conducted by Cuba Office: December 2025

Country Name	**el Proyecto de Mejoramiento de los Equipos Agrícolas para Desarrollar la Tecnología de Producción de Semilla de Arroz (Project for improvement of agricultural machinery advances in rice seeds production techniques)**
Republic of Cuba	

I. Project Outline

Background	In Cuba, one of the priority issue was increasing rice production to improve the low food self-sufficiency rate, and increased production of certified seed using high-quality, superior varieties was needed. However, while the main rice seed production organizations shifted from large-scale state farms to agricultural cooperatives and individual farmers, the number of agricultural machinery owned by the Agroindustrial Company of Grains (EAIG), which provides agricultural machinery services, had been decreasing due to aging, and small- and medium-scale machinery available for use by cooperatives and individual farmers producing certified seeds was very limited. Consequently, plowing, puddling, and leveling field were not carried out properly, resulting in uneven rice growth. In addition, the lack of transplanters meant that direct seeding was the main method of cultivation, leading to dense planting and overgrowth of weeds.					
Objectives of the Project	To increase the rice seed production and stabilize the supply of rice by procuring necessary agricultural machinery for rice seed production in eight provinces and one special municipality, thereby contributing to increased rice production in Cuba.					
Contents of the Project	1. Project Site: the provinces of Pinar del Rio, Matanzas, Cien Fuegos, Villa Clara, Sancti Spiritus, Ciego de Avila, Camagüey, Granma and the Special Municipality Isla de la Juventud. 2. Japanese side Procurement of Tractor (199 units), Rotary tiller (199 units), Wheels for paddy fields (199 units), Rice trans planter (46 units), Combine harvester (42 units), Automatic seeding machine (41 units), Seeding nursery tray (4,158,000) and Spare parts for machinery 3. Cuban side: Installation of security fences and gates at project sites, etc.					
Project Period	E/N Date	March 10, 2017	Completion Date (ex-ante)	June 2018 (Handover) (18 months)	Completion Date (actual)	April 23, 2021 (Completion of the operational guidance)
	G/A Date	November 7, 2017				
Project Cost	E/N Grant Limit / G/A Grant Limit: 1,215 million yen, Actual Grant Amount: 713 million yen					
Executing Agency	Ministry of Agriculture (MINAG) Grupo Empresarial Agrícola (GAG) (Agroindustrial Company of Grains (EAIG) in 8 provinces belonging to GAG and Unidad Empresarial de Base (UEB) of the Special Municipality Isla de la Juventud)					
Contracted Agencies	Main Contractor(s): Sojitz Corporation Main Consultant(s): Japan International Cooperation System					

II. Result of the Evaluation

<Constraints on Evaluation>

- Because gasoline supply was disrupted throughout the country, the scope of the survey visits was reduced due to fueling restrictions.

1 Relevance/Coherence

[Relevance]

<Consistency with the Development Policy of Cuba at the Time of Ex-Ante Evaluation>

The project was consistent with the development policy of Cuba at the time of ex-ante evaluation. Improving the low food self-sufficiency rate was one of priority issues in the development of the agricultural sector in Cuba. In addition, the Guidelines of the Economic and Social Policy of the Party and the Revolution, approved by the Sixth Congress of the Communist Party in 2011, set out the development and promotion of an integrated policy contributing to the production, processing and marketing of seeds.

<Consistency with the Development Needs of Cuba at the Time of Ex-Ante Evaluation>

The project was consistent with the development needs of Cuba at the time of ex-ante evaluation. As mentioned above ("Background"), increasing rice production to improve the low self-sufficiency rate was the priority issue of the country, and increased production of proof seed using high-quality, superior varieties was needed. However, the agricultural machinery had been aging.

<Appropriateness of Project Design/Approach>

The project design/approach was appropriate. With regard to consideration for the marginalized people, the project was intended to make a further contribution to increasing the rice production for food in Cuba. However, since rice is a crop that is distributed equally among the population in Cuba under the rationing system, the increased rice production was intended to have a fair benefit to all the people.

Regarding the overall project design/approach, the initial plan for operation and maintenance training by the manufacturer in the capital city and regional offices was replaced with web-based training at the time of installation, because the machinery was delivered during the COVID-19 pandemic, overseas travel was restricted, and outings were limited in the country. Although the failure to provide on-site training led to unreasonable operation and poor maintenance due to insufficient skills, and was one of

the causes of the breakdowns, it was a force majeure caused by the COVID-19 pandemic, and the failure to continuously train and assign personnel, including machine repairmen and operators, necessary for operation and maintenance of the machinery was another cause of the breakdowns.

<Evaluation Result>

In light of the above, the relevance of the project is ③[1].

[Coherence]

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation >

The project was consistent with the Japan's ODA policy to Cuba at the time of ex-post evaluation. "The Country Assistance Policy for the Republic of Cuba" (April 2014) sets agricultural development as a priority area, and states that assistance will be provided to increase rice production, and so on to improve food self-sufficiency.

<Collaboration/Coordination with JICA's Other Interventions>

The collaboration/coordination between the project and other projects of JICA was planned at the time of ex-ante evaluation and was implemented, and the positive effect expected was confirmed at the time of ex-post evaluation. The technical cooperation project, "Project for extension and diffusion of technologies for certified rice seed production in the central zone of Cuba" (2012-2016) has expanded the production of registered seeds by the Institute of Grain Research (IIGranos), and in the target areas, improved the seed production capacity of seed producers and the sequence of seed production until the produced certified seeds reach the general farmers. The target area is the same area as the project area, and the certified seed production was conducted using seedling cultivation with the automatic seeding planter and rice transplanters introduced in the project. The technical cooperation project, "The Project on Improvement of Agricultural Extension System for Grain Production in Cuba" (2017-2022) shared the same target areas as this project. Cases have been confirmed in each province where farmers participating in the technical cooperation extension activities were the same farmers using machinery from this project for seed production.

<Cooperation with other institutions/ Coordination with International Framework>

No cooperation/coordination with other development partners was clearly planned at the time of ex-ante evaluation or during the project period.

<Evaluation Result>

In light of the above, the coherence of the project is ③.

[Evaluation Result of Relevance/Coherence]

In the light above, the relevance/coherence of the project is ③.

2 Effectiveness/Impact

<Effectiveness>

The project objectives were partially achieved.

Physical condition and use of machinery

The number of non-functioning machineries has been generally high. The cause is lack of knowledge of the users (operators) about manufacturers and equipment that have never been used before. Defects are gradually occurring after the start of use due to lack of initial operation guidance at the time of machine delivery, failure to distributing operating manuals due to the loss in transportation[2], partly due to COVID-19, failure to perform correct maintenance, and other factors. Genuine parts procured through the project are no longer in stock, and although they are being replaced by searching for similar parts, etc., parts are not sufficient, and even if machineries are repaired and put into operation, they cannot be maintained in 100% good condition, so they continue to be used after repeated failures and repairs (the number of operations and non-operations constantly fluctuates). As a result, the service implementation status with the procured machinery has not achieved the expected area, except for the puddling service area with tractors and rotary tillers in 2022.

Achievement status of the effect indicators

As for effect indicators, "Percentage of farmers seed renewal for consumption rice in the target areas (%)" (Indicator 1) have generally achieved the target value and "Yield on the production of transplanting crops in the target areas (ton/ha)" (Indicator 3) have achieved the target values. According to the executing agency, Indicator 1 is achieved due to the completion of technology transfer for mechanization of seed rice cultivation, resulting in an increase in seed quantity. With regard to Indicator 3, agricultural productivity has increased due to uniformity of planting position and quality of seedlings, seed saving, and labor saving (seed saving and labor saving compared to direct seeding by airplanes and human labor), and the introduction of machinery has improved operational efficiency and reduced costs. As for the "Proportion of transplanting crops in the rice seed cultivation surface in the target areas (%)" (Indicator 2), the rice transplanters were not fully utilized, and the effect was not fully realized. Nonetheless, comparing 2015 to 2022 and beyond, the area under rice seed cultivation in Pinar del Rio and Granma provinces has increased approximately 5.5 times, while the area under transplant cultivation has increased 9 to 12 times. In the other six provinces and one special municipality, the rice seed cultivation area has increased about 7 times and the transplant cultivation area has increased about 2.5 times.

As for qualitative effects, since most of the target EAIG did not have machinery suitable for small and medium-scale rice seed production, the machine procured under the project directly led to improved access to quality machinery services. According to EIAG, the introduction of machinery for field preparation and harvesting eased the workload and increased productivity and efficiency and increased production, among others.

<Impact>

Although the project was expected to contribute to an increase in rice production, data provided by the National Statistics Office of Cuba and GAG indicate that rice production in Cuba has decreased. The decrease in rice production can be attributed

[1] ④ : very high, ③ : high, ② : moderately low, ① : low

[2] Some of the missing manuals were later found and distributed to EAIG. The manuals were also translated into local languages during the FU survey and distributed to EAIG.

to a reduction in the operation of machinery, including the machinery and services procured under the project, due to a shortage of inputs such as fertilizers and fuel caused by the country's economic crisis, and the resulting decrease in planted area and unit yields.

On the other hand, the introduction of the procured machinery has certain ripple effects, such as uniform quality of work in field preparation and rice planting, improved accuracy of work planning, and reduction of required labor and simplification of management.

There was an improvement in the wellbeing of the beneficiary farmers due to their freedom from heavy labor and increased earnings, and there was also an impact from a gender perspective, as women began to participate in the cultivation process as a result of the easing of heavy labor.

No negative impact of the project on the natural environment occurred.

<Evaluation Result>

In light of the above, the effectiveness/impact of the project is ②.

Quantitative Effects

Indicators	Baseline 2015 Baseline year	Target 2021 3 Years after Completion	Actual 2022 1 Year after Completion	Actual 2023 2 Years after Completion	Actual 2024 2 Years after Completion	Source
Indicator 1 Percentage of farmers seed renewal for consumption rice in the target areas (%)	51.2	80	77.86	78.96	72.78	All targeted EAIG
Indicator 2 Proportion of transplanting crops in the rice seed cultivation surface in the target areas (%)						
In Pinar del Rio and Granma	1.4	30	2.84	2.77	2.87	All targeted EAIG
In Matanzas, Cienfuegos, Villa Clara, Sancti Spiritus, Ciego de Avila, Camagüey, and the Special Municipality Isla de la Juventud.	24.0	80	7.80	8.19	8.93	All targeted EAIG
Indicator 3 Yield on the production of transplanting crops in the target areas (ton/ha)						
Moist husk	4.2	5.0	4.75	5.03	5.29	All targeted EAIG
Dry husk	2.9	3.5	3.55	3.70	4.31	All targeted EAIG

Physical condition and operational status of procured machinery

Machinery	Physical condition	Estimated annual operating hours per unit (hours)	Actual operating hours per unit (hours)
Tractor (199 units)	Number of units in operation：144 Number of units not in operation：55	470	607.5
Rotary tiller (199 units))	Number of units in operation：78 Number of units not in operation：121	-	-
Rice Trans Planter (46 units)	Number of units in operation：30 Number of units not in operation：16	336	150.25
Combine Harvester (42 units)	Number of units in operation：23 Number of units not in operation：19	336	799.75
Automatic Seeding machine (41 units)	Number of units in good condition：26 Number of units in bad condition：5 Number of units not confirmed: 10*1	203	No info*2

*1 Since two EAIG did not respond to this question in the questionnaire, the 10 vehicles owned by the two EIAGs could not be confirmed.

*2 Because it is not equipped with a meter for operating hours.

Anticipated machinery service

Machinery service	Target Area(ha)	Unit yield (ton/ha)	Production (ton)	Unit price	Income (Cuban peso: CUP)
Puddling service with tractor and rotary tiller	6,234×4 (Number of times repeated)			312 CUP/ha	7,780,032
Transplanting service with rice trans planter	6,234			720 CUP/ha	4,488,480
Harvest service with combine harvester	6,234	5.0	31,170	10 CUP/46kg	6,776,087
					19,044,599

Actual machinery service

Machinery service	Area/Unit price/Income	2022	2023	2024
Puddling service with tractor and rotary	Area(ha) (Including repetition)	17,507.28	12,767.87	7,781.97

tiller	Average unit price (CUP/ha)	3,376.50	3,120.67	3,548.54
	Income (CUP)	59,113,351.60	39,844,302.87	27,614,646.17
Transplanting service with rice trans planter	Area (ha)	2,311.27	2,079.67	1,950.68
	Average unit price (CUP/ha)	1,533.32	1,785.82	1,976.89
	Income (CUP)	3,543,914.82	3,713,915.11	3,856,288.63
Harvest service with combine harvester	Area (ha)	2,410.94	2,485.40	1,997.03
	Average unit price (CUP/ha)	8,577.45	17,071.64	21,166.05
	Income (CUP)	20,679,706.57	42,429,863.25	42,269,228.95

3 Efficiency

Although the project cost was within the plan (the ratio against the plan: 59%), the project period considerably exceeded the plan (the ratio against the plan: 233%).

The project cost was lower than planned due to the results of the bidding process, which were much lower than planned. The purchase of additional components with the remaining funds was considered, but the design changes were not approved because they did not meet the intended use of the remaining funds after the bidding process.

The delay of the project period was due to the following two reasons. (i) November 2017 - September 2018: the U.S. Export Administration Regulations prohibit exports to Cuba if more than 10% of the components are manufactured in the United States. Therefore, additional time was usually required for all companies to disclose information to verify the percentage of U.S. manufactured products in the agricultural machinery to be provided, and as a result, the machinery needed to be remodeled, which took approximately another 10 months.(ii) Postponement of operational guidance (one year from May 2019 to April 2020): due to the impact of COVID-19, the in-service training in Cuba scheduled for May 2020 could not be conducted and was postponed. As a result, the completion period of the consultant contract and the machinery provision contract was extended.

	Project Cost (Japanese side only, yen)	Project Period (months)
Plan (ex-ante)	1,215 million	18
Actual	713 million	42
Ratio (%)	59	233

Outputs were produced as planned.

In the light above, the efficiency of the project is ②.

4 Sustainability

< Institutional/Organizational Aspect>

EAIG has had a well-established operation and maintenance implementation structure and the number of staff has been adequate. EAIG has had three types of systems: (1) EAIG operates and maintains the machinery, and EAIG is responsible for seed production, or EAIG provides machinery services to seed producers and rice farmers; (2) EAIG lends machinery to seed producers (farmers maintain the machinery and EAIG technical staff periodically check the machinery); and (3) EAIG combines the above two types of systems[3].

<Technical Aspect>

The EAIG personnel are considered to be technically sound. As mentioned above, there were not sufficient training opportunities after delivery, but technical guidance was provided during the training in the follow-up surveys (1st survey in November 2024 and 2nd survey in February 2025)[4], and it was confirmed that they have obtained the skills and knowledge to repair the machinery. However, at EAIG, there has been a lot of turnover of staff, and there has been no practice of handing over to successors. EAIG have not been able to established a system to address technical issues and train personnel.

<Financial Aspect>

EAIG have not had enough foreign currency budget to purchase spare parts and budgets have not been secured. Operating costs have been maintained by providing machinery services, and some EAIG have purchased consumables such as lubricants from the EAIG budget, but many EAIG have not had a budget set aside to purchase the spare parts needed to maintain them due to a lack of foreign currency. Not only the machinery procured under the project, EAIG have had insufficient budgets overall, but there is a possibility of improvement as the promotion of production of export products and the government's purchase of rice with foreign currency are being considered.

<Environmental and Social Aspect>

No issue on environmental and social aspects has been observed, and it has not been necessary to take any countermeasures.

<Current Status of Operation and Maintenance>

As noted above, there have been many pieces of machinery that have been inoperable at the time of the ex-post evaluation, and some have not been expected to be repaired. Although regular maintenance has been conducted, parts have been difficult to obtain, making proper maintenance difficult.

<Evaluation Result>

In light of the above, some problems have been observed in terms of the financial aspect and the current status of operation

[3] When each EAIG formulates its annual rice production plan, the systems (1), (2), and (3) are planned and implemented according to the allocation and availability (conditions) of inputs such as machinery, human resources, seeds, fertilizers, pesticides, and fuel required for cultivation.

[4] Since it was found that some of the procured machinery was not in operation due to malfunction, a follow-up survey was conducted to identify the main causes of malfunction of the malfunctioning machinery, discuss operation and maintenance of the machinery, conduct a seminar on operation and maintenance, and make recommendations for future support plans from the Japanese side.

and maintenance. Therefore, the sustainability of the project effects is ②.

5 Summary of the Evaluation

The project partially achieved the project objectives. The “Percentage of farmers seed renewal for consumption rice in the target areas” and “Yield on the production of transplanting crops in the target areas” have generally met their targets, but the “Proportion of transplanting crops in the rice seed cultivation surface in the target areas” has not been achieved. There is also a lot of underutilized machinery, and the expected level of machinery services is not being provided. As for sustainability, some problems have been observed in terms of the financial aspect. Regarding efficiency, although the project cost was within the plan, the project period considerably exceeded the plan.

Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations to Executing Agency:

- It is recommended that the agencies concerned coordinate so that EAIG and individual producers can procure the necessary parts and supplies without delay.
- It is recommended that a system be established and functionalized to deal with technical issues and to train human resources..

Lessons Learned for JICA:

- Due to the COVID-19 pandemic at the time of procurement, no onsite initial operation and maintenance instruction was provided, and instruction was provided remotely. As a result, each operator started using the machine without a full understanding of its operation, which led to machinery failure. The project should have foreseen that operating the machinery without initial operation and maintenance instruction would lead to malfunctions and should have asked EAIG to suspend the start of use of the machinery.

Tractors and rotary tiller for plowing rice fields

Rice harvesting combine harvester