 1 (research and development); 7 supported the achievement of Output 2 (knowledge and technology transfer).

(ii) Of the 37 activities related to research and development, approximately 12 were considered to have been concluded; 13 were still underway and 12 had not been concluded, for several reasons.

- Approximately 8 research activities previously implemented were not concluded until October 2006, due to lack of the time required for final recommendations and validation for implementation of technology transfer in a large scale process. These activities are still in the phase of follow-up or data gathering for final analysis.
- Five activities have new funding raised by the researchers in 2006; three of them are supporting black pepper-related activities.
- Four could not be concluded, due to the contamination of samples at the CPATU laboratory, and were not reestablished.
- The twelve other research studies were discontinued, due to a lack of financial and human resources for fieldwork.

Thus 30% of the research and development activities were not continued, mainly due to lack of **(a)** human resources; **(b)** an entomologist; and **(c)** funding for fuel, per diems and experimental inputs.

Compared with the 2003 evaluation findings, CPATU now shows almost the same percentage (30%) of activities of the project (which lasted from 1999 to 2003) not concluded. This post evaluation percentage should really be higher, since at the time of the terminal evaluation (2003) there were expectations of completion, in the short term, of about 50% of the activities.

This percentage would increase to 60% by 2006 if the group of 13 non-concluded activities were also taken into account. For this group of 13 activities still being carried out, it was not possible for CPATU to indicate a date of expected conclusion.

On the other hand, about 30% of the project's activities were almost concluded in the period from 2004 to 2006. The researchers estimated that 3 to 5 years would be still needed for the validation of experiments yet underway. To be sure, EMBRAPA had already published studies and presented partial results of this research in congresses and seminars, disseminated findings to other technical centers, and made them available on the center's website.

As regards the black pepper clones identified by 2003, it was noted that small farmers are adopting the practice of using different species in the cultivation plots. This would permit a reduction of risk of contamination by diseases caused by black pepper cultivation. With regard to the mixed cultivation systems of perennial and temporary cultivation, there was important progress in this period.

Of the six activities started via the cooperation and related to the achievement of **Output 2** (Technology Transfer), three were concluded and two are underway; a new socioeconomic research study will be done in 2008-2009.

The follow-up on the introduction of "live stakes" in the cultivation of black pepper has been carried out by CPATU technical personnel, in particular as regards *Gliciridia sepium*. There are still problems in providing seedlings. This new "live stake" system with *Gliciridia* was widely diffused through manuals made available on the Internet and disseminated among numerous stakeholders.

EMATER, the state and municipal agricultural secretariats, CAMTA, environmental NGO's (POEMA) and producers' associations have promoted technical visits on the part of small producers from other municipalities and regions in Pará to the pilot properties and experimental fields in Tomé Açu.

These stakeholders mentioned that feedback from small-scale farmers has been quite positive, and that they have showed interest in using agro-forestry systems implemented in Tomé Açu, especially in view of the benefits of (i) alternatives for increasing annual family income and (ii) the low cost of acquisition of live stakes compared with the cost of new dead stakes in the southern region of Pará.

EMBRAPA has been using these pilot areas of Tomé Açu for the dissemination of this system, in particular to professionals who work at its centers in the Amazon region. It has also carried out meetings and events to promote dissemination of the system among producers in the region, although with less intensity after 2003.

CPATU still maintains close contact in Tomé Açu with local authorities and other stakeholders working in agricultural production. According to information provided by CAMTA, the cooperative has the permanent support of the CPATU technical personnel in issues related to different conditions of cultivation and planting.

The activities related to the development of sustainable production systems were implemented between 1999 and 2003. In that period, approximately nine systems of mixed cultivation of tropical fruits and two with black pepper (with live stake) plus tropical fruits or timber were selected. Between 2004 and 2006, a certain degree of monitoring of results of project implementation has been conducted in the pilot areas, with regard to (i) agro-forestry systems, (ii) mixed cultivation of tropical fruits, and (iii) activities aimed at the dissemination of black pepper technologies derived from the research.

Through the visits and interviews, it was discovered that the CPATU specialized researchers have been continuing with the follow-up of tests in the pilot areas with selected small-scale farmers of Tomé Açu.

These professionals mentioned that it was not possible to launch a final validation of black pepper mixed cultivation with selected fruits, due to the short period between the implementation of experiments and cultivation periods. The same situation could be seen in other agro-forestry systems of tropical fruit cultivation (e.g. productivity of fruits, distribution of production of different clones, growth and level of shadow of tree species).

The center's technical personnel considered that they might have more conclusive recommendations for the validation of these experiments in the coming three to five years. After this period of evaluation of results and certification, the process of production, distribution and interchange of findings on selected fruits and black pepper is to be initiated, promoting an increasing level of impact.

Nonetheless, certain preliminary results of the mixed systems for the production of selected tropical fruits or black pepper have been considered generally positive, and have been disseminated among small producers and extensionists. history of previous successful experiences with agro-forestry systems (SAF's) in the properties of producers in Tomé-Açu. That previous experience has been an important support to CPATU in collaboration in research and technology transfer, with the special participation of CAMTA (the Area of Technical Assistance and of Members) and of the Secretary of Agriculture in Tomé Açu, Mr. Michinori Konagano.

The difficulties faced by the center in keeping up with the monitoring of experiments are causing significant delays in the technical validation of findings. Another consequence of this delay may be perceived in the reduced scale of production of those cultures and selected clones for distribution and trade among small and medium producers in the region.

Another result to be achieved under Output 2 refers to proposing solutions to the existing socioeconomic problems in the process of technology transfer for sustainable agriculture among small producers in the pilot areas of Tomé Açu. Conclusive studies and proposed solutions, based on the socio-economic research previously carried out, have not yet been provided by CPATU and the other partners.

The technology transfer activities showed important delays vis-à-vis commitments previously made with the center at the time of the final project evaluation report. As regards the broader dissemination of project results, the relevant contribution of the Japanese-Brazilian experience, among other regions of the Amazon, in the use of agro-forestry systems as one alternative for the sustainable development of communities in the eastern region, was stressed.

It was mentioned by the center that "even though the agriculture carried out by Japanese-Brazilian producers is not suitable for replication throughout the Amazon, at least its principles are valid and important, and can be adapted in other places of the region."

3.3.1 - Summary of the Current Project Situation:

- CPATU provides for the continuity of a reduced set of activities that were started through the cooperation, as long as the conditions of technical, operational and financial resources are existent and favorable.
- During visits to five pilot properties and interviews with producers in the Quatro Bocas district (Tomé Açu), it was noted that the sample areas have been implemented and are being monitored by CPATU technical personnel (from headquarters and from the experimental area in Tomé Açu).

- The dissemination and increase in the use of several types of SAF's by the small producers in the region depends not only on the findings of research and experiments carried out by CPATU, but also on collaboration with other institutions working in rural extension.
- These initiatives are the result of the work of several governmental and nongovernmental stakeholders involved in the systems of supply and production financing, capacity-building and technical assistance to rural producers, as well as support for trade and produce distribution and areas related to the implementation of infrastructure and basic services for education, health, sanitation, energy, communications and transport.
- CPATU has made efforts to disseminate the findings of cooperation-supported research among several governmental and nongovernmental agencies, research associations and universities. However, the effectiveness of these initiatives is limited by a lack of conclusive findings showing relevant variables, indicators and processes, as well as of evaluation and monitoring of the impacts and results of field research.
- The center considers that the several types of SAF's for the Amazon will result in the adaptation of the typologies to the conditions of different regions and communities, as well as to the market demands for certain products.
- The varied solutions to be adopted in the agro-forestry systems in the different municipalities of Pará and Amazonas would require intensive decentralization of technical assistance and training of producers at the local level.
- Difficulties in implementing Output 2 are undermining the achievement of conclusive results and the dissemination of project outcomes to other areas of Pará.
- The municipal agriculture office in Tomé Açu and the technical assistance service at CAMTA have been following the partial results of the research on fruit trees, black pepper and agro-forestry systems.
- The researchers mentioned their financial and technical difficulties in keeping up with scientific experiments, as well as in the production of seedlings.

Chapter 4 - Evaluation Findings

4.1 – project Impact

As a means to assess project results following termination, the Project Evaluation Matrix was used, with emphasis on the criteria of impact and sustainability.

4.1.1 – Impact at the Overall Goal Level

Overall goal:

To develop sustainable agricultural technologies appropriate to the eastern Amazon.

Indicator 1: *By 2009, a 5% or greater increase, within the pilot areas, in the number of plants or species cultivated following project guidelines, different from those traditionally cultivated by small producers living in these areas.*

Indicator 2: *By 2009, a 5% or greater increase, within the pilot areas and with project support, in area cultivated with tested sustainable production systems different from those traditionally used by small producers living in these areas.*

Three years after project termination, the achievement of the overall goal is still being monitored by CPATU, with regard to the results of experiments in properties in Tomé Açu.

As previously mentioned, CPATU researchers still did not consider some research to have been validated as yet. Aside from that, one particular group of research activities was considered to have been concluded, and is being disseminated by the center researchers, among small producers and other relevant partners in Tomé Açu.

Even though the socioeconomic research with 36 producers had been done in Tomé Açu by 2003-2004, there was no annual monitoring of this pilot group. The center mentioned that it would do new research with the same producers in 2009, in order to obtain comparative data on the evolution of the same issues studied in 2003-2004.

Similar research was not carried out by the center in other municipalities of Pará state. Thus, there are no statistical data or indirect information on project impact in these places or in the state as a whole. The available data would not permit assessment of the degree of contribution or participation of the project in the following variables: cultivated area, volume of plant or species production, and average productivity or value of rural production.

Due to the constraints of time, resources and viability of this post-evaluation, the data available on the pilot area in Tomé Açu were analyzed, and complemented by interviews. As a means to support this post-evaluation, specific interviews were done with three types of project participants, during the months of October and November 2006, in Tomé Açu and Belém.

Studies carried out by institutions and information provided by relevant project partners indicated that this cooperation is playing an important role in the achievement of the overall goal in the coming years.

The findings confirm the likelihood of expansion of the use of this system, adapted to local conditions, by small producers in the region of Tomé Açu in the near future.

In other areas of Pará state, such as Castanhal and Santa Isabel, the interest in the use of this system showed during visits by small producers to Tomé Açu suggests that the likelihood of success will be higher in any future replication of the experience. There are no statistical data available on the use of SAF's in the municipalities of Pará in 1999-2003, but researchers report that there are already examples of use by small producers in those locations.

As regards mixed production systems adapted to the local context, it was observed that small producers in the pilot area of Tomé Açu are increasing the use of different crop combinations, based on nine systems previously selected by the project (1999). The research carried out by CPATU found at least 30 different mixed cultivations being used by small producers in Tomé Açu. In 2006, research confirmed that some cultivation was still underway in the pilot area.

As regards the cultivation of black pepper with live stakes, it was noted that there was an increase in this practice in the pilot properties, as well as in small producers' properties around the project area. There was an 80% increase in acceptance of use of mixed cultivation by producers not taking part in the project. The team predicts that there will be a high likelihood of use of agro-forestry systems in Tomé Açu and other pilot areas in Pará in the coming years.

As for the research on the four new species of black pepper, they have been used by small producers in pilot properties and other properties in Tomé Açu. CPATU and CAMTA follow the development of such cultivation on the properties, with the aim of monitoring improvements introduced by producers with respect to the new species. It is expected that conclusive recommendations from CPATU on these experiments may be forthcoming by 2009. At that point, proceedings on the certification of research findings might get underway.

The production and trade on a larger scale of new species by other organizations and the private sector is planned to begin in 2009, increasing the likelihood of achievement of the overall project goal. Currently, the experimental field in Quatro Bocas district is selling clones of assai and cupuassu, on a small-scale, with the price of cupuassu oscillating between R\$ 3,50 and R\$ 4,50.

The reduction in the activities of rural extension carried out by various public agencies in the pilot area between 2004 and 2006 caused a decrease in short term effects related to dissemination and technology transfer initiatives.

Through cross-checking of information, it was possible to confirm that between 2004 and 2006, the small producers interviewed (those who had taken part in the project) expanded, on the average, more than 3% of their cultivated area, with agro-forestry systems adapted to local conditions (consortium planting).

These producers, in the pilot area in Tomé Açu, incorporated into their properties around 3% of new species generated by the project, with the introduction of management orientation by agents involved in the project or producers from the region.

They also considered that the species and agro-forestry systems are adapted to the local conditions, and that they are capable of being disseminated and spread to other regions in Pará.

It was noted that the initial effects are persisting to a certain degree. Up until 2006, the short-term project impacts may be considered to have been achieved, to a moderate degree, in the pilot area in Tomé Açu.

These initial effects have begun to be noted, to different degrees of intensity, by the different types of small producers, depending on their conditions of access to systems of production, transport and trade. Medium-term impacts on sustainable development in the eastern Amazon region and the properties in the pilot areas could be increased in the coming years, through joint action of relevant partners with regard to (i) initiatives in environmental education and awareness raising, and (ii) support for the drafting of management and business plans for improved administration of the small producers' properties.

Any increase in short-term positive impacts will require the participation of other governmental and non-governmental organizations working with public policies on financing and agrarian development adapted to the stage of production capitalization of the small producers.

The establishment by public agencies of more favorable conditions for rural development will support the decision-making process – of each producer on his own property

or of small producers' associations – with regard to the behavioral and cultural changes needed for adoption of new technologies for sustainable agriculture.

In 2009, CPATU plans to do new research in the pilot area in Tomé Açu, in order to consolidate the evaluation of the impacts of its activities. However, it is recommended that two new pilot areas in Pará (Castanhal and Santa Isabel) be included in this study, for comparative purposes, in view of the lesser degree of influence of Japanese-Brazilian producers there.

The project outcomes concerning capacity building and dissemination of knowledge to internal and external research professionals at EMBRAPA are still being pursued by CPATU.

According to the PDM indicators, the project's overall goal should be achieved in 2009, provided all research and technology transfer activities had been concluded by the end of 2004.

The PDME indicators considered appropriate, for the period from 1999 to 2009, a 5% increase in (i) the land cultivated by small producers in the pilot area with tested sustainable systems, based on project advice; and (ii) the number of plants and species cultivated by small producers in the pilot areas.

Through interviews and visits to the pilot area in Tomé Açu, it was found that achievement of these indicators was up to 3% in 2006. Thus, the CPATU initiatives carried are partially contributing to the achievement, to some degree, of the overall goal of the project.

The level of achievement of the overall goal would be better evaluated in the coming years, through the replication of the Tomé Açu experience in at least other 2 or 3 other pilot areas in Pará, where there is not a strong influence of Japanese culture and settlement.

There will be a moderate likelihood of achievement of medium-term project impacts, as long this institution is able to ensure a greater number of researchers and resources for the conclusion of project research and development in Tomé Açu and other pilot areas in Pará state.

4.1.2 – Impact at the Purpose Level

Project Purpose:

Technologies for sustainable agriculture involving selected fruits and black pepper developed by the project in the pilot areas in Pará state, with adaptation to local conditions.

Indicator 1: By 2006, a 3% or greater increase, within the pilot areas, in the number of plants or species cultivated with the project's technical support, different from those traditionally cultivated by small producers living in these areas.

Indicator 2: By 2006, a 3% or greater increase, within the pilot areas and with project technical support, in area cultivated with tested production systems different from those traditionally used by small producers living in these areas.

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

As a means to support this post-evaluation, in October and November 2006 specific interviews were conducted in Tomé Açu and Belém, with project participants of the following three types.

(i) The first group consisted of 16 CPATU researchers in Belém and Tomé Açu; 3 members of the CPATU Advisory Committee (BASA, AMAZON and the Federal University of Pará/POEMA), and 4 EMATER-Belém technical personnel and 2 SEAGRI/Pará technical personnel.

(ii) The second group consisted of 4 producers from neighboring properties and 4 small producers not included in the original project, 4 producers included in the original project, and 3 producers of Japanese-Brazilian background living in districts of Tomé Açu.

(iii) The third group consisted of 3 CMATA managers and 1 CMATA technical assistance professional, 1 ACTA manager, 1 EMATER-Tomé Açu technician, 1 CEPLAC technician, and 1 manager at the Municipal Secretariat of Agriculture in Tomé Açu.

Through visits to the pilot properties, and interviews with EMATER, CEPLAC, the Municipal Secretariat of Agriculture, CAMTA and small producers in Tomé Açu, it was observed that

(i) in new areas of cultivation of black pepper, producers in the pilot areas are using the live stake system with *Gliciridia*; they continue the use of dead stakes on existing plots, due to the longevity of these stakes – which allows reuse;

(ii) 80% of the small producers not belonging to the pilot areas showed interest in using the live stakes systems, but mentioned the need for the support of rural extension technical personnel for that to occur, as well as financial support for the acquisition of seedlings and soil treatment;

(iii) 90% of the small producers living in the buffer zones or neighboring areas – who are landowners and do know the system, since they do seasonal or temporary work for Japanese-Brazilian producers – are using or are willing to use live stakes instead of dead stakes on their properties.

In the interviews and visits, it was stated that between 2004 and 2005 the small producers interviewed (who had taken part in the project) had expanded, on the average, more than 3% of the cultivated area with agro-forestry systems adapted to local conditions. These producers in the pilot area in Tomé Açu incorporated into their properties, on the average, around 3% of new species generated by the project, with the introduction of management by relevant project partners or producers in the region.

Through interviews with producers (who had not taken part in the project), it was found that 50% had expanded, on the average, more the 3% of the cultivated area with agro-forestry systems adapted to local conditions. These producers introduced around 3% of new species generated by the project, within the management system used by relevant project partners or other local producers in the region.

Among small producers (from the neighborhood or not) who had not taken part in the project, there is strong willingness to start to use SAF's, provided they receive training support and regular technical assistance.

The results and short term outcomes achieved in Tomé Açu (1999-2006) were rather important for the evaluation of achievement of the project purpose, considering that some research activities had not been concluded and there was limited support by rural extension agencies to small producers. Both governmental and non-governmental organizations mentioned that the existence of sample areas for awareness-raising among small producers of black pepper in Pará, as regards the importance of the use of the live stakes system, was very relevant.

The achievement of the purpose received some contributions from CPATU, but still depends on actions external to the project, implemented through other governmental institutions. These actions increase or decrease the impacts brought about by the center in the pilot areas, through financial support, warehousing, industrialization, trade, and basic infrastructure services.

Important support for the continuity of short-term project purpose outcomes in this pilot area included, for instance,

(i) the establishment of small experimental areas in selected properties;

(ii) the “sample effect” of sustainable uses for the production of fruits and black pepper;

(iii) the establishment of venues for training other producers in agro-forestry systems;

(iv) the level of validation of mixed cultivation processes and new cultivation and clones; and

(v) space for cost and productivity monitoring.

According to the PDMe indicators, the achievement of the project purpose should have occurred around 2004. However, more than 40% of the research and technology transfer activities had not yet been concluded by the end of 2004.

The PDMe indicators considered appropriate, for the 1999-2006 period, a concomitant increase of 3% in the pilot areas for the following: (i) area cultivated by small producers with tested sustainable production systems, through the project's technical support; and (ii) number of plants or species cultivated by small producers.

The results obtained through interviews and visits to the pilot area in Tomé Açu showed that these two indicators had been achieved, up to 3%, in 2006. Therefore, initiatives taken by CPATU have been partially contributing to the final achievement of the project purpose.

The level of achievement of the project purpose and its impacts will also be better evaluated in the coming years, through the replication of this Tomé Açu experience in at least two or three other pilot areas in Pará without the strong influence of Japanese-Brazilian community culture.

Specialized research at CPATU indicated that medium-term project impacts could be achieved and certainly expanded after the conclusion of certain activities and new arrangements to implement technical assistance programs, in order to ensure the transfer of sustainable agricultural technologies to the final project beneficiaries.

The evaluation team considered partially satisfactory achievement of the project purpose to be likely, in view of the initial results obtained from technology transfer to the pilot area in Tomé Açu, as well as from the activities and outcomes concluded.

The lack of up to date available data comparing the initial results and effects achieved in Tomé Açu with other pilot areas in Pará made it impossible to assess the level of achievement of the purpose in the other proposed pilot areas.

Such comparison is pertinent, due to the fact that Tomé Açu has been using SAF's for the past thirty years. The monitoring and evaluation of other pilot areas without this system practice should provide better results for the validation of impacts and results achieved in Pará state in the coming years.

4.1.3 – Impacts not anticipated at project termination

Non-anticipated impacts were not identified at project termination.

4.1.4 – Impacts of project effects

The project is contributing to the implementation of national and regional policies for the Amazon on the reduction of biodiversity loss and recovery of degraded areas through greater use of agro-forestry systems.

The findings and short term outcomes of research and experiments in the pilot area in Tomé Açu have been providing a certain degree of dissemination of knowledge and successful experiments on sustainable agriculture to the small producers in the region and other professionals in the field.

According to interviews carried out with several stakeholders, the change from traditional rural production, strongly based on monoculture, to mixed cultivation systems of plants and species adapted to local conditions, may well bring more sustainability to the small producers in the region in the medium or long term.

The research concluded to date on cupuassu and black pepper clones has produced species more resistant to diseases and plagues, adapted to the soil characteristics of tropical regions such as Pará and the Amazon. Some small producers are using these clones and seedlings on their properties, with little follow-up by researchers from EMBRAPA and extensionists from EMATER.

An important role has been played by CAMTA, the Municipal Agricultural Secretariat in Tomé Açu and Japanese-Brazilian producers, as regards the continuity of initial project

outcomes, through the donation of seedlings, supporting inputs, and orientation for the management of small properties.

The production of black pepper with live stake “Gliciridia” indicates a high likelihood of expansion of its use by small producers in other areas in Pará. This has been proven through visits to project experimental fields and pilot properties.

CPATU has promoted the dissemination of information on management plans for improved productivity of certain tropical fruits in mixed cultivation, with reduction of environmental impacts and promotion of social and economic benefits, with a view to greater sustainability for small producers.

The fact that 30% of the research had not been concluded, and 30% of the experiments from 1999-2006 had not been continued, has resulted in a decrease in short and medium-term expected project impacts. The technical and budgetary difficulties faced by CPATU resulted in a scenario of little continuity of initiatives, reflected in the reduced follow-up of experiences in the pilot areas in Tomé Açu and technical support to small producers.

The lack of monitoring and evaluation of the project after its termination exacerbated the difficulties involved in identifying not only medium-term impacts but also corrective measures adopted by CPATU when continuing with these initiatives in the 2004-2006 period.

The establishment of a socioeconomic baseline (2003) for the evaluation of project impacts by 2009, with 36 producers in the pilot area in Tomé Açu, will provide a reasonable response on project impacts. Actions aiming at greater dissemination of progress on project issues could be carried out after 2008-2009, as soon as conclusive findings are obtained from the experiments implemented in the pilot area.

The indicators of achievement of the purpose outcomes and the overall project goal, as concerns the pilot area in Tomé Açu, may be considered to have been only partially achieved, since a considerable number of activities were not concluded and some research is still to be monitored through 2008-2009.

It should be stressed that a number of external factors influenced the adoption of certain findings of research and experiments conducted through the cooperation. Among these factors, the following should be mentioned: public financial support, technical assistance services, the producers’ stage of capitalization, the demand for certain products, and market prices.

To a certain degree, it may be stated that the short term project outcomes are likely to be maintained in the coming years, as long as increased technical and financial resources are guaranteed by CPATU for the conclusion of current initiatives.

Furthermore, in the short term, the center is to strive to ensure greater participation of governmental and non-governmental organizations in the provision of technical assistance to small producers in Tomé Açu. Actions aiming at greater dissemination of progress on project issues may be conducted after 2008-2009, as soon as conclusive results are obtained on the experiments implemented in the pilot area

The impacts of project outcomes should increase over the coming years, due to the recent adoption of the Sustainable Amazon Plan (2007-2015) and the multiplication of results and examples of pilot projects for the sustainable development of communities in the Amazon fomented by the PPG-7.

The evaluation of project impacts should be carried out by CPATU in 2009, according to commitments agreed upon by the end of the cooperation.

4.2 Sustainability.

4.2.1 – Technical Aspects

The project schedule was implemented with minor or important delays involving 60% of planned activities for 2004-2006, such as research on cultivation and data gathering on productivity in experimental areas and pilot properties.

Certain activities concerning field experiments will only yield conclusive recommendations around 2008-2009; it is expected that technical and operational difficulties in the monitoring and evaluation of the pilot areas will remain.

Data were not made available on monitoring and evaluation of the application of research and experiments in other experimental areas in Pará, which could increase the technical validation of the results achieved in the Tome Açu area, with the contribution of other pilot areas with different characteristics.

Currently, out of the 29 researchers that took part in the project, 17 are still working at CPATU. Of the 13 professionals trained in Japan, 50% still do research at the center after three years.

Between 2004 and 2006, project follow-up did not have a general coordinator. Thus, it fell to the researchers to take the initiative to continue their activities and produce the outputs.

Although the center does have highly qualified professionals, the lack of budgetary resources and other funding for the activities in 2004-2006 made it impossible to achieve the general conditions required for accomplishment of this aim.

Seventy percent of the CPATU researchers considered that there was no sustainability to project continuity, but 60% stated that there are partial conditions of sustainability (70 – 90%) for the center to do its job in the research field.

The low level of implementation of technology transfer and technical assistance to small producers was given as one of the main technical factors contributing to reduced project effects in the post-evaluation period.

The evaluation team considers that project continuity (2004-2006) presented low sustainability of technical factors, influenced by organizational and financial conditions affecting the institution.

In the medium and long term, there is moderate likelihood that a certain degree of sustainability could be obtained for the follow-up of project results and impacts, provided other public actions in these areas are strengthened in Pará and the Amazon.

4.2.2 – Organizational Aspects

Eighty-five percent of the researchers stated that partial sustainability of conditions of administrative management, human resources and organizational management after project termination was ensured.

The following are examples of factors that lead to the merely partial sustainability achieved in the period: low fundraising orientation for continuation of project actions, administrative difficulties in hiring new professionals, lack of resources for field missions, reduced capacity for replacement of certain parts for imported equipment and laboratory instruments, and limited investment in new, state of the art equipment and labs.

Interviews with small producers and other stakeholders in Tomé Açu indicated low participation of researchers from the center, EMATER and CEPLAC in the dissemination of new technologies and support for the use of new knowledge generated by the project.

Although there is a certain level of cooperation among the various stakeholders in technology transfer in the pilot area, it was noted that the public agencies seemed to have a limited capability to ensure these support services to the producers. These agencies also had insufficient technical, organizational and financial resources to accomplish this aim.

The institutional mandate of the center does not include technical assistance to small farmers. Therefore, there is no tradition or organization at CPATU to undertake actions of this nature. In this institutional context, CAMTA, ACTA and the Municipal Agriculture Secretariat in Tomé Açu played relevant roles in technology transfer and support to producers, whether or not they had participated in the project.

The greater participation of NGO's with experience in technology transfer and technical assistance to small producers was mentioned as one of the elements that could promote greater sustainability of project effects, following its termination. These organizations showed operational advantages and more flexibility for working on these issues, adapting themselves faster to the needs of small producers.

The evaluation team considered that organizational factors related to the design and establishment of the cooperation did not make a very positive contribution to the short term sustainability of the project following termination.

In the medium or long term, the following factors will certainly contribute to improvement of project sustainability: EMBRAPA Western Amazon (Manaus) has become one of the reference centers on SAF's for this region; the participation of CPATU in the Amazon Initiative Regional Project for sustainable development is the second factor.

4.2.3 – Financial Aspects:

In all interviews and meetings held, it was noted that low budgetary resources were an important factor in the decreasing sustainability of project outcomes. In the past five years, only 2.3% of treasury revenues and other EMBRAPA system sources were provided to CPATU. CPATU budgetary resources remained stable between 2001 and 2004, and were increased 10% in 2005 and 20% in 2006.

Of the treasury revenues for CPATU, 90% is for fixed expenditures; of other federal sources, the amount is almost 97%. From 2001 until 2004, 95% of CPATU indirect revenues came from technical assistance.

With the end of technical cooperation with JICA 2004, other sources replaced this amount, but for other projects and research. From other sources, there are new funds for research and services. The center budget is shown below:

In R\$ 1000					
Source/Year	2002	2003	2004	2005	2006
I. Direct Revenues					
Treasury	2212	2015	3939	3570	4560
Other sources	1248	1180	652	1452	1375
Total (i)	3460	3195	4591	5022	5935
II. Indirect Revenues					
Intern. Coop.	5127	5015	3891	161	340
Other sources	226	806	2140	2549	1833
Total (ii)	5353	5821	6031	2690	2173
Total	8813	9016	10622	7712	8108

The resources for the rendering of services on research and development of projects have been increased, through funding linked to projects of development agencies and private companies, but still represent only a small part of the institutional resources.

In the 2004-2006 period, R\$50,000 were ensured for projects related to the continuity of project activities – which was considered very low vis-à-vis existing demands. On the other hand, the public agencies involved in project follow-up had insufficient budgetary resources to fund the actions of technology transfer to small producers.

As regards the small producers themselves, obstacles to the adoption of project findings were identified, due to economic difficulties in attracting investment or making improvements to their properties. These difficulties would be pretty much related to the level of capitalization and debts due to previous rural credit loans, requirements for transportation and trade, low savings capacity, and the need for new investments on the property.

However, the scanty public funding for project follow-up added to difficulties related to the low capitalization of small producers in the pilot area, further aggravating the low degree of sustainability of project outcomes in 2004-2006.

In the short term, if the same conditions prevailing in 2004-2006 are maintained, the trend would be a decrease in project sustainability. Institutional and financial improvements in this scenario would foment a trend toward better sustainability conditions for the project in the near future.

4.2.4 – Political and Systems Aspects:

In the past decade, the increasing relevance of programs for the sustainable development of agriculture in the Amazon region was noted. More efficient instruments were created in order to finance Brazilian small producers (such as PRONAF) and disseminate successful experiences in sustainable community development (such as the pilot projects of the PPG7).

The Sustainable Development Plan for the Amazon (PAS) is likely to play an important role in the policies on recuperation of degraded areas in the region, biodiversity conservation, and the promotion of greater grassroots participation in the sharing of benefits.

Following termination, the project is still in harmony with national agricultural development policy, environmental policy and sustainable development initiatives for the Amazon region.

This relevance of the project has been confirmed by the strategies of the ministries of agriculture and the environment, EMBRAPA, EMATER, CEPLAC, BASA, the Federal University of Pará, Banco do Brasil and other research centers on sustainable development.

However, project results and outcomes will be assimilated in different ways by producers throughout Brazil and in the pilot area. Access to project benefits has, to a certain degree, a relationship with type of producer (family-based, small, medium or large) and their respective stages of capitalization for rural production.

Throughout the history of consolidation of rural production in Brazil, different conditions of access of producers to the benefits of national policies and programs for agricultural development have applied.

Through interviews with small producers in the pilot area, difficulties external to the project were noted, such as scant capacity for saving and investing, limited ability to obtain rural credit loans and limited knowledge of rural property management.

The evaluation team considers that in terms of national rural development policy, favorable conditions for project sustainability were maintained following project termination. In the medium and long term, there is a trend for a political context favorable to the development of sustainable agriculture to persist.

4.2.5 – Social, Cultural and Environmental Aspects:

Small producers in the pilot area, in general, are originally from Pará state, an area not characterized by the national settlement programs (only one project was established there in 2003/2004) and with little participation in cattle ranching activities. Only 20% are in possession of a land title and 40% do have a receipt that proves they bought the property – which makes it difficult to apply for public rural credit programs.

Housing conditions are harsh: 50% do not have electricity and 33% only began to have electricity in the period from 1999 to 2003; 85% do not have toilets in their homes; only 6% have access to running water and 50% use wells.

The illiteracy rate reaches 30%; fully 45% have just 1 to 4 years of primary school. This indicator shows the difficulties facing conventional technology transfer and technical assistance programs for small producers in agricultural projects.

Up to 85% of the local producers had worked as employees for Japanese-Brazilian producers, thus becoming familiar with their modes of production. In this context, the existence of SAF practices and the use of “live stakes” by Japanese-Brazilian producers takes on great importance for the adoption of new technologies by local producers with low level literacy skills. In the pilot area, the Japanese-Brazilian custom of diversification of agricultural production has been an important factor in the sustainability of project outcomes.

Behavioral and cultural changes on the part of small producers, involving the acceptance of project findings, should be considered important factors for the sustainability of the project outcomes in the coming years. Difficulties in previous decades related to administrative and financial management by the Brazilian cooperative movement are, however, another cultural factor that could reduce outcomes.

The tradition of slash and burn agriculture is due in part to a lack of knowledge on the part of small producers with regard to property management planning and environmental education, as well as their limited financial resources to solve urgent health problems and unexpected expenses or debts contracted through financing.

Thus, although the project has shown positive initial results in terms of environmental conservation, it should be noted that Pará is among the states with the highest deforestation rates, as well as the largest degraded areas, in the Amazon region.

Project expansion to other pilot areas in Pará will have to apply planning and implementation strategies different from those employed in Tomé Açu, in view of the lack of consolidated SAF experience and of the rural culture characteristic of the Japanese-Brazilian community.

Hence, project sustainability is more likely to be successful provided other strategies are added to the program to reduce the risks produced by cultural, social and environmental factors affecting small producers in other regions of Pará.

Long term sustainability would be greater if there were a significant increase in the execution of technical assistance programs and financial support for the introduction of SAF's, followed by significant improvement in productive and social infrastructure for small producers in Pará.

4.2.6 – Sustainability of project effects:

For a majority of stakeholders interviewed during the post-evaluation, the relevance and adequacy of the project was maintained in 2004-2006. They confirmed their interest in the continued support of CPATU for follow-up on research in the pilot areas and other properties in Pará.

It was mentioned during the interviews that at the beginning of the current federal administration, the new authorities in the agricultural sector showed special interest in the issue of agribusiness in the Amazon. However, public action for the sustainable development of the Amazon would require integrated planning for the reduction of deforestation and the recuperation of degraded areas.

Due to the characteristics and relevance of the project, interviews pointed out that other national and international sources have been supporting activities in these sectors, maximizing actions carried out by the project – for instance, the Ministry of Agriculture, the Ministry of the Environment, CEPLAC, the Secretariat of Agriculture of Pará, the Amazon Bank, the World Bank, the IADB, KfW and DFID.

In terms of policies for sustainable development in the medium and long term, the likelihood of achieving the sustainability of the initial effects and impacts of the project through the dissemination of new agricultural technologies in the eastern Amazon region may be considered moderate.

The team therefore recommends that in the national context, priority be given to the design of policies and programs which lead to a broadening of the access of family farms to agricultural marketing systems and financial and technical services related to sustainable production systems.

Increasing farmers' access to quality technical assistance services is an issue which requires special attention for medium and long term sustainability. According to the analyses, a large gap in the provision of services has been left following the dismantling of the former public sector programs.

In the short term, PRONAF should give high priority to promoting a range of different technical assistance mechanisms. These may include state technical assistance enterprises, but should also build on the experience of nongovernmental and private service providers as well as that of producer organizations.

Currently rural finance systems depend heavily on directed and subsidized credit programs, to which small-scale farmers have limited access and face transaction costs. Moreover, it should be recognized that credit is not always the most appropriate solution, especially where producers do not have market opportunities or have limited market access.

Development in rural communities also needs to involve better management of land resources, implying a need for strengthening community organizations; the development of stronger linkages between production and markets; and closer collaboration between researchers, extension agents and farmers in the adoption and improvement of sustainable agricultural production systems.

To ensure long-term sustainability, particular emphasis needs to be given to national programs and policies promoting large-scale dissemination of good practices in the Amazon region, through engaging rural farmers in the local testing and adaptation of technological and institutional innovations.

In addition, public managers need to pay attention to reinforcing local organizations which contribute to the horizontal transfer of technology between farmers, as shown by the CPATU project and the PPG-7 demonstration projects.

However, as regards CPATU, given its technical and financial difficulties in concluding 30% of project activities and the fact that 30% were not continued in 2004-2006, 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 findings of experiments and monitoring of the pilot area of Tome' Açu, it is expected that better conditions should be created for continuity of project effects.

Through the interviews carried out with several project stakeholders and beneficiaries, it was found that the percentage of small producers interested in knowing and using SAF's and "live stakes" on their properties has increased.

If CPATU and other public agencies are able to ensure better technical and financial resources in the short term, they may achieve better levels of sustainability of project outcomes and impacts in the medium or long term.

Furthermore, the dissemination of project results in the pilot areas should be expanded, through agricultural technology transfer to new pilot areas with different social and cultural characteristics than those of Tomé Açu.

A greater degree of sustainability of project outcomes would be achieved with more participation of relevant stakeholders in the sector, ensuring conditions for technical assistance, environmental education, productive infrastructure and rural credit. Furthermore, actions aiming at the social development of small farmers in the fields of education, health, housing, sanitation and social welfare – which do not depend on the direct initiative of EMBRAPA/CPATU – could ensure more sustainability of impacts.

To CPATU's difficulties in further project implementation must be added to those structural and circumstantial factors related to Brazilian agriculture, which are outside of project control and have a great capacity to ensure higher levels of sustainability of project results and impacts.

If, in the next four years, the same percentage of the national budget for the center is maintained, not only for cost recovery but also for investment, the original project initiatives will be much more likely to face difficulties with sustainability. Project sustainability will be ensured as long as the national partners are able to ensure political priority for the issues of the National Agenda 2007-2012, promoting an increase in financial and technical resources in the coming years.

The following favorable factors would ensure the continuity of results and effects:

- (i) maintenance of political and budgetary priority for the thematic axis at the federal, state and local levels;
- (ii) an increase in the number of professionals at the relevant partner organizations trained in SAF's, in order to disseminate innovations to new stakeholders at the federal, state and local levels;
- (iii) establishment of partnerships with NGO's and public and private organizations, leading to the multiplication of networks;
- (iv) enhancement of joint actions with the National Program on Agriculture and Sustainable Development, PPA 2007-2012 and the strategic plans for the Amazon region;
- (v) dissemination of project information on its thematic axis;
- (vi) assessment instruments made available for stakeholders;
- (vii) conducting of negotiations with new financing sources and increased synergy;
- (viii) expansion of pilot projects at the local and state levels for the Amazon region.

Considering the relevant actions mentioned for the sustainability of project outcomes and impacts, the possible factors of risk to sustainability are as follows:

- (i) the likelihood of changes in high authorities and strategic managers, due to the recent presidential and state elections;
- (ii) frequent changes related to technical, budgetary and administrative resources;
- (iii) reduced technical staff in some public organizations and their different levels of support;
- (iv) the complexity of inter-institutional coordination of policy and strategy;
- (v) managerial difficulties in the public bureaucracy in cross-cutting issues of sustainable development and agriculture;
- (vi) the complexity of coordination among different levels of government;
- (vii) the irregular annual flow of budgetary resources in the public administration; and

(viii) difficulties with maintenance services for new acquisitions and equipment.

Through the evaluation and interviews, it was estimated that in the coming years, the influential factors required for the maintenance of project effects will have the following probabilities of occurrence.

(i) Support by the top management of the strategic partners: medium low.

(ii) Institutional and legal framework: moderately high.

(iii) Organizational capacity: moderately low.

(iv) Intra-organizational capacity: moderately low.

(v) Inter-organizational capacity: low.

(vi) Availability of financial resources: low.

(vii) Sufficient technical resources: low.

(viii) Beneficiaries' support of the project: high.

(ix) Support from the federal and municipal governments: moderately high.

This classification of low likelihood of project sustainability is based on the following factors.

(i) Certain elements that influence sustainability were not included in the project design, such as general agreements, level of joint actions, coordination and supervision, and possibilities of applying for new resources for the implementation of new demands.

(ii) During post-project execution, certain efforts for continuity were made, but with a dearth of monitoring, fundraising, technical support initiatives and publications.

(iii) After project termination, no formal seminars were held for planning and follow-up with a view to continuity over the coming years.

Implementation of these actions could certainly have led CPATU and EMBRAPA authorities to acquire a better understanding of the institutional, human and financial resources required for project sustainability after 2003.

Chapter 5 - Factors Contributing to Project Effects

5.1 – Factors Promoting Project Effects

The following factors regarding planning and execution played a positive role in the achievement of outcomes and impacts.

5.1.1 – Planning Factors:

The original project design proposed appropriate actions for the achievement of results and effects that were pretty much linked to the thematic axis of scientific research, even though the design presented an excessive number of research projects, considering the limited time for their implementation.

The strategy for project implementation strongly relied on the direct action of CPATU, not involving other levels of dialogue and institutional partnership. The conduct of field research lacked certain project design elements (networking with other stakeholders, support for development of public policies on agriculture and sustainable development, and awareness-raising and training for strategic actors regarding project issues).

As regards project planning, the following favorable factors should be highlighted.

- (a) The national counterpart had already implemented technical cooperation together with JICA, showing excellent technical qualifications and expertise at the national and international levels.
- (b) The participation of short-term and long-term Japanese experts, ensuring transfer of technologies.
- (c) The appropriateness of the diagnosis carried out, in view of existing project demands.
- (d) Selection of experiments in pilot areas with different characteristics, in order to promote the improvement of the project during its execution.

5.1.2 – Implementation Factors:

As regards project implementation, the following positive factors should be stressed.

- (a) Late establishment of follow-up to a given experiment at the local level, promoting a preliminary methodology for the establishment of new experiences in municipalities with different typologies.
- (b) The keeping of institutional records on the implementation of the experiment at the local level.
- (c) Initial dissemination of operational results of the project during congresses and seminars.
- (d) Selection of a first pilot area to concentrate efforts and resources of CPATU, with a greater likelihood of being successful due to the presence of tradition related to project issues.
- (e) Preliminary awareness and training of human resources of the center, strengthening the capabilities of professionals and local stakeholders.
- (f) Initial improvements in the dissemination of information among partners through manuals, the center website, seminars, and meetings with small producers.
- (g) Technical and institutional support for the Japanese-Brazilian producers and their organizations in the follow-up of initiatives in the project's pilot area.

5.2 – Factors inhibiting project effects

5.2.1 – Planning Factors:

The project design and original planning in 1998-1999 were quite ambitious concerning the number of initiatives to be implemented by the project, resulting in difficulties in meeting deadlines and reduced budgetary and human resources for project execution.

The review of the initial plan of activities by the intermediate mission in 2002 retained the excessive amount of research to be conducted, in spite of CPATU's limitations in their execution. The emphasis given in 2002 to the activities of Output 2 – basically not yet executed 18 months before the end of the project – was a significant inhibiting factor for the project's expected results.

Mechanisms for partnership and supervision of the continuity of project research activities were not anticipated; furthermore, in the final phase, no planning of follow-up activities was done. The plans did not anticipate the time required for the following:

- (i) preliminary activities on partnership for the establishment of a network of stakeholders for technology transfer;
- (ii) the joint planning of activities to be carried out with other partners;
- (iii) the formal establishment of networks for dialogue on the pilot experiences; and
- (iv) a certification process for project outputs at the various institutional levels.

In the project proposal, the variables of time, intensity of effort and human and financial resources for the following were somewhat out of synch, vis-à-vis

- (i) the proposal and consolidation of knowledge;
- (ii) methodologies and results-monitoring proceedings; and
- (iii) the process of interchange of lessons learned and good practices of the project and other programs at the national, regional and local levels.

Project planning did not take into consideration the formal participation of NGO's from Pará with relevant experience with rural communities, unions and small producers' associations. NGO participation might have created better conditions for project sustainability, through their capacity for partnerships, flexibility and fundraising from other sources.

The original design did not provide enough financial resources for the Activities 2.1 and 2.2, which were to be implemented after the project termination. It was noted that approximately 95% of the resources of the cooperation were concentrated in research, without much emphasis on the technology transfer to small producers component.

- It was not proposed in the project design to supportive initiatives related to
- (i) formal agreements to ensure the project-related collaboration of relevant institutions;
 - (ii) training actions and awareness-raising on sustainable agriculture issues for public managers;
 - (iii) the socio-environmental awareness of relevant partners, such as rural workers' unions and associations and NGO's;
 - (iv) dissemination of successful experiences for implementation in other municipalities;
 - (v) implementation of different levels of stakeholder participation in post-termination project monitoring;
 - (vi) endorsement for public managers for the introduction of project issues in public policy on sustainable development, the environment and social inclusion; and
 - (vii) establishment of formal networks for dialogue, coordination and planning among relevant partners.

5.2.2 - Factors Related to Execution:

The factors that inhibited the achievement of results, impacts and sustainability were as follows:

- (i)** shortages of budgetary and technical resources for the continuity of research and technology transfer;
- (ii)** a dearth of follow-up of actions on internal and external coordination with other relevant partners;
- (iii)** lack of formal partnership instruments for continuity of project activities;
- (iv)** limited proactive fundraising initiatives aimed at other sources of financing;
- (v)** a lack of implementation of new pilot experiences in other municipalities of Pará state;
- (vi)** low institutional priority at CPATU for the allocation of technical and budgetary resources for project continuity;
- (vii)** little networking among public partners and NGOs, as well as producers' and workers' unions;
- (viii)** little synergy with other programs related to project issues;
- (ix)** insufficient technical assistance to small producers;
- (xi)** the great influence of cultural, social and economic factors external to the project which directly or indirectly impact the conditions of social and productive infrastructure among small producers.

The time factor in the certification of research findings from the experiment fields should be stressed. According to center researchers, the deadline for these actions would be 2008-2009.

Chapter 6 – Conclusions

This ex-post evaluation has assessed the degree to which the impact and sustainability expected at the time of project termination have progressed, and examined how the application of recommendations in the terminal evaluation has influenced the project and project activities from terminal evaluation to ex-post evaluation.

In general, the results achieved by the time of the terminal evaluation were considered satisfactory, since CPATU was committed to conclude the pending activities in the short term; other activities required a longer period of monitoring. The Japanese mission proposed nine recommendations to CPATU/EMBRAPA to ensure follow-up on these activities.

In general, the project has achieved its initial expected results; the necessary conditions for evaluation of the degree of achievement of the purpose and overall goal were not obtained. Furthermore, due to the short deadline, evaluation difficulties were also caused by a lack of data and information on monitoring during project execution.

The project work plan for completion by February 2004 could not be implemented in that period, for several reasons: reduced technical and financial resources allocated to this aim by the center; lack of coordination after the project completion; and a dearth of partnerships with relevant stakeholders. Thirty percent of the activities had not been concluded; and 30% of the activities needed more time for validation, certification and technology transfer.

In the pilot area in Tomé Açu, the indicators of the purpose and overall goal were assessed by the post-evaluation, through interviews and meetings with small producers (project participants, neighbors of the pilot properties and non-participants), relevant public agencies and members of the Japanese-Brazilian community and its association and rural cooperative.

Through the interviews conducted with relevant partners, the increasing interest of small producers in the pilot area as well as in other municipalities in Pará was noted, as regards the adoption of SAF's validated by CPATU, systems of cultivation of black pepper with live stakes, and new species and clones of tropical fruits improved by scientific research and tested in fields and pilot properties.

In 2009, CPATU will carry out new applied socioeconomic research on 36 small producers in Tomé Açu, who in 2003 constituted the control group for evaluation of project impacts.

The operationalization of the project, with the establishment of demonstration pilot areas and pilot farmers' properties in Tomé Açu, could be indicated as the main successful initiative of the initial effects of the cooperation.

However, due to the socioeconomic characteristics and Japanese-Brazilian culture in the area, it is recommended that the same process be established in at least two new pilot areas. This initiative would promote better comparison of results, outcomes and short term impacts in a greater number of municipalities in Pará, generating new lessons learned and recommendations for the improvement of the dissemination and transfer of rural technology.

It was not possible to evaluate medium and long-term impacts, due to the short time elapsed between 2004 and 2006. This period was considered insufficient for technical validation (2009), agricultural certification (2010-2012) and dissemination of information, results and technologies achieved by the project.

The evaluation team considers that there is a moderate likelihood of achieving medium and long-term impacts, provided that in the coming years CPATU and partners are able to ensure major institutional priority and technical and financial resources for the continuity and/or conclusion of project activities.

For this scenario the relevant assumptions of the PDM should remain valid: addition of other pilot areas in Pará state and improved levels of partnership and supervision of other governmental and non-governmental partners, particularly as regards technical assistance and support for rural credit.

Concerning the achievement of short-term sustainability, this could be evaluated as likely to a low but satisfactory degree, due to difficulties faced by CPATU, especially in the fields of technical assistance and technology transfer to small producers.

The following factors also influenced the low short-term sustainability of the project outcomes: lack of financial and technical resources; the need for updating of equipment, and difficulties in equipment maintenance and replacement.

The relevant role in project sustainability played by Japanese-Brazilian producers in the pilot area, as well as the permanent contribution of technical orientation and inputs for the use of the cooperation findings by the small producers in the region, should be noted.

As regards medium and long-term sustainability, it may well be achieved if there are satisfactory conclusion of pending project activities, re-initiation of cancelled activities, greater dissemination of validated and certified results, establishment of a collaborative network and agreements with relevant partners for technical assistance and rural extension, multiplication of pilot farmers' properties and demonstration areas, and replication of pilot experiments in other regions of Pará.

Therefore, the evaluation team considers that there is a moderate likelihood of achieving initial the project impacts, provided that in the short term CPATU and its partners are able to ensure major institutional priority and technical and financial resources for the continuity and/or conclusion of project activities.

The initial outcomes and results of the project may be considered to have been partially achieved, with a moderate degree of short-term sustainability, provided that important improvements are implemented, within the current project management conditions, in the next two years. After project termination, its sustainability level could be considered unsatisfactory, as regards as the low degree of continuity of project activities in 2004-2006.

The project results achieved are contributing, to a certain degree, to the improvement of agriculture and sustainable development among small-scale farmers in the eastern Amazon. These contributions and effects should be increased in the medium term, with a more interactive process of synergy with other projects and programs with important funding for this aim in the Amazon region.

7. Lessons Learned and Recommendations

7.1 - Lessons Learned

Lesson learned 1: The project design should have established formal inter-institutional agreements to ensure the participation of public institutions and NGO's in rural extension, in order to ensure the implementation of the project initiatives following termination. Such agreements would have fomented more political and budgetary engagement and national ownership at upper management levels of the national counterpart and its relevant partners, right from the beginning of the project.

Lesson learned 2: The project design should have provided for formal instruments and proceedings for coordination, supervision and monitoring with relevant organizations, ensuring better conditions for project completion. Such agreements among institutions should be implemented at the federal, state and local levels.

Lesson learned 3: The project design should have concentrated on fewer research activities for sustainable agriculture, given that the five year deadline was considered short for the certification of findings.

Lesson learned 4: Better results after project termination could be ensured with the drafting of an action plan for project follow-up in the coming five years. This plan should have been approved before termination by higher public authorities in the different sectors, relevant NGO's and private organizations.

Lesson learned 5: The selection of an initial pilot area for the project, taking advantage of previous experience with the use of AFS, was relevant to the success of this initiative. Better results re the validation of outputs could be reached through the implementation of more pilot experiments in different municipalities in Pará.

Lesson learned 6: Better conditions of sustainability after project termination could be reached with project design mechanisms to ensure financial resources from selling technical services, receiving royalties for products and selected species, seminars and technical events, negotiation of new projects with national and international institutions, and participation in consultancies with international organizations.

7.2 – Recommendations:

7.2.1 – Recommendations to CPATU:

Recommendation 1: Elicit from the top managers at the Ministry of Agriculture, EMBRAPA and CPATU actions required for the continuity and conclusion of the project initiatives in the coming five years:

- (i) appropriate technical, institutional and financial resources;
- (ii) new agreements with producers' associations and other governmental and nongovernmental organizations;
- (iii) maintenance of the institutional and political priorities at different levels, in order to ensure financial engagement and technical ownership on the part of the Brazilian government, right from the beginning of the project;
- (iv) put in place mechanisms for long-term financial self-sufficiency, including training to ensure financial support from other national and international organizations for CPATU and small farmers' associations;
- (v) maintenance and modernization of equipment and laboratories.

Recommendation 2: Ensure the replication of the Tomé Açu experience in other pilot areas in Pará state and among other regional stakeholders.

Recommendation 3: It would be advisable to work in synergy with regional initiatives as such as the Plan for a Sustainable Amazon (PAS), the Family-Based Agriculture Program (MAPA) and the Amazon Initiative (OAS/JICA), as well as other Amazon projects supported by international organizations and national funds.

Recommendation 4: It is recommended that project institutional records be consolidated, through final reports, videos and manuals related to the adoption of project results by a greater number of relevant national partners.

7.2.2 – Recommendations to JICA:

Recommendation 1: It would be advisable for the JICA office in Brazil to continue to work jointly with CPATU, in accordance with the results obtained by the center after implementation of a 12 month project continuity action plan. This may well ensure that the project findings will be exploited to a greater degree in the next three years. It is considered that the organization of new in-country training with CPATU is an efficient method for dissemination of good practices and transfer of technology obtained from the project.

Recommendation 2: It would be advisable for JICA to include active participation in the planning, implementation and follow-up project phases on the part of stakeholders from civil society and target communities, state and municipal governments, nongovernmental organizations, rural extension institutions, and associations and rural workers' unions. This process could ensure medium and long-term policy support to enhance the impacts and sustainability of the cooperation.

Recommendation 3: It would be advisable for JICA to include in the project planning phase more detailed studies on the institutional capabilities and weaknesses of the national counterpart, for the purpose of making appropriate agreements on project implementation and follow-up.

Recommendation 4: New projects should anticipate a smaller number of research studies and allocate more funding to the transfer of knowledge to small producers. This will require more time, energy and resources for implementation and for short-term outcomes in pilot areas.

Recommendation to follow-up:

N/A

ANNEXES

ANNEX 1 – PROJECT EVALUATION GRID

**ANNEX 2 – ACTIVITIES’ PROJECT DEVELOPMENT MATRIX
EVALUATION (MDPe) 2004/2006**

**ANNEX 3 – PROJECT DEVELOPMENT MATRIX EVALUATION
(MDPe) 2004/2006**

ANNEX 4 – LIST OF INTERVIEWED PERSONNEL

ANNEX 5 – ORGANIZATON CHART

ANNEX 1
PROJECT EVALUATION GRID

Evaluation Grid – Technological Development for Sustainable Agriculture in Eastern Amazon (CPATU/Pará)

5 Evaluation criteria	Evaluation Questions		Judgment Criteria	Required data	Information Source	Data Collection
	Question	Sub-question				
Impact (achievement of overall goal)	<p>Has the Overall Goal been achieved during the period between the project's final assessment (nov.2003) and October 2006?</p> <p>Super Goal: The agricultural management techniques for small-scaled farmers' area improved and stabilized in Eastern Amazon, and the tropical rain forest is conserved through rational use of land.</p> <p>Overall Objective: The Technologies of sustainable agriculture suitable for Eastern Amazon are developed.</p> <p>Project Purpose: The sustainable agricultural technologies involving selected fruit trees and black pepper are developed in the project target areas, in State of Pará, adapted to local conditions.</p>	<p>- Can the short and mid-term effects be felt yet? Which ones? Description (quality/quantity)</p> <p>- Which was the long term effects (impacts) achieved?</p> <p>-Which long term effects will be achieved after October 2006?</p> <p>-Which actions is the CPATU currently taking to measure these impacts in the near future?</p> <p>-Could the CPATU have an action plan to measure these impacts to be achieved in the near future (5 years)?</p> <p>- Indication of effects and impacts of the project from nov.2003 to oct.2006?</p> <p>-Has the Project Purpose achievements of the Project been increased after the conclusion the Project? by 2004 – number of species different from those traditionally cultivated by farmers increased in 5%; and the amount of planted area with sustainable farming system in increased to 5%</p>	<p>- Increase of human and technical resources capability involved in the areas of research and applied through improvements in technological agriculture to sustainable development are carried out by the CPATU.</p> <p>-Increase of sustainable agriculture use by beneficiaries' farmers and new ones in the pilot areas/surroundings.</p> <p>-Until 2009, the number of species or its total number of trees planted by small scaled farmers in the target –areas, different from those traditionally cultivated in family agricultural, is increased to 5% in theirs farmers.</p> <p>-Until 2009, the amount of planted areas with sustainable farming system in the target areas is increased to 5% in their arable lands.</p>	<p>- Researches carried out during the period from November 2003 until October 2006 by: quantity, typology, nature.</p> <p>- Training and rural extension activities with farmers during the period from Nov 2003 to 2002 by: quantity, typology, municipalities.</p> <p>- Evaluations 2004/2006 made by EMBRAPA, Emater and others regarding: improvements on environmental conservation; increases on surface of private land using new sustainable agriculture techniques; number of suitable technologies are recognized by EMBRAPA and EMATER as “approved” and “ready for disseminations”</p> <p>- To measure the impact of Project Purpose it was agreed at final evaluation that EMBRAPA will implement a monitoring and evaluating system after 2004</p>	<p>- Annual activity reports.</p> <p>-Final Evaluation report.</p> <p>- Agricultural statistics published by EMBRAPA and other related institutions</p> <p>- Results of Monitoring and Evaluation activities implemented by EMBRAPA after Project termination.</p>	<p>- Review of Material</p> <p>- Interviews.</p> <p>-</p>
	<p>Which actions not originally planned by the technical cooperation design could have generated bigger impacts in this kind of project?</p>	<p>All activities to support rural extension; transport; financial support; training were outside of Control of EMBRAPA. How an articulation has been done with others relevant institutions?</p>	<p>Design of other cooperation projects in the field of sustainable agriculture for small scale farmers</p>	<p>- Compare actions needed taken in other projects (DFID, GTZ, PPG7, BM, IICA)</p>	<p>- Other projects reports</p> <p>- Missions Reports of JICA (2000,2002)</p> <p>- Brazilian experts opinions</p>	<p>- Interview</p> <p>- Review of Material</p>

Impact	<p>What are the positive and/or negative impacts of this project on the national and sector development policy?</p> <p>Factors inherent to the nature of the project, impact generators.</p> <p>Factors external to the Project, impact generators</p>	<p>-Would the impacts be restricted to pilot areas of the Project? Other regions of Pará? Or would they be felt regionally in Amazon region?</p> <p>-Has the number of contacts of CPATU with similar organizations and institutions increased?</p> <p>-What is CPATU participation in research and development in the sustainable agriculture field for Pará?</p>	<p>-Final Evaluation Report -Situation in October. 2006</p> <p>The period of November 2003 and October 2006 has registered:</p> <p>-an increase in number and types of new technical assistance to farmers.</p> <p>-increase in participation in applied research networks in target themes.</p> <p>-Increase in number and relevance of institutions supporting the transfer of technology in sustainable agriculture.</p> <p>-New research and development areas were added to CPATU between November 2003 and October 2006.</p> <p>-Has the volume of research and development provided by CPATU increased?</p>	<p>-Existence of preliminary evaluations carried out by CPATU on impacts generated by the project during 1999/2003 (base line)</p> <p>-Existence of projects evaluation impacts carried out by CPATU in the target areas, region, state and Amazonian Region? Base line of final evaluation?? 2003</p> <p>-Monitoring an Evaluation of impacts 2003/2006</p> <p>-List of training, meetings and dissemination activities with farmers, associations, ongs and other institutions.</p> <p>-Mechanisms of cooperation between others public institutions and ongs to continuity of Project</p> <p>-List, volume and value of research, development of projects and services provided.</p> <p>-List of participants by pilot area, others farmers in the region;</p>	<p>-CPATU -State agencies -Ministry of Agriculture (MDA)</p>	<p>-Review of existing Material -Interview</p>
	<p>-What other projects and/or interventions have acted as synergies to expand the effects and impacts of this project in the period 2003 to 2006?</p>		<p>Coordinated actions in the sector expand impacts.</p>	<p>Verify other similar projects or actions in the field of SA that supported or impeded impacts.</p>	<p>-EMBRAPA -EMATER -Sec. Agriculture of Pará -International sector of EMBRAPA Headquarters -CPATU</p>	<p>-Review of Material -Interviews</p>
	<p>What negative or positive factors have inhibited or expanded the achievement of the super goal and the overall goal between 2003/2006?</p>		<p>-Final Evaluation Report -Situation in October 2006 -Recommendations to finalize some activities of the Project</p>	<p>-Reports and bulletins on the obstacles of execution -Report on the implementation (total or partial) of uncompleted activities on November 2003 -Opinion of interviewers</p>	<p>-CPATU/EMBRAPA operational plans and annual executive reports. -Reports of Monitoring and Evaluation Project continuity of implementation</p>	<p>-Review of Material -Interviews</p>

Evaluation Grid – Technological Development for Sustainable Agriculture in Eastern Amazon (CPATU/Pará)

5 Evaluation criteria	Evaluation Questions		Judgment Criteria	Required data	Information Source	Data Collection
	Question	Sub-question				
	Will the original assumptions for the achievement of the super goal and the overall goal be valid for the period of 2003/ 2006?	What changes of assumptions could be suggested for designing new similar projects?	-Validity of the assumptions. -Change of setting.	-Identify new assumptions. -Assess validity of assumptions used.	-CPATU -Reports of activities of CPATU -Small farmers scale associations and individual owners land in the pilot areas	-Interviews; -Review of materials;
	Have the CPATU training activities carried out between 2003 and 2006 improved the capability of the farmers in the pilot or not in the theme of the project?	Number and types of training activities Number and types of other institutions developing support activities to improve impacts	-Final Evaluation Report -Situation in October2006	-Self-evaluation of trainee farmer sample. -Examples by sample of application of new knowledge by the farmers in their own fields of work. -Evaluation by sample of farmers trainees by CPATU, EMATER, SEBRAE (instructors, rural development facilitators; business facilitators)	-Annual Activity Report -CPATU. -Farmers	-Questionnaires -Interviews -Review of material
	Have any unexpected positive or negative effects been observed in the Sector?	-Influences on the development of policies, rules and legislation? - Influences on the social and cultural sectors? - Influences on technological and research transfer? -influence on the sector of environmental protection? -economic influence on the target population?	-Final Evaluation Report -Situation in October 2006	-Opinion of actors with significant examples of impacts.	-CPATU -State Agriculture Representative -MDA -Sector representative associations.	-Review of material -Interviews
	Mention at least two assumptions that were considered priority for obtaining the impacts of the project in the period of 2003 to 2006.	- political - economic - behavioral - legal	- Final Evaluation Report - Situation in 2006	- Comparison of assumptions frequency index to the success of projects started by CPATU after 2003.	-CPATU -State of Pará representatives	- Interviews
Sustainability	Would international cooperation be needed to increase CPATU reinforcement for the next 5 years?	What are the reasons/motives for requiring new support of international cooperation? What kind of national government support would be required?	- Final Evaluation Report - Situation in 2006, - Prospective scenario of CPATU for the next 5 years.	- Comparison with other similar projects in the field of sustainable agriculture of EMBRAPA (nationwide)	- CPATU; -EMBRAPA -Para States representatives	- Interviews; -Plan of Activities; -PPA (2003/2007) -PPA (2007/2011)

	<p>What actions and factors held, until Oct. 2006, the continuity of the project's goals and the maintenance or expansion of the results achieved in 2003?</p>	<ul style="list-style-type: none"> - budgetary and financial; - technologic; - human resources; - social and cultural; - maintenance; - new acquisitions and laboratories; - installations; - IT improvements; - data base 	<ul style="list-style-type: none"> - Actions implemented between 2003/ 2006. - Actions to be implemented between 2007 and 2010. 	<ul style="list-style-type: none"> - Comparison with other cooperation projects of CPATU and/or SA , identifying evolution factors of the Sector. 	<ul style="list-style-type: none"> - Opinion of actors of the SA in the fields as: research, training, project development, rural development. - Reports of CPATU and EMBRAPA; MDA and MPO. 	<ul style="list-style-type: none"> - Interviews ; - Review of materials
	<p>Have any efforts been made to disseminate the capacity gained through the experience in the pilot areas to other parts of the Pará and Other States in the Amazon Region? As well as foreign countries?</p>	<ul style="list-style-type: none"> - What actions have been implemented to disseminate this initiative? - If the execution is proved difficult: - what actions would be necessary to execute them? - what is the estimated cost? - would external support be required: technical, administrative and/or financial? 	<ul style="list-style-type: none"> - Final Evaluation Report - Situation 2006 	<ul style="list-style-type: none"> - Comparison with other similar projects; 	<ul style="list-style-type: none"> - Opinion of actors - CPATU - EMBRAPA - STATE of Pará; - ONGS - Farmers associations 	<ul style="list-style-type: none"> - Interviews - Review of material
	<p>Are the management, financial, legal and human resources conditions appropriate to give continuity to the project from 2003 to 2006, allowing the achievement of intermediate and long term impacts?</p>	<p>How many activities of the Project has been concluded during this period?</p> <p>What were the reasons and difficulties faced to finalize the original activities?</p> <p>What are the most significant initiatives of CPATU in terms of strengthening the institution in the field of SA and in pilot areas of the Project between 2004/2006</p> <p>What are the most significant contributions in terms of strengthening the capacity of farmers in the field of SA between 2004/2006?</p>	<ul style="list-style-type: none"> - Final Evaluation Report - Situation in 2006 - Results of assessments by researchers and rural facilitators; - Actors perceptions from previous and subsequent situation. 	<ul style="list-style-type: none"> - Organizational and functional structure. - Public selection of new researchers (employees) or new contracts between 2003/2006 and for the next 5 years. - Monitoring and assessment system of research and projects; - Annual Budget of CPATU (maintenance of CPATU and new investments; research and projects); - annual financial/budget resources planned and executed to the continuity of Project activities; - annual quantitative time of researchers to the continuity of Project activities 	<ul style="list-style-type: none"> - CPATU; - EMBRAPA; - MDA; - MPO Budgetary expenditures to CPATU/EMBRAPA; - State Planning and Budgetary Secretary to sustainable agriculture; rural development and others investments to support the Project; - Monitoring and Evaluation reports of CPATU 	<ul style="list-style-type: none"> - Review of material - Financial and technical coordination (Multi-year budget) - Interviews

Evaluation Grid – Technological Development for Sustainable Agriculture in Eastern Amazon (CPATU/Pará)

5 Evaluation criteria	Evaluation Questions		Judgment Criteria	Required data	Information Source	Data Collection
	Question	Sub-question				
Sustainability (risks)	Has CPATU taken over the ownership of the project?	- Has the CPATU activities to the training/support farmers' to the introduction of new agric. technologies been scheduled in the Center and EMBRAPA activity calendar? -Could a regional/state campaign be organized to disseminate this experience with the farmers i the pilot areas?	-The conditions for CPATUs operation and sustainability were secured 2003-2006 and will be secure to 2007/2011 (different aspects)	- 2003/2006 budget and next five years - Implemented activities in 2003/2006 and perspectives. - Media initiatives	-EMBRAPA -Ministry of Agriculture - State of Agriculture Agency -Farmers associations and individual;	- Review of Material - Interviews
	Could the prospect of national, state and municipal elections jeopardize the continuity of the Project?	-What would the degree of risk of breaking the continuity to the project, with loss of expected long term impacts in the training area?	-Lessons learnt through other SA projects implemented by CPATU/EMBRAPA. - Lessons learned from farmers association and individual in pilot areas;	- Opinion of Project's actors.	- Perception of public and private actors in the SA field.	Interviews
	What is the sustainability of CPATU to continue operating in the next five years? What recommendations could be made with regard to regulations, statutes, composition and frequency of the courses?	In case of strong possibility of discontinuing operation, what suggestions and recommendations could be made to secure continuity? Would the return of international experts be necessary?	Final Evaluation Report - Perception of actors (% yes – reasons)	- Identification of risk factors and degree of discontinuity in the next five years.	- Perception of public and private actors in the SA field.	- Review of material. - Interviews

	<p>What are the areas directly or indirectly institutionally strengthened by the Project in the period of 2004/2006? Also indicate whether the strengthening was felt at national, regional and/or local level of influence.</p>	<ul style="list-style-type: none"> - Legal and regulatory framework - Procedures, manuals, operational guides. - Technical Capacity <ul style="list-style-type: none"> ▪ High management ▪ Mid-management ▪ Of information systems - Customer service - Functional and organizational structure - Planning - Budget/financial management - Coordination <ul style="list-style-type: none"> ▪ intra/inter-sectoral ▪ intra/inter-organizations - RH training - Acquisitions - Rendering of accounts 	<p>- Final Evaluation Report</p>	<ul style="list-style-type: none"> - Situation in 2004 - Situation in 2006. 	<ul style="list-style-type: none"> - Diagnosis of the Centre - Annual monitoring of activities and impacts - CPATU -2003/2006 Activities Annual Reports; - CPATU 2003-2007 Plan of Action; -Number of employees by area of specialization; - number of laboratories; -profile of employees; -profile of farmers in pilot areas; -number of employees at Experimental Station of Tomé Açu; -reports of activities of the Experimental stations of CPATU in the Pará State; 	<ul style="list-style-type: none"> - Review of material - Interviews
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Evaluation Grid – Technological Development for Sustainable Agriculture in Eastern Amazon (CPATU/Pará)

5 Evaluation criteria	Evaluation Questions		Judgment Criteria	Required data	Information Source	Data Collection
	Question	Sub-question				
	Considering the previous questions, describe concrete actions that CPATU could implement in the next years to secure the sustainability of the project.	<ul style="list-style-type: none"> - High management support - Legal framework - Organizational ability - Coordination <ul style="list-style-type: none"> ▪ Intra-organizations ▪ Inter-institutional - Availability of financial resources Fundraising for research and development <ul style="list-style-type: none"> - Adequate number of qualified technical Personnel in required numbers. - Maintenance resources, physical infrastructure and services - Support: to project beneficiaries; by local governments, state governments and federal government. Is there interest in becoming an International Centre of Excellence in Third-Country Technical Cooperation Program? 	Probability from one to four <ul style="list-style-type: none"> - low - medium - high - does not apply 	<ul style="list-style-type: none"> - Opinion of the Executive Unit Staff and other representative institutions of the sector; - Opinion of the Framers association and individual in the pilot areas and other representative institutions of the sector; - Identifying CPATU areas of interest for expanding international trainee clientele and what regions would attend. - Cost estimate - Estimate of start of initiative 	<ul style="list-style-type: none"> - CPATU; - EMBRAPA; - MDA; - States agency; - Farmers; - ONGS - EMBRAPA and CPATU high management 	<ul style="list-style-type: none"> - Interviews; - Interviews
	From what is exposed in this project, indicate lessons learned to support the Project - From 2003 to 2006	<ul style="list-style-type: none"> - Corrective measures adopted by CPATU in the implementation of activities after Project conclusion. - Alternative measures for future projects to be supported by JICA (design and implementation) 	-Verify CPATUs experience in management and proposing solutions to problems or difficulties in the sustainability of the project after 2003 until 2006.	<ul style="list-style-type: none"> - Staff opinion - Survey of corrective actions (implemented or not) - Discussion of alternative measures for the next five years. 	- CPATU / JICA	<ul style="list-style-type: none"> - Review of material - Interviews

ANNEX 2
ACTIVITIES' PROJECT DEVELOPMENT MATRIX EVALUATION
(MDPe) 2004/2006

**The Technological Development Project for Sustainable Agriculture in Eastern Amazon Evaluation MDP
2004/2006**

Item	Results Expected	Progress and Results	Achiv. level	Reason for Delay	Next Plans of Activities
The management and cultivation technologies for selected tropical fruit tress and black pepper are developed so that they are harmonized with the environment					
1. Screening of clones and/or progenies for high productivities and rootstocks for dwarfing on selected tropical trees.					
1-1) selection and evaluation of cupuaçu clones and/or progenies tolerant to Witches' broom with high productivity					
1) Evaluation, selection and recommendation of clone and progenies cupuaçu tolerant to Witches' broom.	Selected cupuaçu clones tolerant to Witches' broom with productivity higher than the regional average.	2004 -2006 - it was implemented 2 demonstrative areas with selected clones in Tomé Açu and S. Francisco do Pará. 2006, 35.000 plants were produced and disseminated to producers.	2	Lack of financial and technical support; and field personnel to realize the evaluation in the producer's area; selected progenies and enxertias	Partially Cancelled. 2007 new star of experiments with another external agency. New cultivar could be selected until 2009.
2) Identification, evaluation and selection of elite mother plants of cupuaçu in commercial plantation in the State of Pará.	Select cupuaçu mother plants with productivity higher than the regional average	2004- It was identified; evaluated and cloned 25 selected elite mother plants in Tome Açu. It was implemented 3 pilot areas in Tomé Açu. In 2006- It was realized in Belém, the final selection of 10 elite mother plants to compound a colonial seed orchard which the population will be the next cupuaçu cultivars to be released by Embrapa CPATU. It was not set up the colonial seeds orchard and distributed as improved seeds to the producers.	2	Lack of financial and technical support; and field personnel to realize the evaluation in the producer's area. Lack of more analysis of data to validate new cultivar more resistant to witches broom disease and 25% more productivity than 2003 cultivar.	Partially Cancelled. 2007 new star of experiments with another external agency. New cultivar could be selected until 2009.
1-2) Selection and evaluation of soursop (Graviola), Antilles cherry (Acerola), Açaí palm and others with high quality and high yields					
1) Selection and cloning of superior mother plants of Antilles cherry (Malpighia glabra L.) in commercial plantation in the State of Pará	Select Antilles cherry mother plants with productivity higher than the regional average and disease tolerance	Until 2003 in the farms of Santa Isabel, Castanhal and Tomé-Açu, grafted cultivars of Embrapa Agroindústria Tropical's were tested and 13 cultivars were selected for this region. 2004/2006 - There was not continuity of activities during new crop seasons to evaluate the fruit's quantity and quality to select materials with higher productivity and disease tolerance.	1	Lack of financial and technical support; and field personnel to realize the evaluation in the producer's area. Lack of more analysis of data to validate experiment.	Cancelled.
2) Introduction and selection of productive	Election of Antilles cherry clones with better economic performance.	Until 2003 by the arrange fruit weight, the CNPMF 030 clone (11.78 g/fruit) showed the best	1	Lack of technical support personnel to realize the evaluation in the	Cancelled.

Antilles cherry (<i>Malpighia glabra</i> L.) clones suitable for the Amazonian environmental conditions.		performance. This clone also attained should become the recommended cultivar for fresh fruit production. 2004/2006 - There was not continuity of activities during another crop season to evaluate the fruit's quantity and quality to select materials for common and industrial consuming.		producer's area.	
3) Selection and cloning of superior mother plants of sour sop (<i>Annona muricata</i> L.) in commercial plantation in Pará.	Select sour sop mother plants with productivity higher than the regional average and tolerance to insect attacks.	High productive were selected in the farms of 20 mother plants in Santa Isabel and Castanhal, propagated by grafting, and introduced to the Embrapa experimental field. 2004/2006 – Experiment was cancelled. It was not produced and selected materials suitable for fresh fruit consumption and agro industrial processing with higher productivity and tolerance to insect attacks.	1	Lack of financial and technical support; and field personnel to realize the evaluation in the producer's area. Lack of more analysis of data to validate experiment	Cancelled.
4) Introduction and selection of productive sour sop (<i>Annona muricata</i> L) clones suitable for Amazonian environmental conditions.	Selection of soursop clones for better economic performance.	2003 -14 superior clones were introduced from Embrapa Cerrados and Embrapa Acre. Some of them have already produced fruits as large as weighing 5kg. However the quality should be well studied before the selection of materials for fresh fruit and industrial consumption. 2004/2006 – There was not studies to more two harvest seasons to evaluate qualitative fruit characteristics do define better selected clones adapted to Amazonian conditions to be used “in natura” and industry production.	1	Lack of financial resources to ensure inputs and materials; lack of timing of budget resources. Lack of technical and support resources to field experiment implementation.	Cancelled.
5) Selection of promising fruit-producing açai palm genotypes.	Select açai palm genotypes with production higher than the collection average.	25 mother plants with higher production had been selected from the collection. Seeding populations produced from the 25 mother trees. From these populations 25 genotypes were selected and planted in the producer farms in Tomé-Açu (2000) and Santa Isabel (2001). Performance of these clones was evaluated each semester.	1	N/A	Concluded semester evaluation of the 25 genotypes by 2003.
6) Progeny tests of açai palm for fruit production.	Analysis of genetic parameters during vegetative growth phase.	2004/2006 - BRS Pará açazeiro clone selected and validated, Is the main cultivar used by agriculture producers in Pará and Brazil. New data collections of açazeiro germoplasm were implemented in 5 different municipalities in	4	N/A	Concluded. New five experiments will be monitored in the next years; 2007-2009 new program to genetic improvements of

		Pará. Four new experiments or progenies tests were installed (white açai palm) and progeny tests were introduced in 2 more municipalities. Three main studies are in execution progeny test to evaluate composition and genetic diversity. Progeny test are in execution with irrigation system to evaluate better selected species to be used in areas with hydrological deficits as Moju, PA. External resources assured for the forthcoming years program activities.			açaizeiro will be implemented generating two more cultivares for all year long açai fruit production; 2011/2012 it is expected a selection of a new cultivar of açai adapted to local conditions as it was obtained with BRS Para
1-3) Selection of rootstock(s) for cupuaçu with drought tolerance, high productivity and dwarfing in genus <i>Theobroma</i>.					
1) Selection of dwarfing rootstocks within the genus <i>Theobroma</i> for cupuaçu.	Obtain a rootstock within the genus <i>Theobroma</i> aiming to reduce the height of cupuaçu trees.	The greenhouse experiment concluded in the results that <i>T. abovatum</i> and <i>T. speciosum</i> were not suitable as rootstocks of cupuaçu, <i>T. subincaunum</i> present and good compatibility with cupuaçu. The field experiment concerning growth and productivity evaluation of 2 cupuaçu clones resistant to Witches' broom grafted on <i>T. grandiflorum</i> it was cancelled in 2004 due a climatic factors (exceptional dry season). The technical results obtained in casa de vegetação were presented in technical meetings. 2004/2006: The experiment was cancelled and not reinstalled a new one including field validation.	1	Exceptional dryness climatic conditions. Lack of financial conditions to restart in other experiment field.	Cancelled. Give institutional priority and restart experiment in others climatic regions of Amazonia.
1-4) Selections of <i>Anonaceae</i> rootstock(s) with tolerance to pests and dwarfing in sour sop.					
1) Selection of rootstocks within the family <i>Anonaceae</i> for dwarfing sour sop.	Select rootstocks with dwarfing effect and graft compatibility.	Four compatible rootstock clones were selected in the greenhouse experiment. The field experiment was established in September 2000. The productivity was quite satisfactory on araticum-do-brejo or the sour sop itself. The biribazeiro was not a good rootstock. 2000- 2004- The field experiment was evaluated when the culture treats were abandoned by lack of resources; it was not concluded productivity of selected rootstocks The experiment was cancelled	2	The field experiment was cancelled, because of the lack of financial resources and "lost" of plants	Cancelled. Give institutional priority and restart experiment in others climatic regions of Amazonia.

1.2. Development of methods for controlling the major diseases of selected tropical fruit trees.					
2-1) Development of methods on integrated disease control for Witches' broom of cupuaçu.					
1) Establishment of integrated control methods of Witches' broom on cupuaçu plants.	Select fungicide to control Witches' broom disease on cupuaçu tree.	Selected 2 fungicides to be evaluated efficient and economic doses in field. Folicur fungicide was selected in 2003 to be evaluated in the field, 2004/2006 – Folicur analysis in the field was not executed. Tebuconazol fungicide showed more efficiency to inhibit <i>Crinipellis perniciososa</i> in vitro and basidiosporos in dry witches' broom. In the field, Mepronil fungicide showed higher efficiency than tebuconazol in the Witches' broom disease on cupuaçu tree but its not a fungicide recognized by Agriculture Ministry Registration and not available in the Brazilian market. The experiment was cancelled and not established efficient and economic doses in the field of Folicur fungicide as recommended	2	Activity stopped because of lack of technical and financial resources. Lack of register of selected fungicide at Ministry of Agriculture.	Cancelled. Give institutional priority and restart experiment in others field experiment.
2-2) Studies of control methods of the major diseases and pests (excluding fruit fly) in soursop, Antilles cherry and passion fruit (maracuja).					
1) Biological and ecological survey and characterization of insects that are phytophagous, pests and potentially harmful, living in plantation of soursop, Antilles cherry and passion fruit.	Catalogue insects that are pests and potentially harmful and evaluate the risks they may represent to soursop, Antilles cherry and passion fruit.	Pests were collected and identified. 2004/2006 -The actions of re-start were not implemented.	2	Activity stopped because of the retirement of the entomologist.	Cancelled in 2003. It was hired a new entomologist and the activities will be re-started. A new contract related to the subject..
2) Control of the soursop fruit borer <i>Cerconata anonella</i> .	Verify whether waxes and tissues are capable of protecting fruit against insect attack and evaluate the attractiveness of adult fruit borer by different carbohydrates.	The use of wax is unworkable because it causes fall of young fruits. 2004/2006 -The actions of re-start were not implemented.	2	Activity stopped because of the retirement of the entomologist.	Cancelled in 2003. It was hired a new entomologist and the activities will be re-started. A new contract related to the subject need to be obtained
3) Integrated management of the	Select effective fungicides to control the diseases.	Fungicides were selected in vitro. 2004/2006-The selected fungicides were not	3	Activity stopped because of the retirement of the entomologist.	Cancelled in 2003. The selected fungicides will be

main diseases of Antilles cherry, passion fruit and soursop.		tested in green house and after in the field. The actions were not continued			tested in greenhouse and after to be tested in field.
1. 3. Transferring of research technologies in management and cultivation for the selected tropical fruit trees.					
3-1) Studies of utilization of defferent forms os foil management (mainly mulching and leguminous plants) for the improvement of soursop. Antilles cherry and cupuaçu cultivation.					
1) Effect of soil covering on fruit tree productivity in Amazonia.	Establish one type of mulch and other of cover crop that favor weed control, allow soil enrichment with organic matter and increase productivity of Antilles cherry cupuaçu and soursop by 10%.	The soursop and cupuaçu experiments are carried on. The acerola experiment is paralyzed. 2004-2006 -The actions were not continued	2	Number of the research members was reduced. The acerola research was conducted by the Japanese consultant.	Cancelled in 2003. Going on with evaluation of different coverings types on soursop and cupuaçu
3-2) Studies of fertilization and mineral nutrition of soursop. Antilles cherry and cupuaçu.					
1) Characterization of symptoms of nutritional deficiencies in cupuaçu (<i>Theobroma grandiflorum</i>).	Obtain a set of nutritional deficiency symptoms for six macronutrients and five micronutrients and the respective levels in foliar tissue for the cupuaçu plant.	The symptoms of macro and micro nutrients and deficiency were characterized and the foliar tissue tests were defined. It was the theme of a Masters' at UFPA.	4		Concluded by UFPA Going on technical publication and technology transfer and dissemination.
2) Determination of standard cupuaçu leaf to diagnose plant tissue.	Determine the standard cupuaçu leaf for diagnosing the plant nutritional status.	All field activities were concluded and now waiting for the leaf data's of laboratory analysis. 2004-2006 -The actions were not continued.	2	The foliar tissues samples were contaminated in the soil and plant laboratory.	Cancelled Going on with laboratory analysis of macro and micronutrients, statistical analysis, interpretation of the results and publication of it.
3) Utilization of the Diagnosis and Recommendation Integrated System (DRIS) in evaluating the nutritional status of cupuaçu trees in production in Pará State.	Obtain the reference norms for 6 macronutrients and 5 micronutrients to be used is DRIS method to cupuaçu in the production phase.	All field activities were concluded and now waiting for the leaf data of laboratory analysis. This activity was presented on the XVII Brazilian Fruticulture Congress. 2004/2006- The actions were not continued	2	The foliar tissue samples were contaminated in the soil and plant laboratory.	Cancelled.
4) Effect of NPK on nursery cupuaçu plants.	Obtain the optimal doses of three macronutrients to be used as mineral fertilizing during the growth phase of	Final results of the experiment were collected and it was concluded that Potassium doses (on k1,k2, k3) were higher than the appropriated. Therefore, it was reinstalled a new experiment with lower	4		Concluded by UFPA Going on technical publication and technology transfer and

	cupuaçu seedlings.	doses of K in 2003. Cancelled at CPATU 2004/2006 –It was the theme of a Master’s degree at UFPA			dissemination.
5) Effect of mineral fertilizing on cupuaçu plants in the growth phase.	Obtain the optimal doses of three macronutrients to be used as mineral fertilizing to maintain a good growth and increase the productivity of cupuaçu trees in the field.	The experiment was partially installed in January 2003 in a production area in Igarapé Mirim. 2004/2006 - Experiment was canceled.	1	Experiment was canceled by climatic conditions.	Cancelled in 2003.
6) Effect of mineral fertilizing in cupuaçu plants in the production phase.	Obtain the optimal doses of three macronutrients to be used as mineral fertilizing in the production stage of cupuaçu, to increase fruit productivity.	The data collected 9 months after the plantation, the plant height was 2.35m on N2P0K1, 5.21m on N2P2 KD and the number of fruits was 16 on N2P0KO. 2004/2006 – Biometric data collection and fruit production were executed until 2004. The foliar analysis was not realized due a lack of resources.	1	Abandoned because of the lack of financial, technical and equipments resources	Cancelled
7) Effect of lime levels on growth and uptake of nutrients by young cupuaçu plants.	Obtain increase in nutrient absorption and production of dry matter in young cupuaçu plants with application of dolomite lime.	Analyses of dry matter was concluded and now waiting for the data of laboratory analysis. Work presented on the Brazilian Fruit culture Congress. Concluded with data of laboratory analysis. 2004/2006 - The foliar analysis was not realized and cancelled technology transfer.	1	The foliar tissues samples were contaminated in the soil and plant laboratory.	Cancelled
8) Characterization of symptoms of nutritional deficiencies in soursop plants (<i>Annona muricata</i> L).	Obtain a set of symptoms of nutritional deficiencies of six macronutrients and five micronutrients and the respective levels in foliar tissue of soursop plant.	Symptoms of macronutrient and micronutrient deficiencies were recognized. This activity was partially presented on the XVII Brazilian Fruit culture Congress. 2004/2006 - A Masters’ dissertation thesis was developed at UFPA. . Macronutrients analysis developed at UFPA’s study.	3	Technical problems on the atomic absorption equipment unable chemical analysis of 5 micronutrients.	Cancelled 5 micronutrients analysis.
9) Effect of lime levels on growth and uptake of nutrients by soursop plants (<i>Annona muricata</i>).	Obtain increase in nutrient absorption and Dm production in young plants of soursop with application of dolomitic lime.	Analysis of dry matter was concluded. The work was presented at the Brazilian Fruit culture Congress (CBF). 2004/2006 -The study was concluded with the data obtained from biometric variety.	2	The foliar tissue samples were contaminated in the soil and plant laboratory.	Cancelled.
10) Effect of NPK fertilizing in soursop plants in the production phase.	Obtain optimal doses of 3 macronutrients for use in mineral fertilizing of sour sop in the productive phase.	Effects of N were identified on the first and second year by the stem diameter and effects of N x P were identified by the high.	1	Abandoned because of alta incidência de broca Cerconata anonella n área de pesquisa.	Cancelled

11) Effect of levels and sources of organic matter for cultivation of Antilles cherry (<i>Malpighia glabe L.</i>).	Obtain increase in productivity of Antilles cherry fruit, with application of at least one course of organic matter combined with one of doses tested.	The experiment was concluded in the field of the biometric varieties. The work was presented at the Brazilian Fruit culture Congress (CBF). 2004/2006 – There was not fruit collection and experiment was cancelled due a lack of resources	2	There were not fruit collections by the lack of human resources in the experimental field; and lack of financial resources for the fruit collection.	Cancelled
12) Effect of lime levels on growth and uptake of nutrient by young plants of Antilles cherry.	Obtain increase in nutrient absorption and Dm production in young plants of Antilles cherry with application of dolomitic lime.	Analysis of dry matter was concluded. The work was presented at the Brazilian Fruit culture Congress (CBF). 2004/2006 –Analyses of nutrients absorption were not executes and it was not obtained conclusive recommendations.	2	The foliar tissue samples were contaminated in the soil and plant laboratory.	Partial conclusion with biometrics variable Going on technical publication and technology transfer and dissemination evaluation.
13) Effect of doses of N, P and K during the productive phase of Antilles cherry.	Obtain the optimal doses for 3 macronutrients for use in mineral fertilizing in the productive phase of Antilles cherry.	Growth analysis was concluded. Plant, soil and production analysis are on pending. 2004/2006 – Activities cancelled in Castanhal	1	Abandoned because of the lack of financial, technical and equipments resources	Cancelled.
14) Characterization of symptoms of nutritional deficiencies in açai plants (<i>Euterpe oleracea Mart.</i>).	Identify the symptoms of nutrient deficiency of six macronutrients and five micronutrients correlating with the level in foliar tissues of açai palm.	Conducted only for deficiency of macronutrients and boron. Symptoms of macronutrients deficiency were identified. The experiment for micronutrients was installed in July 2003. 2004/2006 - Technical problems on the deionization to supply appropriate water for micronutrient experiment in 2003 solved by using laboratories of UFRA. It was theme of a Masters' dissertation thesis on symptoms of micronutrients deficiency, collect plant data and analyses' results.	3		Concluded by UFRA. Going on technical publication and technology transfer and dissemination
15) Effect of NPK in the growth of açai seedlings.	Obtain the optimal doses of 3 macronutrients for use in mineral fertilizing of açai at nursery stage.	Reinstalled in November, 2002, already with the second N and P application. 2004/2006- It was defined doses of N, P, K. Re-started experiment and concluded collect data apply fertilizers; do chemical and statistical analysis and interpretation of results.	3	N/A	Concluded Going on technical publication and technology transfer and dissemination
3-3) Studies on training and pruning of sour sop and cupuaçu trees					
1) Influence of pruning and training on tree architecture and initial growth of	Develop training and pruning system for grafted cupuaçu trees, which will make it possible to obtain plants with a maximum height of 3m and non-	Cupuaçu clones, grafted by top saddle graft in full slit, does not need supporting to obtain erect plants with suitable branch disposition. It can be obtained by only pruning.	4	N/A	Concluded

cupuaçu tree in Amazonia.	decumbent distribution of branches.	2004/2006 - The experiment was evaluated up to 2006 with final conclusions. Evaluated of productivity and its distribution to 5 and 6 year plant. Made publication and technology transfer to small producers.			
2) Influence of training and pruning on tree architecture and the productivity of soursop fruits.	Develop a pruning system for keeping the small architecture of soursop plants.	Pruning of soursop plants propagated by seeds is not an efficient method to reduce plant height as it needs an intensive practice and this let the danger of the lasiodiploidia theobroma fungus contamination higher, and also this method delays the start of fruiting period. Concerned of the problems of this results and that the root-stock's experiment are quite satisfactory, it is suggestible to quit this experiment. It is suggested to concentrate actions on 1.4.1 activities. 2004/2006- 14.1 activity was cancelled in 2004.	3	1.4.1 Activity supporting grafting experiments was cancelled by lack of technical, financial and operational resources. This experiment was stopped	Partially concluded.
3-4) Studies of biology, mass raising and dispersion of pollinating insects of cupuaçu.					
1) Survey and identification of pollinating bees in cupuaçu orchards.	Identify species of sting less bees with potential for raising and management as cupuaçu pollinators.	20 insect's species were collected and classified to 2 categories: coleopters and sting less bees considered holding the higher potential of rational breeding. 2004/2006 – More analyses implemented. It still remains 5 breeding species not classified.	4	Difficult at the identification of the species by the coleopters and bees specialists. Lack of human and financial resources to conclude activity.	Partially concluded.
2) Nest collection and rising of bees that pollinate cupuaçu.	Define methods for management of stingless bees' colonies.	8 colonies of stingless bees were collected and suitable raising method was defined but not implemented in Curaça and Belem fields. Activity cancelled by 2002 by Japanese mission due lack of time to generate impact evaluation 2002-2006 – It was not executed input activity 3.4.1 to be used by 3.4.2.	n/a	Difficult to collect and locate the plebeian minima and tetragonisca angustula colonies in the nature. Lack of specialist researcher and financial resources.	Cancelled in 2002. New re-start could be financed after 2008 with MMA – GEF proposed project: “ <i>Global Conservation and management of Pollinators for Sustainable Agriculture through an ecosystem approach</i> ”.
1.4. Development of the integrated management methods for the control of black pepper diseases					
4-1) Biological control of Fusarium solani disease.					
1) Morpho-physiological responses of young black pepper plants	Obtain biologically efficient microorganism or bioactivating substance against Fusarium solani f. sp. Piperis by studying the	The microorganisms <i>Metylobacterium radiotolerans</i> (B60) and <i>Bacillus subtilis</i> (B57) were selected in vitro. Crab shell and <i>Piper aduncum</i> residue have shown good results in pots	2	Lack of time to validate the conclusions and lack of technical, financial and monitoring resources to give continuity of green-house and	Partially achieved and cancelled.

against <i>Fusarium solani</i> , and tests of biological control of <i>Fusarium solani</i> .	morphological modifications caused to the host by the biocontrol agents.	against <i>Fusarium</i> . 2004-2006 – It was tested in the screen-house and in the field. But due the lack of time it was not possible to validate effectiveness and efficiency of field experiments results		field experiment.	
2) Control of <i>Fusarium solani</i> f. sp. <i>Piperis</i> through inoculation with arbuscular mycorrhizic fungi.	Reduce the incidence of <i>Fusarium</i> disease to a level acceptable to producers and establish a method to intensify the mycorrhization of black pepper young plants.	The results showed that mycorrhization of young black pepper plants with the species <i>Scutelospora heterogama</i> reduced disease incidence to 17%. Rooting and mycorrhization of black pepper cuttings can be done simultaneously in carbonized rice husk. 2004/2006 – It was not tested effectiveness of mycorrhization under field conditions, <i>Fusarium solani</i> was not inoculated to young black pepper plants. Experiment was cancelled due cooperation completion.	1	Difficulties with mycorrhization successful process; lack of technical and financial resources.	Cancelled.
4-2) Evaluation of graft compatibility of piper rootstock(s) with resistance to <i>Fusarium</i> disease in <i>Piper</i> genus.					
1) Compatibility assessment of black pepper rootstocks within the native <i>Piper</i> spp. Population.	Identify rootstocks more compatible with black pepper to control root rot disease.	3 species of native <i>Pipers</i> were prepared as rootstock for <i>Piper nigrum</i> by saddle grafting. Low rates of germination of native <i>Pipers</i> and incompatibilities between scion and stock caused difficulties in this research activity. 2004/2006 – There was not continuity of observation of scion x stock performance in a greenhouse and on the field. Experiment was cancelled due cooperation completion	1	Difficulties with rootstocks' successful process; lack of technical and financial resources.	Cancelled
4-3) Evaluation of tolerance for <i>Fusarium solani</i> disease on black pepper cultivars recently introduced.					
1) Evaluation of black pepper cultivars in producer's field.	Identify clones better production above local average.	Growth data were collected from each material and TTS performance against diseases were observed in 2002. There were no <i>Fusarium</i> cases but some of the plants showed virus disease symptoms. The experiment was canceled because of eradication of plants infected by the PYMV virus.	2	The experiment was canceled by orientation of the Ministry of Agriculture (Pará Regional Office)	Cancelled and concluded.
1.5. Development of black pepper cultivation technologies utilizing of live support					
5-1) Evaluation of a black pepper cultivation system utilizing live support.					
1) Evaluation of black pepper cultivation	Establish a black pepper cultivation system using live support.	2 types of live support namely neem (<i>Azadirachta indica</i>) and gliricidia (<i>Gliricidia sepium</i>) were	3		Concluded at Tomé Açu municipality.

with live support.		selected. A manual of black pepper cultivation with <i>Gliricidia</i> live support was prepared. 2004-2006- Manual was elaborated and disseminated to producers, other researchers and webpage. Meetings and technical support to use new technology.			Continuity of experience in other pilot areas of Pará State.
2) Sustainable production systems for the target-areas, involving suitable intercropping, are developed.					
2. 1. Test and evaluation on sustainable production systems involving mix-planting with different kind tropical plant and establishment of demonstration farms					
1-1) Test and evaluation of mix-planting production systems involving selected tropical fruit trees and black pepper.					
1) Intercropping systems with black pepper and fruit trees.	Identify and recommend fruit trees more suitable for intercropping with black pepper.	The economically productive period of black pepper in Belém and Tomé-Açu was between 3 to 7 years. The production apricot and the avocado started five years after planting. 2004-2006 – Apricot experiment was cancelled at experimental area by showing fusariose disease. Intercropping with avocado was implemented but didn't yet reach conclusive recommendations.	3	Lack of technical, financial and operational resources in implementation intercropping with other recommended fruit trees in new experimental areas.	Partially concluded
2) Effect of soil covering on the productive behavior of new black pepper cultivars.	Identify and recommend at least two types of soil coverage capable of improving the chemical and physical characteristics of soil.	Research activity concluded and began data analysis phase. 2004-2006 - Data analysis concluded after 4 and 7 years showing better productivity of APRA and Guajarina cultivars with two different typos of soil. Technical report elaborated but not yet printed.	3	Long period needed to validate experiment.	Partially concluded
3) Application of NPK fertilizers for calibration of DRIS methods and for correlation with <i>Fusarium</i> disease incidence.	Identify the relations between nutritional unbalances and the incidence of <i>Fusarium</i> disease.	The experiment was concluded. 2004/2006 - The results published in the Experiment and Development Bulletin number 10.	4		Concluded.
1-2) Establishment of demonstration farms of mix-cropping and/or inter-cropping systems for small-scale farmers.					
1) Evaluation of a system of intercropping tropical fruit trees for small scale farmers.	Develop an intercropping system for perennial and semi-perennial plants with cupuaçu.	The intercropping with cupuaçu, banana and timber tree species resulted to 60t of banana production in the first 2 production cycles. Cupuaçu started to produce 2.5 years after plantation.	4	N/A	Concluded. Continuing of evaluating intercropping system until 2010 to obtain better cupuazeiro productivity results regarding

		Other intercropping alternatives for temporary shading include passion fruit and sweet cassava. The permanent shading plants will then be cupuaçu and palms (açai coconut or peach palm). 2004/2006 -The experiment produce initial results concerning appropriateness of intercropping system of cupaçuzeiro and açazeiro. It is still in progress with the continuity of evaluation of fruit productivities; the tolerant productivity distribution of each cupuaçu clone, and the shading levels of each timber tree species			other intercropping permanent trees.
2) Transfer of new technology for black pepper cultivation.	Lectures aiming to improve the knowledge level of black pepper growers on new cultivation technologies. Demonstration fields have been established at local farms for training and technology transfer.	5 lectures were given and the 5 demonstration fields were installed. 2004-2006 - The shading systems video was not produced and a low number of lecturers implemented. The demonstration fields were used by EMBRAPA and others institutions ensuring some degree of technology transfer to producers.	2	Lack of technical, financial and operational resources to increase number of lecturers and activities of dissemination of transfer of technology to small producers.	Partially concluded.
2.2. Transfer of sustainable agro forestry technologies to pilot-farmers.					
2-1) Transfer of sustainable agro forestry technologies to the pilot-farmers.					
1) Transfer of sustainable agro forestry technology to the pilot farmers.	Determine and resolve the problem that occurs through technology transfer to pilot-farmers. Analyze the socioeconomic effects the introduced technologies may leave to the farmers.	36 were selected small producing of 6 communities of the Municipal district of Tomé-Açu. Beginning of collection of data for socioeconomic analysis. 2004/2006 – The socio economic study was executed in Tomé Açu in 2003, and a survey report was elaborated in 2005. There was not elaborated an annual monitoring at this pilot control group at Tomé Açu. An initial Report was not elaborated regarding solutions and recommendations to solve main problems of transfer technologies to small producers.	2	Lack of technical, financial and operational resource	Partially concluded. 2008/2009 – Collection of data for socio-economic comparative analysis and impact evaluation since 2003.

ANNEX 3
PROJECT DEVELOPMENT MATRIX EVALUATION
(MDPe) 2004/2006

Results of the post-evaluation of the Project

2004/2005/2006

	Level of PDM	Indicators of MDPe	Data/Info needed	Means of Verification	Results	Comments of the evaluation
Overall Goal	Appropriate technologies on sustainable agriculture in the Eastern Amazon are developed.	1: Until 2009, in the pilot areas, it will increase in at least 5% the number of plants or cultivated species through guidance of the Project and other than those traditionally used by small producers in these areas.	List of plants or species planted by producers in the pilot areas in 2003 and 2006;-Plans on rural development and sustainable agriculture for the Country, State and Region in the coming 05 years. Plans on small producers' business for the coming 05 years	Monitoring reports of EMBRAPA and public organization with statistic data on plants or species cultivated in the pilot areas and in Pará; Interviews with EMBRAPA staff, stakeholders and small producers. National and State level Census on Agriculture and Cattle Ranching. Plans on rural development.	The Project established actions on monitoring and evaluation in the pilot area in Tomé Açu, through the realization of socio-economic research with 36 producers spread over 09 areas of the municipality. The research shall be again carried out in 2008/2009. Through interviews and visits to small producers, it was noticed that the Project is contributing to the achievement of the Overall Goal, since until 2006 the selected plants increased about 3% in the researched proprieties during the post-evaluation.	Medium to low/reduced likelihood of achieving it until 2009 if not ensured the technical, financial and operational conditions for the follow-up of researches, reproduction in other two areas in Pará; reinstallation of cancelled experiences. Besides, it should be enlarged the partnership with other public institutions and NGOs, in order to support in a intensive way the actions on rural extension and technical assistance to small producers in the pilot areas. Due to the short time, it should be made efforts for the validation of experiments and researches until 2009.

		<p>2. Until 2009, in the pilot areas, it will increase in at least 5% the cultivated area with tested sustainable production systems, through guidance of the Project and other than those traditionally used by small producers in these areas.</p>	<p>List with the cultivated area/surface in the pilot areas with tested sustainable production systems in 2003 and 2006. Indicative plans on sustainable rural development for the Country, State and Region in the coming 05 years. Plans on small producers' business for the coming 05 years.</p>	<p>Monitoring reports of EMBRAPA and public organization with statistic data on plants or species cultivated in the pilot areas and in Pará; Interviews with EMBRAPA staff, stakeholders and small producers. National and State level Census on Agriculture and Cattle Ranching. Plans on rural development.</p>	<p>The Project established actions on monitoring and evaluation in the pilot area in Tomé Açu, through the realization of socio-economic research with 36 producers spread over 09 areas of the municipality. The research shall be again carried out in 2008/2009. Through interviews and visits to small producers, it was noticed that the Project is contributing to the achievement of the Overall Goal, since until 2006 the selected plants increased about 3% in the researched proprieties during the post-evaluation.</p>	<p>Medium to low/reduced likelihood of achieving it until 2009 if not ensured the technical, financial and operational conditions for the follow-up of researches, reproduction in other two areas in Pará; reinstallation of cancelled experiences. Besides, it should be enlarged the partnership with other public institutions and NGOs, in order to support in a intensive way the actions on rural extension and technical assistance to small producers in the pilot areas. Due to the short time, it should be made efforts for the validation of experiments and researches until 2009 in order to have a greater productivity of selected systems.</p>
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Project "Technological Development for the Sustainable Agriculture in the Eastern Amazon"

**Results of the post-evaluation of the Project
2004/2005/2006**

	Level of PDM	Indicators of MDPe	Data/Info needed	Means of verification	Results	Comments of the evaluation
Purpose	By the end of the final period of the Project post-evaluation (2004-2006). Technologies on sustainable agriculture including selected fruits and black pepper, developed by the Project in pilot areas in Pará State, through adaptation to local conditions.	1. Until 2006, in the pilot areas, it will increase in at least 3% the number of plants or cultivated species through guidance of the Project and other than those traditionally used by small producers in these areas.	List of plants or species planted by small producers in the pilot areas in 2003 and 2006; - List of existent projects and activities concluded by the Project; equipments; buildings; laboratories; researchers; materials and budgetary resources; researches and tested and approved species; actions on training and dissemination for the use of species approved in the pilot area; and production and trade of species and plants approved by the Project.	Monitoring reports of EMBRAPA and public organization with statistic data on plants or species cultivated in the pilot areas and in Pará; Interviews with EMBRAPA staff, stakeholders and small producers in the pilot area. National and State level Census on Agriculture and Cattle Ranching. Plans on rural development and visits to the pilot areas.	The Project presented low degree of actions on monitoring and evaluation of researches and experiments in the pilot area in Tomé Açu, due to insufficient technical, budgetary and operation resources for the follow-up of activities in the period 2004/2006. Approximately 19 activities were cancelled following the Project conclusion. Due to the nature of the Project, around 10 activities still do not count with final results on validation, but they have been monitored, and 10 were concluded. Through interviews with relevant partners and visits to the pilot area in Tomé Açu, it was noticed that the Project is contributing to the achievement of the Purpose. Until 2006, the use of selected plants increased around 3% at the researched proprieties in the pilot area in Tomé Açu. This indicator could have been achieved in 2004, with the Project conclusion.	Partially achieved the Purpose since actions were not implemented in other pilot areas of the Project , not allowing to measure the Project impacts for the Eastern Amazon and Pará. Achieved the indicator of Project Purpose in researched proprieties in the pilot area Tomé Açu. Through the realization by CPATU of a new socio-economic research in 2008/2009, it can be better evaluated the achievement of Project Purpose and identified solutions for problems faced by small producers in other pilot areas in Pará to be implemented by the national counterpart. Due to technical, budgetary and operational difficulties faced by CPATU, around 50% of activities were cancelled after the Project conclusion. It was pretty much reduced the actions on technical assistance and rural extension in order to support small producers and produce greater impacts on the short-term of the Project Purpose, during 2004/2006.

		<p>2. Until 2006, in the pilot areas, it will increase in at least 3% the cultivated area with tested sustainable production systems, through guidance of the Project and other than those traditionally used by small producers in these areas.</p>	<p>List with the cultivated area/surface in the pilot areas with tested sustainable production systems in 2003 and 2006. Indicative plans on sustainable rural development for the Country, State and Region in the coming 05 years. - List of existent projects and activities concluded by the Project; level of use of equipments; buildings, laboratories; researchers; materials and budgetary resources used; concluded and transferred researches on productive systems on sustainable agriculture in the pilot areas; follow-up of actions on monitoring and evaluation of the experimental areas and the pilot proprieties; actions on training and dissemination of tested and approved systems in pilot areas.</p>	<p>Monitoring reports of EMBRAPA and public organization with statistic data on plants or species cultivated in the pilot areas and in Pará; Interviews with EMBRAPA staff, stakeholders and small producers in the pilot area. National and State level Census on Agriculture and Cattle Ranching. Plans on rural development and visits to the pilot areas.</p>	<p>The Project presented low degree of actions on monitoring and evaluation of researches and experiments in the pilot area in Tomé Açu, due to insufficient technical, budgetary and operation resources for the follow-up of activities in the period 2004/2006. Approximately 19 activities were cancelled following the Project conclusion. Due to the nature of the Project, around 10 activities still do not count with final results on validation, but they have been monitored, and 10 were concluded. Through interviews with relevant partners and visits to the pilot area in Tomé Açu, it was noticed that the Project is contributing to the achievement of the Purpose. Until 2006, producers increased on average more than 3% the use of mixed cultivation of selected plants or species and increased in more than 3% the planted area of black pepper with alive stake (Gliciridia) in the pilot area in Tomé Açu.</p>	<p>Partially achieved the Purpose since actions were not implemented in other pilot areas of the Project, not allowing to measure the Project impacts for the Eastern Amazon and Pará. Achieved the indicator of Project Purpose in researched proprieties in the pilot area Tomé Açu. Through the realization by CPATU of a new socio-economic research in 2008/2009, it can be better evaluated the achievement of Project Purpose and identified solutions for problems faced by small producers in other pilot areas in Pará to be implemented by the national counterpart. Due to technical, budgetary and operational difficulties faced by CPATU, around 50% of activities were cancelled after the Project conclusion. It was pretty much reduced the actions on technical assistance and rural extension in order to support small producers and produce greater impacts on the short-term of the Project Purpose, during 2004/2006. The Project outcomes were kept in the pilot area mostly thanks to the support of Japanese-Brazilian producers and their respective associations in Tomé Açu.</p>
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ANNEX 4
LIST OF INTERVIEWED PERSONNEL

Listo of Interviewed Personnel

Embrapa Oriental Amazonia (CPATU)

Mr. _____ – Chief Adjoint of Research and Development
Mr. João Baía Brito – Chief Adjoint of Management
Mr. Eduardo Jorge Maklouf Carvalho – Coordinator of Research and Development
Mr. Emanuel Adilson de Souza Serrão - Ex- General Chief of CPATU
Mr. Dílson Augusto Capucho Frazão – Ex-National Coordinator Project
Mr. Edílson Carvalho Brasil – Researcher
Mr. Alfredo Kingo Oyama Homma – Researcher
Mrs. Marli Costa Poltronieri - Researcher
Mr. João Tomé de Farias Neto - Researcher
Mrs. Walquimário de Paulo Lemos – Researcher
Mr. Osvaldo Ryohei Kato - Researcher
Mrs. Maria de Lourdes Reis Duarte – Researcher
Mr. José Edmar Urano de Carvalho - Researcher
Mrs. Walnice Maria de Oliveira do Nascimento – Researcher
Mr. Antônio Agostinho Muller – Researcher
Mrs. Lindaura Alves de Souza – Researcher
Mr. Rafael Moysés Alves – Researcher
Mr. Heráclito Eugênio Oliveira da Conceição – Researcher
Mrs. Maria do Socorro Padilha de Oliveira – Researcher
Mr. Francisco da Silva Bentes – Researcher
Mr. Antônio Carlos Paula Neves da Rocha – Researcher

EMBRAPA (Headquarters)

Mr. Sotto Pacheco –International Cooperation Coordinator (Retired)
Mr. Washington Luiz de Carvalho e Silva- Chief of International Relations Technical Adviser Unit

Bank of Amazonia S.A

Sra. Rosângela Maria Queiroz da Costa – Technical Adviser of CPATU

IMAZON – Institute to Amazonia Population and Environment

Sr. Paulo Gonçalves Barreto – Technical Adviser of CPATU

POEMA – Poverty and Environment Program of Amazonia (Unit of FUPA)

Sr. Ailton Pires de Lima – Vice-Director

SAGRI – Agriculture Secretary of State of Pará

Sr. Francisco de Jesus – Planning Coordination Department
Sr. Benito Causa Vara – Statistic Unit

EMATER - Pará

Sra. Gilberta Souza – Diretora Técnica do Pará
Sr. Kleber Farias Perotes – Coordenadoria Técnica do Pará
Sr. Raimundo Nonato da Silveira Ribeiro – Núcleo Técnico do Pará
Sr. A. Kenji – Coordenadoria Técnica do Pará
Sr. Milton Manuel da Cunha Couto Neto – Chefe do Escritório de Tomé Açú

CEPLAC – National Planning Executive Commission of Cocoa
Sr. Jasson Luis P. Moreira – Chefe do Escritório de Tomé Açú
CAMTA – Agricultural Mixed Cooperative of Tomé Açú
Mr. Francisco Wataru Sakaguchi – President-Director
Mr. Michinori Konagano – In charge of Technical Assistance Unit
Mr. Jailson K. – Technical Assistance Officer

ACTA – Brazilian-Japanese Cultural Association and Agricultural Encouragement of Tomé Açú
Mr. Mitsuharu Onuki – President

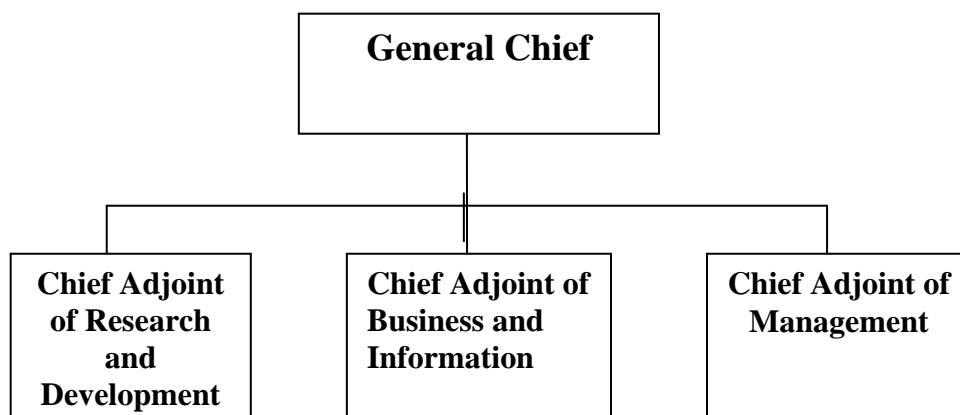
SMA – Local Secretary of Agriculture of Tomé Açú
Mr. Michinori Konagano – Head of Local Secretary

Small farmers of Tomé Açú Municipality (pilot area 1)

Mr. Michinori Konagano
Mr. Seya Takaki
Mrs. Seya Takaki
Mr. Koji Susuki
Mrs. Yukio Sasaki
Mr. Mitsuharu Onuki
Mr. Edson Ribeiro Costa
Mr. José Vieira Costa Neto
Mr. Bernardo Batista Costa
Mr. Antônio Edílson Rodrigues
Mr. Sebastião Brasil Rodrigues
Mr. Raimundo Romano Nunes
Mr. Manoel Romano Trindade
Mr. Bruno Souza Prazeres
Mrs. Bruno Souza Prazeres
Mr. Erisvaldo da Silva
Mr. Raimundo Pereira da Costa
Mr. Ademar Ferreira
Mr. Luis Palheta Coelho
Mrs. Luis Palheta Coelho
Mr. Cipriano dos Santos Maciel
Mrs. Ana dos Santos Dias

ANNEX 5
ORGANIZATION CHART

Organization Chart of CPATU



Technical Adviser Council of CPATU

President

Mrs. Tatiana Deane de Abreu Sá (Executive Director of EMBRAPA)

Vice-president

Mr. Jorge Alberto Gazel Yared (General Chief of Embrapa Oriental Amazonia)

Councilors:

Mrs. Rosângela Maria Queiroz da Costa (BASA S/A),

Mr. Francisco de Assis Costa (Agency for Amazonia Development - ADA)

Mr. Iran Pereira Veiga Junior (Federal University of Pará - UFPA)

Mrs. Ima Célia Guimarães Vieira (Emílio Goeldi Museum of Pará- MPEG)

Mr. Luiz Pinto de Oliveira (State Secretary for Science and Environment- SECTAM)

Mr. Paulo Gonçalves Barreto (Instituto do Homem e Meio Ambiente da Amazônia- IMAZON)

Mr. Carlos Augusto S. Silva (Pará Agriculture Workers Union – FETAGRI)

Mr. Carlos Fernandes Xavier (Pará Agriculture Federation - FAEPA)

Sra. Najja M S. Guimarães (IBAMA)

**THIRD PARTY
EVALUATION**

Third Party Review by External Experts

Ex-Post Evaluation on “The Technological Development Project for Sustainable Agriculture in Eastern Amazon”

-This Third Party Review by External Experts is to examine the end-product (evaluation report and a summary sheet) of ex-post evaluation of the above-mentioned project in light of its structure, verification procedure and overall consistency. It is to be noted that the review is not to question the validity of the evaluation results per se.

- On the leftmost column of each item, choose the rating from A as “excellent”, B as “good”, C as “acceptable” and D as “unacceptable”.

- When you choose D for an item, specify the reason in comment fields.

- For more details of viewpoints for each item, refer to the corresponding page of “JICA Project Evaluation Guideline” which is indicated on the rightmost column of each item.

1 Evaluation Framework

Reference page No.
of “JICA Project
Evaluation Guideline”

A	(1) Time Frame of Evaluation Study	97
Viewpoint	Necessary field survey activities such as data collection and discussion with counterparts are appropriately set within the time frame of the evaluation study. Time frame also contains preparations such as distribution of questionnaires, and are appropriate in terms of timing, length and schedule of the evaluation study.	
A	(2) Study Team	107
Viewpoint	Team members are assigned on an impartial basis, and are with balance specialty.	
Comment		

2 Data Collection and Analysis

A	(1) Evaluation Questions	51
Viewpoint	Evaluation questions are in line with evaluation purposes and set properly in the evaluation grid. General questions as to the five evaluation criteria are narrowed down to more specific sub questions to identify necessary information/data to be collected	
A	(2) Data Collection	72
Viewpoint	Data collection is conducted based on the evaluation grid, and is sufficient for obtaining answers for evaluation questions. Additional Binformation are collected for unexpected and newly confronted questions during the process.	
A	(3) Measurement of Results	61
Viewpoint	Achievement level of overall goal is examined on the basis of appropriate indicators, being compared with targets.	
A	(4) Examination of Causal Relationship	62
Viewpoint	The causal relationships whether the effects for the beneficiaries resulted from the project is examined either in a qualitative or quantitative manner (i.e. Are the effects at the overall goal level caused by the project intervention?)	
Comment		

3 Evaluation Results

A	(1) Impact	57, 85-86
Viewpoint	Perspectives for evaluation of “Impact” (e.g. achievement level of the overall goal, causal relationships between the outcome of the project and overall goal, ripple effects) are substantially covered. Grounds for judgment are clearly stated in a convincing manner.	
A	(2) Sustainability	58, 85-86
Viewpoint	Perspective for evaluation of “Sustainability” (e.g. probability of activities to be continued and outcomes to be produced in terms of 1) policies and systems, 2) organizational and financial aspects, 3) technical aspects, 4) Society, Culture and environment and) are substantially covered. Grounds for judgment are clearly stated in a convincing manner.	
A	(3) Factors Promoting Sustainability and Impact	85-86
Viewpoint	Promoting factors on “Impact“ and “Sustainability” are analyzed properly based on the information obtained through evaluation process.	
A	(4) Factors Inhibiting Sustainability and Impact	85-86
Viewpoint	Inhibiting factors on “Impact“ and “Sustainability” are analyzed properly based on the information obtained through evaluation process.	
A	(5) Recommendations	87-88
Viewpoint	Recommendations are made thoroughly based on the information obtained through the process of data analysis and interpretation. Recommendations are specific and useful for feedbacks and follow-ups, preferably being prioritized with a time frame.	
A	(6) Lessons Learned	87-88
Viewpoint	Lessons learned are derived thoroughly based on the information obtained through the process of data analysis and interpretation. Lessons learned are convincing and useful for feedbacks, being generalized for wider applicability.	
Comment		

4 Structure of Report

B	(1) Writing Manner	89, 103
Viewpoint	Logical structure and major points are clearly described in an easily understandable manner.	
B	(2) Presentation of Primary Data and Utilization of Figures	89, 103
Viewpoint	Sufficient primary data such as in the target, contents and results of interviews and questionnaires are presented properly in the report. Figures and tables are utilized effectively to present statistics and analysis results.	
Comment		

5 Overall Review based on “Criteria for Good Evaluation”

A	(1) Usefulness	13-14
Viewpoint	In light of the effective feedback to the decision-making of the organization, clear and useful evaluation results are obtained.	
A	(2) Impartiality and Independence	13-14
Viewpoint	Evaluation is impartially conducted in a neutral setting.	
A	(3) Credibility	13-14
Viewpoint	In light if the specialties of evaluator, transparency of the evaluation process and appropriateness of the criterion of judgment, evaluation information are credible.	
A	(4) Participation of Partner Countries	13-14
Viewpoint	Partner countries stakeholders participate actively in the process of evaluation, not just provide information.	
Comment		

6 Overall Comment

We can be concluded after the evaluation of Third Party Review by External Experts that: the report had been introduced the purpose, the evaluation and the goal of this Project very well, appropriated and with clearness. The executed activities, the reached goals, the item was not concluded, the item not executed, the technological, financial, social, cultural difficulties had been considered. It was important that it had been indicated the way of the progress of the Project and the steps to be taken for its concretion.

There is an observation to do : the headings in chapters 3 (3.3) and 5 (5.2.2) in the index they aren't the same in the text. Moreover, verify the item 3.3 in chapter 3, page 16, line 14: there is some difficulty for its comprehension.

Date : 2007/03/30

Name of the Third Party : Sunao Sato PhD

Designation : Full Professor

Name of the Institution : São Paulo University