

Postharvest Technology and Marketing Systems for Small-scale Farmers

21 -25 April 2014

National Agriculture and Forestry Research Institute (NAFRI), Ministry of Agriculture and Forestry,
Hatdokeo Horticultural Research Center

Vientiane, Lao PDR

Training Report



The Network for Knowledge Transfer on Sustainable Agricultural Technologies and Improved Market Linkages in South and Southeast Asia (SATNET Asia) aims to support innovation by strengthening South–South dialogue and intraregional learning on sustainable agriculture technologies and trade facilitation. Funded by the European Union, SATNET facilitates knowledge transfer through the development of a portfolio of best practices on sustainable agriculture, trade facilitation and innovative knowledge sharing. Based on this documented knowledge, it delivers a range of capacity building programmes to network participants.

SATNET Asia is implemented by the Centre for Alleviation of Poverty through Sustainable Agriculture (CAPSA) in collaboration with the AVRDC – The World Vegetable Center, the Asian and Pacific Centre for Transfer of Technology (APCTT), the Food Security Centre of the University of Hohenheim and the Trade and Investment Division of UNESCAP.

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Introduction

A training session on “**Postharvest Technology and Marketing Systems for Small-Scale Farmers**” was conducted by AVRDC – The World Vegetable Center East and Southeast Asia regional office in collaboration with National Agriculture and Forestry Research Institute (NAFRI), Ministry of Agriculture and Forestry from 21 to 25 April 2014 at the Hatdokeo Horticultural Research Center, Vientiane, Lao PDR.

The training was organized through the Network for Knowledge Transfer on Sustainable Agricultural Technologies and Improved Market Linkages in South and Southeast Asia (SATNET Asia), a project funded by the European Union (EU).

SATNET Asia facilitates knowledge transfer and sharing of best practices on sustainable agriculture, trade facilitation and innovative knowledge sharing through a range of capacity-building programmes to network participants. The goal is to enable participants to in turn transfer this knowledge to those who need it most – smallholder farmers, and small-scale entrepreneurs.

AVRDC – The World Vegetable Center supports SATNET Asia through facilitating and implementing capacity building activities in four targeted Southeast Asian countries: Cambodia, Indonesia, Lao PDR and Myanmar.

A total of 15 participants, 9 male and 6 female, attended the training and represented various research centers of the Ministry of Agriculture and Forestry based in provinces and officers from non-government and government agencies

The purpose of the training on “Postharvest Technology and Marketing Systems for Small-scale Farmers” was to enhance the knowledge and skills of the participants and in particular objectives were to:

1. Understand the importance of postharvest management /technologies in minimizing loss in fruits and vegetables along each postharvest stage.
2. Define appropriate and applicable postharvest technologies in Lao PDR setting.
3. Understand the link between producers, markets and consumers.
4. Define methods in market data collection and analyses.
5. Develop a plan on how to extend the knowledge and skills gained during the training.
6. Enhance linkage and collaboration among national organizations in Lao PDR.

Summary of sessions and outcomes

1. Introduction and preliminaries

The training began with an introduction to participants and facilitators coming AVRDC – The World Vegetable Center and the Lao's National Agriculture and Forestry Research Institute (NAFRI). Mr. Bounpheng Sihomchan, head of the Integrated Pest Managements and Postharvest Research Section facilitated the overall process of the training. Dr. Linkham Douangsavanh, Deputy Director General of NAFRI opened the training course and welcomed all participants and facilitators. He encouraged the participants to learn and discuss applicable technologies that will address the losses in vegetable production due to inappropriate postharvest practices. Dr. Linkham Douangsavanh further challenged the need for strategies to increase farmers' income through better marketing systems.

Ms. Somchit Pruangwitayakun, Vegetable Research and Training Assistant, AVRDC, run through the objectives and learning map (program) of the training course with the participants. It was then agreed that to maximize the learning and free discussions, main language to be used was Thai, which is commonly used in Lao PDR.

2. Postharvest

Dr. Apita Bunsiri, Postharvest expert from Kasetsart University, Thailand started the session with a plenary discussion on the current postharvest situation, practices and problems for vegetables and fruits. Below was the highlight of the discussion;

- Vegetables are widely grown across the country, second to rice and most are leafy vegetables
- Deterioration of the quality of vegetables as affected by insects and pests.
- Leafy vegetables such as pak-choi and cabbage are widely grown in northern part of Lao where infrastructure is a concern
- Lack of storage facilities
- Road linking the farms to market (distance and quality)
- Packing and loading/handling practices for vegetables.
- Loss during transportation
- Low prices during high production season of same crops, leading to income loss by the farmers
- Handling of vegetables at the market

The plenary discussion made the participants understand the importance of seeing the whole system of vegetable production, from the field to the market and how each postharvest handling practice is important to minimize losses in production, nutrients and to further increase the income of farmers.

The session on “Principles of Postharvest Technology” introduced the participants to main categories of problems in postharvest losses (food safety, mechanical/physical damage, physiological deterioration, pests, and disasters). Detailed discussions focused on each stages of the postharvest handling system with corresponding practices and technology options to minimize losses along the system.

Some of the postharvest technology options that the participants found applicable to their setting are:

- Pre-cooling techniques
- Handling practices at the field
- Appropriate packaging for various crops
- Quick hot water treatment to reduce pathogen contaminations from the field
- Hot water treatment for lemon grass
- Wax coating to increase the shelf life of fruits and vegetables
- Cooling and storage

Participants did practical exercises on simple cleaning and trimming of leafy vegetables, pre-cooling to reduce the heat from the field, packaging, and making of an alternative wax for fruits and vegetables of which basic materials needed are found in every kitchen such as cooking oil and egg.



Participants during the practical exercises on pre-cooling and making of wax

3. Field visit to fruit and vegetable market

Participants visited the *Lao-Aussie-Europe* wholesale market in Nongtaeng, Vientiane where fresh fruits and vegetables produced from the different provinces in Lao are brought in. The visit made the participants appreciate the whole value chain of vegetable production and further observe practices in handling vegetables that need to be improved to minimize losses. The participants also gathered market information needed for their exercises on marketing systems.

4. Marketing systems for small-scale farmers

The aim of the session was for participants to identify and understand the principles of marketing and its role in improving small scale farmers' livelihood from farming, and to understand how to link farmers to markets.

The session was divided into the following key topics and discussion:

- a. Marketing: farming as a business
- b. Supply chain of vegetable production
- c. Value addition
- d. Cluster based approach for agro-enterprise development



Vegetables displayed at Lao-Aussie-Europe market, Vientiane

The session started with a brief sharing of participants' learning and observations during the visit to Lao-Aussie-Europe market. Participants generally observed the abundance of traditional vegetables in the market. They also observed the handling practices of vegetables particularly in transporting, stacking, packaging and storing and further identified which stage where most losses and wastage happened.



Participants discussing their community based

To deepen their understanding on value chain and marketing channels of agricultural products, they identified and analyzed various factors which influenced the improvement and sustainability of the small scale farmers' income using the SWOT (strength, weaknesses, opportunities, threats) tool. After the exercise, participants realized that the shorter the chain of marketing the higher benefits for the farmers.

The participants were then led through the process of developing agro-enterprises through cluster based approach. They showed much interest in applying this to their own districts and provinces under the "Market Development Plan" developed as a learning output from the training.

5. Way Forward

The participants together with officers of NAFRI discussed the following as action points in moving forward.

Improve postharvest practices by engaging the other government and private sectors in disseminating technologies

- Share knowledge with farmers
- Request for research funds to better understand the postharvest systems of vegetables
- Establish a network of farmers to help in promoting postharvest technologies and improved market linkages.

Annexes

Annex 1: Training Program

Monday, 21 April 2014

09.00-10.00	Welcome and Introduction <i>Dr. Linkham Douangsavanh</i> <i>Deputy Director, National Agriculture and Forestry Institute</i> <i>Ministry of Agriculture and Forestry, Lao PDR</i>
	Course Overview <i>Somchit Pruangwitayakun</i> <i>AVRDC – The World Vegetable Center</i>
10.00-10.15	Coffee Break
10.15-12.00	Principles of Postharvest Management <i>Dr. Apita Bunsiri</i> <i>Postharvest Technology Center, Kasetsart University, Thailand</i>
12.00-13.30	Lunch Break
13.30-15.00	Postharvest Practices for vegetables and fruits <i>Dr. Apita Bunsiri</i> <i>Postharvest Technology Center, Kasetsart University, Thailand</i>
15.00-15.15	Coffee Break
15.15-16.30	Postharvest Practices for vegetables and fruits

Tuesday, 22 April 2014

08.30-10.00	Postharvest technology options in fruits and vegetables <i>Dr. Apita Bunsiri</i> <i>Postharvest Technology Center, Kasetsart University, Thailand</i>
10.00-10.15	Coffee Break
10.15-12.00	Postharvest technology options in fruits and vegetables <i>Dr. Apita Bunsiri</i>
12.00-13.30	Lunch Break
13.30-15.00	Practical on Postharvest technology options in fruits and vegetables <i>Dr. Apita Bunsiri</i>
15.00-15.15	Coffee Break
15.15-16.30	Practical on Postharvest technology options in fruits and vegetables <i>Dr. Apita Bunsiri</i>

Wednesday, 23 April 2014

08.00-16.30 Field Trip to *Lao-Aussie-Europe* fruit and vegetable wholesale market

Thursday, 24 April 2014

08.30-10.00 Linking Farmers to Market: Farming as a Business
Ms. Analisa Miso
Department of Resource Economics, Kasetsart University

10.00-10.15 Coffee Break

10.15-12.00 Market Chains and Market Linkages
Ms. Analisa Miso
Department of Resource Economics, Kasetsart University

12.00-13.30 Lunch Break

13.30-15.00 Value Addition/ Marketing in groups
Ms. Analisa Miso
Department of Resource Economics, Kasetsart University

15.00-15.15 Coffee Break

15.15-16.30 Cluster Approach developing a community based marketing plan
Ms. Analisa Miso
Department of Resource Economics, Kasetsart University

25 April Way Forward, Planning, Course Evaluation, Closing

Annex 2: List of participants

No	Name	Organization	E-mail address
1	Mr. Sengdala MOUNALA	Horticulture Research Center	K_sengdala@yahoo.com
2	Mr. Dong BOUBPHAPHAN	Horticulture Research Center	-
3	Mrs. Toungliene VILAYPHONE	Horticulture Research Center	Tong.hdk@hotmail.com
4	Ms. Chansamone SISOUVONG	Horticulture Research Center	-
5	Ms. Lamyai PHASUIXAYGNAM	Horticulture Research Center	-
6	Ms. Malyvanh OUNPHANOUXAY	Agriculture Research Center	-
7	Mr. Bounthong SAYALATH	Seed Development Company	-
8	Mr. Khamphanh XAYYALATH	Seed Development Company	Khamphanh2006@yahoo.om
9	Mr. Phouthane PHIMMAVONGSA	Seed Development Company	-
10	Mr. Odeth SAMOUNTY	Agriculture and Forestry Center	-
11	Mr. Jommany KODSAMIT	Agriculture and Forestry Center	-
12	Mrs. Chitpasong KOUSONSAVATH	Faculty of Agriculture Nabong Campus	kchitpasong@gmail.com
13	Mr. Vilayphone KEOSILAPHET	Faculty of Agriculture Nabong Campus	keosilaphety@yahoo.com
14	Ms. Lon KEOPONCHANH	Clean Agriculture Development Center	-
15	Mr. Solichanh VORLABOUS	Clean Agriculture Development Center	-

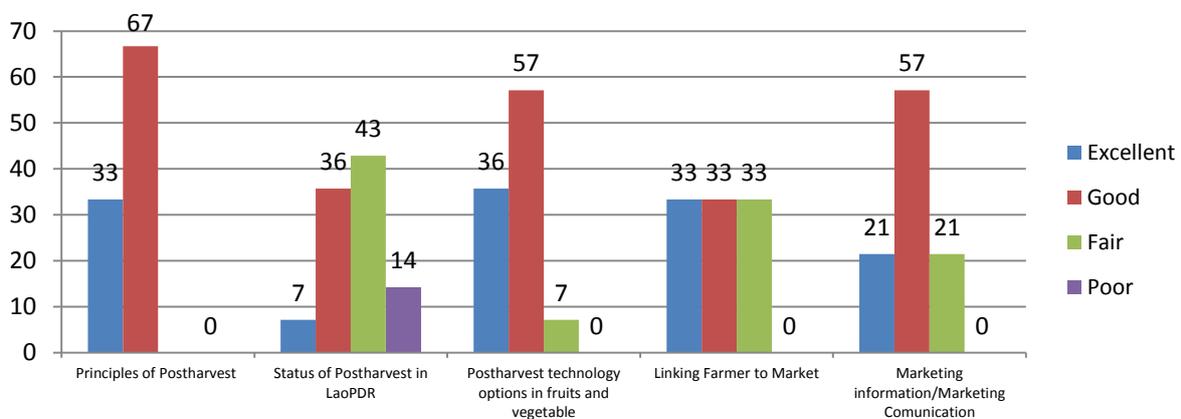
Annex 3: Training course evaluation results and discussion

The end of course evaluation was done through a survey questionnaire, which was answered by the participants individually.

1. Usefulness and quality of the training

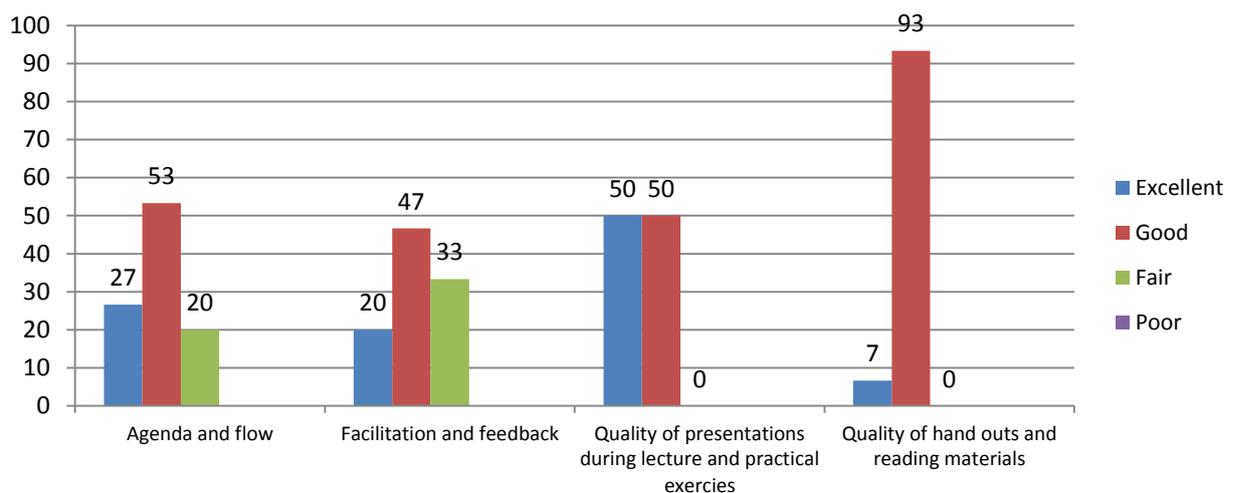
For usefulness and quality of training in terms of content, participants generally rated each topic as “good”, with high percent rating for the topic on Principle of Postharvest were 67%, Postharvest technology options in fruit and vegetable and Marketing information/Marketing Communication were 57%, while Status of Postharvest System in Lao PDR were rate for fair as 47% and linking farmer to market as 33% respectively (Figure 1).

Figure 1. Percent rating for usefulness and quality of training in terms of content.



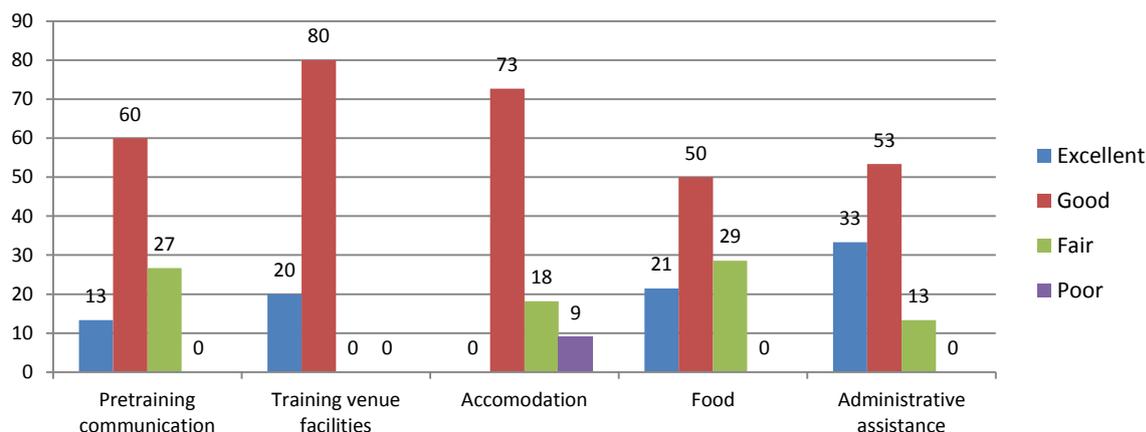
In terms of process and materials, all of participants rating “Good” for agenda and flow, facilitation and feedback, Quality of presentations during lecture and practical and quality of hand outs and reading materials were at 53%, 47%, 50% and 93% respectively. (Figure 2)

Figure 2. Percent rating of process and materials.



For logistics all of participants rating “Good” for pre training communication, training venue facilities, accommodation, food and administrative assistance during the training as 60%, 80%, 73%, 50% and 53% accordingly. (Figure 3.)

Figure 3. Percent rating logistics.



Expectations

Majority of participants (73%) indicated that the training course met their expectations. 13% of the participants said their expectations had been largely met and 13% said to a medium extent.

Overall rating of the training

64% of the participants gave an overall rating of the training as good, while 36% said the training is excellent.

2. Knowledge, attitude and practice (KAP) survey

This part of the evaluation serves as a basis for evaluating changes in knowledge, attitude and practice of trainees over time. Another such evaluation will be conducted after six months to one year after the training.

Key learning being taken away by the participant after the training

Majority of the participants said that their keys learning are the following:

- Marketing, network creation and technique for storage
- Postharvest technology, marketing and value added
- all content and practical
- Postharvest technology, marketing
- Simple post-harvest technologies, SWOT Analysis, the development of agro enterprise
- SWOT analysis, Marketing chain, farmer group operating
- PH technology, production and marketing

Full understanding of all the training content

Participants were requested to answer if they have fully understood all training content. 71% of them said Yes and 29% said No. As to the reasons why they answered No, the following outlines their reasons:

- Language and technical terminologies
- New topics and not familiar

Expected areas where the training did not cover

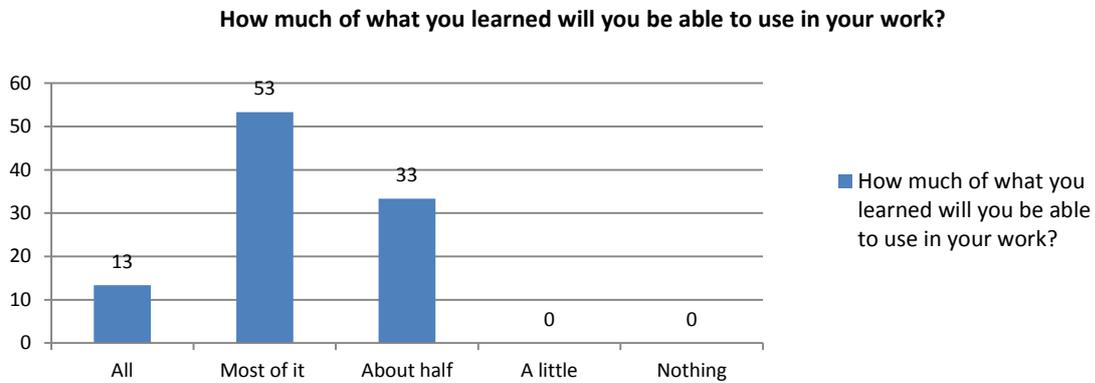
71% of the participants answered no while 29% answered yes. Below is the list of their expectations but where not covered by the training:

- network set up
- build cool room for storage the product
- packaging development

Application of learning

Participants were asked how much of their learning they are ready to apply after the training (Figure 4). 52% of participants answered ‘most of it’ to able to use in their job, 13% for ‘all’, and 33% for ‘about half’.

Figure 4. Percentage of application of learning



Plan to share the learning

When asked if they are planning to share the learning gained from the training to others, 100% of the participants said Yes.

3. Comments and suggestions

Aspects of the training to be improved in the future:

- have some farmers attend the training
- very good, should have more follow up trainings
- more practical exercises
- more time for training and more materials such as pictures and film
- more practical and need hand out for marketing part
- translation into Lao for better understanding