

## Summary

Evaluation conducted by: OPMAC Corporation

<b>1. Outline of the Project</b>	
<b>Country:</b> The Republic of Bolivia	<b>Project title:</b> The Project for the Dissemination of High-Quality Rice Seeds for Small-Scale Farmers in Bolivia
<b>Issue/Sector:</b> Agriculture	<b>Cooperation Scheme:</b> Technical Cooperation Project
<b>Division in charge:</b> Field Crop Based Farming Area, Team I, Rural Development Department (Field Crop Based Farming Area Division I, Field Crop Based Farming Area Group, Rural Development Department)	<b>Total Cost:</b> 929 million Yen
<b>Period of Cooperation</b>	August 1 <sup>st</sup> 2000 to July 31, 2005
	<p><b>Partner Country's Implementing Organization:</b>            Ministry of Agriculture, Livestock and Rural Development (MAGDR) (Ministry of Rural Development and Land)            The Government of the Prefecture Santa Cruz            Tropical Agriculture Research Center (CIAT)</p> <p><b>Supporting Organization in Japan:</b>            Ministry of Agriculture, Forestry and Fisheries</p>
<b>Related Cooperation</b>	None in particular.
<p><b>1-1. Background of the Project</b></p> <p>The rice production in Bolivia has been increasing year by year with the expansion of cropping area. Production reached 344,000 tons from a cultivated area of 131,000 hectares in 1995/96. About 82% of this national production was produced by the Prefecture of Santa Cruz, from an area covering 67% of the national rice field. Small-scale farmers, which comprised 90% of the total rice farmers in Santa Cruz, only contributed 30% of the prefecture total rice production. The paddy rice yield of these small farmers was 1.5 tons per hectare, which was only half that of the middle and large-scale farmers.</p> <p>In this context, the Government of Bolivia requested the Government of Japan for the implementation of a project to support in an increase in family income, stabilization of farming, and improvement of the food security for small-scale farmers in the Eastern Plain Area of the country, through improved rice varieties, seed production methods, and distribution methods of high quality rice seeds for sowing. In response to the request, JICA dispatched the Preliminary and Implementation Study Teams to assess the relevance, feasibility and planning of the project. As a result, both Governments signed the R/D in May, 2005, and the five (5)-year period Project began in August, 2005.</p> <p><b>1-2. Project Overview</b></p> <p>The technical cooperation project was implemented in cooperation with the Tropical Agriculture Research Center (CIAT), which is under the local government of the Prefecture of Santa Cruz. Its goal is to establish an extension system of high yielding rice varieties, accompanied with proper distribution of high quality seed rice for small-scale rice farmers in the pilot area, Yapacaní, of Santa Cruz Prefecture.</p> <p><b>(1) Overall Goal</b></p> <p>The rice production of small-scale farmers is increased in the selected pilot area.</p>	

## (2) Project Purpose

The dissemination systems of high-quality and high-yield rice seeds for small-scale rice farmers are established in the selected pilot area.

## (3) Outputs

- 1) High-yield and high quality rice varieties and lines for small-scale rice farmers are selected.
- 2) The rice seed multiplication technologies for small-scale rice farmers are developed and improved.
- 3) High-yield and high-quality rice seeds for the dissemination are cultivated by rice seed growers in the pilot area.
- 4) High-yield and high-quality rice seeds are disseminated with the improved rice cultivation technologies in the pilot area.

## (4) Inputs

### Japanese side:

Long-term Expert:	9 persons	Equipment:	116 million Yen
Short-term Expert:	8 persons	Local cost:	113million Yen
Trainees received:	24 persons	Others :	19 million Yen
			<u>Total: 929 million Yen</u>

### Bolivian side:

Counterpart:	17 persons		
Land and Facilities:	CIAT Santa Cruz Central Office, Saavedra Agriculture Experimental Center, Yapacaní Experimental Center, San Pedro Experimental Center	Local cost:	137 million US dollars (164 million Yen)

## 2. Evaluation Team

<b>Members of Evaluation Team</b>	General Manager/Evaluation Design and Management: Mitsue Mishima, Consultant, OPMAC Corporation	
	Evaluation and Analysis: Hisami Nakamura, Consultant, OPMAC Corporation	
<b>Period of Evaluation</b>	November 24, 2008 to April 29, 2009 (Field survey: January 27, 2009 to February 10, 2009)	<b>Period of Evaluation:</b> Ex-post Evaluation
	Evaluation of Agriculture/Rural Development: Kiyoko Hitsuda, Consultant, Japan Development Service	

## 3. Project Performance

### 3-1. Performance of Project Purpose

The Project purpose is judged to have been achieved within the project period.

While the Project Purpose is "the establishment of a dissemination system for high quality and high yield seed rice for small-scale farmers in the selected pilot area", the verifiable indicator of the Project Purpose was the share of small-scale farmers who plant the recommended high quality rice varieties. In order to verify the achievement of the Project Purpose is based on this indicator in view of the causal relationship between the Project Purpose and the overall goal of "the increased rice productivity of small-scale farmers in the selected pilot area".

"High quality" here is understood to be the high quality of the seeds of rice rather than the quality of the rice produced (in terms of taste, nutritional value, etc.) and the judgement of the level of achievement is based on this understanding. Meanwhile, the "high yield and high quality rice varieties and lines" in Output 1 is regarded as the meaning of "high yield rice varieties and lines which will produce high quality rice" while "high yield and high quality seed rice" in Outputs 3 and 4 are considered as the meaning of "high yield and high quality seed rice".

Regarding the indicator for the Project purpose of "the planting of high quality rice varieties by 40% of small-scale rice farmers in the pilot area", the farming household survey in 2004 reported that the diffusion rate of CIAT-recommended rice varieties among small-scale farmers in the pilot area was 33.6% as of May, 2004. The figure increases to 41.1% when small-scale farmers planting modern varieties recommended by the Agriculture and Livestock Cooperation of San Juan, Yapacaní

(CAISY: Cooperativa Agropecuaria San Juan de Yapacaní) are included.

### **3-2. Achievement Related to Overall Goal**

At the time of the ex-post evaluation, the overall goal was achieved.

The average yield of rice in the Yapacaní area was as high as 2.5 tons/ha for slash and burn farmers and 3.5 tons/ha for semi-mechanised farmers, achieving the target value of the indicator for the overall goal.

### **3-3. Follow-up of the Recommendations by Terminal Evaluation Study**

The terminal evaluation report made recommendations for continuous collaboration between the CIAT and the Non Governmental Organizations (NGOs) which were involved in the extension activities under the Project, maintenance of the extension-related inputs, equipment and facilities, continuation of the extension activities and the sustainable management of the revolving fund. While the recommendation on the use of the equipment and facilities provided under the Project has been implemented, the other recommendations have not been taken up, resulting in the discontinuation of the collaboration between the CIAT and the NGOs in order to conduct project-related activities in the post-project period.

## **4. Results of Evaluation**

### **4-1. Summary of Evaluation Results**

#### **(1) Relevance**

The relevance of the Project was extremely high.

In its 10 Year Agricultural Development Strategy (1994-2004), the Government of Bolivia identified "food security" and "the elimination of rural poverty" as priority issues. The overall goal of the Project, which aimed at increasing the rice production volume, is consistent with the development policy of the Government of Bolivia. While Santa Cruz Department, in which the pilot area is located, is a leading rice production area in Bolivia, the rice production yield of local farmers, 90% of which were small-scale farmers who had moved from the highlands to the lowlands in accordance with the policy promoted by the government, was extremely low. The improvement of productivity of rice cultivation met not only the need of small-scale farmers but also the policy of internal resettlement of the Government of Bolivia. Even before the commencement of the Project, a Japanese rice breeding expert had been assigned to the CIAT for a period of 10 years. Such long-term commitment led an appropriate understanding of the local situation by JICA. Accordingly, the Project was formulated on the basis of the understandings. Therefore, the project approach, including the selection of target group, to improving the rice production productivity of small-scale farmers is appropriate.

Since the Japan's ODA policy for Bolivia prioritizes assistance for poverty reduction which includes productivity improvement, the Project Purpose is consistent with the policy target of the Japan's ODA for Bolivia.

#### **(2) Effectiveness**

The effectiveness of the Project was very high.

The Project purpose was achieved in the Project period through the successful achievement of the four planned outputs. However, it was difficult to verify some indicators relating to the capacity building of engineers and extension workers because the target number of people to be trained and the types of capacity to be developed were not clearly defined. For other indicators to measure attainment of the outputs, quantifiable targets were set and the achievement of these targets was verified. Hence, the lack of clear definitions for some indicators did not affect the general evaluation of the effectiveness of the Project.

#### **(3) Efficiency**

Even though there was room for some improvement of the implementation process, it is judged that the Project is efficient.

The main inputs by the Japanese side were the dispatch of experts, training of CIAT staff members in Japan, provision of equipment and funding to cover the field work expenses while the inputs by the Bolivian side provided engineers of the CIAT, which was the C/P organization, land,

building and equipment for the Project office and funding to cover the Project expenses. All of the inputs were effectively used in the Project activities to produce the intended outputs. Even though 10 C/P personnel were replaced during the Project period, the handing over of the work was properly conducted. As the transfer of skills by the Japanese experts was also satisfactorily conducted, there was no negative impact of the staff replacement. In regard to the extension activities, a collaborative relationship was established with NGOs and others and such inputs as the loan of motorcycles and financial support for the activities of the NGOs and others were made. These inputs greatly contributed to the production of the intended outputs and proved to be positive factors which increased the efficiency of the Project.

Moreover, a short term expert was assigned under the Project to support the activities of the Yapacaní Seeds Center which was constructed by Japan's grassroots grant aid. This input enabled a post-harvest treatment to produce high quality seed rice which brought about a positive impact on the efficiency of the Project through the contribution of this service to increasing production using the recommended varieties.

#### **(4) Impacts**

The Project brought about the various impacts described below.

##### **(Anticipated Positive Impacts)**

- Achievement of the overall goal (increase of the rice productivity of small-scale farmers in the selected pilot area): In the post-project period, the productivity of rice production has increased for both slash and burn rice farmers and farmers cultivating rice in semi-mechanised rain-fed cropping fields. This positive result can be attributed to the wider use of the recommended rice varieties by small-scale farmers and their improved cultivation techniques as a result of the extension activities under the Project. The improvement of productivity of local rice production was confirmed by the field survey which was conducted as part of the ex-post evaluation. The increase in household income of small-scale farmers, which led by the improvement of productivity has facilitated a shift from slash and burn agriculture to cultivation in semi-mechanised rain-fed cropping fields.
- Capacity building of people involved in the Project: Staff members of the CIAT learned techniques and knowledge relating to research on superior rice varieties, production of seed rice, transfer of skills and technical guidance. Since the completion of the Project, they have been utilising these newly acquired techniques and knowledge to improve their work. The extension workers of the NGOs and other organizations, which were involved in the project activities in the pilot area, also learned new rice cultivation techniques. Many small-scale farmers, who were the intended principal beneficiaries of the Project, have improved their cultivation techniques based on the knowledge and skills learned through the Project but also their livelihood. It has also been confirmed that those farmers have been disseminating such knowledge and skills to farmers in the neighbouring area. They have been also utilizing those knowledge to improve communal activities as well.

##### **(Other Spill-over Effects)**

- Impacts on policies and institutional arrangements: The outcomes of the Project made the Yapacaní area well known as a center of rice production in Bolivia. The central, departmental and municipal governments have been considering policies to promote rice production for small-scale farmers.
- Economic impacts: Since the rice produced in Yapacaní become higher profile in the country, the domestic sales routes for the Yapacaní rice have expanded. In addition, while the unit yield of rice has increased, the highly profitable seed rice production techniques have been disseminated in the pilot area. Those improvements of rice production, together with the high price of rice in 2008, brought about the improvement of standard of living in the pilot area.
- Environmental impact: As farmers have learned appropriate use of agricultural chemicals through the Project, the environmental load of the chemicals has been reduced.

Although there is no negative impact of the Project so far, there is a risk to induce socially adverse impact by the Project. The disparities between the farmers who can introduce the new techniques and the others who cannot are becoming obvious and there is a concern that those disparities would cause the economic gap among the small-scale farmers in the pilot area near future. Therefore, it is essential to consider policies to cope with those possible negative impacts, including widening economic gap and unfavourable social changes by the economic disparities.

#### **(5) Sustainability**

The outcomes of the Project are highly sustainable.

- Policy and institutional aspect: Although there is uncertainty caused by the political discord between the central government and the departmental government of Santa Cruz, the governments at all levels of central, departmental and municipal highly prioritize policy support for sustaining and further development of the project outcomes since those outcomes have considerable positive impacts on the country.
- Technical aspect: The technical capability of the CIAT has improved. The CIAT has been making efforts to sustain the outcomes of the Project, including an effort to disseminate rice cultivation techniques based on the method adopted for the Project activities. Some of the new rice varieties developed by the CIAT have been unpopular among farmers because of the high level of threshability (unsuitable for manual rice reaping in slash and burn cultivation) or low level of threshability (unsuitable for mechanical reaping). In this aspect, there is a room for future technical improvement. Assistance for the extension service by the NGOs and other organizations suspended two years after the completion of the Project because of financial constraints. Nevertheless, the cultivation techniques using high quality seeds of the improved varieties, which were introduced by the Project to farmers in the pilot area, have already rooted in the area. Thus, the suspension of the direct extension service by the NGOs has not been seriously affecting activities for dissemination of the rice cultivation technique in the area. More likely, some farmers have even tried tests to compare varieties or hybridization by themselves while others have formed their own groups to promote acquisition of new knowledge or external assistance smoothly. There has been growing interests in paddy rice cultivation among the small-scale farmers because of the high yield. However, only slightly less than 5% of small-scale farmers are actually using the rice varieties for paddy field cultivation and associated techniques introduced by the Project because the most small-scale farmers have been facing the shortage of funds to create paddy fields.
- Public finance: Although both the central government and departmental government highly prioritize support to sustain the project outcomes, the allocation of the departmental budget for the CIAT is insufficient. Therefore, there is uncertainty to sustain and to further develop the activities introduced by the Project.
- Environmental aspect: There is concern about overuse of forest resources due to the progressive clearance of forest areas to expand semi-mechanised rice cultivation and to increase use of firewood for the drying process of seed rice production and rice polishing. The appropriate planning of land use is required for a new local agricultural system.

### **4-2. Factors Promoting the Project**

#### **(1) Impacts**

The production zeal among small-scale farmers has been enhanced by the general increase of grain prices and the government action to establish the EMAPA to purchase the entire volume of produced rice and seed rice at guaranteed prices as a supporting measure for small and medium-scale farmers. The fact that the volume of rice production behind the consumption volume has been encouraging the expansion of rice cultivation led by the Project area.

#### **(2) Sustainability**

Since the farmers in the pilot area have their own rice mill, they could continuously produce highly profitable seed rice without exploiting margins by the private rice mills. The target group of small-scale farmers, many of which have been resettled within Bolivia, have a strong desire for a

better life and are highly motivated to give higher education to their children. Their willingness to learn is the key to the good sustainability for sustainable and highly productive rice production.

### **(3) Efficiency**

The Japanese experts on rice breeding had been assigned to the CIAT for a total period of 10 years before the Project. They successfully created an environment to accommodate and facilitate the Project. In that environment, the Project could be implemented efficiently due to the sufficient understanding and support by the stakeholders, including small-scale farmers. Since the small-scale farmers in the pilot area had been exposed to superior rice cultivation techniques practiced by descendants of Japanese settlers in a neighbouring area, they have been encouraged to learn such techniques. Their motivation to learn facilitated the transfer of techniques, resulting in the efficient achievement of the intended outputs as well as the Project Purpose. Moreover, the collaboration between the CIAT and the NGOs, etc. for the extension activities and establishment of the Yapacaní Seed Center contributed to the promotion of the project implementation.

## **4-3. Factors Inhibiting the Project**

### **(1) Impacts**

While the overall goal was achieved, the number of seed rice producers decreased in the 2005/06 and 2006/07 cropping seasons due to sluggish rice prices and flood damage. The fluctuation of grain prices and abnormal climate still adversely affected the motivation of farmers to increase rice production.

### **(2) Sustainability**

Although the project outcomes are sustainable in general, here are some risks which may hamper the sustainability.

- Limited treatment capacity of the Yapacaní Seed Center: The volume of local rice production through the wider use of improved varieties has exceeded the treatment capacity of the center which is the only rice mill in the area. Due to the limited capacity of the post-harvest treatment of seed rice, the number of seed rice producers has decreased. Since a short-term expert on post-harvest treatment was dispatched for only one month, technical transfer to the local engineers to operate the Yapacaní Seeds Center could not be sufficiently implemented and harmed sustainable management of the Center.
- Continuity of the EMAPA's support system: After the Project, the number of seed rice producers has decreased as the produced seed rice has not been sold in full. Since the central government established the EMAPA in 2008 to introduce a system of the guaranteed purchase of seed rice, the farmers were motivated to increase their production. At this point of time, however, it is not clear whether the EMAPA will continue the buyback system for rice in future or not.
- Fluctuations of the rice price: The government often imports rice regardless of the domestic situation, causing a drastic fall of the rice price. The risks, including the fluctuation of grain prices and climate change in recent years, harm stable rice cultivation for small-scale farmers in the pilot area.
- Dependency on aid among some groups: Some local groups, such as the Yapacaní Seed Growers' Association, have become passive, showing signs of dependency on aid. The passive behaviour of these groups has become obstacle against disseminate the project outcomes over a much wider area.
- Political influence: As the departmental government of Santa Cruz is at the forefront of the opposition to the current central government, the delivery of basic goods (fuel, cooking oil, etc.) to the Department of Santa Cruz is often blocked as a result of political discord between the central government and the departmental government. In such situation, the small-scale farmers cannot stably continue their production activities.

### **(3) Others**

None in particular.

#### **4-4. Conclusions**

It is considered that the Project has been highly successful.

Although there are some issues to be addressed regarding the capacity of farmers to manage an organization and their own farming in a profitable manner, the Project improved the abilities of the CIAT, the C/P organization, and their staff members as well as the targeted small-scale rice farmers in the pilot area. The techniques to produce high yield and high quality seed rice were firmly rooted among these farmers. As a result, the overall goal of the Project, the increase in productivity of rice production by small-scale farmers in the pilot area, was achieved soon after the completion of the Project. Such a positive impact has been stimulating the self-reliant development efforts of farmers beyond the pilot area. The successful outputs of the Project are increasingly recognised throughout Bolivia, resulting in much stronger positive impacts of the Project than the anticipated. One positive factor behind the remarkable outcomes of the Project was the strong willingness of local farmers, who were the targeted beneficiaries of the Project, to improve their livelihood through the improvement of rice cultivation techniques. The positive stance of the CIAT to expand of the project outcomes nationwide has greatly contributed to the high level of sustainability of these outcomes even though the CIAT itself is primarily a research organization and not an extension agency. From the viewpoint of the Project implementation set-up, the actual implementation of the Project was greatly assisted by the fact that the environment for the formulation of an effective approach and efficient implementation of the Project was already in place as a result of the presence of Japanese experts over a long period of time before the commencement of the Project.

#### **4-5. Recommendations**

(Recommendations for the JICA)

- Assistance for the management capacity of farmers' associations: Further assistance to strengthen farmers' associations using a participatory approach is required to enhance the self-reliance of the Project beneficiaries. A typical example is the Yapacaní Seed Producers' Association.

(Recommendations for the Government of Bolivia)

- Steady implementation of supporting measures for small and medium-scale farmers: The steady implementation of supporting measures for small and medium-scale farmers as typically represented by the activities of the EMAPA is essential.

(Recommendations for the Local Authorities of Santa Cruz and Yapacaní)

- Attention to a possible socioeconomic gap among farmers: Careful attention should be paid to the potential disparities among farmers as a result of the introduction of improved cultivation techniques.
- Formulation of a sustainable land use plan: The formulation of a land use plan for the sustainable development of rice cultivation in the Yapacaní area is required. The contents of this plan should include the establishment of reserve forests (or a required area of forests to be preserved) and suitable sites for conversion to paddy fields.

#### **4-6. Lessons Learned**

(Lessons for the JICA)

- Thorough analysis of the target issues: Important technical terms (such as "mechanised field" and "high quality seeds") which represented core concepts of the Project were not clearly defined in the Project and were used in an inadequate manner. In general, it is essential to thoroughly analyse the target issues in advance in order to clarify the target(s) of a project and what actions are to be taken so that all project activities can be implemented with a common understanding of the issues at stake by all people involved in the project using clearly defined technical terms.
- Assistance based on a long-term strategy for activities: Both the effectiveness and efficiency of the Project were enhanced by the positive environment for project implementation created by the motivation of the target farmers to learn and the long-term presence of Japanese experts

prior to the Project. In general, the step by step creation of an environment to assist the implementation of a project from the long-term perspective is important as part of a strategy to not only produce the intended positive outcomes but also to achieve the overall goal of the project.

- Collaboration with different aid schemes, NGOs and other donors: There was a problem concerning the management of the revolving fund to support the extension activities even during the project period. It must have been foreseeable that it would be difficult to continue the extension activities with the collaboration of the CIAT and the NGOs or other organizations in the post-project period. Proper assessment of the feasibility of sustainable extension activities with the collaboration of the CIAT and the NGOs should have taken place during the project implementation period. If the feasibility is low, an alternative extension system, including an extension system based on the strengthened farmers' associations should have been established..While the establishment of the Yapacaní Seed Center under Japan's grassroots grant aid scheme was an important development to ensure the commitment of small-scale farmers to the production of seed rice, collaboration beyond a single scheme is required to ensure the sustainability of the management set-up of this center.

(Lessons for Yapakani Authority and CIAT)

- Participatory management method for farmers' associations and strengthening of such associations: Since the time of the completion of the Project, it has been predicted that the transfer of responsibility for the management of the Yapacaní Seed Center to local farmers would be difficult. Although the decision to transfer the responsibility to farmers is likely to have been taken in the face of an increasing nationalist sentiment, a more reliable management method should have been taken through discussions with association members.