

Republic of the Union of Myanmar
Ministry of Natural Resources and Environmental Conservation
Forest Department



“Training on Bamboo silviculture, Production of pickled bamboo shoots, bamboo shoots, dried bamboo shoot and market linkage training for the development of rural areas”

Completion Report

February 2024

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**“Training on Bamboo silviculture, Production of pickled bamboo shoots, bamboo shoots, dried bamboo shoot and market linkage training for the development of rural areas”
Completion Report**

Introduction

1. The Project title “Integrated Forest ecosystem management and demonstration project in greater Mekong sub-region (Myanmar), Myanmar Component is being implemented by the Forest Research Institute, Forest Department and the Asia-Pacific Network for sustainable forest management and rehabilitation (APFNet) with five-year plan. The three specific objectives are: (1) To conserve and improve forest germplasm resources through construction of Arboretum in FRI; (2) To demonstrate integrated watershed management practice in Paung Laung Watershed; and (3) To enhance the capacity and knowledge of local community, local government and staff through capacity building programs.
2. Palaung watershed area, Pinlaung Village, there are (8) villages in the Tainpin group, including Leinli village, and mainly rely on shifting cultivation and selling non-timber forest products such as bamboo and broom raw materials. Tainpin Group produces about 300,000 tons of bamboo shoots per year and sells it to bamboo depots.
3. As part of the project, technical training on watershed conservation and rural development support training for the local people, bamboo silviculture, production of pickled bamboo shoots, bamboo shoots, dried bamboo shoot and market linkage training will be conducted.

Objectives

4. The objectives are as follows-
 - (1) To maintain the natural bamboo forests, to establish bamboo plantations and to know methods of systematic extraction of bamboo.
 - (2) To learn and understand bamboo market potential and practical activities of pickled bamboo shoots, dried bamboo shoots and bamboo shoots production.
 - (3) For the socio-economic development of the local people living in Palaung watershed area

Training Period

5. Training was held during February 5, 2024 to February 9, 2024 for 5 days.

Training Place

6. Training was held at the Forest Research Institute, Yezin, Zayarthiri Township, Naypyitaw.

Opening/ Closing Ceremony

7. Opening/ closing ceremony will be attached in appendix (1) and (2).

Invited Persons

8. Invited persons will be attached in appendix 3.

Training Courses

9. Training time table will be attached in appendix (4) and training courses are as follows-

- (1) Introduction of the training.
- (2) Global bamboo market prospects
- (3) Natural bamboo forest management
- (4) Sustainable bamboo extraction method
- (5) Bamboo storing method
- (6) Bamboo shoots boiling method
- (7) Bamboo shoots drying method
- (8) Practical teaching of making pickled bamboo shoots
- (9) Teaching and practicing how to make bamboo shoots
- (10) Market connection of bamboo shoots
- (11) Technology of storage of fermented bamboo shoots
- (12) Bamboo shoots production
- (13) Plantation of Bamboo
- (14) General discussion

10. The trainers of the course that will be taught in lecture and practical are as listed below;

- (1) U Moe Zaw, Director of Forest Research Institute
- (2) Dr. Ei Ei Swe Hlaing, Assistant Director of Forest Research Institute
- (3) U Aung Zaw Moe, Research Officer, Forest Research Institute
- (4) Daw Nan Khin Ohn, Founder & CEO, Na Rain Dara Co., Ltd.
- (5) U Kyaw Win, Vice Chair-man of Bamboo Cooperative Society
- (6) Staffs from Na Rain Dara Co., Ltd
- (7) U Than Htay, Trading in pickled bamboo shoots

List of Trainees

11. 25 trainees: Local villagers from the project area where located at the Lainli village, Pinlaung Township, Shan State, attended in this training and 10 young researcher trainees from Forest Research Institute.

A summary of the topics

12. Before the start of the course, the introduction of the course and the entrance examination of the course began to be taught. Myanmar is one of the countries with the third richest bamboo

resources in Asia and Southeast Asia after China and India. According to the records of Forest Department, there are 75 genera and 1250 species all over the world. 21 genera and 102 Species are found in Myanmar. Among them, Kyat-khat-wa, Ta-bin-taing-wa, Kya-thaung-wa, Thaik-wa, Wa-nat, Tin-wa, ka-lyay-wa, Kya-loh-wa, Wa-gyi, Wa-bo, Wa-bo-myat-san-kyal, Wa-ni, Myin-wa, Wa-nwe, Wa-yar, Kayin-wa, Tha-nat-wa and The-yoe-wa are economically benefits species. After that, the growing condition of the bamboo plant is depending on rainfall, temperature, the height above sea level and the soil. In order for bamboo to grow well, the temperature needs between 8 degrees Celsius and 36 degrees Celsius and at least 39 inches of rainfall although usually bamboo grows naturally in areas with 47 to 157 inches of rainfall. The type of soil that is good for bamboo growth is sandy loam with a little acidity. It was clearly taught that the soil has good drainage and can retain moisture and is full of nutrients for bamboo.

13. Then, bamboo seed production and bamboo plantation establishment are taught. There are two methods of propagation of bamboo: (1) propagation using bamboo seeds and (2) propagation using vegetative parts (stem organs). Bamboo seeds are only available after the several year intervals, so it is not easy to reproduce from bamboo seeds every year. Therefore, to obtain reproduction of bamboos, vegetative propagation method (stem propagation method) is mainly used. Bamboo flowers are only available after 20 to 60 years. Mainly, there are (5) types of bamboo reproduction methods that are easy and effective in practice (1) reproduction using bamboo root junctions; (2) planting a whole bamboo plant lying on the ground; (3) reproduction of bamboo side branches in the soil. (4) propagation of bamboo joint cuttings and (5) propagation by division of the stem and weakness and advantages was taught with step by step.

14. Most of the bamboo species in Myanmar usually produce bamboo shoots from May to October after the first rains fall. The best size of the bamboo shoot is about 9 inches to 1 foot. 2 out of 3 of the bamboo shoots produced from a bamboo plant can be collected as bamboo, and the rest one is left for bamboo, will the species be less likely to disappear. When extracting the bamboo shoots, you can leave three (3) strong shoots and cut the remaining ones. It is necessary to avoid cutting bamboo during the bamboo growing season and it is necessary to cut bamboo when the bamboo shoot is (3) years old.

15. After harvesting bamboo, the making method of pickled bamboo shoots, bamboo shoots and dried bamboo were taught in practice. In making dried bamboo shoots in the international market, only mature bamboo shoots that are mainly used, and only Tin-wa and Kya-loh-wa are mainly used. Any kind of bamboo can be used to make dried bamboo shoots for domestic use. to make dried bamboo shoots - firstly, the bamboo must be boiled. After that, it must be dried in the sun for 2 days. After drying, the humidity of the dried bamboo must be kept below 10 degrees. Then, the cleaning must be carried out and cut into desired pieces. Storage must be kept away from air. Dried bamboo shoots can be made as dried and pickled bamboo and dried bamboo shoots.

16. To making pickled bamboo shoots, as first the bamboo shoots must be put in a pot and then boiled. The bamboo shoots that have been boiled must be cleaned. The bamboo shoots obtained at this stage can also be reused for making dried bamboo shoots. Bamboo shoots can be cut as desired, then soak in rice syrup, and put in a plastic bag. The bags must be tied tightly and on the top of the bags a stone or weight need to be put on. After about 7 days, pickled bamboo

shoots will be got and ready to eat. If you keep the pickled bamboo in airtight bags, you can eat it all year round.

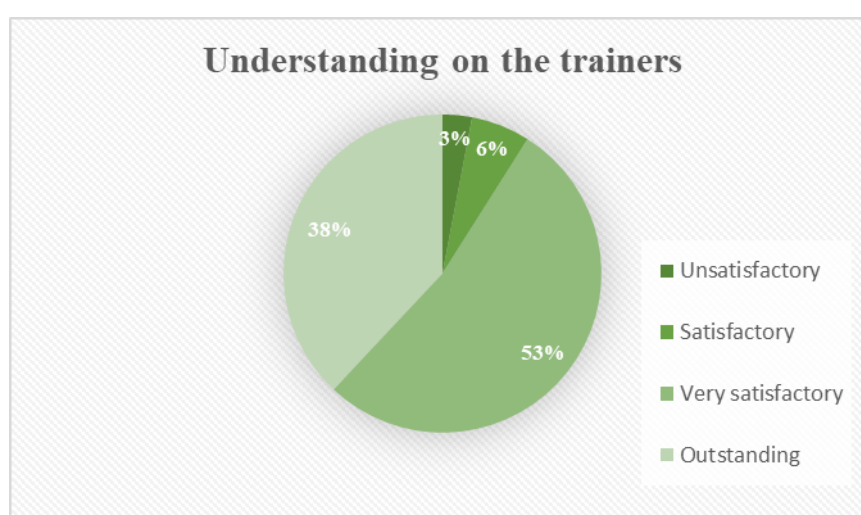
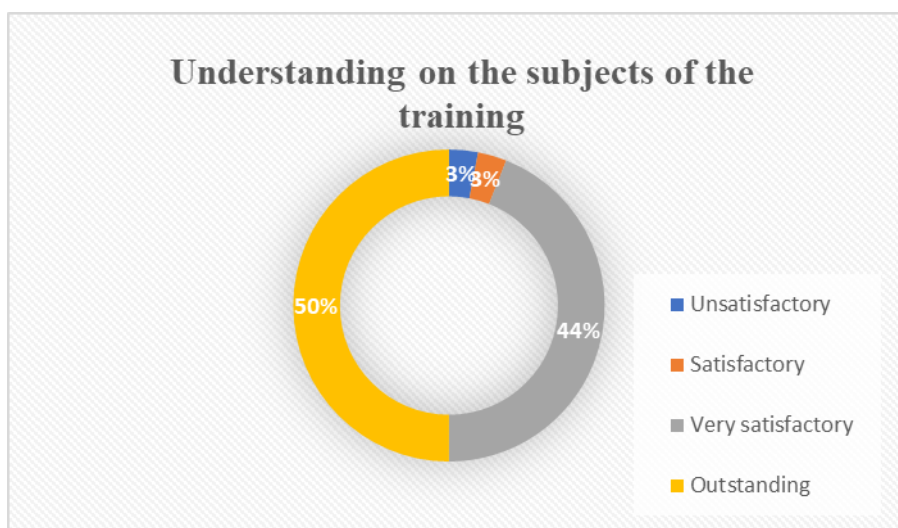
17. To make salted bamboo shoots, the bamboo shoots that are get from Myin-wa. Take the bamboo shoots that are cut in pieces and clean them and boiled. Drain the boiled bamboo shoots. The boiled bamboo shoots are put in a glass pot and add one layer of bamboo and one layer of salt until the pot is full. The upper surface is covered with plastic and pressed with bamboo. 8 pounds of salt are needed for a 150-pound jar. After about 7 days, the salted bamboo shoots are got that is suitable for consumption. If it is necessary to drain out the liquid, add more water and salt if it is necessary.

18. To make bamboo shoots, the bamboo shoots that are harvested must be removed the upper bamboo leaves within a day. The outer skin must be cut off with a knife. Bamboo shoots of the same size must be selected and kept. If the trainees want to import raw bamboo shoots and dried bamboo, they will purchase quality bamboo products from Na Rain Dara Co., Ltd, and market potential and market connections will be made. And then, the storing methods, cooking methods, the making of bamboo jam, uses of Natural bamboo forest management and plantation establishment, market connections, etc. are taught practically.

Feedback from Trainees

19. After the training, following feedback were received from the trainees –

- ❖ They learnt about the planting techniques of bamboo and bamboo silvicultural to get the high quality of bamboo, bamboo shoots.
- ❖ They get the knowledge about sustainable bamboo management and they also get the wider vision that they have responsibility to conserve the bamboo forests to be sustained.
- ❖ As before the training, they collected raw bamboo shoots and sold them. But after the training, they can make dried bamboo shoots, pickle bamboo shoots and bamboo shoots.
- ❖ They can generate more income from the value-added products of bamboo shoots; that can reduce the poverty issue.
- ❖ They also have a chance to know about the world market of bamboo shoot, dried bamboo shoots and pickle of bamboo shoots rather than the market of the country.
- ❖ Through this training, they also known about the different between the market of the country and the international conditions. So that, they motivated to produce value-added products with high quality.
- ❖ They also learnt the processes of dried bamboo shoots, pickle bamboo shoots and bamboo shoots as practical.
- ❖ After the training, they get many knowledge and practices on the bamboo shoots and they will distribute the knowledge to their community.
- ❖ Thank you very much to the project and the trainers for giving a chance to learn such precious knowledge to them.



Administration

20. Vehicle: During the course opening/graduation ceremony, the food for the participants and trainers and plans were made to use the funds of the project to purchase a car to travel to the training site.

21. Communication: If emergency safety and health issues arise during the course, the Forestry Research Department, to the heads of the organizations by telephone and communicated step by step in the right way.

Conclusion

22. By opening this training, the local people can understand the sustainable bamboo forest management, able to properly extract bamboo systematically and they can understand and practices of value-added bamboo shoots products to the market such as dried bamboo shoots, bamboo shoots and pickled bamboo shoots. We would like to submit that it will contribute to the socio-economic development of rural areas as we will connect the opportunities to produce and sell the value-added product (dried bamboo, sweet bamboo, pickled bamboo) from raw materials (bamboo) to the market.

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Agenda for Opening Ceremony

Date : 5.2.2024

Place : Auditorium, Forest Research Institute, Yezin

No.	Time	Agenda
1	08: 00- 9: 00	Agenda for Opening Ceremony (1) Announcement for opening ceremony (2) Opening speech delivered by Director General of Forest Department (3) Announcement of ending for opening ceremony (4) Photo Session (5) Refreshment

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Agenda for Closing Ceremony

Date : 9.2.2024

Place : Auditorium, Forest Research Institute, Yezin

No.	Time	Agenda
1	15:15- 16:15	Agenda for Closing Ceremony (1) Announcement for opening ceremony (2) Closing Remarked by Director General of Forest Department (3) Awarding the certificates (4) Announcement of ending for closing ceremony (5) Refreshment

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Invitated Persons

	Name	Department	Number
1	Director General, Deputy Director General, Director, Deputy Directors, Assistant Directors	Forest Department and Forest Research Institute	61
2	Trainees	Local villagers, Lainli village, Pinloun Township, Shan State	35
Total			96

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Training Courses and Time Table (5.2.2024 to 9.2.2024)

time / date	9:00-10:00	10:00-10:15	10:15-11:15	11:15-12:15	12:15-13:00	13:00-14:00	14:00-15:00	15:00-15:15	15:15-16:15
5-2-2024	Introduction of the training	Tea Break	Introduction of the project	Global bamboo market prospects	Lunch Break	Natural bamboo forest management		Tea break	Sustainable bamboo extraction method
6-2-2024	Bamboo storing method		Bamboo shoots boiling method			Bamboo shoots drying method			Bamboo shoots drying method
7-2-2024	Practical teaching of making pickled bamboo shoots		Teaching and practicing how to make bamboo shoots			Teaching and practicing how to make bamboo shoots			Teaching and practicing how to make bamboo shoots
8-2-2024	Practical teaching of making pickled bamboo shoots		Practical teaching of making pickled bamboo shoots			Technology of storage of fermented bamboo shoots			Bamboo shoots production
9-2-2024	Bamboo shoots production		Plantation of Bamboo			General Discussions	Assessment		Closing Ceremony

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Trainees list**

No.	Name	Address
1	U Maung Phyo	Forest Research Institute
2	Daw Ei Ei Zin	Forest Research Institute
3	Daw Swe Swe Win	Forest Research Institute
4	Daw Khin Ma Ma Khaing	Forest Research Institute
5	Daw Aye Nyein Chan	Forest Research Institute
6	Daw Hnin Nu Nu Kyaw	Forest Research Institute
7	U Chan Nyein Ko Ko	Forest Research Institute
8	Daw Hnin Issali	Forest Research Institute
9	Daw Naw Lu Lu Aye	Forest Research Institute
10	Daw Than Than Soe	Forest Research Institute
11	U Saw Aye	Leinli Village
12	U Saline Chit Lone	Kong Chaing Village
13	U Nyunt Shwe	Kyaung Village
14	U Bone Maw	Lwe Gyi Village
15	U Sein Win	Taung Kya Village
16	U Kyaw Zayar	Lwe Gyi
17	U Than Soe Aung	Lwe Gyi
18	U Aung Kyaw Kyaw Thein	Lwe Gyi
19	U Win Naing Tun	Lwe Gyi
20	U Kyaw Min Sein	Lay har Village
21	Daw Baby Rosey	Koe Kyae Village
22	Daw Aye Aye Myint	Lainli Village
23	Daw Phyo	Lainli Village
24	Daw Nan Nyunt Kyi	Kyaung Village
25	Daw Hnin Nwet Khaing	Lainli Village
25	Daw Khaing Zar Ni Moe	Lainli Village
27	Daw Yi Htay	Lainli Village
28	Daw Thae Su Wai	Lainli Village
29	Daw Khin Moe Moe Htay	Lainli Village
30	Daw Khin Lay Nwe	Edan Village
31	Daw Thaya Phi Tun	Koe Kyae Village
32	Daw Than Nwet	Taung Kya Village
33	Daw Pan Phyu	Lwe Gyi Village
34	Daw Than Yi	Taung Kya Village
35	Daw Lady	Taung Kya Village



Opening speech by Union Minister



Meets with Trainees by Union Minister



Explaining the extraction of Non-timber Forest Products



Explaining about bamboo shoots boiling, drying, market condition and linkage to market





Teaching about bamboo silviculture, natural bamboo forest management and sustainable bamboo shoots production





Teaching bamboo storage methods, pickled bamboo shoots, dried bamboo shoots and Exchange of experiences of those working in the bamboo business





Practical study on bamboo shoots boiling, cutting, restoring and packaging



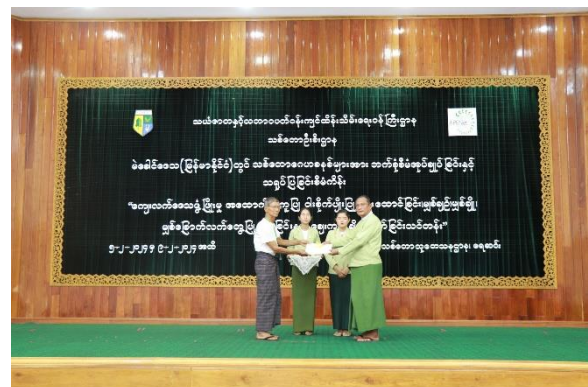
A practical field study of bamboo crafts and bamboo construction



General Discussions and Assessment



Closing speech by Director of Forest Research Institute



Awarding of training certificates

Recorded photos of Trainees and supported organizations



