

Sustainable Crop Production Systems for Small-Scale Farmers

12 – 16 August 2013
Yangon, Myanmar

Training Report



Table of Contents

Introduction

Training program

Summary of sessions and outcomes

Annexes:

1. Evaluation results
2. List of participants

Introduction

A training on “**Sustainable Crop Productions Systems for Small-scale Farmers**” was conducted by AVRDC – The World Vegetable Center in collaboration with Food and Security Working Group in Myanmar on 12 – 16 August 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 nine (29) participants of which 9 are female and 20 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 “**Sustainable Crop Production Systems for Small-Scale Farmers**” aimed to enhance the technical skills of the agriculture practitioners and extension workers to be able to produced crops in a sustainable manner.

Specific objectives are:

1. Participants will enhance their learning on integrated pest management system, water management, and crop farming systems.
2. Participants will strengthen their abilities in applying the technologies learned in the training.
3. Participants will develop a plan on how to extend the knowledge and skills gained during the training.

Training Program:

Monday, 12 August 2013

| | |
|---------------|---|
| 09.00 – 10.00 | <p>Welcome messages Dr. Ohnmar Khaing Coordinator, Food Security Working Group</p> <p>Dr. Robert Holmer Regional Director, AVRDC – The World Vegetable Center</p> <p>Introduction, expectations setting and course overview Ms. Sheila de Lima Administrative and Training Officer, AVRDC – The World Vegetable Center</p> |
| 10.00 – 10.30 | Coffee Break |
| 10.30 – 12.00 | <p>Vegetables for Development: Myanmar situation (group discussion) Facilitator: Ms. Sheila de Lima</p> |
| 12.00 – 13.30 | Lunch Break |
| 13.30 – 14.30 | <p>AVRDC – The World Vegetable Center, its role in food and nutrition security Dr. Robert Holmer</p> |
| 14.30 – 15.00 | <p>Framework for knowledge sharing: SATNET Asia project Ms. Sheila de Lima</p> |
| 15.00 – 15.30 | Coffee Break |
| 15.30 – 16.30 | <p>Extension and technology dissemination Facilitator: Ms. Sheila de Lima</p> |

Tuesday, 13 August 2013

| | |
|---------------|---|
| 08.30 – 10.00 | <p>Soil management and plant nutrition Dr. Robert Holmer</p> |
| 10.00 – 10.30 | Coffee Break |
| 10.30 – 12.00 | <p>Integrated Crop Management Dr. Robert Holmer</p> |
| 12.00 – 13.30 | Lunch Break |
| 13.30 – 15.00 | Vegetable grafting |

Ms. Somchit Pruangwitayakun
Vegetable Research and Training Assistant, AVRDC – The World
Vegetable Center

15.00 – 15.30 Coffee Break

15.30 – 16.00 Vegetable grafting (Cont)

16.00 – 16.30 Wrapping up of day 1

Wednesday, 14 August 2013

08.30 – 10.00 Integrated Pest Management
Principles of pest management
Ms. Sopana Yule
Research Assistant – Entomology
AVRDC – The World Vegetable Center

10.00 – 10.30 Coffee Break

10.30 – 12.00 Identification of beneficial and harmful insects
Ms. Sopana Yule

12.00 – 13.30 Lunch Break

13.00 – 17.00 Identification of beneficial and harmful insects
Field trip to Fruit and Vegetable Research and Development Center

Thursday, 15 August 2013

08.30 – 16.30 Bio control measures/ IPM practices
Ms. Sopana Yule

Friday, 16 August 2013

08.30 – 12.00 'Saving your own seeds'
Community seed bank
Seed production techniques
Ms. Somchit Pruangwitayakun

12.00 – 13.30 Lunch Break

13.30 – 16.30 Way forward, course evaluation, closing
Ms. Sheila de Lima

Summary of sessions and outcomes:

1. Introduction, general orientation and leveling of expectations

Dr. Robert Holmer, Regional Director of AVRDC - The World Vegetable Center together with Dr. Ohnmar Khaing, Coordinator of Food Security Working Group (FSWG) jointly opened the training and welcome all participants to **Sustainable Crop Production Systems for Small-scale Farmers**. They both emphasized on the value of partnership between AVRDC and FSWG in undertaking capacity building for the partners in Myanmar.



Dr. Robert Holmer and Dr. Ohnmar Khaing welcoming the participants

During the introduction exercise, the participants were invited to share not only their names and work but also a symbol describing ‘what’ they are at the moment. The exercise made them know each other and appreciate each contribution to the development of their states.

It was then followed with identifying their expectations from the training. Below is the summary of expectations according training content and process:

| <i>Content</i> | <i>Process</i> |
|--|--|
| ✍ Organic vegetable production | ✍ Sharing on improved cultural practices on crop management and vegetable production |
| ✍ Drought resistant crops | ✍ Experience based sharing |
| ✍ Value chain and marketing | ✍ Extension process |
| ✍ Fertilizer applications | ✍ More on discussions |
| ✍ Water management technologies | ✍ Practical sessions |
| ✍ Small scale vegetable farming | ✍ Field trips |
| ✍ Soil fertility management | ✍ Gradual process – basic to advance |
| ✍ Sustainable utilization of natural resources | ✍ Group work – collective discussion |
| ✍ Crop management – sustainable crop | ✍ Trainer to be more patient |

| | |
|--|--|
| production techniques | |
|  Farm cultivation |  Participatory approach in learning |
|  Integrated pest management | |
|  Post harvest technologies | |
|  All year round vegetable production | |
|  Crops which can be grown in dry zone | |
|  How to share research outputs | |
|  Seed production techniques | |
|  How to disseminate knowledge and skills to farmers | |

2. AVRDC and vegetables for development

The session was aimed at briefing the participants on what AVRDC is and what are its programs in the region as well understanding the role vegetables for development in connection with addressing issues on food and nutrition security. It also aimed at defining the landscape of vegetable production and consumption in Myanmar.

In small groups, the participants discussed the following questions:

- a. What are the problems they are facing on vegetable productions in the country?
- b. How they will address these problems:

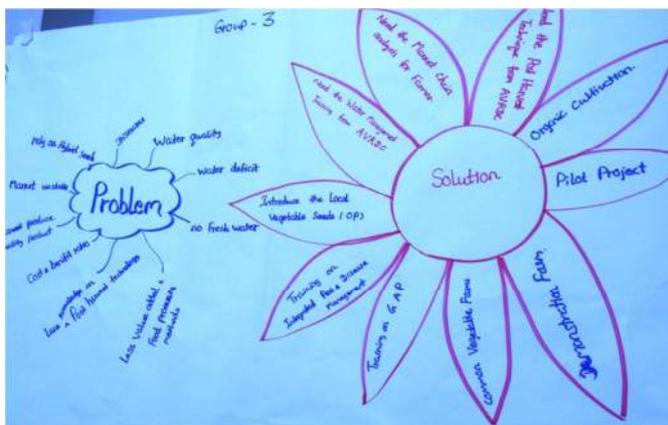
Below is the summary of the group discussions:

| <i>Problems</i> | <i>Solutions</i> |
|---|---|
| <ul style="list-style-type: none"> • Availability of quality seeds | <ul style="list-style-type: none"> • Distribution of quality seeds to farmers at affordable prices |
| <ul style="list-style-type: none"> • Water log areas | <ul style="list-style-type: none"> • Need for irrigation systems • Raised beds agri/vegetable plots • Plant crops which can survived with more water |
| <ul style="list-style-type: none"> • Pests and diseases problems | <ul style="list-style-type: none"> • Integrated pest management • Need for pests and disease resistant varieties • Establish demonstration plots |
| <ul style="list-style-type: none"> • Seed storage systems and facilities | <ul style="list-style-type: none"> • Capacity building and linking to other agencies |
| <ul style="list-style-type: none"> • Postharvest losses | <ul style="list-style-type: none"> • Conduct research on postharvest situation in Myanmar • Sharing on good agricultural practices (GAP) • Provide postharvest technologies – training and support |
| <ul style="list-style-type: none"> • Market fluctuations | <ul style="list-style-type: none"> • Establishment of vegetable market centers • Study on marketing information systems • |
| <ul style="list-style-type: none"> • Transportation - infrastructure | <ul style="list-style-type: none"> • Lobby with government |

- Soil salinity

- Saline soil tolerant crops

The group discussion results provided a good platform to further discuss what AVRDC and FSWG can do together to support the network members. After the presentation of Dr. Robert Holmer, organizations represented in the group openly request AVRDC for some open pollinated lines of vegetable crops and expressed willingness to participate in future field trials. These organizations are: Vegetable and Fruit Research and Development Centre (VFRDC); AVSI Foundation; Golden Plain Livelihood Development Services Co-op Ltd.; and, Yezin Agriculture University.



Clockwise from top left: diagram showing problems and solutions; group discussions, Dr. Robert Holmer presented AVRDC.

3. Framework for knowledge and skill sharing

This session presented brief information about the Network for Knowledge Transfer on Sustainable Agricultural Technologies and Improved Market Linkages in South and Southeast Asia (SATNET Asia) project. It also discussed how technologies are disseminated using agri extension processes as well as the discussion on how important their roles in extension. Participants identified criteria and important qualities of an effective extension worker. These qualities are categorized into: knowledge, attitude, skills, values and passion for development, and understanding of the society and environment

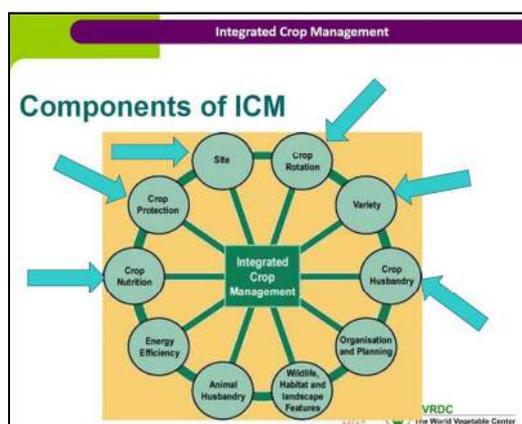


Qualities of an effective extension worker

4. Soil management and plant nutrition for vegetable crops

This session enabled the participants to understand the basics of soil as a source of basic plant nutrients. It further discussed management practices on enhancing soil fertility for improved vegetable production. The participants also shared some indigenous practices in soil nutrition management such as application of organic manure, composting, fallow system and vermi-composting. They were also interested in the session on fertilizer applications.

5. Integrated crop management



The session in integrated crop management discussed on how to manage crop production on the whole farm in a way that maintains and enhances the environment for wildlife and people, while at the same time producing economic yields of high quality crops. It encompasses all aspects of small-scale vegetable production, capitalizing on indigenous practices and minimizing external inputs.

6. Grafting techniques for vegetable production

This session was aimed at introducing the participants to vegetable grafting as a strategy to minimize problems with vegetable crops associated with flooding and soil borne diseases. A video produced by AVRDC's Global Technology Dissemination group on tomato-chili grafting and cucurbit grafting were shown to the participants. Actual demonstrations and practical exercises allowed the participants to practice vegetable grafting by themselves.



Participants on grafting vegetables

7. Integrated pest management

Participants were led into the discussion of integrated pest management (IPM) as a strategy which uses all available pest control techniques to gain maximum yields with minimum environmental damage. It involves both pest prevention and pest control. Sopana Yule, Research Assistant Entomology shared the research and IPM practices within the center. It focused on identifying and rearing parasitoids to combat common pests in vegetables particular the *Maruca vitrata* in legumes.

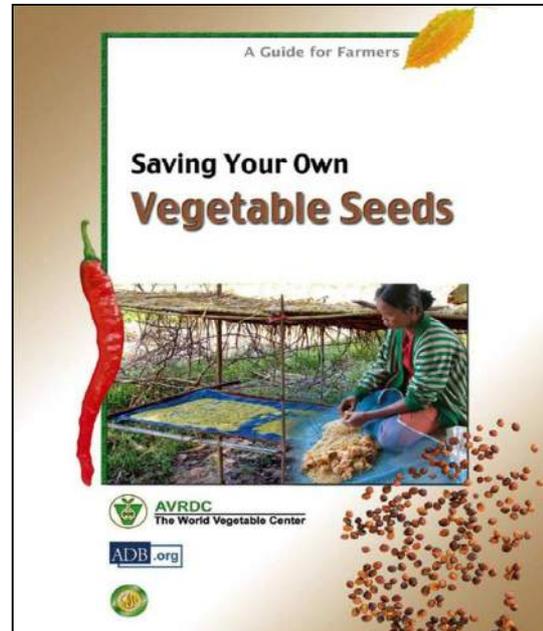
To further appreciate IPM, the participants went on a field trip to Hlegu Township of Yangon where the Vegetables and Fruits Research and Development Center (VFRDC) of the Ministry of Agriculture and Irrigation (MOAI) is located. They collected some samples of pests and diseases which they identified later during the session. While at VFRDC, they participants had the opportunity to learn what the Center is doing particularly in producing vegetable varieties and seeds for distribution t farmers in the locality. The discussion further enhanced institutional collaboration within the network members on how to improve vegetable production within Myanmar. Contact information about VFRDC and MOAI were distributed to participants.

8. Saving your own seeds

The session on “saving your own seeds” was tailored to address participants concern on the lack of quality vegetable seeds in the country. The discussion focused on what seeds to save, how to keep seeds pure and management practices in seed storage.

Participants appreciated more the session as AVRDC’s publication on “Saving your own Seeds: Farmers’ Guide” was translated to Burmese language and made available to them during the training. They said that it is now easy for them to train farmers as materials are readily available.

The session also led them to know the process of requesting open pollinated seeds of AVRDC through the germplasm link in AVRDC website.



9. Way forward and course evaluation

Way forward discussion through a plenary resulted to having a list of actions points by the participants, FSWG and AVRDC. These are the following:

- Training of farmers on seed saving
- Enhancing the link by the network members to state offices of the Ministry of Agriculture and Irrigation.
- Field trials for open pollinated seeds of AVRDC
- Redefining the content of second training in Myanmar, which is the postharvest and linking to farmers sessions

Dr. Ohnmar Khaing in her closing remarks mentioned that FSWG will continue to provide capacity support to member organizations and they will serve as a link to AVRDC for appropriate technical support.

Annex 1: Training course evaluation results and discussion

The training evaluation process was conducted through the following:

- ↪ General evaluation using the evaluation wheel
- ↪ Evaluation questionnaires given to the participants at the end of the training course
- ↪ Sharing of learning and insights

General Evaluation

The first part of the course evaluation exercise was to get the general reaction and feedback from the participants on how well the overall training was managed, specifically on the course content and process, resource persons, training team and logistics. It was done using a wheel-like visual presentation where the participants were asked to mark the circle area which corresponds their rating. The innermost circle (number 1) indicates 'very good' and the outermost circle (number 5) indicates 'very poor'.

The evaluation wheel (see figure 1) showed that the majority of the participants marked innermost '1' and '2' circles. This visually indicates that most were satisfied with how the overall training was implemented.

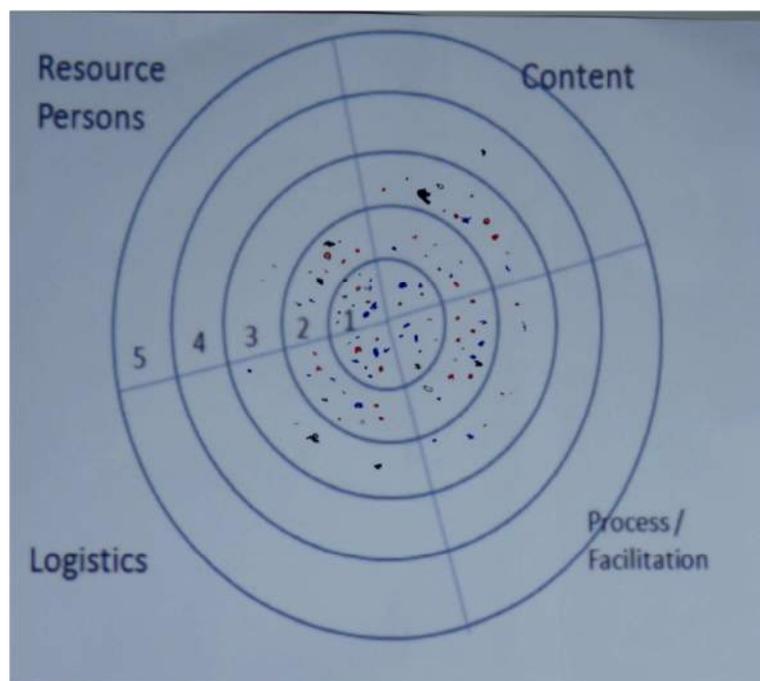


Figure 1: Evaluation wheel shows general reaction and feedback from the participants on how well the overall training was managed

End of Training Evaluation

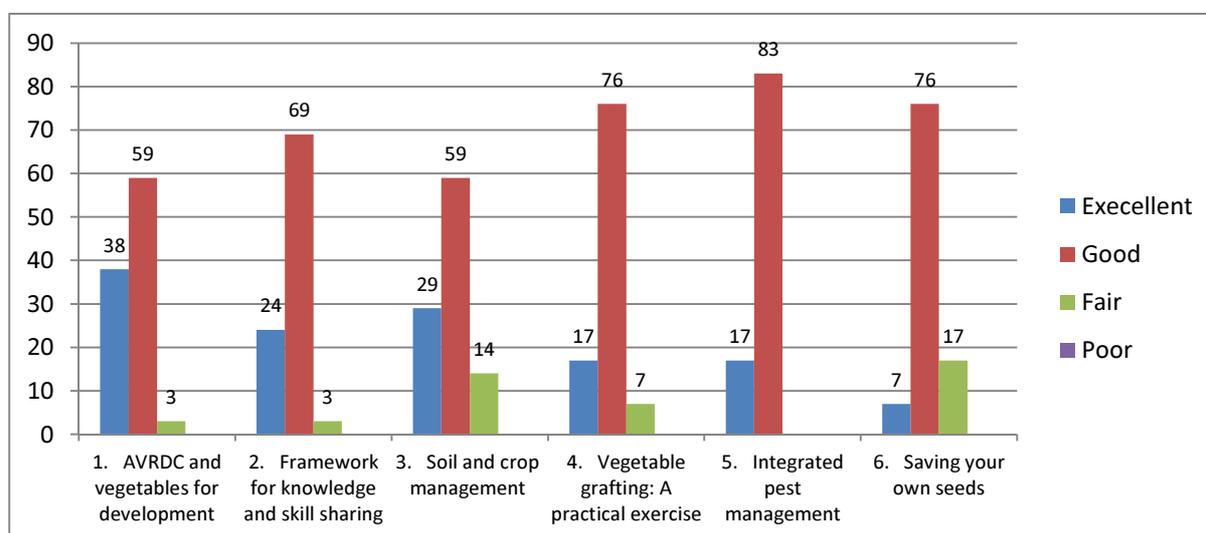
The end of course evaluation was done through a survey questionnaire, which was answered by the participants individually. The survey has 5 parts, namely: [1] usefulness and quality of the training course; [2] knowledge, attitude and practice (KAP) survey; and, [3] other comments and recommendations.

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).

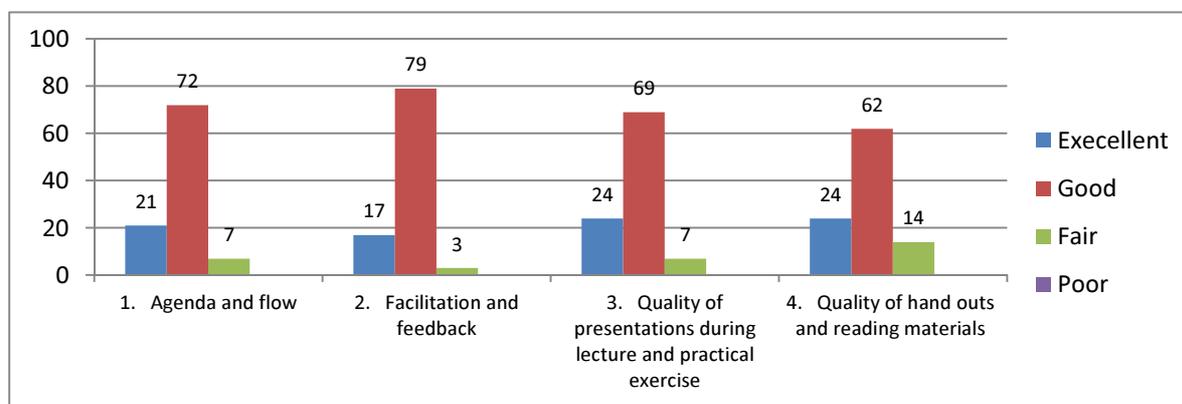
In terms of content, participants evaluated each key session. Chart 1 below shows that participants rated mostly all key sessions as ‘good’. The sessions with high excellent ratings are *AVRDC and vegetables for development* (38%), *soil and crop management* (29%) and *framework for knowledge and skill sharing* with 24%. The sessions on *integrated pest management*, *vegetable grafting* and *saving your own seeds* were rated highly as good with 83% and 76%, respectively.

Chart 1: Percent rating of the key sessions.



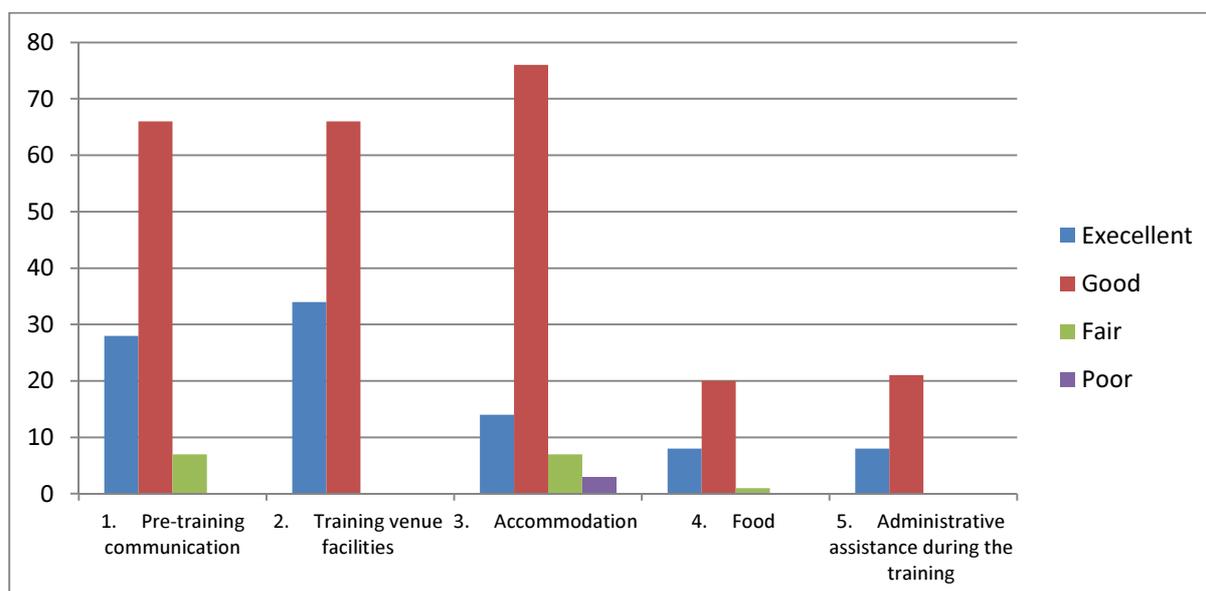
In terms process and materials, most participants were satisfied with the quality of training conducted. Chart 2 below shows the good rating for facilitation and feedback (79%), agenda and flow (72%), quality of presentations during lecture and practical exercise (69%), and, quality of handouts and reading materials (62%)

Chart 2: Percent rating on processes and materials.



Most participants rated the logistic as good – pre training communications (66%), training venue (66%), accommodation (76%), food (20%) and administrative assistance (21%)

Chart 3: Percent rating on logistics.



Expectations

Majority of participants (68%) indicated that the training course met their expectations to a large extent. 7 % of the participants said very largely extent and 25% said medium.

Overall rating of the training

79% of the participants gave an overall rating of the training as good, while 17% said the training is excellent and around 3 % fairly rated 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 learning are the following:

- Integrated pest management
- Vegetable propagation techniques
- Seed selection and storage
- Crop management
- Soil management
- Practical exercise on vegetable grafting
- Facilitation processes especially the structure group discussion and presentation
- Importance of growing and consuming vegetables

Full understanding of all the training content

Participants were requested to answer if they have fully understood all training content. 79% of them said yes and 21% said no. As to the reasons why they answered no, the following outlines their reasons:

- Back is not in agriculture and have difficulty in catching up with the technical terms
- Language barrier
- Some topics are very technical

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?", 67% of the participants answered yes while 33% answered no. Below is the list of their expectations but where not covered by the training:

- Plant disease management and post harvest technologies
- water management
- water management
- Biotechnology
- soil management, want to know specifics on fertilizer application and natural fertilizer making methods

Application of learning

Participants were also asked how much of their learning they are ready to apply after the training. 52% answered ‘most of it’, 22% said ‘all’, and 26% said ‘about half’.

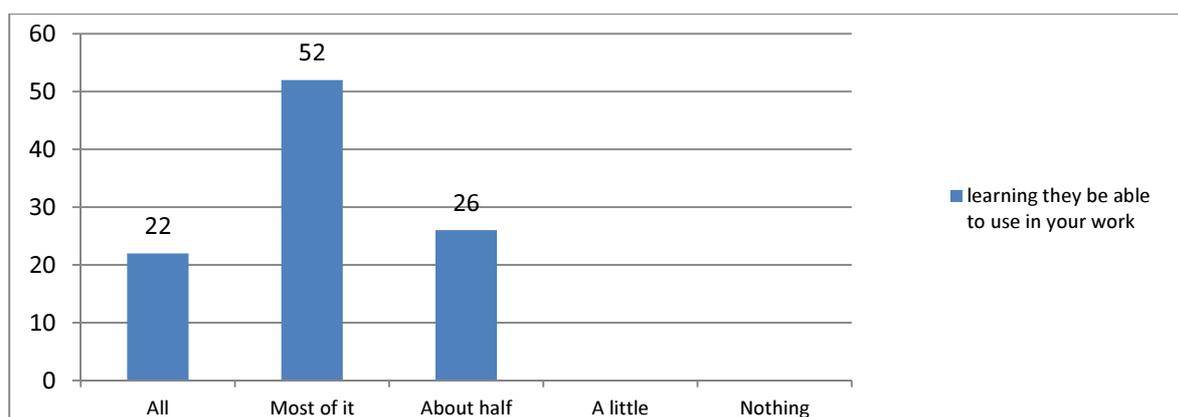


Chart 4: Percent of participants on how much of their learning they are ready to apply.

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.

| | |
|---|--|
| <p>Learning area:</p> <ul style="list-style-type: none"> • how to successfully grow vegetables • establish tomato trial with grafting method • soil and crop management • Saving seeds • Home and community gardening | <p>Groups:</p> <ul style="list-style-type: none"> • rural farming community, especially the women • livelihood group • partner organizations • students • colleagues • community trainers |
|---|--|

Comments and suggestions

Aspects of the training to be improved in the future

- integrate programs to promote vegetable production in rural area
- perform more practical demonstrations
- have field work activities

- include session on sloping agricultural land technology and sustainable livelihood technique

Additional comments

- Appreciated the training since teachers shared knowledge thoroughly
- An effective training
- Hoping for more advance vegetable production technique
- Like the practical practical exercises
- To include more biological control modules
- Even gained more friends where there is sharing of knowledge
- The sharing of experiences among members will contribute to making the network strong

Sharing of learning and insights

The last activity of the course evaluation was the sharing of learning and insights. Participants voluntarily shared their insights, as outlined below:

- *Realized on the importance of micronutrients in vegetables especially to women and children*
- *Saving our own seeds is very important to make the crop production sector in Myanmar sustainable*
- *The techniques in vegetable propagation are simple and applicable to our setting*
- *The need to put more focus on extension and enhanced collaboration with partners*
- *The training has enhanced my experiences*
- *Very important to get to know the challenges in vegetable production and how to address them*
- *Will integrate extension into the curriculum and produce more agri-extension workers from the school*
- *The technologies need to be disseminated to farmers*
- *The 5 days training is giving me the responsibility to answer the concerns on food and nutrition security even in simple ways*
- *Happy with the network and this training is first time for me. I need to share the invaluable techniques and knowledge I learned from here to the communities using the extension tools I learned from this training*
- *I will apply the techniques I learned on seed production and vegetable production*
- *It's the first time I do grafting and I need to practice it more and share it to the members of my community*
- *Hoping that the techniques on rearing parasitoids will reach to the farmers*
- *Vegetables was not really of my interest before but because of this training, I realized how important it is and how important my role in its development*

- *We actually have a draw in the community of who will attend this training because there are so many interested ones. What I gained here I will share to the rest of the community members*
- *Appreciated the process of open and guided discussion, participatory and a good balanced between theory and practice*
- *We don't grow vegetables but only buy from the market. Now, I realized the need to plant our own vegetables*
- *Have a deeper appreciation of vegetables*
- *The materials in Burmese will be very helpful to the farmers*

Annex 2. List of Participants:

| S/N | Name | Position / Institution | Contact details |
|-----|-------------------|---|--|
| 1. | U Aye Naing | C & C Myanmar Co. Ltd. Myanmar Paddy Production Association | Phone: 09 49 290 817 E-mail: thihaaung64@gmail.com |
| 2. | U Zaw Lwin | Farm Inspector Myanmar Organic Agriculture Group | Phone : 09 430 96 445 E-mail : zawlwin9@gmail.com |
| 3. | U Lwin Aung | Secretary Bago Division Myanmar Farmer Association, Phyu Township | Phone : 09 428 188 205 |
| 4. | U Saw Moe Ra | Supervisor Organic Training Centre (Naung Kham) | Phone : 09 36055363 Off : 09428226953 E-mail : naung.kham@metta-myanmar.org |
| 5. | Daw Tin Tin Cho | Assistant Director Vegetable and Fruit Research and Development Centre (VFRDC) Hlegu, Yangon | Phone: 09 31 347 197 |
| 6. | U Than Zaw Oo | Farmer Field School Kyun Taw Village, Inn Taw Township Sagaing Division | Phone :09 421 162 217 E-mail : kaduthanzaw@gmail.com |
| 7. | Nang Swe Swe Aye | AVSI Foundation | Phone : 09 52 832 78 E-mail : nanswesweaye@gmail.com : nang.swesweaye@avsi.org |
| 8. | U Aung Saw Oo | Extension East West Seed | Phone : 09 423 703 585 E-mail: aungsawoo.ewi@gmail.com |
| 9. | Daw Aye Aye Nyein | Golden Plain Livelihood Development Services Co-op Ltd. | Hp :09 310 83 875 Off: 09 730 95 729 |
| 10. | U Win Maw | National Resources and Technology Applied Group (NRTAG) Kyauk Tan Township | Phone: 09 51 35 986 |
| 11. | Mai Khin Than Yin | Asho Chin Baptist Conference | Phone: 09 430 28 135 |
| 12. | U Kee Bu | Supervisor S I Kan Pet Let Township Chin State | Phone : 09 471 71 356 E-mail : keebu.chi039@gmail.com |
| 13. | Khun Tun Lin | ADRA Myanmar | Phone: 09 428 329 323 |

| S/N | Name | Position / Institution | Contact details |
|-----|----------------------------|--|--|
| 14. | U Than Naing | South Okkalapa | Phone : 09 420 140 128 |
| 15. | U Soe Win Aung | Secretary VDC Ayardaw Township | |
| 16. | U Kyaw Lin Oo | Agro specialist World Vision Myanmar National Office Yangon | Phone: 09 428 143 757 |
| 17. | U Thaung Shwe | Green Network Magway | Phone : 09 330 750 14 E-mail: greennetwork.agro@gmail.com |
| 18. | Daw May Thingyan | Mercy corps | Phone : 09 422 476 124 |
| 19. | U Aye Ko | CEVSI Pa Le Township, Sagaing Division | Phone : 09 420 782 626 E-mail : ayekomyanmar@gmail.com |
| 20. | U Aung Soe | Network Activities Group Ayartaw Township | Phone : 09 401 677 516 E-mail: aungsoesrcdp@gmail.com |
| 21. | U Nan Htike | AVSI Foundation | Phone :09 402 760 220 E-mail: nh.nanhtike@gmail.com |
| 22. | Sa, Isidore Saw Ko Ko | KMSS (YS) | Phone: 09 422 481 514 E-mail: isidore123@gmail.com |
| 23. | U Than Htike Win | Agriculture Officer HAI, Ma Hlaing Township | Phone: 09 493 511 19 E-mail: pyaemoon@gmail.com |
| 24. | U Sein Myint Naing | Peasant Union Thar Paung Township Ayarwadi Division | Phone: 09 315 25 738 |
| 25. | Daw Theint Thandar Latt | Demonstrator Yezin Agriculture University | Phone : 09 448 042 355 |
| 26. | Daw Swan Yi Kyu | VFRDC, MOAI | Phone : 09 420 162 537 E-mail: swanawan1989@gmail.com |
| 27. | U Kyaw Oo | Agri Officer HAI, Ma Hlaing Township | Phone : 09 495 76 808 |
| 28. | Daw Than Htway Lwin | Demonstrator Yezin Agriculture University | Phone : 09 492 05 846 |
| 29. | U Aung Kyaw Nyunt | Chairman Maung Daw | Phone: 09 421 750 035 |