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| Country Name | Improvement of Cattle Productivity for Small and Medium Scale Farmers Project |
| Republic of Nicaragua | in the Republic of Nicaragua |

I. Project Outline

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| Background | In Nicaragua, the northern mountain area is the main area of cattle production. 80% of farmers in the area were deemed as small-scale farmers with less than 35 ha (2001 census). They cultivated corns and others for self-consumption and at the same time, they were engaged in cattle production and played a role of supplier of beef and dairy products. However, the area's productivity was very low as the area had problems of (1) shortage of feeding stuff in dry season, (2) deterioration of livestock due to inbreeding, and (3) worsened cattle reproductive ability. Moreover, the government's support to the farmers was not sufficient and the instruction capacity of technical experts in livestock associations varied. As a result, the productivity in the area had not been improved. | | | | | | | | | | | | |
| Objectives of the Project | <ol style="list-style-type: none"> Overall Goal: Cattle production technical capacity of small and medium scale farmers is enhanced and farm management improves in the target areas Project Purpose: Cattle production technical capacity of small and medium scale farmers is enhanced and farm management improves in the model areas | | | | | | | | | | | | |
| Activities of the project | <ol style="list-style-type: none"> Project site: <ol style="list-style-type: none"> Model areas: 6 municipalities selected from Boaco department and Chontales department (From Boaco department: Camoapa and Boaco municipalities. From Chontales department: San Francisco de Cuapa, San Pedro de Lóvago, Santo Tomás and Villa Sandino municipalities.) Target areas: Boaco department and Chontales department Main activities: <ol style="list-style-type: none"> Training to extension officers (technical experts) and to farmers/farm workers on appropriate technologies (feeding system, livestock reproduction, livestock hygiene technology), (2) training on artificial insemination and transplanted of fertilized eggs at national institutions, (3) farming planning and awareness activities Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Nicaraguan Side</td> </tr> <tr> <td>1. Experts: 13 persons (Long-term:8 persons, Short-term:5 persons)</td> <td>1. Staff allocated: 28 persons</td> </tr> <tr> <td>2. Trainees received :11 persons (training in Japan)</td> <td>2. Land and facilities: Project offices at MAGFOR regional office and UNA, venue and accommodation for training</td> </tr> <tr> <td>3. Equipment: Vehicles, PCs, Audio Visual equipment, Sonogram, Microscopes and others</td> <td>3. Local cost: 1,040 thousand US dollars</td> </tr> </table> | | | | | Japanese Side | Nicaraguan Side | 1. Experts: 13 persons (Long-term:8 persons, Short-term:5 persons) | 1. Staff allocated: 28 persons | 2. Trainees received :11 persons (training in Japan) | 2. Land and facilities: Project offices at MAGFOR regional office and UNA, venue and accommodation for training | 3. Equipment: Vehicles, PCs, Audio Visual equipment, Sonogram, Microscopes and others | 3. Local cost: 1,040 thousand US dollars |
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| Ex-Ante Evaluation | 2005 | Project Period | May 2005 – May 2010 | Project Cost | 580 million yen | | | | | | | | |
| Implementing Agency | <ul style="list-style-type: none"> Centro de Servicio Genético Pecuario (CSGP, Livestock Genetic Service Center) under Ministerio Agropecuario y Forestal (MAGFOR, Ministry of Agriculture and Forestry) Universidad Nacional Agraria (UNA, National Agrarian University) | | | | | | | | | | | | |
| Cooperation Agency in Japan | Ministry of Agriculture, Forestry and Fisheries | | | | | | | | | | | | |

II. Result of the Evaluation

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| 1 Relevance |
| This project has been highly relevant with the prioritized policy of "strengthening of competence as a means of poverty reduction" which focused on promotion of cattle production in rural areas as set in National Development Plan (2002), National human development and food security plan (2008-2012) and other documents as well as development needs of importance of livestock farming in the target areas ¹ at the time of both ex-ante evaluation and project completion. The project is also consistent with Japan's ODA policy (Country assistance program for Nicaragua 2002 and JICA's country implementation plan for prioritizing agriculture and rural development) at the time of ex-ante evaluation. Therefore, relevance of this project is high. |
| 2 Effectiveness/Impact |
| <p>The project mainly implemented (1) training for extension officers (technical experts) so that they provide training to farmers on appropriate technologies (feeding system, livestock reproduction, livestock hygiene technology) introduced by the project, and (2) training on artificial insemination and transplanted of fertilized eggs at national institutions. By using these technologies, the project aimed to improve cattle productivity of farmers both in the model areas and the target areas.</p> <p>The project achieved the project purpose at the limited level by the time of the project completion. The project trained 450 farmers on appropriate technologies and 29 monitor farmers were selected by the project completion²; however, cattle productivity did not reach the target level (see the table below). It is because there was not enough pasture production and water in dry season, and farmers did not completely apply appropriate technologies due to the following reasons; (i) most of the farmers did not implement periodic grass/pasture production, (ii) no institution followed up the farmers' activities after the</p> |

¹ Although the cattle herd has increased in Chontales and Boaco departments, the ratio against national cattle herd has decreased.

² Monitor farmers are the cooperation farmers from whom the data is collected to measure the effectiveness of the project and for whom the appropriate technologies are extended.

training, (iii) at the beginning, the project aimed to appoint 60 monitor farmers, but only 29 were selected due to the difficulties in allocation of technical experts and road conditions and (iv) farmers were not well aware of marketing strategy including quality, prices, amount of sales all of which are critical to continue acquired skills. The implementation of artificial insemination by farmers at the time of project completion was low, and since there has not been a good management of the heard, this activity has not contributed to the improvement of the productivity³ as expected.

After the project completion, however, quantity and quality of milk have been improved by the effort of implementing and cooperating organizations/agencies who have extended the appropriate technologies introduced by the project. As of 2014, 9 appointed monitor farmers in Camoapa (Boaco Department) have been actively implementing the technology at the local level by using PROGANICs' methodology through Masiguito Cooperative, and in the rest of 5 out of 6 model areas, approximately 5 monitor farmers in each area have continued the activities. A case featured-worthy is Masiguito cooperative as well as Chontalac cooperative. Masiguito cooperative has kept implementing the project's methodology to a group of 9 farms called Pan-American in Boaco, They also established a system to improve the milk production process on both quality and quantity of milk, providing a free technical assistance to their members/partners. According to the Masiguito, members feel benefited by implementing good milk techniques, producing grade A quality milk, and by obtaining good price as a result of reputation of the cooperative. Their member increased from 400 (2006) to 960(2014), and all of them have been trained on the effective milking practices and implementing its hygiene process. Regarding Chontalac Cooperative, it has maintained the same number (900 farmers) of its member in the target area. Therefore, in sum, 1860 farmers in the target area have been working by applying the technologies introduced by the project through training by cooperatives (Masiguito and Chontalac) and programs of MEFCCA⁴ with cooperation of city hall. In case of city halls, while they have been facing difficulties to continue the activities because of change of administrative personnel after the elections in 2011, some city halls still provide technical guidance by using picture indicators for dissemination of the technologies. The above improvement at the local level has been positively influenced by national level counterparts who have also played an important role to develop and operate the project methodologies and its techniques. For example, MEFCCA re-established PROGANIC system and has allocated a certain amount of budget on the system. Alba Genetica, a joint venture that acquired the administration of Livestock Genetic Service Center, has managed artificial insemination governmental program. It has focused on the artificial insemination activity, providing the services for 6, 212 cattle in total in the model areas after the project completion. Moreover, UNA's strong decision in 2010 has led to further implementation of PROGANIC methodology at the national level. However, some issues still remain. Due to the fact that main offices of MEFCCA and UNA are located in Managua (the capital), the MEFCCA and UNA prioritized reinforcing capacities in South Pacific Region and Rio San Juan and thus it was difficult for them to keep supervising the activities of farmers groups. Therefore, there was no frequent follow up by these counterparts in the model and the target areas. Also, coordination among the stakeholders stated above is not sufficiently enough for the extension services in model and target areas at the time of ex-post evaluation.

As for the overall goal, the data of monitor farmers in target areas was difficult to obtain at the time of ex-post evaluation, dividing the data of the model areas and thus achievement level of 2-4 indicators could not be measured. As for indicator 1, according to the interviews with 4 technicians of Masiguito and Chontalac cooperatives, 2 persons from city halls, and 5 persons from UNA, MAG, MEFCCA and CONAGAN, it is confirmed that the average increase of milk yield was 32% in the target area which includes the model areas.

Other several positive impacts are observed. Both of MEFCCA and UNA have extended the appropriate technologies to other areas in the country, such as Rio San Juan, Estelí, Nueva Guinea, Carazo and Rivas. MEFCCA trained 63 technicians (5 from the project target areas and 58 from the South Pacific region of Nicaragua) who in turn have introduced appropriate technologies for cattle productivity improvement to 1,500 small scale farmers called protagonistas after the name of this project (the project's acronym is PROGANIC) in mainly South Pacific Region. UNA transferred the project methods to other 4 universities in Nicaragua. UNA also has provided extension services to Rio San Juan farmers with a PROGANIC approach. UNA's students as well as professors have provided trainings in Rio San Juan Farms.

The project has achieved its project purpose by the time of the project completion at the limited level but some of the effects were continued in the model areas. However, several indicators of overall goal could not be measured by the time of the ex-post evaluation. Nevertheless, the project methodologies and technologies have remained and made good use at some of the model areas. Moreover there are positive impacts that the appropriate technologies introduced by the project have been disseminated in other regions of the country, therefore, the effectiveness/impact of the project is fair.

Achievement of project purpose and overall goal

| Aim | Indicators | Results |
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| (Project Purpose) Cattle production technical capacity of small and medium scale farmers is enhanced and farm management improves in the model areas | Indicator 1: Average milk yield per cattle in dry season increases by 30% at more than 50% of monitor farmers in the model areas | (Project Completion) The average increase (of 5 monitor farmers) of milk yield is 17% (4.1kg/cattle versus baseline of 3.5kg/cattle) (Ex-post Evaluation) The average increase of milk yield is 44.6% (5.06kg/cattle versus baseline of 3.5kg/cattle) in 50% of 10 samples of farmers in the model areas**. |
| | Indicator 2: Yearly calving rate reaches at least 60% at more than 50% of monitor farmers in the model areas | (Project completion) Yearly calving rate reached 60% at 47.36% of monitor farmers in the model areas. (Ex-post Evaluation) The average yearly calving rate is 52% in 50% of 10 samples of farmers in the model areas. . |

³ Technical transfer on artificial insemination and transplantation of fertilized eggs was completed by the end of the project. But before the transfer was completed, during the project implementation, the function of artificial insemination was contracted out to private companies. In the field level, farmers just started experiments at the time of project completion.

⁴ MAGFOR's extension function was transferred to Ministerio de Economía Familiar comunitario Cooperativa y Asociativa (Ministry of Family Economy, Communitarian, Cooperative and Associative, MEFCCA) in 2011.

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| | Indicator 3: Average daily weight increase of 7 month cattle is more than 30% at more than 50% of monitor farmers in the model areas | (Project completion) The average daily weight of 7 month cattle (of 5 monitor farmers) was 0.25 kg (16% less than the baseline (0.3 kg at mid-term review). (Ex-post Evaluation) The average daily weight increase of 7 month cattle is 0.25 kg in 60% of 10 samples of farmers in the model areas. (16% less than the base line of 0.3kg and same average from the time of project completion). |
| | Indicator 4: Hygiene quality of milk becomes grade A at least 50% of monitor farmers and pilot farmers | (Project completion) 41% in the model area. However, 67% of the association groups achieved grade A. (Ex-post Evaluation) 100% of 10 samples of farmers in the model areas produced milk grade A. Moreover, 60% of 10 sample farmers in the model area produced grade A hygiene quality milk with over 30% of the production volume. |
| (Overall goal) Overall Goal: Cattle production technical capacity of small and medium scale farmers is enhanced and farm management improves in the target areas | Indicator 1: Average milk yield per cattle in dry season increases by 30% at more than 30% of monitor farms in the target areas | (Ex-post Evaluation) The average increase of milk yield was 32% in the target area which includes the model areas (while its milk yield was 4.62kg/cattle, base line was 3.5kg/cattle). *** |
| | Indicator 2: Yearly calving rate reaches at least 60% at more than 30% of monitor farmers in the target areas | (Ex-post Evaluation) The data of monitor farmers in the target area was not available. |
| | Indicator 3: Average daily increase of weight of 7 month cattle increases by more than 30% of more than 30% of monitor farmers in the target areas | (Ex-post Evaluation) The data of monitor farmers in the target area was not available. |
| | Indicator 4: The number of farmers who produce grade A hygiene quality of milk increases | (Ex-post Evaluation). The data of monitor farmers in the target area which excludes the data from model areas was not available. |

Source : Terminal evaluation report, Project completion report, Interviews with counterparts and farmers and surveys in 2014.

* At the time of project completion, 5 samples of monitor farmers in the model area were used for indicator 1 and 3. However, the number of sample for indicator 2 and 4 is unknown.

**At the time of ex-post evaluation, the data on the productivity of 10 samples of farmers in the model area (8 monitor farmers and 2 pilot farmers) was collected for continuity of the project purpose by the time of the ex-post evaluation.

*** The information was collected through cooperatives. the data could not be distinguished as the data from model areas or that from target areas, thus this information is the data from the target areas which includes the model areas.

3 Efficiency

While the project period was within the plan (ratio against the plan: 100%). The project cost slightly exceeded the plan (ratio against the plan: 105%) because the provision of the materials were added based on the agreement of the Joint Coordination Committee. (E.g., infrastructure materials to the monitors and pilot farms (such as building materials for floors and sleeves, traps vampires, platform balance, , etc) and materials for implementation and proper maintenance of artificial insemination to UNA Therefore, efficiency is fair.

4 Sustainability

In the policy aspect, the project is still given importance in the current development policy, as National Human Development and Food Security Plan (2012-2016) set the target of strengthening competence of and value addition to the products. Initiatives for improving livestock productivity have been promoted by the government. One of the initiatives is "Conversion of livestock cattle and sheep of Nicaragua subprogram" (2008-2012/2012-2016), which aims to improve productivity of small and medium producers and achieve greater competitiveness.

Institutional setup has been changed after the project completion. MAGFOR no longer carries out extension activities, however, MEFCCA is responsible for MAGFOR's role and operational function; extension of appropriate technologies at the national level. The personnel trained by the project have transferred to MEFCCA extension department; therefore the trained personnel still work at MEFCCA. Also, the responsibility for management of the Livestock Genetic Service Center transferred from MAGFOR to Alba Genetica and Alba Genetica has made good use of techniques, methodology, capacities built by the PROGANIC project. MEFCCA has prioritized South Pacific Region and Rio San Juan in order to reinforce these areas' capacities after MAGFOR's programs of extension were transferred to MEFCCA (since 2011). Some of city halls in the model area face difficulties to continue the extension activities, however there is an extension area attended by 1-3 technicians to cover all the communities. Masiguito Cooperative hired 6 technical officers who have been applying the PROGANIC system at the local level, using the materials provided by PROGANIC (manuals, posters, etc.) to train farmers. CONAGAN has 9 experts on extension activities covering national range. Each of MEFCCA, UNA, City Halls and cooperatives has appropriate institutional setup to sustain effects of the project.

Technical level of MEFCCA and UNA is sufficient as they are continuously involved with extension of the technology introduced by the project. MEFCCA has been using the manuals elaborated during/after the project implementation. Two manuals were reedited with a Japanese expert (short term) in 2012 and three new small illustrated manualson cattle were published⁵.UNA has extended the project results to Rivas, Estelí and the Atlantic Region by training 4 universities⁶. These

⁵ The manuals are namely (1) let's know about mastitits, (2) Milk production by introducing cutting pasture, (3) Herd improvement

⁶ 4 universities include: EIAG: Escuela Internacional de Agricultora y Ganadería UCATSE: Universidad Católica del Trópico Seco BICU: Bluefields Indian and

universities are also implementing PROGANIC's technologies in a new farm school in Rio San Juan. This school was established with a project founded by NCU (National Council of Universities) to develop the PROGANIC system and train faculties and students. Furthermore, City halls and cooperatives have carried out different training programs in the target areas, combining the contents/topics of PROGANIC methodology, such as traceability (with MAG⁷), entrepreneurship (with MEFCCA), and also donation projects (in collaboration with Luxembourg and San Pedro de Lóvago). Cooperatives such as Masiquito have technical capacity as they continue implementing the technology introduced by the project.

Financially, at the level of the local counterpart, Masiquito Coop. requires an investment average of US\$ 3,100 to US\$ 3,300 (monthly) for extension activities in Camoapa, one of the model areas. To fulfill activities, they are managing a "Food Cattle Processor" project⁸ during 2014 to 2015. This project includes extension and training programs for not only technicians but also farmers, following PROGANIC's methods. However, at the level of national counterpart, it is uncertain whether MEFCCA's yearly budget would be assigned to secure financial source for the PROGANIC project in the target areas or not. Moreover, UNA has to secure financial source on a project basis from MEFCCA or partners if they intend to further extend the technologies introduced by the project.

As there are some uncertain facts in financial aspects, sustainability of the project is fair.

5 Summary of the Evaluation

This project has achieved its project purpose by the time of the project completion at the limited level as the productivity of cattle is low. However, till the time of ex-post evaluation, some of the effects have continued and also implementing agencies and cooperating agencies have extended the appropriate technologies introduced by the project at the national level including the model areas and target areas. As for the overall goal, the data to confirm the achievement level was not available at the time of ex-post evaluation. The project cost exceeded the plan during the implementation. Nevertheless, the continuous extension activities by the counterparts are worthy of mention in terms of project sustainability, since this project is still given importance in the current development policy and other sustainability aspects are stable except for financial issue. In the light of above, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

1. To MEFCCA. Participation of MEFCCA in the model and target areas is necessary to sustain the project effect further. MEFCCA's cooperation with the Operational Committee⁹ is recommended, because they are responsible for extension matters in the government.
2. To city halls and cooperatives in the model and target area. City halls and cooperatives are encouraged to participate as part of the Operational Committee. Also, periodic (e.g. monthly) meetings should be held to establish network for collaboration with other institutions and enhance the actions taken at the field level.

Lessons learned for JICA

1. At the time of project completion, the implementing agencies at national level changed functions: MAGFOR no longer managed extension programs, and instead MEFCCA started performing such function. So it would have been effective for JICA to have continuous dialogue with a new agency and make sure that the new agency implements future activities to sustain the project effects even after the project completion.
2. In this project, Masigito cooperative appreciated the good quality milk and set better prices, which made farmers continue hygiene milking techniques. On the other hand, many farmers claimed that they have not continued the hygiene technology because their cooperatives do not pay enough reward for better quality products. Thus, to ensure project sustainability, it would be effective to design a project in a way incentives are given to farmers including cooperatives along with operative marketing strategies.
3. In this project, the main counterparts were local institutions instead of those at the national level. The lesson is that the project could encourage more efforts to sufficiently involve not only cooperatives and city halls, but also the national counterparts, so that some issues like budget constraints of cooperatives could be addressed. Moreover, promotion of coordination among them during the project period would be effective for enhancing project's sustainability.



El Lovago City Halls, showing some techniques Taught By PROGANIC



PROGANICs indications about bats capture

Carribbean University URACAN: Universidad de las Regiones de la Costa Atlántica de Nicaragua

⁷ MAG (Ministerio de Agricultura y Ganadería) is the former MAGFOR.

⁸ The project is construction of the food processor plant with a budget of US\$ 600,000 (50%: non-refundable by MEFCCA, 25%: Institutional loan - CARUNA, 25%: own funds).

⁹ The operational committee consists of MAG, UNA, MEFCCA and CONAGAN. Its purpose is to discuss relevant project's operations, strategies budget, etc.