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ENHANCING COASTAL LIVELIHOODS AND FOOD SECURITY IN THE PROVINCES OF SOUTH HAMGYON AND KANGWON IN DPR KOREA THROUGH IMPROVED MARINE BIVALVE AQUACULTURE PRACTICES

June 2022

SDGs:



Country: The Democratic People's Republic of Korea

Project Codes: TCP/DRK/3706

FAO Contribution: USD 372 000

Duration: 17 January 2020 – 31 December 2021

Contact Info: FAO Representation in the Democratic People's Republic of Korea
FAO-KP@fao.org

Implementing Partners

Ministry of Fisheries (MoFi).

Beneficiaries

The MoFi and mussel and oyster cooperative farmers in the targeted areas.

Country Programming Framework (CPF) Outputs

Outcome 1.1 – Increased and sustainable food production, productivity and livelihood opportunities in agriculture, horticulture, livestock and fisheries.

Output 1.4 – Strengthened capacity in agricultural, livestock, forestry and fisheries extension, training and advisory services.



BACKGROUND

The Government of the Democratic People's Republic of Korea has identified aquaculture and fisheries production as a key priority area for improving the nutrition status of its citizens. More specifically, the government seeks to: (i) increase aquaculture; (ii) enhance the technical capacities of farmers; and (iii) improve the quality and production of artificial and natural seed required for the expansion of the aquaculture sector.

This project was designed to support the achievement of the above-mentioned goals by enhancing mussel and oyster farming in the country through capacity development, the provision of technical assistance and equipment, and the introduction of improved farming technologies.

IMPACT

The increased production of bivalves that occurred thanks to the farming and management practices introduced under this project is expected to contribute to food security and nutrition in the Democratic People's Republic of Korea.

ACHIEVEMENT OF RESULTS

Bivalve production in the targeted areas increased overall (although the exact percentage increase had yet to be measured at the time of reporting), and 150 000 scallop seeds measuring between four and five mm were produced through the acquisition of improved technical skills.

The project design included three outputs. Under the first output, improved bivalve culture systems were implemented in two targeted aquaculture cooperative demonstration farms, covering a coastal zone of 30 ha.

Output two was partially achieved. Its primary focus was to introduce advanced post-harvest management practices and value-addition methods on the two targeted farms; however, due to the COVID-19-related travel restrictions, field visits and consultations with international experts could not take place as originally planned. That said, the international consultants produced three technical manuals (one on Pacific oyster farming, one on mussel farming and one on scallop hatchery seed production) that were provided to technical staff of the Ministry of Fisheries (MoFi). The MoFi then transmitted the procedures and protocols contained in the manuals to the Hongwon Mariculture Cooperative and Songdo Fisheries and Mariculture Cooperative.

The final output, which envisaged the training of 175 farmers and 25 fishery/aquaculture development planners on bivalve production, the operation and maintenance of culture units, harvest and post-harvest management and value addition, was only partially achieved as well, owing to the travel restrictions. The manuals are expected to serve as the basis for further training in these areas.

IMPLEMENTATION OF WORK PLAN

Due to the travel restrictions imposed because of the COVID-19 pandemic, the implementation of field activities was delayed to some extent; however, the activities in the project workplan were either fully or partially achieved, and they were implemented within the allotted budget.

Sanctions and the COVID-19-related travel restrictions affected the flow of cash into the country during the implementation of the project. The FAO Office in the Democratic People's Republic of Korea experienced severe constraints throughout the year 2020 as cash advances could not be obtained. No mitigation measures were implemented owing to the absence of international staff in the country.

FOLLOW-UP FOR GOVERNMENT ATTENTION

The MoFi is expected to train farmers and fishery development planners on bivalve production, the operation and maintenance of culture units, harvest and post-harvest management and value addition.

SUSTAINABILITY

1. Capacity development

The capacity of MoFi technical experts was improved through the provision of the technical manuals. Local experts are expected to carry out training based on the technical manuals once the project is operationally closed. In the Democratic People's Republic of Korea, FAO is the major international development institution, with over three decades of experience working with government counterpart organizations. Its operations span most parts of the country, including northern mountainous regions where access is restricted. This reflects the high level of trust and partnership that FAO has built with the MoFi and other government agencies. This strong collaboration with the MoFi is expected to facilitate the sustainability of the project results.

The ownership of the project was transferred to the government. Lessons learned were documented and institutionalized through their inclusion in the farm workplan and in technical guidance documents.

2. Gender equality

Inputs (aquaculture material and equipment) were distributed to cooperatives with gender equality in mind. The follow-up training and technical consultations to be carried out by MoFi will engage both women and men.

3. Environmental sustainability

The MoFi ensured environmental sustainability throughout the implementation of project activities.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The project promoted human rights principles by working to improve the food security of beneficiaries in the Democratic People's Republic of Korea through increased technical capacities for fisheries production.

5. Technological sustainability

The technical knowledge and recommendations disseminated by the international consultants through the manuals were incorporated into the programme of MoFi. The project contributed to the development of local knowledge, capacity, resources and good practices through the provision of the technical manuals, inputs and equipment.

The MoFi expressed their full commitment to support the implementation of project activities in terms of providing facilities, materials and financial resources for their researchers and officials.

6. Economic sustainability

The technical manuals describe the best aquaculture practices for producing commercial-size oysters and mussels and scallop seed in detail. The farming systems described are simple, and the overall technologies are both affordable and easily implemented in locations where resources are scarce. The adoption and implementation of the aquaculture methods and management protocols included in the manuals should ensure an increase in farm outputs that in turn should generate higher incomes for farming cooperatives, allowing them to replace old or broken structures with new ones and therefore continuing to produce mussels and oysters.



DOCUMENTS AND OUTREACH PRODUCTS

- ❑ Sarkis, A. & Lovatelli, A. 2022. *Hatchery-based seed production of the Japanese scallop, Mizuhopecten yessoensis*. FAO Fisheries and Aquaculture Technical Paper No. 683. Rome, FAO. <https://doi.org/10.4060/cc0535en>.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Improved nutrition and food security of undernourished population sectors in DPR Korea		
Outcome	Increased bivalve production through improved farming and management practices in two targeted and existing mariculture cooperative farms		
	Indicator	Percentage production increased of bivalves.	
	Baseline	190 000 MT (MoFi 2017 statistics).	
	End Target	5% increase in bivalve production.	
	Comments and follow-up action to be taken	Overall bivalve production increased through improved farming and management practices; however, the exact percentage increase is yet to be measured by the MoFi. Although the lead technical officer (LTO) was not able to undertake field missions to the Democratic People's Republic of Korea to implement project activities, three highly technical, practical manuals were prepared with the inputs of five international consultants: (i) a practical manual on Pacific oyster farming; (ii) a practical manual on mussel farming; and (iii) a hatchery seed production manual on the Japanese scallop, <i>Mizuhopecten yessoensis</i> . It is expected that the manuals will be translated into the Korean language. Production was also enhanced through the provision of laboratory and farming equipment.	
Output 1	Implemented an improved bivalve culture systems in 30 hectares of coastal areas in two targeted mariculture cooperative farms		
	Indicators	Target	Achieved
	Seafarming surface area where improved bivalve farming and management practices have been introduced and adopted.	30 ha	Yes
Baseline	0		
Comments	The surface area where improved bivalve farming and management practices were implemented increased by 30 ha.		
Activity 1.1	Establish a 20-hectare coastal zone scallop aquaculture farm in each of the targeted (02) mariculture cooperative farms		
	Achieved	Yes	
	Comments	Seeds were provided for scallop aquaculture covering a 20-hectare coastal zone. The survival rate of the scallop seeds increased by 18 percent compared to the year 2018. Also, during the project period, 150 000 scallop seeds with a size of 4-5 mm were produced.	
Activity 1.2	Establish a 10-hectare intertidal zone mussel aquaculture farm in each of the targeted (02) mariculture cooperative farms		
	Achieved	Yes	
	Comments	Through the FAO assistance, 10 ha of mussel aquaculture farms were expanded, and their productivity improved. The average production increased to 50 tonnes per hectare. A total of 450 tonnes of mussels were produced during the project period.	
Activity 1.3	Support the renovation of the Hongwon Fishery Station hatchery unit		
	Achieved	Yes	
	Comments	<p>The project provided key equipment to the MoFi to improve the production capacity of the Hongwon Fishery Station Hatchery Unit and farms. The items provided to MoFi included:</p> <ul style="list-style-type: none">– three-strand polyethylene (PE) rope – Type I;– three-strand PE rope;– lantern cage (18 layers);– lantern cage (15 layers);– expanded polystyrene (EPS) material;– polyvinyl chloride (PVC) float (32 cm);– PVC float (35 cm);– birch tree pole;– nylon filter cloth (300 mesh);– nylon filter cloth (200 mesh);– nylon filter cloth (120 mesh);– nylon filter cloth (60 mesh); and– PE net. <p>The LTO and international consultants were not able to provide direct hands-on technical guidance and could not undertake the planned field missions to the hatchery unit to adequately assess gaps in terms of technical inputs due to the COVID-19 travel restrictions.</p>	

Output 2	Advanced post-harvest management practices and value addition methods introduced in the two targeted mariculture cooperative farms		
	Indicators	Target	Achieved
	Advanced post-harvest handling procedures introduced.	Improved post-harvest handling procedure and processing of bivalves.	Partially
Baseline	0		
Comments	The international consultants provided technical guidance on post-harvest handling procedures and the processing of bivalves in the technical manuals prepared on Pacific oyster farming and mussel farming. The MoFi transferred these post-harvest procedures and protocols to the Hongwon Mariculture Cooperative and Songdo Mariculture Cooperative farms.		
Activity 2.1	Introduction of advanced post-harvest handling procedures, processing of bivalve flesh based on meat texture, storage and packaging based on local market demand		
	Achieved	Partially	
	Comments	Advanced post-harvest handling procedures and the processing of bivalve flesh for meat texture, as well as storage and packaging based on local market demand were introduced in the three technical manuals prepared by the international consultants.	
Activity 2.2	Introduction of value addition techniques for scallops and mussels combined with de-shelling, salting, pickling, whole meat drying and dry meat powdering		
	Achieved	Partially	
	Comments	The value addition techniques for scallops and mussels combined with de-shelling, salting, pickling, whole meat drying, and dry meat powdering were partially presented in the three technical manuals prepared. The MoFi is expected to implement these techniques at the cooperative level in the absence of international consultants due to COVID-19-related travel restrictions. Inadequate field information was provided on existing value addition techniques by MoFi.	
Output 3	Developed bivalve farming and management capacities of farmers and farm managers in the two targeted mariculture cooperative farms and fishery/aquaculture development planners at the central level		
	Indicators	Target	Achieved
	Number of farmers and fishery development planners trained.	200	Partially
Baseline	0		
Comments	The bivalve farming and management capacities of technical experts of MoFi staff and farm managers were improved through the well-drafted technical manuals. MoFi is expected to train farmers and fishery development planners.		
Activity 3.1	Training of 175 farmers and 25 fishery/aquaculture development planners with equal gender equality on bivalve production, operation and maintenance of culture units, harvest and post-harvest management and value addition		
	Achieved	Partially	
	Comments	To support the MoFi training programmes with the technical guidance of international consultants and the LTO, the three technical manuals were produced.	

Outreach, Marketing and Reporting Unit (PSRR)
Business Development and Resource Mobilization Division (PSR)

For more information please contact: Reporting@fao.org