



Addressing food insecurity and malnutrition through agroecological approaches: The experience of Lao Farmer Network on soybean production and processing

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Background

Undernutrition and food insecurity remain significantly high in Lao PDR, mostly in the upland areas, with more than sixty percent of children under five years of age considered stunted. The Agriculture for Nutrition Programme (AFN) was initiated in 2016 to improve food security and nutrition in Lao PDR, with funding support from the Global Agriculture and Food Security Program (GAFSP). The aims are to achieve improved and diversified agricultural production and household nutrition to enhance life prospects.

GAFSP promotes the active participation of civil society sector groups and producer groups throughout the project cycle. The Lao Farmer Network (LFN) has regularly participated in project steering committee meetings, annual gatherings, and technical meetings at the national level. The engagement in project steering and technical meetings started since the inception of the project in 2016.

Smallholder family farmers have a key role in addressing the interrelated challenges related to food, nutrition, biodiversity and climate change through agroecological approaches and organic production practices. From 2019 to 2020, AFN provided funding support to LFN to implement a small-scale project in 2 villages in Nonghet district, Xiengkhouang province to do a pilot test on production of soybean with other crops and processing.

The project, “Piloting soybean production and processing to improve nutrition in Nonghet district”, was implemented from April 2019–March 2020. It aimed to pilot test the soybean production to improve soil fertility and quality; and to promote processing of soybean (soymilk, tofu, and soy oil) to be consumed by the farmers to improve nutrition.

Activities and Strategies

LFN provided seed support, equipment, and technical support including planning, training, and follow-ups. The training included production practices from sowing, harvesting, and seed storage. The strategy is learning by doing at the farmer’s field level.

The series of training were conducted at the production area. The practical application followed after lectures. Training materials were developed such as posters and leaflets. Moreover, a video was produced to capture the process and results for learning and scaling up purpose.

Outcomes and Lessons Learned

This engagement has allowed LFN to do a pilot project on soybean production and processing in Nongshet district in Xiengkhouang province. The aim was to contribute to improving the nutrition of women and children. Extension activities include soya bean production for soil improvement and processing to soya milk and tofu. The project has shown that soybeans can be grown in AFN target areas and can be intercropped with maize. Intercropping these crops can yield positive outcomes in the long run by increasing farmers' income and by improving soil fertility. The soybean plants is a good source of nitrogen when incorporated in the soil as green manure (Huang, S. and Wu, C.).

The project processed the soybean seeds into soya milk and tofu. A food tasting was held and through this activity it was confirmed that these products are acceptable in the communities. These products can be used in school meals, feeding centers, and nutrition centers. Soybean production and processing can be scaled out in more communities to improve the nutrition of women and children.



When development projects and programs partner with farmers' organizations, they can achieve multiple outcomes. Farmers' organizations are platforms for capacity building and in addressing challenges related to market access. Flexibility is also important in any development projects and processes because of the complexity of problems that most agriculture programs are trying to address. One of the mechanisms that has been incorporated in the new phase of the project is the inclusion of Challenge Fund.

The Challenge Fund is a financing mechanism that would allow farmers' organizations like LFN to access funding support from government-led projects. With this mechanism farmer groups can access financing for small-scale projects allowing them to innovate solutions that respond well to their needs and local context. Through this farmers can develop innovations that they can sustain.

Soybean Production and Processing Guide

Soybean is a short-cycle crop that can be harvested in less than 100 days after planting. It can be grown in the rainy season and dry season. It can be grown in a wide range of well-drained soil including loam, clay, and sandy soil. It cannot tolerate being submerged in water. So, it is important to plant soybean in areas with a good drainage system.

Land preparation and sowing

If you plant it right after rice harvesting, you can just sow the seeds directly by making holes in the soil with a dibble. No need to plow the field. If the field is dry and hard, you will have to plow the land to loosen the soil before sowing the seeds. If you are in the upland area, all you need to do is clear the field then sow the seeds directly by making holes in the soil with a dibble. The best time for planting is in November – December and in May – June.

For early maturing variety (less than 90 days), plant the seeds 40 centimeters apart. For varieties that are more than 100 days, plant the seeds 20–30 centimeters apart. One rai of land or 1600 square meters would require about 10–12 kilograms of seeds

Nutrient management

Use 700–1000 kilograms of compost per rai to grown soybeans organically. If there is no available compost and the area is not fertile or deficient in nutrients, then you can use a minimal amount of synthetic fertilizers, about 25 kilograms per rai of complete fertilizer. Apply the fertilizer before sowing. Cover the fertilizer thinly with soil after application. Weeding is important.

Pest and disease management

Use an integrated approach for pest and disease management. Practice crop rotation and observe field sanitation. Remove diseased plants. If you see pests damaging the crops, you can use bio-pesticides and naturally fermented solutions. The common pest affecting soybeans are aphids, the common cutworms, and pod borers.

Harvesting

Soybean is ready for harvest when leaves have turned yellow or brown. When leaves have fallen, it is also an indication that the beans are ready for harvest.

If you do not harvest on time, the pods will break and the seeds will fall on the ground. Cut the plants at the base and then dry them in the sun.

After threshing or removing the seeds from the pods, dry them in the sun for 2–3 days until the moisture content is reduced to 10–12 %. Finally, store the bean in a dry place.

Processing soybean

The following are the steps to prepare soya milk:

- 1) First, soak the bean for about 2 hours. The beans will increase in size.
- 2) Next, grind the beans using a blender for about 1 minute using a ration of 1-part bean to 3 parts water (1:3).
- 3) After that, filter the soya milk using a clean cloth.
- 4) Lastly, boil the soya milk for about 30 minutes. It is now ready for drinking.

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