

Promotion of Clean Agriculture - Pilot Activities

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1. Promotion of Clean Agriculture through Ban Yo Agricultural Technique Station

A. Introduction

1 In the four target Northern provinces, it is difficult to produce vegetables at large scale during rainy season as the farmers have no proper facilities, equipment, techniques and inputs. Thus, during rainy season, the provinces import large volume of vegetables from China. Recently, demand for organic or low pesticide vegetables is expanding in these areas as awareness on food safety is being increased and many people began to worry about the use of pesticides in imported vegetables from China.

2 In order to locally produce low pesticide vegetables to replace those imported from China, Phongsaly PAFO and Boun Neua DAFO are planning to promote clean crop production through establishment of five (5) greenhouses as well as necessary technical trainings and equipment/ materials to Ban Yo Agricultural Technique Station in Nam Hoy-Nam Lou Subproject (Phase III).

3 There are growing markets for high quality, 'clean, and safe' vegetables in China, Vietnam and Thailand as well as in fast-growing urban centers in Lao PDR. These demands for high-quality products provide ample market opportunities for Lao PDR's 'clean and green products'.

4 In 2014, the Ministry of Agriculture and Forestry (MAF) launched Lao Good Agricultural Practices (Lao GAP) in harmonized with ASEAN GAP. The Lao GAP was approved as a part of the ASEAN GAP standards under the ASEAN Economic Community 2015 Agreement. Therefore, based on Lao GAP, the project will establish a quality assurance system in order to supply vegetables and fruits with quality assurance to both domestic and export markets, especially in the neighboring countries such as Thailand, Vietnam and China. Proper agrochemical use is one of the most important part of Lao GAP implementation. Providing training on pesticide reduction and supporting IPM activities will be implemented by modernization of existing training programs of the Plant Protection Center under MAF.

5 The introduction of GAP also aims to build traceability procedures for crops and livestock production. In recent years, in neighboring countries such as Vietnam, China and Thailand, supermarkets have been remarkably developed as retailers, but in order to access such high value-added markets, traceability system must established.

B. Objectives

6 The Promotion of Clean Vegetable Production at Ban Yo Agricultural Technique Station has the following objectives.

- (1) Development of safe vegetable production in Ban Yo Area of Boun Neua District, especially during the wet season as alternative to imported Chinese vegetables
- (2) Development of knowledge and experience of the farmers in Nam Hoy- Nam Lou Subproject (Phase III) on safe and clean vegetable production
- (3) Development of the DAFO's Agricultural Technique Station located in Ban Yo as a training center on the safe and clean vegetable production for the project
- (4) Promotion of commercial crop production by strengthening of Farmers Producer Group (FPG)
- (5) Supporting the local government policy on the promotion of safe and clean vegetable production
- (6) Capacity building for the PPO/DCO/DAFO on safe and clean vegetable production
- (7) Introduction of Lao GAP and traceability system at pilot basis

C. Approaches

7 The project provides five (5) green houses for the Agricultural Technique Station in Ban Yo. Ten (10) households in the target villages of Nam Hoy – Nam Lou Subproject (Phase III) will grow vegetables for sale with minimum agrochemicals use in the five (5) greenhouses under 1-year contract with the Agricultural Technique Station in Ban Yo in order for the villages to learn how to grow vegetables with minimum agrochemical use.

8 For the technical support, the Plant Protection Centers of MAF and Phongsaly PAFO will be responsible for implementation of Pesticide Reduction Training. The Plant Protection Centers will introduce Lao GAP at pilot basis.

D. Budgeting

9 The budget will be allocated under Marketing and Processing Equipment category. The estimated cost of the pilot activity approved by NPMO in January 2019 and received no objection letter by ADB LRM in the Aide Memoire of the Mid-Term Review mission in February 2019 is summarized in the table below.

(Unit: kip)

	Description	
1	Direct cost (Construction of 5 greenhouses)	253,957,414
2	Capacity building, trainings, administration	71,443,000
3	Equipment and materials	66,300,000
TOTAL		391,700,414
<i>(equivalent to US\$)</i>		<i>(US\$45,824)</i>

Remarks: US\$1=8,548kip

E. Implementation Procedure and Schedule

10 The Promotion of Clean Agriculture at Ban Yo Agricultural Technique Station implemented by the following procedure.

- (1) Consultation meeting with target pilot villages
- (2) Establishment of a committee for the Promotion of Clean Agriculture
- (3) Selection of households for the activity
- (4) Arrangement for procurement of the materials for greenhouse and other necessary equipment
- (5) Delivery of the materials for greenhouse and other necessary equipment
- (6) Preparation and providing training on vegetable production with minimum agrochemical use in cooperation with the Plant Protection Centers of MAF and Phongsaly PAFO
- (7) Vegetable production with minimum agrochemicals/ organic method are implemented by the selected households
- (8) Handing over the management of provided facilities and activities to the Agricultural Technique Station

11 The implementation schedule of each step is shown in table below.

Step	Activities	Expected Timing	Responsibility
1	<ul style="list-style-type: none"> • Development of selection criteria • Village consultation (including study of villagers requirement) • Selection of target group • Organizing of group (committee) • Contract signing 	Dec. 2018	GIC/CF/ Marketing Team PPO/DCO

Step	Activities	Expected Timing	Responsibility
2	<ul style="list-style-type: none"> Project planning (writing project proposal, financial planning, training plan, implementation delivery plan, monitoring and reporting plan) Submission of project proposal to NPMO 	Dec. 2018 – Jan. 2019	GIC/CF/ Marketing Team PPO/DCO Agricultural Technique Station in B.Yo
3	<ul style="list-style-type: none"> NPMO finalizing and approval 	Jan. 2019	PPO & NPMO
4	<ul style="list-style-type: none"> Arrangement for procurement of the materials for greenhouse and other necessary equipment Preparation of training on vegetable production with minimum agrochemical use in cooperation with the Plant Protection Centers 	Feb.-Oct. 2019	GIC/CF/ Marketing Team PPO/DCO the Plant Protection Centers
5	<ul style="list-style-type: none"> Delivery of the materials for greenhouse and other necessary equipment Construction of the greenhouse 	Nov.-Dec. 2019	PPO/DCO Agricultural Technique Station in B.Yo
6	<ul style="list-style-type: none"> Providing training on vegetable production with minimum agrochemical use by the Plant Protection Centers 	Jan.-Feb. 2020	GIC/CF/ Marketing Team PPO/DCO Plant Protection Centers Agricultural Technique Station in Ban Yo
7	<ul style="list-style-type: none"> The first selected ten (10) households implement vegetable production with minimum agrochemicals / organic method. 	Mar. 2020– Feb. 2021	PPO & DCO Agricultural Technique Station in B.Yo
8	<ul style="list-style-type: none"> The second selected ten (10) households implement vegetable production with minimum agrochemicals / organic method. 	Mar. 2021 – Feb. 2022	PPO & DCO Agricultural Technique Station in Ban.Yo
9	<ul style="list-style-type: none"> Management of the facilities and activities will be completely handed over to the Agricultural Technique Station in Ban Yo. 	Feb. 2022	PPO & DCO Agricultural Technique Station in Ban Yo

F. Progress during the Reporting Period

12 The implementation and budget plan of the pilot activity was approved by NPMO on 23 January 2019 and received no objection letter by ADB LRM in the Aide Memoire of the Mid-Term Review mission (4 – 15 February 2019).

13 The NPMO/GIC team conducted fieldwork to support and supervise PPO and DCO staffs in implementing the pilot activity and visited greenhouse construction on 16 November 2019 at Yo village, Nam Hoy-Nam Lou subproject, Bounneua district, Phongsaly Province.

14 Construction of the five (5) greenhouses at _____ was completed on **30 November 2019**.

No.	Bed preparation	Seeding	Planting	Harvesting
House No. I	28/1-11/2/2020	12/2/2020	27/2-3/3/2020	22-27/3/2020
House No. II	1-15/2/2020	16/2/2020	2-8/3/2020	25-30/3/2020
House No. III	5-19/2/2020	20/2/2020	6-11/3/2020	29/3-4/4/2020
House No. IV	9-23/2/2020	24/2/2020	10-15/3/2020	2-7/4/2020
House No. V	13-27/2/2020	28/2/2020	14-19/3/2020	6-11/4/2020

(3) On the Job training to group members " on 12 February 2020 for (i) growing bed preparation, (ii) seedling preparation and maintenance, and (iii) growing bed preparation



(4) On 25 August 2020, PPO hold a meeting to determine market places where the harvested organic vegetables can sell.

(5) Two (2) buyers from (2) markets (i) Bouneua city fresh market and (ii) Ban Phon Home market have been chosen to sell organic vegetables of 5 greenhouses, contracted with group members of greenhouses with guarantee price at 7,000kip/kg.



Bouneua city fresh market



Ban Phon Home market at
Bouneua city

6) The vegetable growing of five (5) greenhouses at Ban Yor for the first round from the 1st July to 15th September 2020 could get the total incomes of **3,512,000 Kips**

Green-house No.	Farmer name	Area (m ²)	Kind of grown vegetable	Growing period	Yield (Kg)	Price (Kip/kg)	Income (Kip)
1	1. Mrs. Nith 2. Mrs. Khammany	184.8	Coriander, mustard, Chinese cabbage,	5-30/7/2020	280	2,275	637,000
2	1. Mrs. Phout 2. Mrs. Say Dy	184.8	Coriander, mustard, Chinese cabbage, Pachoy lettuce	20/7/- 3/8/2020	443	1,679	744,000

3	1. Mrs. One 2. Mr. Thanh	184.8	Coriander, mustard, Chinese cabbage, Pachoy lettuce	4/7/- 5/8/2020	461	2,191	1,010,000
4	1. Mr. May Som Pheng) 2. Mr. Kham Vone	184.8	Coriander, mustard, Chinese cabbage, Pachoy lettuce	3/7/- 6/8/2020	82.5	2,739	226,000
5	1. Mr. Oun Chanh 2. Mr. Kham Pha	184.8	Coriander, mustard, Chinese cabbage, Pachoy lettuce	3/7/- 29/7/2020	299	2,993	895,000
Total					1,566		3,512,000

Vegetable growing in Ban Yo Greenhouse after planting 15 - 20 days, Nam Hoy-Nam Lou subproject, Bounneua district, PSL



7) Follow up by PPO and DCOs during the growing period to advise growers about the maintenance up to the harvest, 4/9/2020



8) Pesticide Residue Analysis on the 10th by PAFO staff before harvesting and selling in the markets.





9) Progress of vegetable growing in Ban Yor greenhouses as of March 2021 at Nam Hoy-Nam Lou subproject, Bounneua district, Phongsaly province

Round/ House no.	Vegetable	Product (Kg)	Price (Kip/Kg)	Incomes (kip)	Remarks
I.		367.0	9,649	3,541,000	
House No.1	Coriander, mustard, chinese cabbage	57.0		648,000	
House No.2	Coriander, mustard, chinese cabbage	53.0		744,000	
House No.3	Coriander, mustard, chinese cabbage	71.0		1,010,000	
House No.4	Coriander, mustard, chinese cabbage	22.5		244,000	
House No.5	Coriander, mustard, chinese cabbage	84.3		895,000	
II.		462.4	10,405	4,811,000	
House No.1	Chinese cabbage	125.0		1,000,000	
House No.2	Pakchoy, Lettuce	31.8		670,000	
House No.3	Chinese cabbage	85.0		1,000,000	
House No.4	Chinese cabbage	25.0		216,000	
House No.5	Chinese cabbage	195.6		1,925,000	
III.		712.5	8,895	6,338,000	
House No.1	Chinese cabbage	112.5		900,000	
House No.2	Chinese cabbage	68.0		544,000	
House No.3	Chinese cabbage	100.0		1,000,000	
House No.4	Chinese cabbage	213.0		1,704,000	
House No.5	Chinese cabbage	219.0		2,190,000	
Total		1,541.9	9,527	14,690,000	

Note: 1) Not including the present 4th round while the product of each house is selling to the contracted traders at Bounneua district fresh market and data summarized on 20 November 2020 when the GIC team visited on 19 November 2020

10) Incomes of vegetable growing in five greenhouses at Ban Yor, as of December 2021

Growing time		Incomes (kips)
October	2020	14,690,000
March	2021	4,600,000
November	2021	2,300,000
Total		21,590,000 Kips



(11) As of September 2022, the progress of vegetable growing in five (5) greenhouses at Ban Yor (Nam Hoy-Nam Lou subproject-PSL) had the total incomes of 45,532,000 kips

Growing time	Products (Kg)	Icomes (Kip)
Up to October 2020	9,527	14,690,000
Mar-21	460	4,600,000
Nov-21	450	2,300,000
Jun-22	274	3,562,000
Sep-22	1,220	20,380,000
Total	11,931	45,532,000

Note: 1) reported from Phongsaly PPO on 30 September 2022



(12) As of December 2022, the progress of vegetable growing from September to December 2022 in five (5) greenhouses at Ban Yor (Nam Hoy-Nam Lou subproject-PSL) had incomes of 3,098,000 kips and total incomes of 48,630,000 kips as shown below.

Growing time	Products (Kg)	Icomes (Kip)
Up to October 2020	9,527	14,690,000
Mar-21	460	4,600,000
Nov-21	450	2,300,000
Jun-22	274	3,562,000
Sep-22	1,220	20,380,000
Dec-22	300	3,098,000
Total	12,231	48,630,000

Note: 1) reported from Phongsaly PPO on 31 November 2022



2. Promotion of Clean Agriculture for 2 AHs at Named village in Nam Beng subproject (Phase I)

16 As described in the Para 24 of the Aide Memoire of Mid-Term Review Mission (4 - 15 February 2019), the project provided materials for building greenhouses to the 2 affected households at Nam Met Village of Nam Beng Subproject (Phase I).

17 The greenhouses completed by the end of March 2019. NPMO/GIC conducted fieldwork on 16-28 September and advised PPO/DCO together with 2 AHs prepare the vegetable production implementing plan in each crop growing period and follow up regularly by PPO/DCO and the implementation is summarized in the table below.

Date	Activities Implented	Targets and Responsibilities
25 Dec. 2018	Area survey	2 AHs
26 Dec. 2018	Materialpreparation	Follow up with construction technique
05 Feb. 2019	Providing greenhouse materials	2 AHs
05–10 Feb. 2019	Area cleanning	2 AHs, instructed byPPO/DCO
11–15 Feb. 2019	House structure preparation	2 AHs, instructed by PPO/DCO
18–19 Mar. 2019	Training on high value crops and vegetables	On the Job training
20 Feb. – 30 Mar. 2019	Construction of the 2 greenhouses	2 AHs, instructed by PPO/DCO
30 Mar. 2019	Completed the 2 greenhoiuses	2 AHs, instructed by PPO/DCO
18 Apr. 2019	On-the-job training on growing vegetable in greenhouse for 2 AH by the relevant PPO and DCO staffs	On the Job training
01 Oct 2019 to 31 March 2020	Growing period of selected vegetables	On the Job training and regularly follow up by PPO/DCO

(1) The two Affected Households (AH) in Ban Namet at Nam Beng subprojects (Oudomxay province) completed the construction on 30 March 2019.



Mr.Thong

Mr. Pheng

- (2) As of September 2022, the vegetable growing in greenhouses of two affected households (Mr. Pheng and Mr. Thong) got the **incomes of 10,510,000 Kips** as showed below
- (3) As of December 2022, the vegetable growing in greenhouses of two affected households (Mr. Pheng and Mr. Thong) got the incomes of 6,789,000 Kips and total incomes of 17,303,000 kips as showed below, reported by Oudomxay PPO on December 2022.

Growing period	Incomes of 2 Affected households (Kip)		Total (Kip)
	1. Mr. Thong	2. Mr. May Pheng	
As of September 2022	4,1578,000	5,952,000	10,510,000
As of December 2022	5,585,200	1,204,000	6,789,200
<u>Total</u>	9,743,000	7,560,000	17,303,000



3. Lesson Learned

The vegetable growing in greenhouse of benefit farmers is the first time, compared with previous open growing in small gardens nearly the house or along the riverbank. It has several advantages reported by farmers during activity visited and evaluated by GIC team together with PPO and DCOs, including:

- (1) continuous vegetable growing and selling around the year
- (2) adding more family incomes in parallel with rice and other commercial crop production.
- (3) efficient use of land through higher productivity
- (4) suitable for leaf vegetable growing