

## Postharvest Technology and Marketing Systems for Small-Scale Farmers

9-13 September 2013  
Yangon, Myanmar

### Training Report



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## Introduction

A training on “**Postharvest Technology and Marketing Systems for Small-Scale Farmers**” was conducted by AVRDC – The World Vegetable Center in collaboration with Food and Security Working Group in Myanmar on 9-13 September 2013 at Yangon, Myanmar.

It 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. This will enable participants to transfer this knowledge to those who need it most – smallholder farmers and small-scale entrepreneurs.

AVRDC – The World Vegetable Center Regional Office for East and Southeast Asia is directly involved with SATNET Asia in facilitating and implementing capacity building activities and knowledge transfers in Southeast Asia countries, namely: Cambodia, Indonesia, Lao PDR and Myanmar.

A total of twenty four (24) participants of which 7 are female and 17 are male, attended the course coming from civil society organizations, academe and government institutions who are members of the network of FSWG. Further, the participants represent the three main zones of Myanmar, namely: the highland, middle (dry land) and southern states.

The training on “**Postharvest Technology and Marketing Systems for Small-scale Farmers**” aims to enhance the knowledge and skills of the participants on postharvest practices and marketing information systems.

Specific objectives are:

1. Understand the importance of postharvest management/technology in minimizing loss in fruits and vegetables along each postharvest stage.
2. Define appropriate and applicable postharvest technologies in Myanmar 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

## Training Program:

### Monday, 9 September 2013

- 09.00 – 10.00      Welcome messages  
*Dr. Min KoKoMaung*  
*Deputy Coordinator, Food Security Working Group*
- Introduction, expectations setting and course overview  
*Ms. Sheila de Lima*  
*Administrative and Training Officer, AVRDC – The World Vegetable Center*
- 10.00 – 10.30      Coffee break
- 10.30 – 12.00      Principles of postharvest  
*Dr. ApitaBunsiri*  
*Senior Postharvest Expert*  
*Postharvest Technology Center, Kasetsart University*  
*Thailand*
- 12.00 – 13.00      Lunch break
- 13.00 – 16.00      Status of Postharvest systems in Myanmar  
*Dr. Yi YiSoe*  
*Professor, Yezin Agriculture University*  
*Myanmar*

### Tuesday, 10 September 2013

- 08.30 – 16.30      Postharvest technology options for fruits and vegetables  
 (lecture and practical exercises)  
*Dr. ApitaBunsiri*

### Wednesday, 11 September 2013

- 08.30 – 16.30      Field trip  
 (1) Hirimingalar fruit and vegetable market (Yangon)  
 (2) Postharvest Technology Activity Center (Hlegutownship, Yangon)

### Thursday, 12 September 2013

- 08.30 – 09.00      Learning from the field trip: Sharing  
*Ms. Sheila de Lima*  
*AVRDC – The World Vegetable Center*

09.00 – 10.00	Linking Farmers to Market <i>Ms. Analiza Miso</i> <i>Faculty of Resource Economics</i> <i>Kasetsart University</i> <i>Thailand</i>
10.00 – 10.30	Coffee break
10.30 – 12.00	Farming as a Business Market Chains and Market Linkages
12.00 – 13.00	Lunch break
13.00 – 16.30	Market Information / Marketing Communications Value Addition

**Friday, 13 September 2013**

08.30 – 12.00	Marketing in groups/Cluster Approach Developing a community based marketing plan
12.00 – 13.00	Lunch break
13.00 – 16.30	Way forward SATNET Asia technology options Course Evaluation <i>Mr. Takashi Takahake</i> <i>Program Officer, SATNET Asia</i>

## Summary of sessions and outcomes:

### 1. Introduction, general orientation and leveling of expectations

Dr. Min KoKo Maung, Deputy Coordinator of Food Security Working Group in Myanmar together Sheila de Lima, Administrative and Training Officer, AVRDC – The World Vegetable Center East and Southeast Asia jointly opened the training course. Dr. Maung welcomed all participants and training team and hoped the training to be a successful event. He further said that postharvest is a one of the areas in vegetable production chain which needs more attention and investment in capacity building as well as develop more options to address such need.

Ms. Sheila de Lima facilitated the group introduction exercise and leveling of expectations. Each participant shared their work background and the reasons why they were attending the training course. Expectations were grouped into training content and process.

Content	Process
<ul style="list-style-type: none"> <li>▪ Pre and post harvest technology</li> </ul>	<ul style="list-style-type: none"> <li>▪ Participatory</li> </ul>
<ul style="list-style-type: none"> <li>▪ Processes along the value chain</li> </ul>	<ul style="list-style-type: none"> <li>▪ Interactive and more discussion</li> </ul>
<ul style="list-style-type: none"> <li>▪ Technology options for small scale farmers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Trainer approach</li> </ul>
<ul style="list-style-type: none"> <li>▪ Product and market linkage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Exchanges of learning and experiences</li> </ul>
<ul style="list-style-type: none"> <li>▪ How to conduct livelihood training</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sharing through community based approaches</li> </ul>
<ul style="list-style-type: none"> <li>▪ Market chain and value addition</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Postharvest practices in Myanmar</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Indigenous systems and practices</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Reduction of postharvest losses</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Marketing for small farmers</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Market data collection and analyses</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Food processing</li> </ul>	
<ul style="list-style-type: none"> <li>▪ Prolonging the shelf life of fruits and vegetables</li> </ul>	

## 2. Postharvest

The postharvest session started with discussion on the principles of postharvest. It emphasized on the basic principles of postharvest which includes the biology of fruits and vegetables, food safety issues, physiological changes at postharvest and mechanical changes during the postharvest handling system. The session enabled the participants to have a common understanding on the concepts of postharvest and enabled them identify which postharvest stage that loss in vegetables and fruits is high.

The session on the “Status of postharvest systems in Myanmar” opened them to realities of what the current problems in Myanmar and what are the projects and programs the government is doing to address these problems. It also made them understand that there are a number of studies on postharvest technologies in Myanmar but is not trickled down to the farmers. They further realized that postharvest concerns should be a major agenda in extension services and programs of government and non-government institutions.

The session on postharvest technology options introduced the participants to simple and applicable techniques in minimizing loss in production and loss in nutrients along the various stages of postharvest. These technology options are the following:

- Simple cooling techniques
- Harvest handling
- Storage
- Layers during transporting
- Edible wax / coating (Kitchen wax) to prolong shelf life of fruits and vegetable
- Bio-plastic packaging
- Water heat treatment to inhibit further germinations (applicable for lemon grass, green onions)
- Natural wax coating from durian peels

Participants did practical exercise on preparing kitchen wax and applying it to fruits. Samples were given to participants for them observe further the changes even after the training.

## 3. Marketing Systems for Small-Scale Farmers

The session was intended to let participants familiarize and understand the principles of marketing and its role to sustain small-scale farmers’ livelihood through farming. It further aimed to let participants understand how to link small-scale farmers to market.

The discussion started with a presentation with the basic background on the concept of marketing and the 5 Pillars of marketing (*Product, Price, Place, Promotion and People*) in order for the participants to understand how the exchange of goods and services can happen. It was emphasized that, in order to have a successful marketing, marketers should

take steps to ensure that each of these pillars works together to establish a strong foundation for their overall marketing efforts.

It was also discussed how marketing played an important role in agriculture to sustain small-scale farmers and putting into the context that “agriculture or farming as not just simply planting crops and raising animals”, but, letting participants realize that farming is also a business just like any other type of business, since farming, whether small or big entails costs and aimed at gaining something (monetary or non-monetary). Thus, in the process of discussing that farming as a business especially for small-scale farmers, basic farm record keeping system was introduced, how to develop a simple calendar of farm production, how to calculate simple cost and benefit in the small scale farming were discussed. And participants were given practical exercises on these aspects using their chosen commodity found in their region.

Participants were also guided to understand the value chain or marketing channels of their agricultural products and how to use the strengths, weaknesses, threats and opportunities (SWOT) analysis tool, in order to identify factors that may influence the improvement and sustainability of the small-scale farmers’ income. The participants analyzed their local situation on how their agricultural commodities moved from the farm to the market. And at the same time they were able to develop a SWOT analysis of their region in terms of the 3-major crops commonly produced in their locality and they were able to identify the different market channels of their agricultural commodities. The practical activity enabled participants to reflect and understand that the shorter the chain of marketing the higher benefits for the farmers, hence, they further realize why the farmers in their zone gain less income from their farm products.

The session also covered the importance of value addition and communication as factors that may help increase small-scale farmers. The participants were able to identify appropriate value addition and communication strategies suited to their respective zones and with the type of agricultural commodity produced in their area.

A case study on how a cluster based approach in organizing a small-scale farming community is done in order to efficiently meet the supply and demand of agricultural products was introduced as a case study. The participants were very interested with the approach and most especially appreciated the video presentation since they learned a lot about the process of organizing a cluster based approach, and they find it also applicable to their regions.

And at the end of the entire session, participants were able to develop their own action plan: “A Marketing plan for their chosen major commodity” that they could start implementing things they’ve learned during the training.

#### **4. Educational Trip**

The educational trip was conducted in Hlegu, Yangon Fresh Vegetables and Fruits Public Market; and at the Postharvest Technology Application Center (PTAC), Yangon. There were both wholesale and retail sections in the market.

Generally the educational trip expected participants to learn related to marketing and postharvest technologies as preliminary understanding about the market and the importance of postharvest technologies in relation to the succeeding topic which is linking small-scale farmers to market.

The first stop of the field trip was at the Hlgu Yangon Fresh Vegetables and Fruits Public Market. This provide venue for the training participants to observe and deeply familiarize the situation at the public market, as well as to integrate themselves with the public vendors and customers. With the open ended guide questions, the participants were given opportunity to converse with the sellers and asked any market and marketing related questions and or based on the guide questions randomly.

The second and last educational trip was at PTAC. This gave participants opportunity to familiarize, learn and understand postharvest technologies at the PTA Center. This is a setting which allowed them to gain insights on how the postharvest technologies worked.

During the synthesis of the educational trip experience, done the day after the educational trip, participants shared their observations, learning and recommendations for both educational areas. The synthesis session showed that participants really took seriously the educational trip for they critically gave their comments and suggestions about the areas as well as provided great insights about the trip.

Major insights from the educational trip among the participants were:

**A. *Fresh Vegetables and Fruits Public Market***

- They observed that:
  - Wholesalers and retailers are just adjacent
  - The public market need to improve their sanitation system as they claim that fruits and vegetables should be sold clean for cleanliness at the market is important for health purposes.
  - There is a need to improve their packaging system.
  - Wastage and losses of the vendors might be due to improper handling of the agricultural commodities.
  - They use improper sorting container
  - Similar with other public market, the Hlgu public market needs to be organize well
  - Perhaps the vendor at the Hlgu needs awareness rising on the importance of putting fruits and vegetables elevated instead of putting them on the ground.
  - Some retailers do not properly handle the vegetables they are selling (no proper container and packaging, exposed to dirt)

- They found out that the wholesaler has more profit than the farmers
- They were able to identify the market channels on some of the agricultural commodities in the market and further understood why farm price is low and farmers are losing.
- They were able to realize what are the things that need to be improved at the public market

***B. Postharvest Technology Application Center (PTAC), Yangon***

- They were able to learn and understand the agricultural especially rice situation in Myanmar.
- They were able to see and familiarize some of the postharvest technologies for rice.
- They observed that:
  - PTAC's postharvest technologies were obsolete
  - PTAC need to upgrade their postharvest technologies
  - No postharvest technologies for fruits and vegetables
- They realized that postharvest systems and postharvest technologies for fruits and vegetables are not the priority at PTAC and even in Myanmar as a whole.
- They recommended that PTAC needs staff development

Apart from those mentioned above, participants also shared that they were very thankful with the educational trip was done for they learned a lot of the practical things about the market and the postharvest technologies of rice.

Based on the sharing of the participants from what they've learned from the educational trip, it is revealed that exposing them to areas related to the theories of the training is an essential tool to deepen their knowledge and understanding on the topics covered in the training. This is an opportunity for them to critically observe and gain practical experience of not just being buyer at the public market but as observer.

On the other hand, the PTAC exposure, made the participants further realize that their country need political support to give importance on postharvest facilities for rice including fruits and vegetables.

Thus the success of the training was further enhanced by the educational trip conducted for it enabled participants gain practical knowledge.

## Training course evaluation results and discussion

The training evaluation process was conducted through the following:

- ↳ General feedback
- ↳ Evaluation questionnaires given to the participants at the end of the training course
- ↳ Sharing of learning and insights

### General feedback

In small groups, the participants assessed the training by answering the following questions:

- Which session did you like most and why?
- What additional topics would you have liked the training to cover?
- How do you plan to use your knowledge gained from this training?

*Which session did you like most and why?*

<i>Like most</i>	<i>Reasons</i>
<ul style="list-style-type: none"> <li>• Marketing in cluster</li> </ul>	Very practical and applicable us. Farmers will benefit mostly this from this approach
<ul style="list-style-type: none"> <li>• Postharvest technology options for fruits and vegetables</li> </ul>	Techniques are simple and can be implemented in small scale. Importance of storage. Less loss and less waste. Adding more value to products. Practical technique such as the making of kitchen solution to
<ul style="list-style-type: none"> <li>• Value addition</li> </ul>	Important because income of farmers will increase
<ul style="list-style-type: none"> <li>• Marketing</li> </ul>	Practical tips in market creation. To increase income of farmers. Practical ways in increasing income such as growing different crops

*What additional topics would you have liked the training to cover?*

- Food processing methods
- Other crops not only vegetables

*How do you plan to use your knowledge gained from this training?*

- Share learning with the village members through training
- Integrate these topics into the larger capacity building programs of the organization
- Practice more with ourselves then share to others
- Conduct demonstrations day
- Group discussions with farmers through either formal or informal venues

## **End of Training Evaluation**

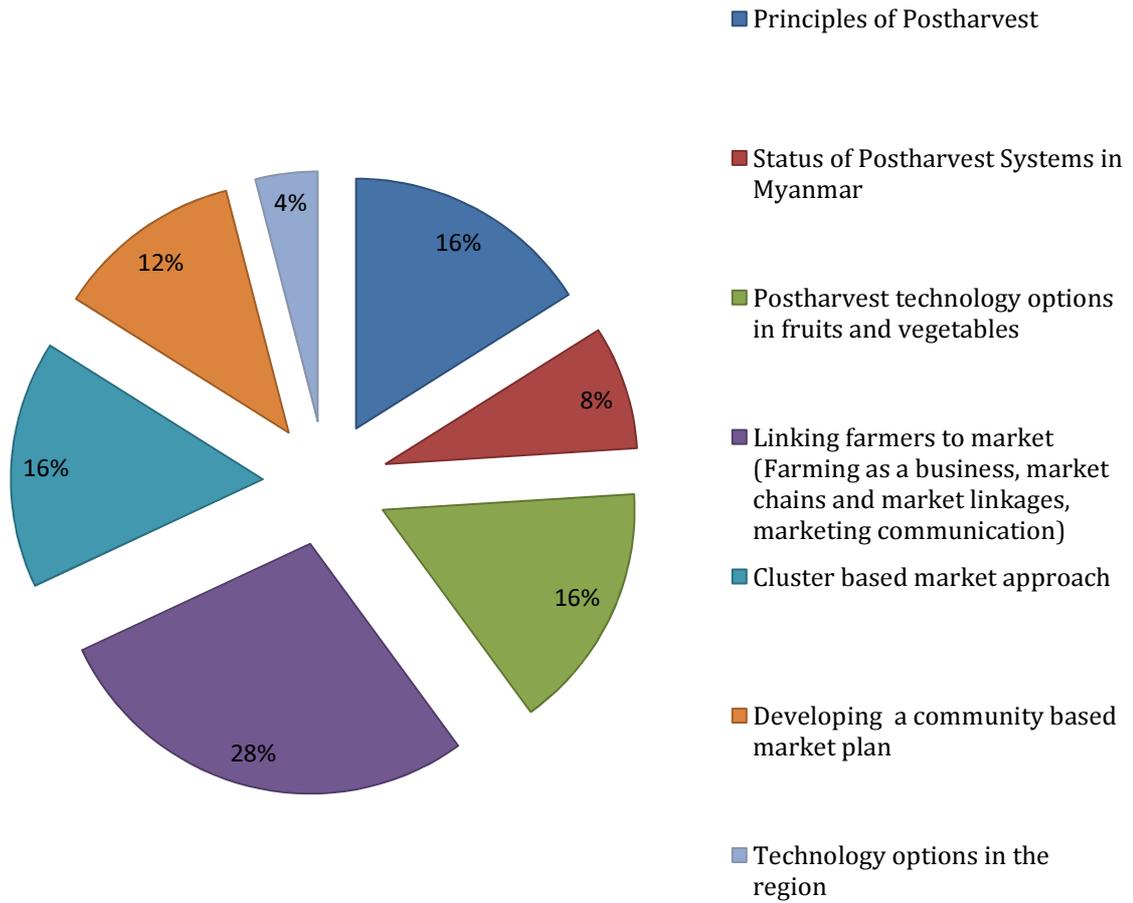
The end of course evaluation was done through a survey questionnaire, which was answered by the participants individually. The survey has 5 parts, namely: [1] usefulness and quality of the training course; [2] knowledge, attitude and practice (KAP) survey; and, [3] other comments and recommendations.

### ***Usefulness and quality of the training***

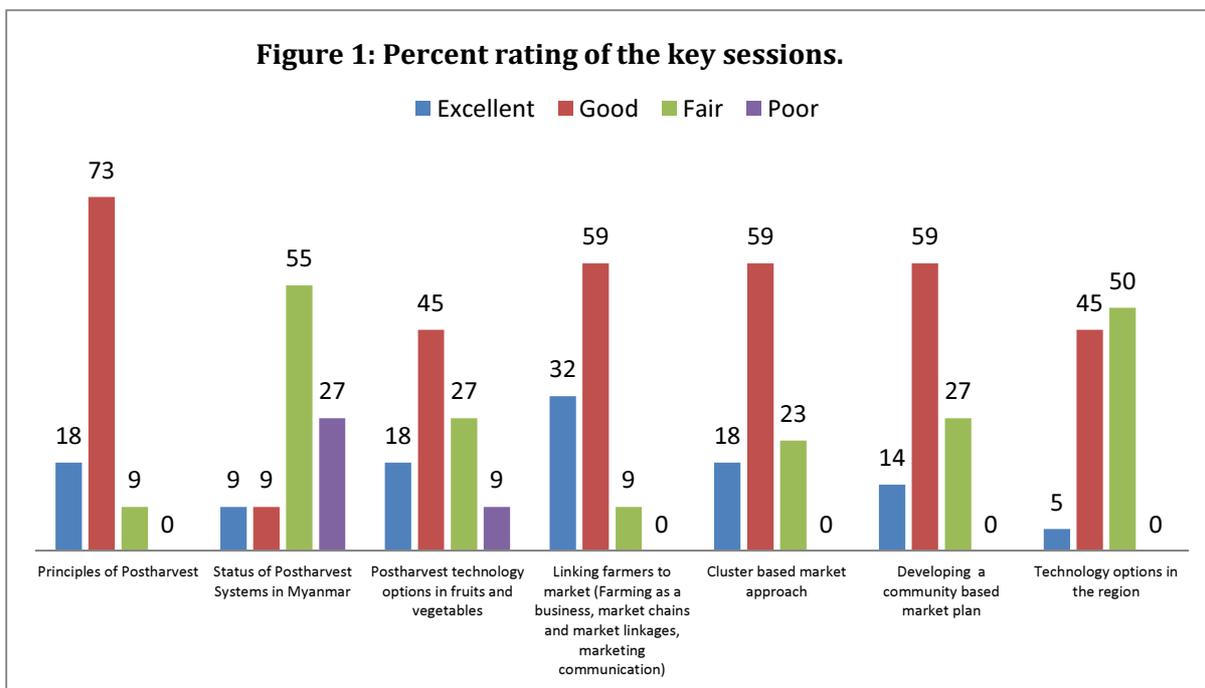
Participants we asked to rate the usefulness and quality of the training in terms of content, processes and materials and logistics, from 'excellent' to 'poor'. The table below gives results according to four evaluation criteria (excellent, good, average and poor).

In terms of content, participants evaluated each key session. Chart 1 below shows that participants rated mostly all key sessions as 'good'. The sessions with highly excellent rating *linking farmers to market (Farming as a business, market chains and market linkages, marketing communication) (32%)*, while the sessions highly rated as good are *principles of postharvest ((73%), cluster based market approach (59%), developing a community based market plan (59%), respectively.*

**Figure 1: Percent rating of the key sessions.**

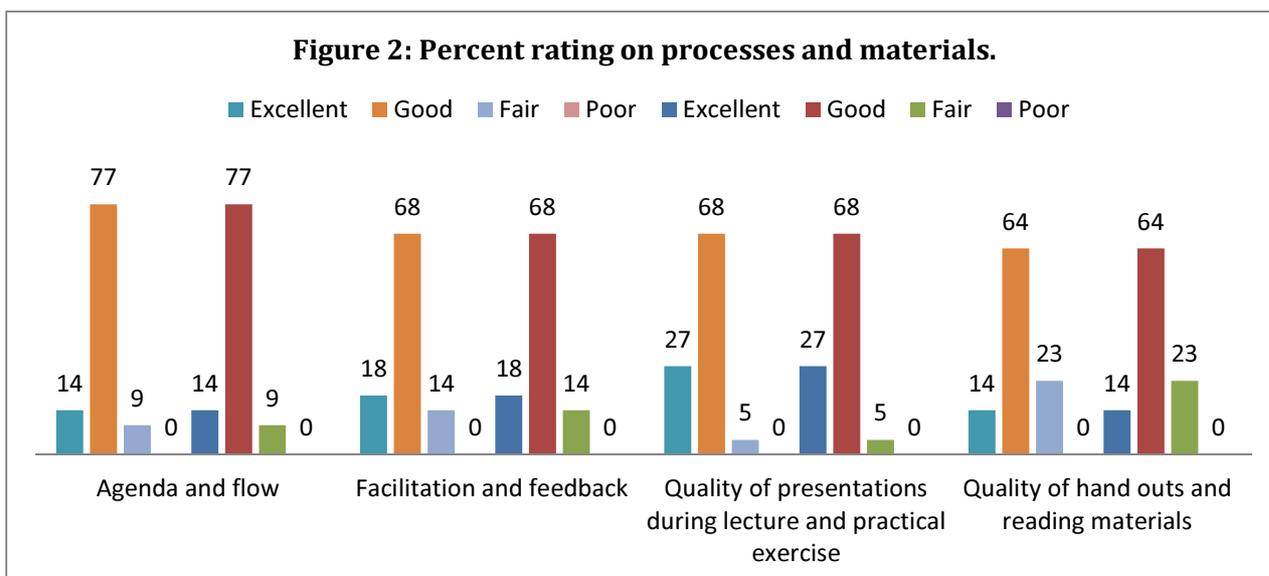


**Figure 1: Percent rating of the key sessions.**



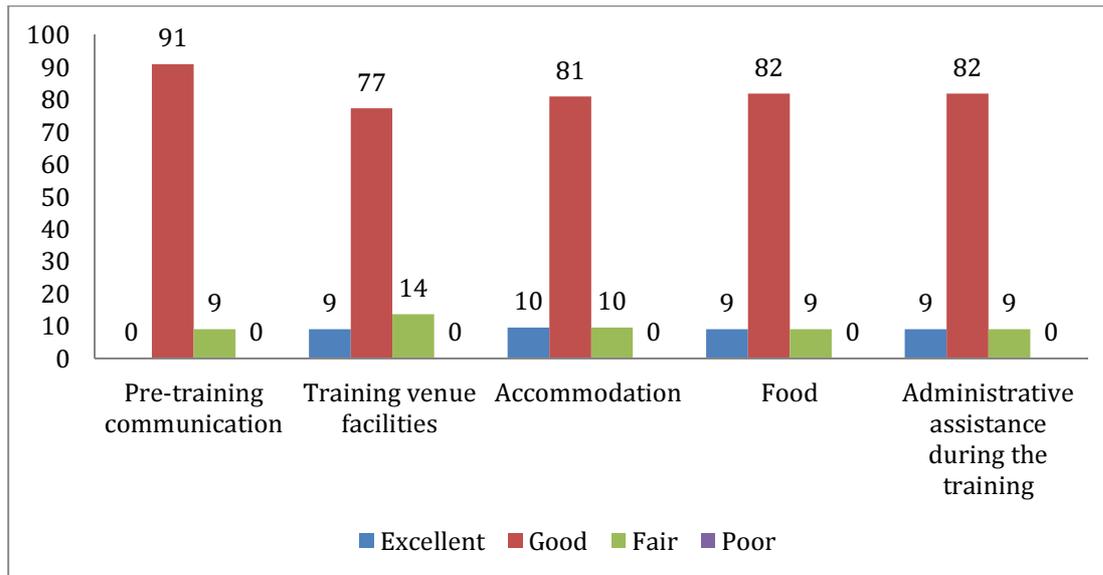
In terms process and materials, most participants were satisfied with the quality of training conducted. Figure 2 below shows the good rating for agenda and flow (78%), quality of presentations during lecture and practical exercise and facilitation and feedback (both got 68%), quality of hand outs and reading materials (64%)

**Figure 2: Percent rating on processes and materials.**

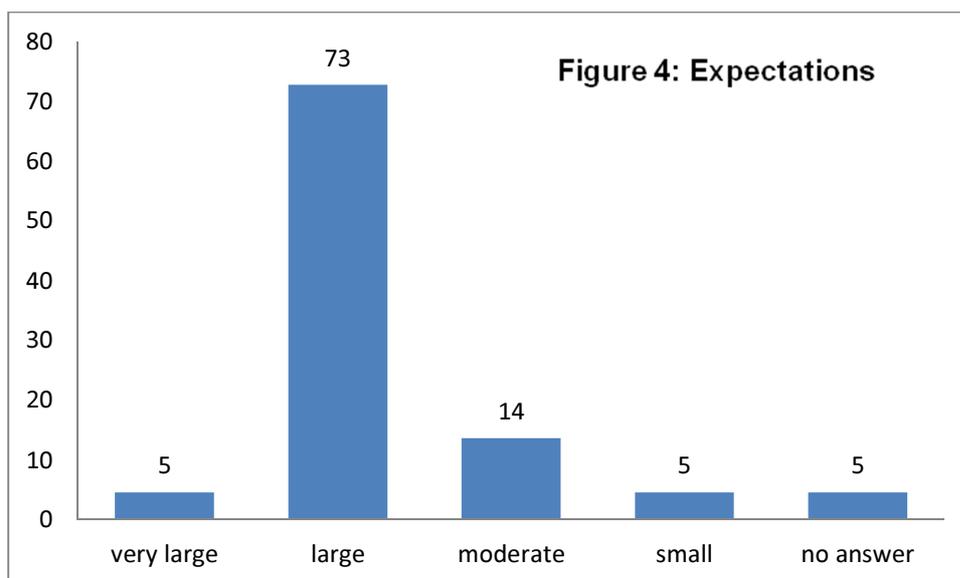


Most participants rated logistics as good - pre-training communication (91%), accommodation (82%), and administrative assistance during the training (82%), accommodation (81%), and training venue facilities (77%), respectively.

**Figure 3:** Percent rating on logistics.

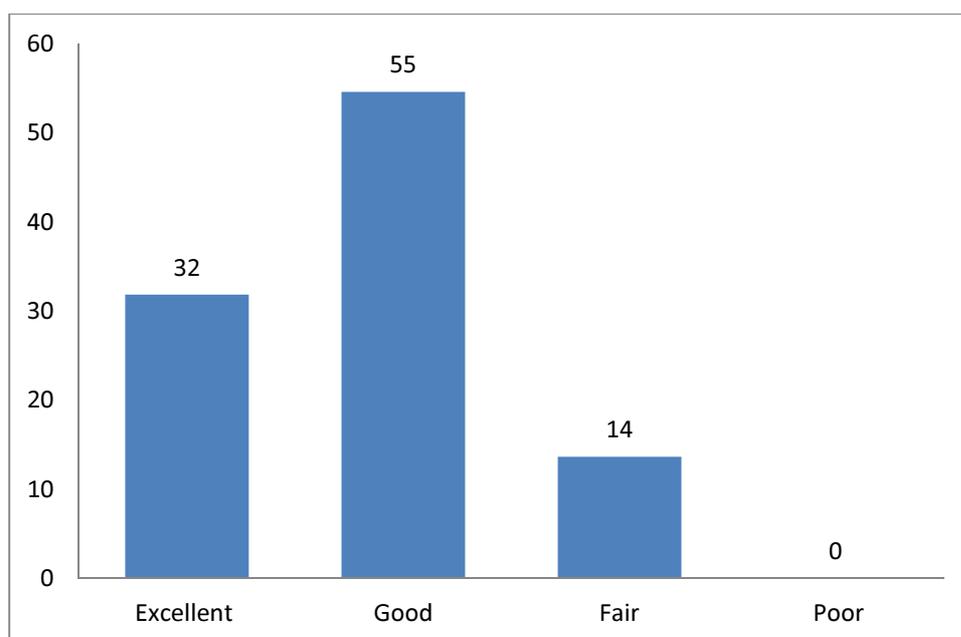


Majority of participants (73%) indicated that the training course met their expectations to a large extent. 5 % of the participants said very largely extent and 14% said medium.



55% of the participants gave an overall rating of the training as good, while 32% said the training is excellent and around 14 % fairly rated the training.

**Figure 5:** Overall rating of the training



### ***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 key learnings are the following:

- Marketing system
- Postharvest technology
- Farming is a business
- Harvested vegetables and fruits are still alive
- how to handle products
- 5 Pillars of marketing
- SWOT analysis
- Marketing chain
- learning visit to market
- farmers link to market
- postharvest systems
- kitchen solution from post harvest, supply chain
- marketing and postharvest technology
- market chain and market linkage

- postharvest technology and marketing
- cluster based market approach in organizing small-scale farmers

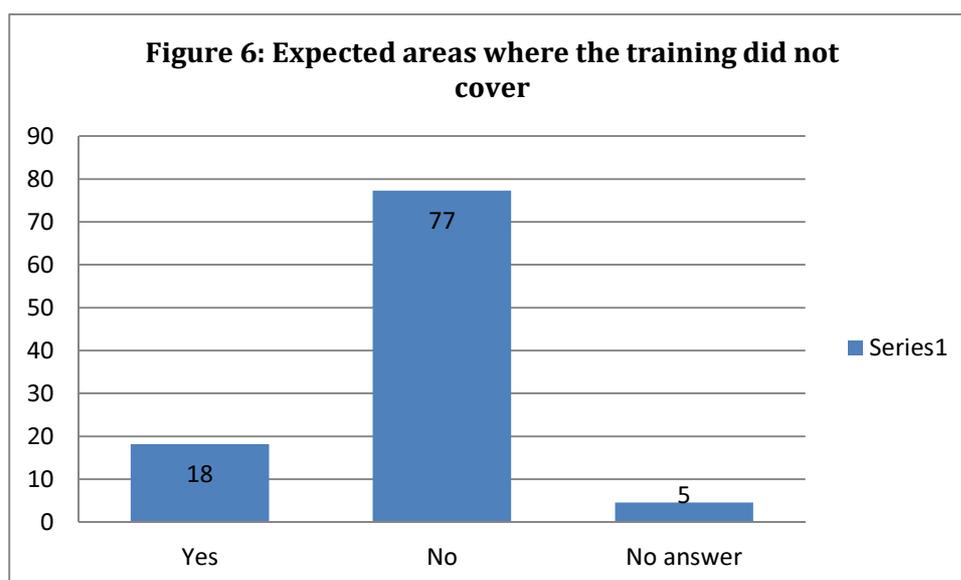
### Full understanding of all the training content

Participants were requested to answer if they have fully understood all training content. 77% of them said yes and 22% said no. As to the reasons why they answered no, the following outlines their reasons:

- difficulty in understand everything
- problem analysis
- not familiar with the topic

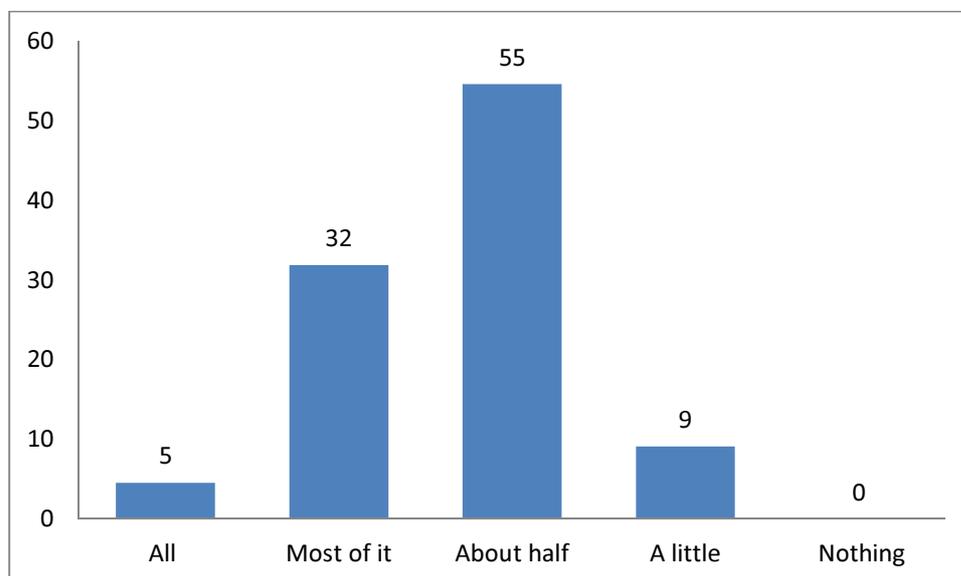
### Expected areas where the training did not cover

When asked the question, “Is there an area that you expected to learn about but the training did not cover?”, 18% of the participants answered yes while 77% answered no.



Participants were also asked how much of their learning they are ready to apply after the training. 55% answered ‘about half’, ‘most of it’, ‘9% said a little’ and 5% said ‘all’.

**Figure 7: Application of learning**



Percent of participants on how much of their learning they are ready to apply.

### **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. Majority of them is willing to share the following areas to their constituents.

#### **Whom to share:**

- organization, agronomist
- grass root farmers & rural poor, friends
- staff, village
- to my team, to the villager
- vegetable growers
- co-workers and farmers
- neighbors and farmers
- product agri-product based on demand, organize partnership to have market, know the target market, to reduce wastes and losses schedule the harvesting time.
- every organization in the local area
- small scale farmers
- mostly answered, share to farmers

#### **What to share:**

- postharvest, storage, pest and control methods, marketing link with farmer
- postharvest technology, value addition, supply chain
- implementing agricultural livelihood postharvest technology and marketing

- postharvest technology options, farming as a business, market chain, market linkages, marketing communication
- cluster-based approach
- vegetable handling, packaging and marketing
- packaging, market
- postharvest technology and storage system
- marketing and postharvest knowledge
- postharvest and marketing knowledge
- postharvest system and how to link farm to market
- GAP including postharvest technologies' whole value chain
- I will start with how they feel about production cost, total cost and net profit of their products, then I will lead them how reduce losses and improve their profit and calculate the net profit, then I will led them to have high price by using proper postharvest handling, packaging

### **Comments and suggestions**

*Aspects of the training to be improved in the future*

#### **1. What aspects of the training could be improved in the future?**

- should prepare questionnaire to ask the seller during the field trip, postharvest procedure and marketing
- more hands-on technique on postharvest to apply to field since we are extension worker
- value addition of agricultural products
- more activities about technologies and emphasis on organic based technology and more field trips
- need storage camp for packaging system
- maybe more development by farmer's technique
- would be helpful to conduct this training to the village level
- postharvest technology for cereal and oil crops in dry zone
- more demonstrations on preservations. I liked valued addition

#### ***Additional comments***

- the whole training is excellent but need more discussions
- good, all topic fits the time and schedule
- to include postharvest for cereal and oil
- i like everything
- I like the training
- very good
- I don't like too much aircon
- training on cereal crops, oils and pulses
- overall very good but more practical works
- I like field trip

- more knowledge on postharvest and marketing system but more group discussion which take long time
- need more time, not enough time
- social should be included in the training

### List of Participants:

S/N	Name	Position / Institution	Contact details
1.	Saw Ah Tun	Admin Officer/ KESAN	Phone: 09 8617 706 E-mail : <a href="mailto:joyathun1983@gmail.com">joyathun1983@gmail.com</a>
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16.	Nay Zhu Kyaw	PM/MHDO	Phone: 0947212372 Email: <a href="mailto:nythukyaw77@gmail.com">nythukyaw77@gmail.com</a>
17.	Ma Tin Tin Mu	F/AGE	Phone : 09 421 729 651 E-mail: <a href="mailto:greennetwork.agro@gmail.com">greennetwork.agro@gmail.com</a>
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