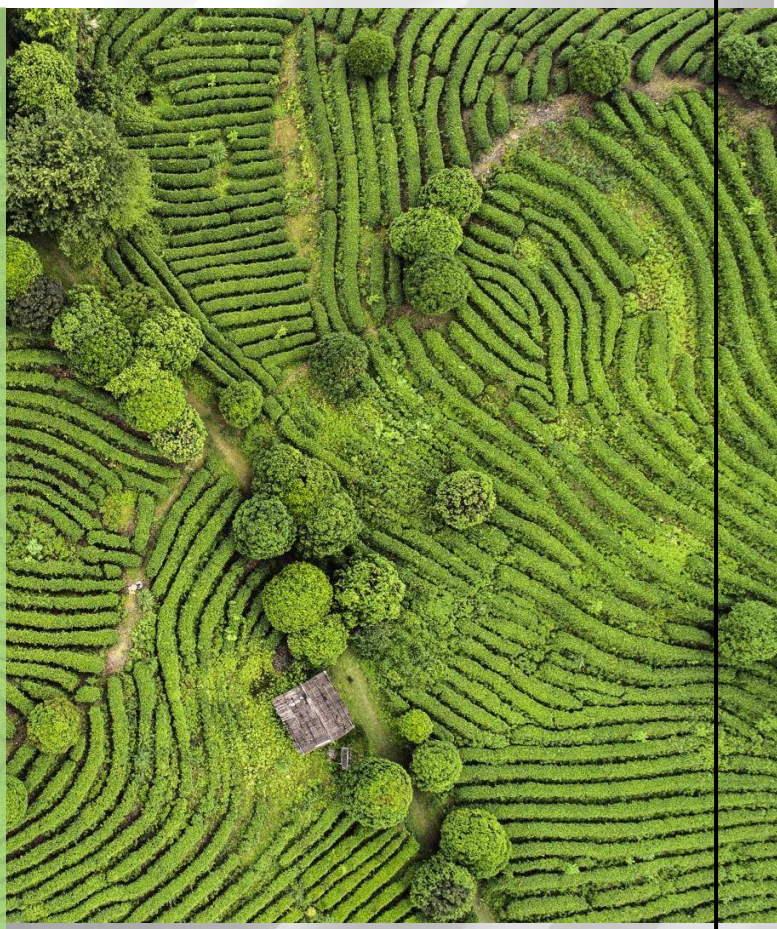
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FINAL REPORT

Future-Proofing Smallholder Farmers in Selected Communities in the Philippines through Nature-Positive Food Production



CBA2023-01MY-Landicho

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1. Summary

The capacity development project titled *"Future-Proofing Smallholder Farmers in Selected Communities in the Philippines through Nature-Positive Food Production"* (Project Reference: CBA2023-01MY-LANDICHO) was implemented from October 2023 to September 30, 2026, with an awarded funding of $38,583 from the Asia-Pacific Network for Global Change Research (APN). Led by Dr Leila D. Landicho from the Agricultural Systems Institute, University of the Philippines Los Baños, in collaboration with Benguet State University and Nueva Vizcaya State University, the project targeted rural smallholder vegetable farmers in Sariaya (Quezon), Bayombong (Nueva Vizcaya), and Atok (Benguet).

The primary objective was to build ecological and economic resilience among smallholders by transitioning them from chemical-heavy practices toward sustainable, nature-positive food production systems. Baseline surveys and focus group discussions across the three pilot sites revealed that 96% of households rely on farming as their main income source, with 71.23% earning low annual incomes (USD 200–500) and 67.89% remaining heavily dependent on expensive synthetic inputs. Identified challenges included climate change vulnerability, fluctuating market prices, and lack of capital.

To address these vulnerabilities, the project established Multi-Stakeholder Focal Teams (MFTs) in each community, pairing farmers with local government units (LGUs) and academic institutions. A comprehensive capacity-building program trained 53 local farmers on soil health evaluation (using Soil Test Kits), organic farming practices, agroforestry, alternative pest management, and organic seed production. Practical modules guided farmers in making self-produced, farm-based inputs like Fermented Plant Juice (FPJ) and plant-based compost, significantly lowering production costs and chemical exposure.

To showcase these methods, three main community demonstration farms and expansion site demonstration plots were created. These plots integrated crop diversification, mulching, organic soil amendments, and conservation tillage. Demonstrating high local ownership, initial harvests from the demonstration plots were donated to community members and local school feeding programs. Furthermore, a peer-led extension model was instituted: 15 farmer-trainers successfully trained 30 additional farmers in adjacent villages, resulting in newly established organic vegetable gardens in expansion communities like Barangay Pinagbakuran.

The project culminated in three regional Organic Agriculture Festivals combined with Policy Forums across Quezon, Benguet, and Nueva Vizcaya, convening over 450 farmers, policymakers, and youth participants. These events promoted organic produce, seed exchange, and crop programming while connecting farmers directly to enabling local policies—such as LGU-designated organic market days and the Participatory Guarantee System (PGS).

Key outputs developed by the project team include a comprehensive monograph/guidebook detailing best practices, a policy brief urging local government integration of nature-positive

agriculture, an audio-visual presentation, and research papers presented at national and international conferences, including the 17th International Conference for Environmental and Rural Development in Cambodia. Overall, the initiative successfully built institutional partnerships, strengthened community social capital, and provided a scalable model for long-term food security and sustainable farming across the Philippines.

2. Objectives

This capacity development project primarily aims to future-proof the smallholder farmers in the Philippines through the nature-positive food production. Specifically, it aimed to:

1. Develop their knowledge and skills in determining the soil fertility levels of their farms
2. Promote adoption of crop diversification, organic farming and/or agroforestry as the main production system
3. Produce their own organic soil amendments and organic pest controls
4. Establish at least one (1) demonstration area in each of the pilot communities
5. Produce policy brief and knowledge products for dissemination to various stakeholders
6. Establish local multistakeholder partnership
7. Expand the model to nearby rural communities

3. Outputs, Outcomes and Impacts

Outputs	Outcomes	Impacts
Framework for establishing institutional partnerships through multistakeholder facilitating team (Appendix 1)	Institutionalized partnerships of local development organizations and farming communities to sustain the project initiatives	Operationalizing the project framework, particularly institutionalizing the multistakeholder facilitating team, will support the sustainability of project initiatives. Furthermore, this will pave the way for scaling up or replicating the framework in other adjoining communities.
Baseline data on the socioeconomic and Biophysical characteristics and capacities (Appendix 2)	Identification of appropriate, location-specific, and need-based social and technology interventions	Available and updated baseline data shall lead toward an effective and efficient technical and advisory services and technology interventions
Outputs	**Outcomes**	**Impacts**
Training Modules on Soil Fertility Analysis and Management, Organic Farming and Agroforestry (trained 15 farmers in Sariaya, Quezon; 15 farmers in Bayombong, Nueva Vizcaya; and 15 farmers in Atok, Benguet; Appendix 3)	Developed and/or improved knowledge and skills of farming communities on soil fertility analysis and management, organic farming and agroforestry Sharing/Transfer of knowledge and skills gained to other farmers within their communities	Creating awareness and improving knowledge and skills of farmers shall lead towards the adoption and integration of nature-positive approaches in food production, pest control and management. Once these approaches are integrated in agricultural production, then the farmers would reduce their expenses on expensive and harmful synthetic inputs. In the long run, these nature-positive approaches will contribute to healthy soils, improved biodiversity and environment, while ensuring food security of the
Training Modules on Alternative Pest	Developed and/or improved knowledge	

Management (trained 20 farmers in Sariaya, Quezon; 15 farmers in Bayombong, Nueva Vizcaya; and 20 farmers in Atok, Benguet; Appendix 4)	and skills of farmers on alternative pest management Production of their own concoctions and employing farm management practices for pest control without the use of harmful chemicals	communities. The production of these farm inputs could also serve as income source of the community/organization and/or farmers in the future.
Training Module on Organic Seed Production (training 20 farmers in Sariaya, Quezon; 15 farmers in Bayombong, Nueva Vizcaya; and 20 farmers in Atok, Benguet; Appendix 5)	Enhanced knowledge and skills of farmers on organic seed production Application of knowledge and skills in the production, collection and storage of seeds	Farmers and communities manage their own organic seed production for use and exchange with other communities. This will reduce farmers' expenses on the purchase of seeds, ensure the availability of planting materials regardless of uncertainties and physical constraints; offer potential income source of the farmers and communities. These will all lead towards sustainable and resilient food production.
Outputs	**Outcomes**	**Impacts**
Protocols/Guide in the Production of Organic Soil Amendments and Plant Supplements (trained 10 farmers in Sariaya, Quezon; 10 farmers in Bayombong, Nueva Vizcaya; and 15 farmers in Atok, Benguet; Appendix 6	Developed skills in the Production of organic soil amendments and plant supplements Production of their own organic soil amendments and supplements	Sustainable and resilient food production Reduced expenses on the purchase of fertilizers from the market Potential income source of farmers and communities
Established one demonstration site each in the three project sites; and three expansion	Show window of the community for other farmers to follow and adopt	Transition to and adoption of nature-positive approaches to community gardening

sites in adjoining communities, showcasing nature-positive food production (Appendix 7)	Production of safe and nutritious vegetables to ensure food security of the communities	Adoption of nature-positive food production at the household level Sustainable and resilient food production
Conducted three (3) sessions of farmer-to-farmer training on soil fertility analysis and management; production of organic soil amendments; organic farming, and agroforestry (10 farmer-trainers trained 10 fellow-farmers in adjoining sites/villages; Appendix 8)	Knowledge gained by the farmer-trainers transferred to fellow members Developed a pool of trainers within the communities	Enhanced adoption of nature-positive approaches to food production, particularly organic farming practices Community transition to organic farming villages Sustainable and resilient food production
Organized three community-led awareness programs on nature-positive food production (with 130 participants in Quezon; 120 participants in Benguet and 130 participants in Nueva Vizcaya; Appendix 9) back-to-back with Policy Forum	Promoted knowledge sharing on organic crop production, production of organic soil amendments, organic certification, marketing of organic produce, and youth engagement on organic agriculture	Potential establishment of a network (community of practice) for nature-positive food production, particularly organic farming. This network can serve as a mechanism for scaling-up organic farming and nature-positive food production in the country
Outputs	**Outcomes**	**Impacts**
	Promoted seed exchange among farmers Enhanced food production using organic farming practices shared by the practitioners	

	Initiated partnerships and networking between and among organic practitioners and associations	
Held one Policy Forum in each site, back-to-back with the Organic Agriculture Festival	Linked nature-positive practices to policy Awareness of the local policy-making bodies on the issues and concerns confronting the farmers and practitioners Awareness of the farmers and practitioners on the enabling policies and programs for nature-positive food production, particularly organic farming	Institution of local policies (i.e. municipal ordinances) integrating nature-positive food production, particularly organic farming Improved organic farming practices Enhanced adoption of organic farming
Produced knowledge products (i.e. guidebook, policy brief, audio-visual presentation, scientific articles – Appendix 10); and paper presentation (Appendix 11)	Wider dissemination of the project activities, lessons, experiences and best practices	Replication of the model for future-proofing smallholder farmers through nature-positive food production

4. Key facts/figures

- Based on survey results, smallholder farmers in the three project sites cultivate an average farm size of 0.84 hectares. Most of them were male, with a mean age of 48 years old, and a mean household size of six (6). They had an estimated annual household income ranging from PHP10,000 to PHP30,000 (approximately USD 157 to USD 475), which are generated from farming, being their main source of livelihoods
- Smallholder farms are cultivated mostly with vegetable crops for food and income source of the household, some with fruit trees and Livestock. Most of these areas are in flat areas, rainfed and are owned by the farmers
- 70-80% of smallholder farmers expressed need to improve their farm by employing practices such as organic farming and crop diversification
- 45 farmers were trained on Soil Fertility Analysis and Management, Organic Farming and Agroforestry
- 30 farmers were trained by the 1st batch of trainees on soil fertility analysis and management, and production of organic soil amendments during the farmer-to-farmer training
- 55 farmers were trained on Alternative Pest Management and Organic Seed Production
- 35 farmers were provided hands-on experience on the production of compost, and organic plant supplement (fermented fruit juice, fermented plant juice)
- Three (3) community demonstration farms were established in the three communities; and, two were established in expansion sites
- 380 farmers and stakeholders were convened in Organic Agriculture Festival in the three sites
- Five (5) farmers from each site comprised the pool of farmer-trainers
- Two papers were presented in National and International Conference
- One policy brief developed; one guidebook produced; one scientific article drafted; and one set of AVP produced;
- 23 events held (capacity assessment workshops (60 pax for three sites), training (150 for three sites for 3 trainings), farmer-to-farmer training (10 pax per community), Festival/community-led awareness program; policy forum (380 pax for three sites)
- Three (3) multi-stakeholder facilitating teams formed and established

5. Publications

None yet

6. Media reports, videos and other digital content

Audio-visual presentation about the project

8. Pull quotes

'Through this project, we have learned about the farming practices that are environment-friendly, particularly organic farming "

"The knowledge gained from the trainings organized by the project team helped us to establish vegetable gardens even in our small backyards, using organic farming practices "

"As the lead implementing unit, the UPLB is pleased to establish collaboration with other local state colleges and universities, and also linked and initiate their partnership with the upland farming communities and local government units."

"For organic farmers, we appreciate the learning events organized by the project such as OA festival as these events serve as mechanisms for us to raise issues and concerns confronting the practice of organic agriculture, and also share our experiences in organic farming "

8. Acknowledgements

We hereby acknowledge the partner-communities in Barangay Concepcion Banahaw, Sariaya, Quezon; Pasdong, Atok, Benguet; and Cabua-an, Bayombong, Nueva Vizcaya, for their active engagement in the entire process of this capacity development project. We also thank the project collaborators from the Nueva Vizcaya State University and Benguet State University, for taking an active role in the implementation of project activities in their respective communities. The MFTs composed of the local state college, farming communities and the local government units are likewise recognized for their commitment and support in the overall project implementation.

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9. Appendices

Appendix 1. Multistakeholder Orientation and Formation of Multistakeholder Facilitating Teams

Appendix 2. Summary of survey and FGD results on the community situation and capacity assessment

Appendix 3. On-Site Training on Building Soil Health, Organic Farming and Agroforestry

Appendix 4. Training on Alternative Pest Management

Appendix 5. Training on Organic Seed Production

Appendix 6. On-site Production of Organic Soil Amendments and Plant Supplements

Appendix 7. Establishment of community demonstration farms

Appendix 8. Farmer-to-farmer training on soil fertility analysis, organic farming, and agroforestry, and expansion of the community demonstration farm

Appendix 9. Community-led awareness program on nature-positive food Production/ Organic Agriculture Festival back-to-back with Policy Forum

Appendix 10. Knowledge products developed by the project team

Appendix 1. Multistakeholder Orientation and Formation of Multistakeholder Facilitating Teams

This activity gathered the local stakeholders including the farmers barangay officials, and representatives from the Local Government Unit-Municipal Agriculturist Office and Municipal Environment and Natural Resources Office. This activity provided an overview of the capacity development project, its objectives, activities, and expected outputs; discussed the project work plan, including the methodologies and approaches; and created the Multistakeholder Focal Teams (MFTs) that would serve as core groups throughout project implementation. The Multistakeholder Orientation in Sariaya, Quezon was held on December 7, 2023, while those in Atok, Benguet, and Bayombong, Nueva Vizcaya, were held on January 23, 2024, and April 29, 2024, respectively.

The Multistakeholder Orientation was attended by 15 participants in Sariaya, Quezon, 17 participants in Bayombong, Nueva Vizcaya and 23 participants in Pasdong, Atok, Benguet. Meanwhile, the MFTs in ach site is composed of a representative from the farmers' group, village officials, local state college/university, and the local government units.





Multistakeholder Orientation in Barangay Concepcion Banahaw, Sariaya, Quezon held on December 7, 2023



Multistakeholder Orientation in Barangay Cabua-an, Bayombong Nueva Vizcaya on April 29, 2024



Multistakeholder Orientation in Barangay Pasdong, Atok, Benguet held on January 23, 2024

Appendix 2. Summary of survey and FGD results on the community situation and capacity assessment

a) **Farmers' Capacity Assessment via FGD**. This activity was done primarily to enable the farmers and the local stakeholders determine their capacity for nature-positive food production via self-assessment workshop. The self-assessment centered on the five community capitals or assets that are believed to be among the determinants of sustainability and resilience. These include : human capital (or the knowledge and skills of the farmers; household members active in farming; and health conditions of the farmers); social capital (or the social relationships particularly the bonding capital or relationships within the community; and the bridging capital or relationships with organizations outside the community); financial capital (which includes savings, presence of credit facilities; household income and income sources); and natural capital (which refers to the farms that they cultivate particularly the size, status of ownership and farming systems; and access to and presence of natural resources such as water source and other natural resources).

   The self-assessment was done using the SWOT (strengths, weaknesses, opportunities and threats) analysis.

   Among the strengths identified by the farmers are: availability of land or area to cultivate for food production; existing farmers' organizations; practice of collective action; technical support of the local government units; availability of food crops throughout the year; farmers' experiences passed on to them by parents and older generations. Meanwhile, their weaknesses centered on : the lack of financial capital, lack of savings from farming; fluctuating market prices of their produce, hence, could not generate higher farm income; lack of post-harvest and processing facilities; farm-to-market roads; their farms are rainfed, making their agricultural production more vulnerable when there are changes in the rainfall pattern.

   They have identified some opportunities, which can be tapped to maximize their strengths and overcome their weaknesses. Among these are the partnerships with local government units, state colleges and other organizations, which can be sources of funding and technical support; market demand for vegetable produce; and, local policies supporting smallholder farmers. They are worried, however, on climate change impacts, pests and diseases and natural disaster as potential threats in their agricultural production.

   Capacity-building on organic farming, agroforestry, crop diversification and other topics that would enhance their agricultural production; strengthening their relationships within their farmers' associations, and continuously building linkages with other organizations are among the strategies that were sounded off to help address their weaknesses and threats.






Capacity assessment via FGD in Sariaya, Quezon; Bayombong, Nueva Vizcaya and Atok, Benguet

b) Socioeconomic characterization via household survey

Table 2 shows that, overall, vegetable-based farming in the upland communities in the three project sites is dominated by males (73.57%); however, Benguet and Nueva Vizcaya show nearly equal representation of males and females. Recently, studies show a greater involvement of women in agriculture, particularly in vegetable-based farming systems (Nakwe et al., 2018, Narayanan et al., 2026). The smallholder farmers in these communities were middle-aged, with a mean age of 48 years old. This indicates that they are relatively in their productive years. However, Table 2 also highlights that only one member of the household was actively engaged in farming. Usually, it is the household head, as also noted by previous studies (Telleria and Maxmillian, 2023).

Most (71%) were small-income earners with an estimated annual income ranging from $200- $500, and operated a mean farm size of 0.87 hectares. Ironically, most (67.89%) of these farmers were still dependent on the use of synthetic farm inputs, oftentimes purchased from the market, and in some cases, provided for free by the government agencies. Hossain et al (2025) emphasized that farmers' preference on the synthetic farm inputs fore reliable and high crop yields, as well as ease of application (Visvanathan,

Nila & Priyadharshini, 2025). However, cost-effectiveness, soil health, economic, and the environment are at stake, as noted also by several literature (Hossain et al, 2025;

Table 2. Socioeconomic characteristics of smallholder farmers in the three project sites, 2023

Socioeconomic characteristics	Percentage of response from the participants						Total	
	Benguet (n=100)		Quezon (n=159)		Nueva Vizcaya (n-40)			
	Freq	%	Freq	%	Freq	%	Freq	%
Sex								
Male	55	55	143	90	22	55	220	73.57
Female	45	45	16	10	18	45	79	26.43
Household income								
< Php10000-30000 ($200-500)	65	65	122	77	26	65	213	71.23
>31000-60000 ($510-1000)	35	35	37	23	14	35	86	28.27
Mean household size	6							
Mean age	48							
Mean farm size	0.84							
Mean HH members engaged in farming	1							
Primary source of income								
Farming	99	99	149	94	40	100	289	96
Dependence on synthetic inputs								
Yes	68	68	111	70	24	60	203	67.89
No	32	32	48	30	16	40	96	32.11

Figure 2 shows that the smallholder farmers in the three project sites have expressed the need for farm improvement. This could be because of the several economic and environmental challenges, affecting farm productivity and income. Specifically, 70-80% of the smallholder farmers have expressed the need to explore organic farming; pest management and control (60-80 %), and crop diversification (40-60 %). As discussed earlier, these farming practices have shown potential in building the ecological and economic resilience of food production systems, because of their positive contributions to biodiversity and ecological stability, while at the same time making farm inputs more accessible and cost-effective. These farming practices will certainly contribute to farm improvement, which is the primary aim of the smallholder farmers.

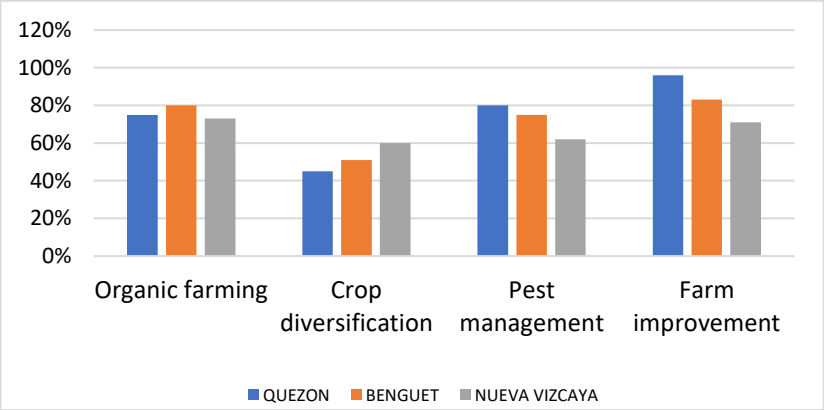


Figure 2. Capacity development needs of smallholder farmers in the three project sites

Appendix 3. On-Site Training on Building Soil Health, Organic Farming and Agroforestry

Ten (10) farmers in each project site were selected as participants based on the following criteria: a) willingness to attend and echo the training to the other farmers within the village; b) active engagement in farming and with developed/cropped areas; and, c) equitable representation of men and women farmers, as well as sitios/sub-villages within the project site.

The basic concepts of soil, including its significance in crop production, were discussed as an introductory topic. The different management practices that would improve soil health were also tackled. The participants were also taught how to determine the pH level and soil fertility (N, P, K) using the Soil Test Kit. This handy, user-friendly, and practical tool determines soil pH and N, P, and K status based on the combination of reagents that would generate various colors for qualitative assessment. The soil analysis results will provide the basis for applying the appropriate amount of fertilizers.

The basic concepts of organic agriculture and agroforestry were likewise discussed. Specifically, the 5Cs of improving soil health were emphasized. These include crop diversification/crop rotation, cover cropping, mulching, composting and conservation tillage.

Farmers had the chance to visit the learning laboratories in organic agriculture and agroforestry, managed by the collaborating institutions at the three project sites. These include the Organic Agriculture Research, Development and Extension Center (OARDEC) and the Learning Laboratory for Agroforestry (LLA) at the University of the Philippines Los Baños, which the farmers from Barangay Concepcion Banahaw, Sariaya, Quezon visited.

The training culminated with the preparation of action plans that are aimed at applying the learnings gained from the training, and echoing the training to their respective communities.

The on-site training was held on June 25-26, 2024, in Barangay Concepcion Banahaw, Sariaya, Quezon, and on October 14-15, 2024, in Barangay Pasdong, Atok, Benguet. Meanwhile, the training of farmers in Barangay Cabua-an, Bayombong, Nueva Vizcaya shall be held in the 3rd week of October.



Figure 3. Training of farmers in Barangay Concepcion Banahaw, Sariaya, Quezon







Figure 4. Training of farmers in Barangay Pasdong, Atok, Benguet

Appendix 4. Training on Alternative Pest Management

To avoid the use of synthetic pesticides, the farmer-trainers in the three project sites were trained in organic pest management, which focuses on management practices and, to some extent, the use of biopesticides to control pests. Among the management practices are crop diversification, particularly intercropping (planting of companion crops), crop rotation (change of crop species every cropping season), integration of plant species that drive away pests, such as marigold and lemongrass, and integration of plant species that attract beneficial insects, such as cosmos. The farmers were also taught about the production and use of biopesticides. There is a basket of options for the production of biopesticides, such as the mixture of kakawate and hot pepper; garlic and onion; neem leaves and kakawate extract, and many more.

The training was conducted in October 2025 in Barangay Cabua-an, Bayombong, Nueva Vizcaya with 15 participants. Meanwhile, 20 farmers from Barangay Concepcion Banahaw and Concepcion Pinagbakuran, Sariaya, Quezon were trained at the Organic Agriculture Research, Development and Extension Center, UPLB on January 16, 2026. Lastly, the training was held on February 11, 2026 in Barangay Pasdong, Atok, Benguet with 20 farmer-participants.



Figure 5. Training conducted in Barangay Cabua-an, Bayombong, Nueva Vizcaya



Figure 6. Training on alternative pest management for farmers in Sariaya, Quezon



Figure 7a Training on alternative pest management for farmers in Pasdong, Atok, Benguet



Figure 7b Training on alternative pest management for farmers in Cabua-an, Bayombong, Nueva Vizcaya

Appendix 5. Training on Organic Seed Production

To ensure a sustainable source of planting materials, the farmer-trainers were also taught about organic seed production. The lecture-discussion focused on the benefits of producing one's own seeds, how to produce them based on the type of seed or crop variety, flower morphology, and family group of the vegetable crops. It also highlighted the requirements for seed production, such as the ecological requirements, the seed production area, and management practices.

The training was conducted in October 2025 in Barangay Cabua-an, Bayombong, Nueva Vizcaya with 15 participants. Meanwhile, 20 farmers from Barangay Concepcion Banahaw and Concepcion Pinagbakuran, Sariaya, Quezon were trained at the Organic Agriculture Research, Development and Extension Center, UPLB on January 16, 2026. Lastly, the training was held on February 11, 2026 in Barangay Pasdong, Atok, Benguet with 20 farmer-participants.



Figure 7. Training on organic seed production

Appendix 6. On-site Production of Organic Soil Amendments and Plant Supplements

To ensure that the focal farmers in the three project sites would have a continuous supply of organic soil amendments, they had to produce these themselves. In this way, they would not rely solely on the market, thereby minimizing their expenses on external farm inputs. Using the resources found within their farms, the farmers were taught how to produce organic plant supplements such as Fermented Plant Juice (FPJ), using kakawate (*Gliricidia sepium*) as the main ingredient, together with molasses. The mixture shall be harvested after 2-3 weeks. Once harvested, farmers can already apply this to their vegetable crops with the ratio of 160ml :16liters of water.



Figure 8. Production of FPJ in Sariaya, Quezon



Figure 9a. Production of plant-based compost in Pasdong, Atok, Benguet



Figure 9b. Production of plant-based compost in Cabua-an, Bayombong, Nueva Vizcaya

Appendix 7. Establishment of community demonstration farms

The community demonstration farms intend to showcase vegetable production, employing different organic practices. The farmer-trainers who were trained on organic agriculture took the lead in selecting the site for the demonstration farm. These include accessibility to ensure that other farmers within the community can see and visit the farms; accessibility to water source; and, willingness of the farmer-owner to employ organic farming practices and share the technology with the other farmers. In Sariaya, Quezon, the "Gulayan sa Barangay " served as the demonstration farm to enhance their project "HAPAG", which aims to promote food security among the community members. The community demonstration plot is continuously being maintained by the community members.



Figure 10. Organic vegetable garden in Concepcion Banahaw.

The farmers established seven (7) plots, which measure 10m x 5m, and are planted to different vegetable crops, employing different management practices as follows:

1. Crop diversification. Each plot is planted to different vegetable crops such as tomato, sweet pepper, okra, mungbean, mustard, bush sitao, cucumber and squash.
2. Mulching. Kakawate leaves were used as mulch to ensure that the soil will be protected from the direct impact of heavy rainfall, and heat; conserve moisture; and, control weed growth
3. Use of organic soil amendments. The organic fertiizers provided by the LGU-MENRO of Sariaya were used as basal fertiizers. Meanwhile, the Fermented Plant Juice (FPJ) that were produced by the farmer-trainors are being applied as plant supplements

4. Conservation tillage. The land area was prepared manually by the farmer-trainors. Carabao was used for plowing. Establishment of the plots was done manually. Periodic cultivation and weeding are likewise done manually.

For their first cropping, the farmer-cooperators were able to harvest vegetables that were given free to the community members, and to the pre-elementary school for their feeding program. On their succeeding cropping cycles, the community members practiced crop rotation. Their plots have been planted with legumes such as bush sitao and cowpea, bell pepper, mustard and eggplant.



Figure 11. Harvests from the first cropping cycle of vegetable crops

In Pasdong, Atok, Benguet the farmers have already established their community garden, utilizing compost and liquid plant supplement as organic fertilizers. The farmers planted leafy vegetables (i.e. lettuce and pechay) as their initial food crops.





Figure 12. Community demonstration farm in Pasdong, Atok, Benguet

Meanwhile, a farmer-cooperator in Barangay Cabua-an,, Bayombong, Nueva Vizcaya, began establishing the demonstration plot in November 2025. The farmer-cooperator has produced Fermented Plant Juice (FPJ) as plant supplement, and integrated marigold for pest control.





Figure 13. Community demonstration farm in Cabua-an, Bayombong, Nueva Vizcaya

Appendix 8. Farmer-to-farmer training on soil fertility analysis, organic farming, and agroforestry, and expansion of the community demonstration farm

Farmer-trainors from Pasdong, trained their fellow farmers from other sitios/puroks of the village about organic agriculture. They talked about the basic concepts of organic agriculture, and taught the other farmers about the production of organic plant supplement, making use of raw materials available in their own farms. Specifically, the farmers demonstrated the production of fermented plant juice.



Figure 14. Farmer-trainees prepare their own fermented plant juice during the farmer-to-farmer training in Pasdong, Atok, Benguet

On May 23, 2025, five (5) farmer-trainers in Barangay Concepcion Banahaw trained their fellow farmers in the adjoining community, Barangay Pinagbakuran in Sariaya, Quezon, on organic agriculture. The training centered on the concepts and principles of organic agriculture, soil sampling and soil testing using Soil Test Kit, and the production of organic soil amendments, particularly organic plant supplements such as Fermented Plant Juice.

The five farmer-trainers were among those who were trained earlier by the Organic Agriculture Program of the Agricultural Systems Institute (OAP-ASI) on organic agriculture in 2024. After the training, they established their community organic vegetable garden (Gulayan sa Barangay), showcasing different organic farming practices such as mulching, cover cropping, conservation tillage, and crop diversification.

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Figure 15. Farmer-to-farmer training on soil fertility analysis, and organic plant supplements in Sariaya, Quezon

After the farmer-to-farmer training conducted by the farmer-trainors from Barangay Concepcion Banahaw, the farmer-trainees in Barangay Concepcion Pinagbakuran have also begun establishing their own organic vegetable garden. A 200-m2 farmlot is planted to pechay, eggplant, upo, patola, cucumber, and bell pepper. Kakawate leaves were used as mulch not only to protect the soil from the direct impact of heavy rainfall and strong heat, but also to serve as fertilizer. The fermented plant juice that was prepared by the farmer-trainees are now used as plant supplement.



Figure 16. Establishment of community demonstration farm in an expansion barangay in Concepcion Pinagbakuran, Sariaya, Quezon

Appendix 9. Community-led awareness program on nature-positive food Production/ Organic Agriculture Festival back-to-back with Policy Forum

As a culminating activity of the project, the OA Festival was organized in Quezon on March 12, 2026 with 150 participants, and in Benguet on March 17, 2026 with 120 participants, and on September 9, 2026 in Nueva Vizcaya with 130 participants. This event provided a platform for harnessing the active engagement of organic farmers, local policy makers, and program implementors. Selected organic farmers shared their practices and experiences in organic crop production, production of organic soil amendments, marketing of organic produce, and organic certification. Invited youth also shared their experiences in engaging in organic agriculture, where one of the drivers for adopting organic agriculture is the government's program on Youth Internship Program on Organic Agriculture (YIPOA). YIPOA not only provides technical training on organic agriculture, but also offers entrepreneurial opportunities among the youth, to develop organic business models, while enticing youth interest to engage in agriculture. It was noted that farmer-members of the Nueva Vizcaya PGS Group are now implementing crop programming in their communities to prevent oversupply that oftentimes leads to low market prices.

The program implementors at the municipal, provincial, and regional levels, on the other hand, highlighted the enabling policies and support systems in promoting organic agriculture in their respective areas. These include the capacity-building opportunities for organic farmers in the form of training; access to the Participatory Guarantee System that would enable the smallholder farmers to get their farms certified; funding opportunities for infrastructure and livelihoods sustainability; and the institution of local policies at the municipal level that would help mainstream organic agriculture in the local development program. One significant contribution of the local government units who have shared their programs and policies, is organizing a separate market day solely for organic products. This serves as a mechanism to increase the market channels of organic produce, and intensify the promotion of organic produce.

The OA Festival also provided an opportunity for the different organic farmers' associations to showcase and sell their organic fresh produce and processed products, and promote seed exchange among the organic farmers.



Figure 17. OA Festival and Policy Forum in Quezon Province



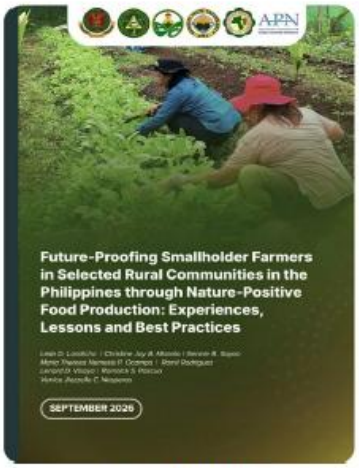
Figure 18. OA Festival and Policy Forum in Benguet Province



Figure 19. OA Festival and Policy Forum in Nueva Vizcaya Province

Appendix 10. Knowledge products developed by the project team

The project team developed a guidebook highlighting the methodologies, activities, and processes that were undertaken by the team throughout the project implementation. This knowledge product also highlights the best practices, as well as the lessons drawn from the project experiences. The guidebook shall be disseminated through online platforms and printed copies, to serve as reference for other organizations that may wish to implement similar capacity development projects. In addition, the research team formulated a policy brief highlighting the policy implications and recommendations from the experiences and lessons of this project. This policy brief shall be communicated to the local government units for the possible integration of nature-positive food production in the local development programs. Finally, an audio-visual presentation about the project is being finalized and shall be disseminated to the different stakeholders, particularly the farming communities.



Monograph/Guidebook



Policy brief

Appendix 11. Paper presentation

The project experiences, lessons, and best practices were shared and disseminated during the 17th International Conference for Environmental and Rural Development held on March 25-29, 2026 at the Royal University of Agriculture in Phnom Penh, Cambodia, with the theme "Transforming Rural Communities Through Solution-Driven Science and Digitalization for Livelihood Security".

The paper entitled "Future-Proofing Smallholder Farmers in Selected Rural Communities in the Philippines through Organic Agriculture" was highlighted in the Conference Session, Rural Development.



The 17th International Conference on Environmental and Rural Development

Certificate

OF APPRECIATION

This certificate is presented to

Leila Dimayuga LANDICHO

University of the Philippines Los Baños

In recognition of your contribution through an ***Oral Presentation*** entitled:

"Future-Proofing Smallholder Farmers in Selected Communities in the Philippines through Organic Agriculture"

at the 17th International Conference on Environmental and Rural Development

Held on 26-29 March 2026

at the Royal University of Agriculture, Phnom Penh, Cambodia

ICERD

Prof. Dr. Bunthan NGO
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