

Postharvest Technology and Marketing Systems for Small-Scale Farmers

4-6 April 2014

Indonesian Vegetable Research Institute (IVEGRI)

Lembang, Bandung, Indonesia

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 Indonesian Vegetable Research Institute (IVEGRI) of the Indonesian Agency for Agricultural Research and Development from 4 to 6 April 2014 at the BALITSA Complex, Lembang, Bandung, Indonesia.

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 23 participants, 13 male and 10 female, attended the training representing the provincial offices of IVEGRI and Food Security Agency. Co-funded by the government of Indonesia through the office Food Security Agency, has allowed more participants coming from island provinces to join the training course.

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 Indonesia 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 Indonesia.

Summary of sessions and outcomes:

1. Introduction and preliminaries

The training on Postharvest Technology and Marketing Systems for Small Scale Farmers started with a brief introduction participants and resource persons. Sheila de Lima, AVRDC's Admin and Training Officer facilitated in plenary the levelling of expectations among the participants. Expectations were clustered into content, process and facilitators.

Expectations from the participants:

Content	Process	Facilitator
<ul style="list-style-type: none"> • New technologies on postharvest • Food processing • Postharvest for fruits • Understand what is value chain • How to market • Vegetable production • Postharvest for rice 	<ul style="list-style-type: none"> • More discussion • Use of Bahasa language • Field activity • Have time to go to market • Participatory 	<ul style="list-style-type: none"> • Patience • Smiling • To talk slowly

After clarifying and levelling off expectations, the course program was presented. It was also agreed that presentations will be translated to Bahasa Indonesia with the assistance from IVEGRI staff. Mr. Abdi Huddaya and Ms. Nur Khaririyatun, both staff of IVEGRI took turns as translators during the training.

2. Principles of postharvest management

Dr. Apita Bunsiri, Postharvest expert from Kasetsart University, Thailand gave a lecture on the basic principles of postharvest. The topic focused on enabling the participants deepen their understanding on the stages of postharvest handling and at what stage where high product loss happened. The participants appreciated the discussion around the framework of good agricultural practices (GAP) and good manufacturing practices (GMP) on major crops. It made them understand the differences in handling practices on different types of vegetables (e.g. fruit, leafy, bulbs, etc.). Various causes of postharvest losses were also discussed thoroughly. These are categorized as physical or mechanical losses, biotic damage due to pests and diseases.

3. Postharvest technology options for vegetables and fruits

Detailed discussions focused on each stages of the postharvest handling system with corresponding practices and technology options to minimize losses along the system. Technologies that are practical, innovative, low cost and applicable were shared and discussed. Among the technology options that the participants found applicable and can be replicated in their respective areas are the following:

- 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 using 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.

4. Field visits

- a. Mekar Tani Jaya is a community based market for vegetables located in Lembang. It started in 1987 as a traditional market mainly selling produce from a 2.3 hectare area. They have expanded the production area, diversified their produce and more farmers joined the group. In 2000, they started exporting to Japan, Australia, China and Thailand. They obtained GAP certification and this made them expand their market. They also received recognition from the Indonesian government and received further assistance from the Ministry of Agriculture. Right now, aside from export market, they also supplied fresh vegetables to hotels, restaurants and catering services in Bandung and Jakarta.
- b. Bimandiri Packaging is a packing house for vegetables and a buy and sell facility owned by a number of farmers. Vegetables produced in Lembang and Bandung are dropped in the facility and then distributed to other local markets. They facilitate the cleaning, sorting, packing and labelling of various fruits and vegetables.

The participants interacted well with farmers and personnel at both sites and learned the following important elements in postharvest management and marketing.

- Product: maintain levels of quality for various markets, learn what the market prefers, product should be market oriented
- Partnership with government agencies and private sectors
- Pooling of resources and capital/investments from members to increase scale and thus efficiency
- Continued capacity building to members and officers
- Good management anchored on trust and transparency

5. 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

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.

6. Way forward discussion

The participants shared the key points they have learned from the training and how they will move forward in applying the learning:

Rusida (East Kalimantan)

- o Training is very useful for me as an local extension, because we need this kind of material (practical activities based on the results of research)
- o I apply to my family first, then to the community

Herdini (Central Java)

- Training to improve food security and nutrition through homegardens and postharvest technology management are new to me, I have never participated in this event before. I enjoyed every material and practice of training.

Srimei Deliningrum (West Java)

- Leaders of community can disseminate these activities
- Organized the farmers for better marketing

Derlan (South Sulawesi)

- Provide knowledge for me, then communities that exist in our region
- Motivated me to improve the welfare of the people in our area
- Gave me inspiration for creating or organized the community

Pujiharti (South Sumatra)

- Information added and knowledge gained, knowledge gained will be applied
- Experts shared technology based on science and can be applied
- Programs of AVRDC should be in every province in Indonesia

Tri Handayani (East Java)

- To improve the knowledge, both material and practice in the field are needed
- I gained more friends

Mahdalena (Lampung)

- Increased knowledge
- Have new friends and improve relations
- The results of training can be applied to my community

Hari Suharsa (Banten)

- This training inspired me to apply with the community for improved production and increased income
- Disseminate to various levels of community
- Personally gained knowledge and new information
- If possible AVRDC will conduct a training in Banten

Afandi (Mekartani Jaya Cluster Farmer)

- Good combination of science and practice
- Motivate food needs in particular to improve the family's own nutrition
- Establish relationship among other participants
- Increase knowledge of pests and diseases on vegetable and the control way
- Information about new technologies will be shared to my organization

Renny Fatmyah Utamy (South Sulawesi)

- Improved my knowledge, my skills and able to make friends because we are coming from different provinces and we can share each other's learning and experiences.
- I can remember AVRDC and someday it will be beneficial for me to conduct my skills in other countries through linkages to AVRDC.

Annexes:

Annex 1: Training Program

Friday, 4 April 2014

08.00 – 08.30	Introduction and Preliminaries Course Overview <i>Ms. Sheila de Lima</i> <i>Administrative and Training Officer, AVRDC – The World Vegetable Center</i>
08.30 – 10.00	Principles of Postharvest Management <i>Dr. Apita Bunsiri</i> <i>Postharvest Technology Center, Kasetsart University, Thailand</i>
10.00-10.15	Coffee Break
10.15-12.00	Principles of Postharvest Management <i>Dr. Apita Bunsiri</i>
12.00-13.30	Lunch Break
13.30-15.00	Postharvest technology options 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 technology options for vegetables and fruits <i>Dr. Apita Bunsiri</i>

Saturday, 5 April 2014 I

08.00-10.00	Field visit: community vegetable market
10.00-12.00	Field visit: Bimandiri packaging (vegetable postharvest facility)
12.00-13.30	Lunch Break
13.30-17.00	Linking Farmers to Market - Farming as a Business - Value addition - Marketing in groups/cluster approach - Market chains and market linkages <i>Ms. Analisa Miso</i> <i>Department of Resource Economics, Kasetsart University</i>

Sunday, 6 April 2014

08.00- 09.45	Developing a community based marketing plan <i>Ms. Analisa Miso</i> <i>Department of Resource Economics, Kasetsart University</i>
09.45-10.00	Coffee Break
10.15-12.00	Developing a community based marketing plan <i>Ms. Analisa Miso</i>
12.00-13.30	Lunch Break
13.30-15.00	Way Forward, Planning, Course Evaluation, Closing

Annex 2: List of participants

NO.	Name		Position	Institution	Contact details (email/phone number)
1	Ir. Kasmul Hayadi	M	Kasubid Ketersediaan dan Keamanan Pangan	BP2KP Kota Sungai Penuh- Jambi	82307760914
2	Kusnadi, SP	M	Kasubid Konsumsi dan Penganekaragaman Pangan	Badan Ketahanan Pangan Prov. Jambi	kusnadibkpbjambi@yahoo.com 81367678540
3	Derland, SE	M	Ka. Sie. Kelembagaan Pangan KKP	Badan Ketahanan Pangan	derland_bs@yahoo.com 85223981778
4	Pujiharti, A.Md	F	Kasubid Kelembagaan Bapluh-KP Ogan Hilir	Badan Pelaksana Penyuluhan dan Ketahanan Pangan Kab. Ogan Hilir	85368065785
5	Mahdalena, S.Sos	F	Kasubid Penganekaragaman Pangan	Badan Ketahanan Pangan Daerah Prov. Lampung	mahdalena2268@yahoo.co.id 81379222768
6	Deny Asharuddin, SP	M	Bidang Penganekaragaman Konsumsi Pangan	Badan Ketahanan Pangan Prov. Sumatera Barat	deni_virgo@ymail.com 81374057490
7	Mulyadi, A. Pi	M	Kepala Bidang KP pada BP4K2P Kab. Agam Sumatera Barat	BP4K2P Kab. Agam Prov. Sumatera Barat	a.pimulyadi@yahoo.co.id 81374743817
8	Ir. Nining R, MP	F	Kasubag Ketersediaan dan Kerawanan Pangan	Bagian Ketahanan Pangan Setda Kab. Tasikmalaya	8121489453
9	Dr. Agr. Renny Fatmyah Utamy, S.Pt., M. Agr.	F	Kasubid Pengembangan Pangan Lokal	Badan Ketahanan Pangan Daerah Prov. Sulawesi Selatan	rfusat@yahoo.com 81242583456
10	Ir. Tri Handayani, M.IP	F	Staf Subid Cadangan Pangan BKP Prov. Jawa Timur	Badan Ketahanan Pangan Prov. Jawa Timur	trihan38@yahoo.co.id 81330762268
11	Ir. MM. Happy Wahyunani	F	Kabid Pengembangan Konsumsi, Ketersediaan dan Distribusi Pangan	Badan Ketahanan Pangan dan Pelaksana Penyuluhan Kota Bengkulu	zone1234happy@yahoo.com 87894905801
12	Rusida, S.TP	F	Penyuluh Pertanian Madya	Badan Ketahanan Pangan dan Penyuluhan Prov. Kalimantan Barat	8125701069
13	Afandi	M	Div. Pemasaran Mekar Tani Jaya	Kelompok Tani Mekar Tani Jaya	pandikumamoto@gmail.com 81809171080
14	Asep Sofyan	M	Div. Diklat dan Administrasi Mekar Tani Jaya	Kelompok Tani Mekar Tani Jaya	aomen86@yahoo.com 87821487607
15	Hari Suharsa, SKM, MKM	M	Pelaksana	BKPP Banten	hari.suharsa@yahoo.co.id 8128198603
16	Handoko	M	Kasubid Konsumsi Pangan	Badan Ketahanan Pangan Prov. Jawa Timur	konsumsipangan@yahoo.co.id 81216361976
17	Catur Prastiwi	F	Kabid Konsumsi dan Keamanan Pangan	Badan Ketahanan Pangan Kab. TB Barat	81272551166
18	Srimei Deliningrum	F	Fungsional PMHP	Badan Ketahanan Pangan Prov. Jawa Barat	srimeideliningrum@gmail.com (022) 2031044
19	Ir. Imberiyadi	M	Penyuluh/Pendamping P2KP	Suku Dinas Pertanian dan Kehutanan Jakarta Selatan	81310780563
20	Herdini Nur Airianik, STP., M.Si.	F	Staf Subid Konsumsi Pangan	Badan Ketahanan Pangan Prov. Jawa Tengah	din2cutz@yahoo.com 81229048155

NO.	Name		Position	Institution	Contact details (email/phone number)
21	Heru Setyawan, STP	M	Staf Mutu Konsumsi Pangan	BKPP DIY	bkpp@prov.diy.com 0817274698
22	Armaini, SP	M	Kasubag umum dan Kepegawaian	BKP Provinsi Kepulauan Bangka Belitung	ar_hsd165@yahoo.co.id 081273461966
23	Deny Riyadi	M	Staf Distribusi BKP Babel	BKP Provinsi Kepulauan Bangka Belitung	08127388720

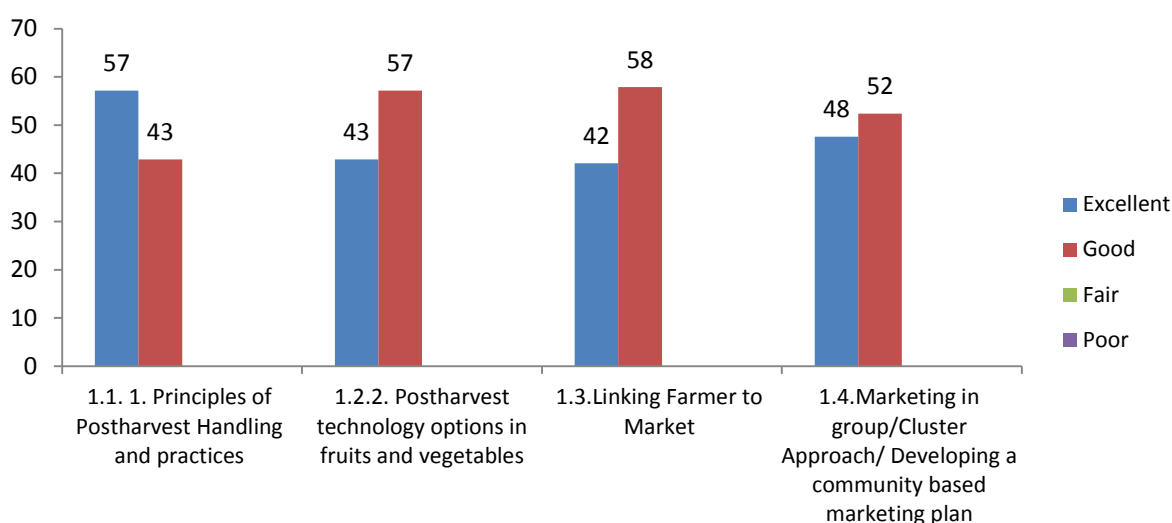
Annex 3: Evaluation results and discussion

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

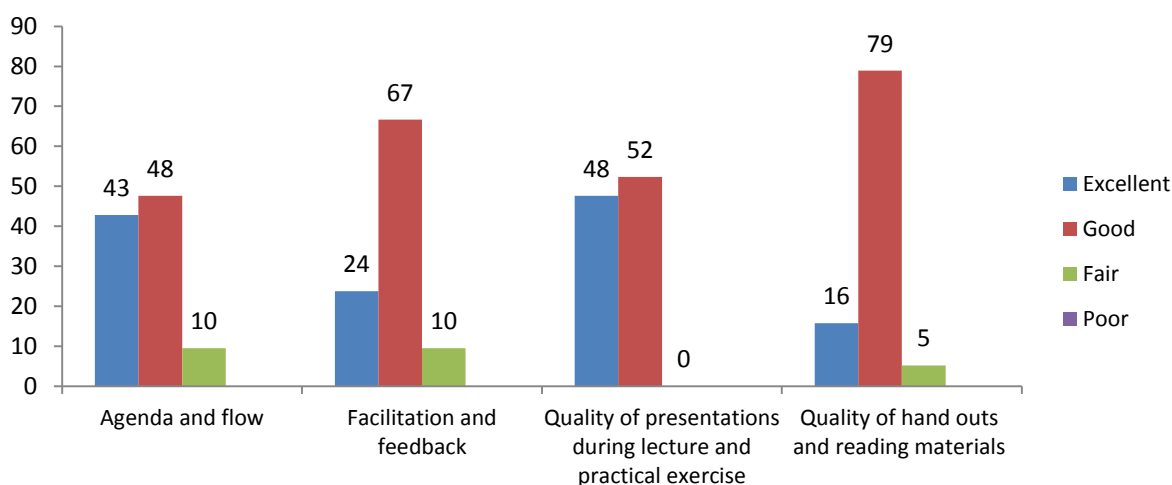
For usefulness and quality of training in terms of content, participants rated each topic as either excellent, good, fair or poor. The session on Principles of Postharvest Management was rated highest with 57% of the participants said “excellent”; Postharvest technology options in fruit and vegetable, linking farmers to market and cluster based marketing approach were rated “good” with 57%, 58% and 52%, respectively(Figure 1).

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



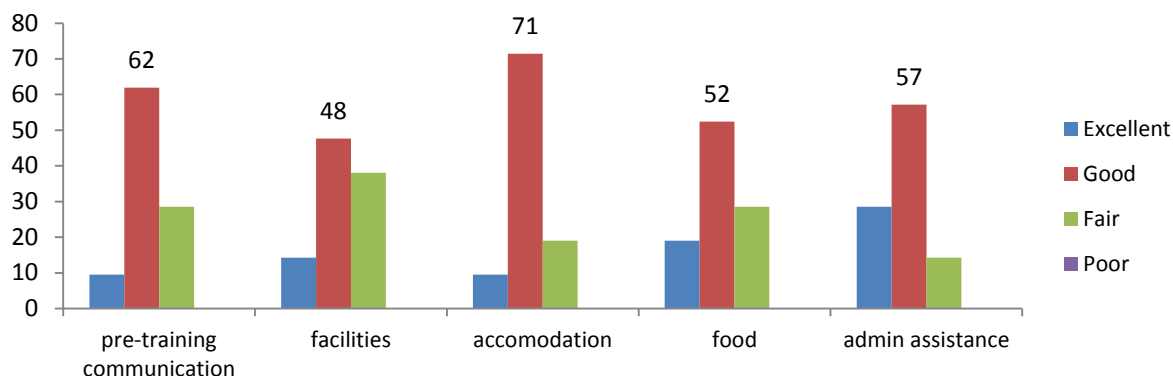
In terms of process and materials, all of participants rating “Good” for agenda and flow, facilitation and feedback, Quality of presentations during lecture and practical and quality of hand outs and reading materials were at 48%, 67% 52% and 79%, respectively (Figure 2.)

Figure 2. Percent rating of process and materials.



For logistics, participants' rating is "Good" for pre training communication, training venue facilities, accommodation, food and administrative assistance during the training as 62%, 48%, 71%, 52% and 57% accordingly (Figure 3.)

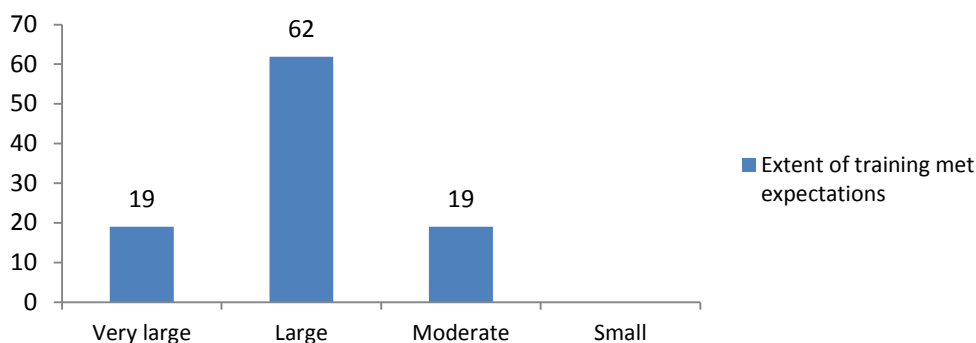
Figure 3. Percent rating logistics.



Expectations

Majority of participants (62%) indicated that the training course "largely" met their expectations. 19% of the participants said their expectations had been "very largely" met and 19% said to a medium extent (Figure 4).

Figure 4. Percent rating on the extent of expectations met



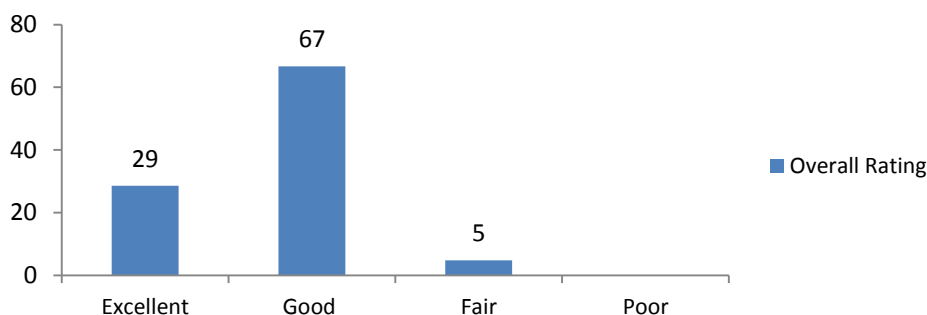
Participants were also asked for reasons to support their respective ratings. They said:

- this training support the vegetable production and marketing in the country
- all of the materials can be understood
- materials were given to support the learning
- more practical exercise were integrated into the training course
- very helpful in resolving problems regarding technology group but in addition there are still other problems facing farmers

Overall rating of the training

67% of the participants gave an overall rating of the training as good, while 29% said the training is excellent (Figure 5).

Figure 5. Percent overall rating of the training course



Brief explanation of the overall rating:

- good content
- training is represented by all districts/provinces
- competent resource persons
- materials and schedule are just right
- Everyone is active
- Resource experts provides materials which are not in theory but can be applied
- Questions are answered accordingly
- Overall, nice and satisfying

Recommendations to further improve the training:

- Need to quick translation
- Supply chain need more time
- All materials could be translated to local language before the training
- Processing of products with high value
- More exercises on packaging
- Training venue can be bigger
- More targeted trainees
- Presentation handouts can be provided in hard copies

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:

- Application of learning to increase the income of farmers
- If you really want it, there's a way of doing
- Practice more on post-handling processes
- Application of good agricultural practices (GAP)
- Need for cooperation with other agencies
- Good postharvest practices should be embodied in production results
- Application of postharvest technologies will increase profits

Full understanding of all the training content

Participants were requested to answer if they have fully understood all training content. 91% of them said Yes and 9% said No. As to the reasons why they answered No, the following outlines their reasons:

- Language and technical terminologies

Expected areas where the training did not cover

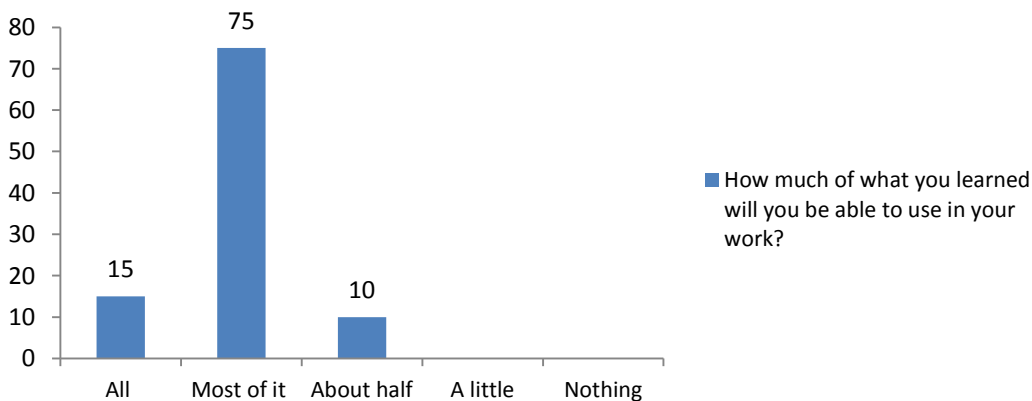
73% of the participants answered no while 27% answered yes. Below is the list of their expectations that were not covered by the training:

- Becoming a 'modern' farmer
- Practical activities for organizing farmers for cluster marketing

Application of learning

Participants were asked how much of their learning they are ready to apply after the training (Figure 6). 75% of participants answered 'most of it' will be used in their job, 15% for 'all', and 10% for 'about half'.

Figure 6. 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.