



Food and Agriculture
Organization of the
United Nations



Farmer Field School Curriculum

on

Climate Smart Agriculture

in

Central Dry Zone



© FAO

Myanmar

Farmer Field School Curriculum
on
Climate Smart Agriculture
in
Central Dry Zone
Myanmar

**Sustainable Cropland and Forest Management in Priority
Agro-ecosystems of Myanmar Project (GCP/MYA/017/GFF)**

Published by
the Food and Agriculture Organization of the United Nations
and
AVSI Foundation
Naypyidaw, 2019

Required citation:

FAO. 2019. *Famer Field School Curriculum on Climate Smart Agriculture in central dry zone, Myanmar*. Naypyidaw. 56 pp.
Licence: CC BY-NC-SA 3.0 IGO

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) or AVSI Foundation concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO or AVSI in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO or AVSI.

ISBN 978-92-5-131324-4 (FAO)
© FAO, 2019



Some rights reserved. This work is made available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo/legalcode>).

Under the terms of this licence, this work may be copied, redistributed and adapted for non-commercial purposes, provided that the work is appropriately cited. In any use of this work, there should be no suggestion that FAO endorses any specific organization, products or services. The use of the FAO logo is not permitted. If the work is adapted, then it must be licensed under the same or equivalent Creative Commons license. If a translation of this work is created, it must include the following disclaimer along with the required citation: "This translation was not created by the Food and Agriculture Organization of the United Nations (FAO). FAO is not responsible for the content or accuracy of this translation. The original English edition shall be the authoritative edition."

Disputes arising under the licence that cannot be settled amicably will be resolved by mediation and arbitration as described in Article 8 of the licence except as otherwise provided herein. The applicable mediation rules will be the mediation rules of the World Intellectual Property Organization <http://www.wipo.int/amc/en/mediation/rules> and any arbitration will be in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL)

Third-party materials. Users wishing to reuse material from this work that is attributed to a third party, such as tables, figures or images, are responsible for determining whether permission is needed for that reuse and for obtaining permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

Sales, rights and licensing. FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org. Requests for commercial use should be submitted via: www.fao.org/contact-us/licence-request. Queries regarding rights and licensing should be submitted to: copyright@fao.org.

CONTENTS

	Acronyms	iv
1	Background / Context	1
2	Introduction and Objectives of FFS in Central Dry Zone	1
3	Key Steps of FFS Implementation	2
4	General Principles of Climate Smart Agriculture in FFS context	3
5	Pre-FFS Preparation	4
5.1	Village Selection for the Establishment of FFS	4
5.2	FFS Committee Formation	4
5.3	Selecting FFS Facilitator	5
6	Collection of relevant information/data	7
7	Cropping Calendar of the Potential Crops in Central Dry Zone	7
8	Guiding Principles of FFS in Central Dry Zone	8
9	Farmer Field School Curriculum for Central Dry Zone	11
9.1	FFS Curriculum for Nyaung-U (Rainfed: Groundnut, Green Gram and Pigeon pea)	11
9.2	FFS Curriculum for Nyaung-U (Irrigated: Chickpea and Green Gram)	16
9.3	FFS Curriculum for Nyaung-U (Irrigated: Groundnut and Green Gram).	21
9.4	FFS Curriculum for Nyaung-U (Rainfed: Pigeon pea, Sesame and Groundnut).	27
9.5	FFS Curriculum for Kyaukpadaung (Rainfed: Pigeon pea and Groundnut)	32
9.6	FFS Curriculum for Kyaukpadaung (Irrigated: Sesame, Pigeon pea and Groundnut)	37
9.7	FFS Curriculum for Kyaukpadaung (Rainfed: Sesame and Groundnut)	43

ACRONYMS

AESA	Agro-ecosystem Analysis
AVSI	Association of Volunteers in International Service
CA	Conservation Agriculture
CSA	Climate Smart Agriculture
DoA	Department of Agriculture
EM	Effective microorganism
EPI	Ear Primordial Initiation
FAA	Fish Amino Acid
FAAB	Farming As A Business
FAO	Food and Agriculture Organization of United Nations
FFS	Farmer Field School
FGD	Focus Group Discussion
GAD	General Administrative Department
GAP	Good Agricultural Practices
GEF	Global Environment Facility
GHG	Greenhouse Gas
IMO	Indigenous Microorganism
IPM	Integrated Pest Management
MoALI	Ministry of Agriculture, Livestock and Irrigation
MONREC	Ministry of Natural Resources and Environmental Conservation
NGO	Non-government Organization
PTD	Participatory Technology Development
SFM	Sustainable Forest Management
SLM	Sustainable Land Management

1. Background / Context

The Food and Agriculture Organization of the United Nations (FAO) is implementing a project entitled **“Sustainable Cropland and forest management in priority agro-ecosystems of Myanmar (SLM-GEF)”** in coordination with the Ministry of Natural Resources and Environmental Conservation (MONREC) and the Ministry of Agriculture, Livestock and Irrigation (MOALI) with funding from the Global Environment Facility (GEF). AVSI Foundation has been contracted to develop the National Farmer Field School (FFS) curriculum and FFS Handbook. AVSI Foundation has developed a FFS curriculum/module on climate smart agriculture (CSA) techniques/practices for each selected agricultural crop and for three agro-ecological zones incorporating solutions to the major problems identified during the needs assessments, also considering the findings of the value chain analysis.

2. Introduction and Objectives of FFS in Central Dry Zone

The Farmer Field School (FFS) is a learning process whereby a group of farmers come together and engage in a process of hands-on field-based learning process over a season/ production cycle. FFS is a time-bound learning by doing activity with a beginning and an end and aims to solve the problems related to cultivating crops.

FFS is a platform for holistic learning and should address issues and aspects that directly or indirectly contribute to the performance of the local farming system, even if these issues are not agriculture-based as such.

All FFS programmes need to integrate programming on gender equality and nutrition concerns in FFS development. Gender norms, roles and customs are very relevant for FFS implementation such as assessment and targeting of the specific needs of male and female farmers, selection and gender awareness of facilitators, and composition of an FFS group (with adequate representation of women and girls) and targeting the specific needs and priorities of men and women.

This module of FFS has been designed to increase agricultural productivity of the priority crops in Central Dry Zone (Nyaung-U and Kyaukpadaung), by addressing the challenges identified during the needs assessment conducted based on knowledge systems and practices by FAO with support of AVSI as a Service Provider. During the need assessment cultural barriers for FFS implementation, gender norms, traditions, etc. were considered. Generally, it's been observed that farmers, both men and women, have low knowledge of climate smart agriculture (CSA). The learning objectives of this module are to:

- Empower farmers (both men and women) with knowledge and skills to improve the productivity of their main crops.
- Sharpen the farmers' ability to make critical and informed decisions that render their farming profitable and climate-smart for both male and female farmers.
- To sensitize farmers in new ways of thinking and solve problems linked to climate changes. Help farmers learn how to organize themselves and their communities, with a focus on women and girls.

3. Key Steps of FFS Implementation

FFS implementation follows a three phases approach in a crop season depending upon the duration of the crop cultivation.

I. Preparatory Phase

- a. Situation Analysis,
- b. Village selection for FFS implementation,
- c. Farmers selection for FFS (both male and female farmers),
- d. FFS group formation and organization,
- e. Selection and training of facilitators,
- f. Selection of learning activity/enterprise, and
- g. Design and setup of the FFS experimental field (demonstration plots). This is to compare the current practices with improved/alternative practices.

II. Basic FFS Cycle

- a. Regular learning cycles/sessions,
- b. Evaluating participatory technology development (PTD) activities,
- c. Gender-sensitive monitoring and evaluation to assess the different impacts on men and women.
- d. Conducting field day (at the end of the season),
- e. Organizing exchange visits (Exchange visits with other FFS), and
- f. Organizing graduation ceremony. All the farmers (FFS Committee Members) who took part in the FFS activities by attending all the FFS trainings/meetings (with more than 80% of the attendance) and planting the given seeds in their own field will be awarded with a FFS Certificate during the graduation ceremony.

III. Post-graduation Phase

- a. Follow up activities,

- b. Networking, and
- c. Income generation and setting up second generation FFS, especially when new livelihood opportunities or challenges arise.

4. General Principles of Climate Smart Agriculture in FFS context

There are two ways by which agricultural production can contribute to mitigate climate change:

- Reducing GHGs emissions per unit of land and/or agricultural products, and
- Enhancing soil carbon sinks

CSA aims to sustainably improve agricultural productivity, enhance food security, boost farmers' adaptive capacity and resilience to climate shocks and contribute to GHG mitigation. Given limited understanding of farmers about CSA, the module aims to raise awareness of the principles of CSA. CSA approach is embedded in all activities of this module. The principles of CSA are:

- sustainably increasing agricultural productivity and incomes;
- adapting and building resilience of agricultural livelihoods to climate change; and
- reducing and/or removing greenhouse gas emissions, where possible.

CSA aims to strengthen livelihoods and food security, especially of male and female smallholders - farmers, herders, fishers, forest-dependent communities, as well as indigenous people –by improving their management and use of natural resources and adopting appropriate methods and technologies for the production, processing and marketing of agricultural products.

Adoption of climate smart agriculture is very important for adaptation and mitigation of the adverse climate impact and increase the resilience of livelihoods to threats and crises, especially for the poorest and most marginalized people that are disproportionately affected by hazards and crises.

FAO foresees a broader approach, working to build synergies among social protection and climate change to achieve sustainable growth and eliminate rural poverty. FAO uses a “twin-track” approach, on the one hand taking immediate steps to protect and support agriculture, food and nutrition, and on the other addressing in the longer term the underlying factors driving risks, disasters and crises. FAO's work focuses on developing, protecting and restoring sustainable livelihoods so that the integrity of societies that depend on farming, livestock, fish, forests and other natural resources is not threatened by crises. CSA uses a comprehensive approach in

seeking to improve rural livelihoods, increasing the productivity and resilience of poor communities, including rural women and girls, while also providing mitigation benefits.

5. Pre-FFS Preparation

5.1 Village Selection for the Establishment of FFS

There will be one FFS organized in each of the selected villages. FFS villages should be selected considering the following criteria:

- The villages should represent the specified agro-ecological zone.
- The villages should fall in the given pilot Township.
- The villages should be selected in such a way that they should represent the various variabilities within the given agro-ecological zone.
- The community in the village must be interested in and willing to take part in FFS activities. The community in the village should be informed about the FFS to be established in order to obtain formal consent and interest to partake in FFS activities.
- Sufficient number of men and women must be identified for the FFS Committee and to run the FFS, to represent the interests and priorities of both male and female farmers. Additional knowledge created by women differs from men's due to their life experience; ensuring that both co-create the FFS thus significantly enriches the entire group.

As a general rule, to avoid duplication, FFS will only be established in villages where there are not already similar FFS activities supported by other organizations. However, if there is scope of complementarity and synergies with existing initiatives, FFS can be established in the same village.

5.2 FFS Committee Formation

Assist the community in forming a FFS Committee comprising of 20-30 members, either through the formation of new group or strengthening of existing groups, ensuring an adequate number of women and girls. The gender dimensions should be analyzed and if men and women are generally involved in the farming activities, mixed FFS groups should be formed. The main criteria applied for selection of participants should be as follows.

- Group (FFS Committee) of 20-30 farmers,

- Observe the gender, age and experience balance and encourage women and youth participation as far as possible.
- Farmers having experience of local production and livelihood system and to grow the crops which are included in the FFS,
- Must be resident from the same village,
- Smallholder farmers (owning no more than 10 acres of land) or land users who are resource-poor and often have limited access to education, information, extension services, market access and financial capital,
- Farmers demonstrate interest and commitment to the full FFS cycle,
- Farmers demonstrate good attitude: eager to learn and share knowledge and experience, keen to work in the group, help to clean the site after the FFS session, etc., and
- Should continue for at least two subsequent crop cycles to see the results.

Facilitate FFS Committee to select a Chairperson, a Vice Chairperson, a Secretary, a Treasurer and a Lead Farmer. The Lead Farmer will host and take lead to establish study/ learning/ experiment/ demonstration plot and will gradually take over the responsibility of FFS Facilitator from DoA Extension Officer from the second year onwards. Rest should be considered as general members. The other members of the FFS Committee will be responsible for taking part actively in the regular FFS meetings/training to contribute, to learn and to replicate the learning in their own field and to disseminate to other farmers.

5.3 Selecting a Lead Farmer (FFS Facilitator)

The FFS Facilitator is a technically competent person who facilitates hands-on exercises. The Lead Farmer/Facilitator should possess the following skills/characteristics.

- Must be a member of the FFS Committee of the respective village.
- **Social skills:** ability to engage everyone in the group into productive learning and exchange process, gender sensitivity, good communication and presentation skills.
- **Interpersonal skills:** non-judgmental, supportive attitude, sensitivity to group dynamics processes (e.g. managing dominant behavior).
- **Technical skills:** ability to lead the group through the process of improving the crop production according to CSA principles, prior experience (or education) in farming and agriculture, understanding of market economy.

- **Organizational skills:** ability to guide the process for setting up the demonstration field and ability to keep records.
- **Gender awareness:** ability to address potential gender barriers as well as to be familiar with concepts of social inclusion and social vulnerability. Qualified female member should be given priority as far as possible to become Facilitator/Lead Farmer. The FFS ToT programme will include gender mainstreaming issues/topics.

In the first year, while a Lead Farmer will be selected from among the FFS Committee Members, there will be a FFS Facilitator assigned by the respective Township DoA for each FFS who will be a technically competent person responsible for leading the group members through the hands-on exercises. From the second year onwards, the DoA Extension Officer will take a back seat only offering guidance whenever needed and the Lead Farmer from the FFS Committee will take over the responsibility of FFS Facilitator. Both the FFS Facilitator from the DoA Office and the Lead Farmer from the FFS Committee should ensure an adequate involvement of women and girls since the FFS is set up.

6. Collection of relevant information/data:

A village profile will be developed for each FFS village prior to the FFS implementation using a standard format. The village profile will include geographical information, demographic information, available resources and livelihoods opportunities, livelihoods profile of the people, major crops grown in the village, cropping patterns/calendar, major problems associated with priority crops, major needs of the community and analysis of the gender roles and the division of tasks of men and women for each of the selected crops, assessing their capacity and needs.

All the relevant information from the standing crops and post-harvest information will be obtained using a standard template. The tools, methods, and indicators/questions used will be gender-sensitive, i.e. they do not exclude women from being able to give their opinions, and by including questions that directly address gender inequalities in the context of implementation. Gender-disaggregated data/information will also be collected on FFS attendance and gender-sensitive indicators will be created accounting for the diversity of ethnicity, gender, age, class, religion, and culture in the impact assessment. Specific indicators will be developed that are able to measure the achievement of gender equality among programme participants. This may require disaggregation of data by sex and their analysis to identify functional relations and effects.

7. Cropping Calendar of the Potential Crops in Central Dry Zone

Cropping Patterns of the Selected Crops in Nyaung U Township (Groundnut, Sesame, Green Gram and Chick Pea)

Crops	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Monsoon Groundnut												
Monsoon Sesame												
Monsoon Green Gram												
Winter Groundnut												
Winter Chick Pea												
Summer Sesame												
Summer Green Gram												

Source: Department of Agriculture, Nyaung U Township (Nov, 2017)

Cropping Patterns of the Selected Crops in Kyaukpadaung Township (Groundnut, Sesame, Pigeon Pea and Chick Pea)

Crops	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Monsoon Groundnut												
Monsoon Sesame												
Monsoon Pigeon Pea												
Winter Groundnut												
Winter Chick Pea												
Summer Sesame												

Source: Department of Agriculture, Kyaukpadaung Township (Nov, 2017)

8. Guiding Principles of FFS in Central Dry Zone

As per the initial needs assessment and value chain analysis done by FAO with AVSI Foundation as a Service Provider, seasonal crops of groundnut, green gram, chickpea, and pigeon pea and plantation tree of Shaw-Phyu have been identified as the priority crops in the area based on technical feasibility, the crops already being grown in the area, have high market demand and contribute to improved nutrition of men and women and their households, especially children, the elderly and the disabled. Gender considerations will cut across all indicators for data collection to ensure that information can be easily gender disaggregated. Therefore, the FFS module and FFS activities will cover those prioritized crops.

Based on the needs and crops prioritized, prevailing cropping systems and discussion with the respective DoA Offices in Townships, the following cropping systems have been preferred for both the Townships. Therefore, the FFS implementation will cover the below mentioned crops and cropping systems.

1. Nyaung-U:

- Rain-fed area: Groundnut + Green Gram + Pigeon pea (July planting)
- Irrigated area: Chick pea (Nov planting) - Green Gram (Feb planting)
- Irrigated area: Winter groundnut (Nov planting) - Green gram (Feb planting)
- Rain-fed area: Pigeon pea + Sesame Intercrop (May) - Groundnut (July)

2. Kyaukpadaung:

- Rain-fed area: Pigeon Pea + Mid-monsoon Groundnut (July)

- b. Irrigated areas: Monsoon Sesame + Pigeon Pea (May planting) – Mid-monsoon Groundnut (Aug planting)
- c. Rain-fed areas: Monsoon Sesame (May planting) - Winter Groundnut (Sep)

Cropping Calendar of the Potential Crops (Groundnut, Pigeon pea, Green gram, Chickpea, Shaw-byu) in Central Dry Zone

Crops	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Groundnut				Sowing			Harvesting					
Pigeon pea				Sowing					Harvesting			
Green gram				Sowing			Harvesting					
Shaw-byu				Sowing								

Source: Department of Agriculture, Nyaung-U and Kyaukpadaung Townships (May, 2018)

Similarly, the project focus in the central dry zone areas is to promote agro-forestry practices and hence, the above mentioned prioritized crops will be grown as a mix/inter crop i.e. Shaw-Phyu (Karaya Gum) or any other suitable species as agreed with DoA such as Kapok can also be planted on the same plot. Saplings of multipurpose *Gliricidia sepium* will also be planted as windbreaks. *Gliricidia sepium* tree species can also offer fuelwood, nutrient-rich mulch, erosion control and soil stabilizer and high quality forage for ruminants. The FFS Committee can also select any other suitable tree species to be planted in consultation with Department of Agriculture and/or Forest Department Offices.

The guiding principles for this FFS module are:

- Working in groups (15-30 farmers, with adequate representation of female farmers),
- Season-long activities (following the season of crops),
- Regular meetings/sessions during the season. The formal meeting/training has been planned in the curriculum to be one time in a month however, the FFS Committee meet informally as and when needed.
- Study/learning/demonstration plots/experiments to compare current practices with improved/alternative practices, taking into account gender aspects
- Using group knowledge to solve problems, taking into account the knowledge and capacity of both men and women
- Role of facilitator: to facilitate group work, rather than impose knowledge,
- Technical expert to provide input on CSA techniques and practices related to: a) high resistance seeds to the adverse factors, b) soil testing practices, c) land preparation

techniques, d) soil nutrients and water management, e) proper application of crop protection and crop nutrition substances, f) integrated pest management, g) post-harvest techniques (storage) and prospects for processing. The analysis should also consider gender aspects and how male and female farmers might actually benefit from the proposed techniques and practices.

- Keep regular schedule of the meetings as specified in the curricula presented in the Section 9,
- Observe the demonstration plot regularly after every FFS meetings and also outside the FFS meetings, as much as possible, to see the changes and any problems in the demonstration plot, and
- Keep the crop records during the whole cycle. Also analyse and keep record on how male and female farmers are actually benefitting from these crops and the new techniques and practices.

Once the FFS has started and demonstration plot has been established, each FFS meeting/session should include the following steps as much as possible (this should be reflected for each FFS meeting occurring after establishment of the crops till harvesting):

- Agro-ecosystem analysis (AESAs),
- A group dynamics exercise, taking into account gender roles and power dynamics between male and female farmers
- Special topic, and
- Feedback on the session. The feedback will include the views and perceptions of both men and women

After the completion of the one cycle of FFS, the FFS Committee will need to continue the FFS on longer run on their own with minimum support from the project only for second year. The respective Township DoA Office will provide necessary technical supports as and when needed and will be responsible for the follow up activities. The DoA will also be responsible for monitoring the extent of adoption of newly acquired practices and how these are being scaled up in other neighboring communities.

9. Farmer Field School Curriculum for Central Dry Zone

1. FFS Curriculum for Nyaung-U

Rain-fed area: Groundnut + Green Gram + Pigeon pea (July planting)

Month	Module	Subject and Competences
May	Pre-FFS Introductory Meeting	<ol style="list-style-type: none"> 1. Objectives of FFS, guiding principles, FFS Farmers selection, FFS Committee formation, selection of Lead Farmer, etc. 2. Introduction of participants: Facilitator, technical specialist, participants from villages (with adequate participation of female farmers). 3. Site selection for establishing demonstration plot (in Lead Farmer's Field) also discussion and agreement on size (one acre), treatments to be included and layout of the demonstration plot. 4. Introduction of crops/species that will be covered in FFS training i.e. Groundnut, Pigeon Pea, Green Gram and Karaya Gum (Shaw-Phyu). 5. Collection of soil samples for soil analysis that will be sent to soil lab to get the base line data of pH , soil texture, electrical conductivity, organic carbon, nutrient contents (N. P. K. Ca, Mg, S, Zn, B) and Na and related radicals (Cl, CO₃ and HCO₃).
June	Module 1	<ol style="list-style-type: none"> 1. Concept of Climate Smart Agriculture and Climate Change effects. 2. Introduction to Good Agricultural Practices (GAP). 3. Introduction to Conservation Agriculture- CA. 4. Concept of Agroforestry and growing of seasonal crops (groundnut/sesame/pigeon pea) in the plantations of Zee (<i>Zizyphus jujube</i>), Shaw-Phyu (<i>Sterculia versicolor</i>). 5. Discussion on the forest cover in the intervention zone, especially regarding the challenges. 6. Analysis of existing farming systems that affect the soil, the crop/plant, and environment from the participant's perspective (putting the points on the flipcharts) and general discussion on that (brainstorming session). 7. Analysis on land preparation practices, heavy tillage preparation and its adverse effects on soil erosion, soil nutrients and soil biota. 8. Concept of cropping system and cropping patterns. 9. Development of cropping pattern for groundnut, green gram and pigeon pea for monsoon as mix-cropping i.e. Groundnut + Pigeon pea + Green gram (sequences and spacing of individual crop) (Brainstorming). 10. Analysis of Demo Plot soil by participants based on their empirical knowledge (texture, possible nutrient and organic matter content by their perspective).

Month	Module	Subject and Competences
		11. Site clearing of Demo Plot and mulching of soil with weed residues and rubbishes collected from site clearing (no burning of organic wastes) (Practical exercise). 12. Keeping records on crop managements for each crop and data entry in every training session. 13. Keeping financial records on input costs and general expenditures. 14. Opinions and feedbacks from participants on the training session. 15. Development of individual's action plans to replicate the learning from the FFS Demonstration Plot in their own farm.
July	Module 2	1. Soil conservation concepts and practices. 2. Occurrence of erosions in the area and consideration of prevention measures (water harvesting trenches and contour bunds, check-dams, growing of windbreak trees such as <i>gliricidia</i> , plants for replenishing organic matter such as <i>gliricidia</i> , <i>leucaena</i> and <i>daincha-Sesbania spp.</i>). 3. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species by observing <i>Gliricidia Sepium</i> trees available elsewhere. 4. Establishment of soil erosion prevention measures (digging of water harvesting trenches, mounding of contour bunds with soil collected from digging trenches, construction of check-dams) (Practical exercise). 5. Sowing of <i>leucaena</i> seeds at both sides of contour bunds and mulching sown seeds (to become hedgerows and will be cut down at the height of 2-2.5'). 6. Transplanting of <i>gliricidia</i> seedlings in the pits already dug and mulching at the base after transplanted with organic residues. 7. Transplanting of Shaw-Phyu in the pits already dug and filled with soil and mulching at the base after transplanted with organic residues. The source of tree saplings should be from an already established and functional and reliable community tree nursery source. 8. Sowing of groundnut, green gram and pigeon pea (opening of sowing lines by plough/harrow depending on the texture of soil, application of manures and neem-cakes in the sowing lines, sowing seeds, spraying of EM in sown lines if available) (Practical exercise). 9. Heavy mulching of sown lines with any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise). 10. Preparation of home-made organic fertilizers and pesticides (EM, Indigenous Micro Organism-IMO, Fish Amino Acid-FAA, Bocashi, Tobacco-ginger-chilli-EM pesticide, etc.) (Practical exercise).

Month	Module	Subject and Competences
		11. Introduction of rearing of earthworms for compost production. 12. Group Dynamic Exercises 13. Special topics. 14. Recording of expenditures in financial record book. 15. Observation on the effectiveness of mulching on the performance of groundnut, green gram and pigeon pea. 16. Review on the individual's activities undertaken according to the plan and comments on that. 17. Development of individual's action plans. 18. Opinions and feedbacks from participants on the establishment of erosion prevention measures.
August	Module 3	1. Introduction to IPM. 2. Survey and collection of insects and classification of beneficial insects and pests. 3. Forms of fertilizers – organic and inorganic, and their effects on soil and environment. 4. Spraying of EM and home-made organic fertilizers and organic pesticides including neem pesticide. 5. Discussion on how to maintain and protect tree seedlings growth. 6. Recording of crop performances in crop management record books. 7. Review on the individual's activity undertaken and analyzing the strengths and weakness. 8. Production of individual's action plan to undertake at their farms. 9. Open discussion on the whole training session of the day and recording of participants feedbacks.
September	Module 4	1. Agroecosystem Analysis Exercise – Groups comprising of five Participants will study and make records on the following in Demo Plot. 1) the effectiveness of erosion control measures, 2) effects of mulching, 3) soil organic matter and soil moisture conditions, 4) crop performances and incidences of pest and diseases. 2. Recording of findings by groups. 3. Group presentations on their findings and responding to questions raised by other groups. 4. Making decisions and recording of important points for further actions for improvement. 5. Review on participants understanding on CSA based on the practices undertaken in Demo Plot. The level of knowledge and skills of male and female farmers will be assessed, and agreement will be made on how to better involve them in the agroecosystem analysis.

Month	Module	Subject and Competences
		6. Recording of expenditures in the crop management record book, estimation of income from groundnut, green gram and pigeon pea after selling out and estimation of cost and benefit. 7. Review on the individual's activities undertaken against their plans and comments. 8. Production of individual's action plan. 9. Open discussion on the whole training session of the day and recording of participants feedbacks (Agroecosystem Analysis – AESA should be carried on at available times).
October First week	Module 5	<p style="text-align: center;">Exchange Visits</p> <p>An adequate participation of women and girls in such exchange visits will be ensured.</p> <ol style="list-style-type: none"> 1. Visits to other FFS in the Township (Building up the relationship among farmer groups). 2. Observation on the progress in other FFS and making comparisons with each other. 3. Sharing of experiences among farmer groups. 4. Dissemination of new findings to other farmer Groups. 5. Specific discussion during the exchange visits is on CSA based on their experiences in FFS and why the practices in FFS are relevant to CSA.
October Third week	Module 6	<p style="text-align: center;">Farmer's Field Day</p> <p>An adequate participation of women and girls in the Farmer Field Day will be ensured.</p> <ol style="list-style-type: none"> 1. Visitors observation on the performances and achievements undertaken in FFS. 2. Presentations on the activities undertaken in FFS by FFS trainees (putting emphasis on CSA). 3. Sharing of technologies and ideas to visitors by FFS trainees. 4. Presentations of FFS participants (both men and women) on their experiences throughout the whole school session, emphasizing on why Climate Smart Agriculture becomes important in their farming, climate change effects and resilience of crops and plants grown in the Demo Plot to the changes because of proper crop and soil management practices. 5. Contribution of opinions, ideas, comments and suggestions from visitors.
November	Module 7	<ol style="list-style-type: none"> 1. Green manure. 2. Post-harvest handling. 3. Harvesting of groundnut and green gram. 4. Discussion on lessons learned and on how and when to start harvesting from the perennial trees included in the FFS such as Shaw Phyu in a sustainable manner. 5. Yield estimation of groundnut and green gram and pigeon pea. 6. Recording of expenditures of groundnut in financial record book.

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 7. Observation on the conditions of water harvesting in the trenches, silt depositing at the base of check-dams and situation of soil erosion in Demo Plot comparing to nearby plot. 8. Review on the individual's activities undertaken against their plans and comments Production of individual's action plan. 9. Open discussion on the training session and recording of opinions and suggestions from participants.
December	Module 8	<p style="text-align: center;">Farming As A Business (FAAB)</p> <p>Group discussion on the following (Groups comprising of five participants):</p> <ol style="list-style-type: none"> 1. What is agriculture as a business? 2) How can agriculture be done as a business? 3) What is the difference between food crop and cash crop? 4) Why intercropping can optimize output per acre? 2. Group presentations of their outputs and defending feedbacks from participants. 3. Documentation of important points for further actions. 4. Group discussion on essentials of agriculture as a business (plans of production, keeping of financial record book, keeping the cash flow, knowing of cost of production, main cost drivers and alternatives). 5. Discuss and explore the potential business opportunities for women and the most marginalized farmers to ensure their participation and equal benefits. 6. Group presentations of their outputs and defending feedbacks from participants. 7. Documentation of important points for further consideration. 8. Group discussion on their understanding of the market system (role of brokers and traders, price variation in market systems, importance of linkages for market information, market prospects for a crop, as recommended in value chain analysis). 9. Group presentations of their outputs and defending feedbacks from participants. 10. Determination of ways to improve market system to benefiting to individual farmers and documentation of important points for further actions. 11. Harvesting of pigeon pea. 12. Presentations of individuals on their activities undertaken in between the FFS sessions. 13. Production of individual's action plan. 14. Open discussion on the whole training session of the day and recording of participants feedbacks.
January	Module 9	<p style="text-align: center;">Graduation Day:</p> <ol style="list-style-type: none"> 1. Review on the whole FFS training session by participants and their awareness on CSA and its practices. 2. Review on the awareness of participants on CA, GAP, Agroforestry, Agroecosystem Analysis-AESA, IPM, and Agriculture as a Business. 3. Development of plans of actions to undertake beyond FFS. 4. Lessons learned from the FFS.

Month	Module	Subject and Competences
		5. Evaluation of training session by participants. 6. Provision of Completion Certificate to participants. 7. Ending of FFS successfully.

2. FFS Curriculum for Nyaung-U

Irrigated area: Chick pea (Nov planting) - Green Gram (Feb planting)

Month	Module	Subject and Competences
May	Pre-FFS Introductory Meeting	1. Objectives of FFS, guiding principles, FFS Farmers selection, FFS Committee formation, selection of Lead Farmer, etc. 2. Introduction of participants: Facilitator, technical specialist, participants from villages. 3. Site selection for establishing demonstration plot (in Lead Farmer's Field) also discussion and agreement on size (one acre), treatments to be included and layout of the demonstration plot. 4. Introduction of crops/species that will be covered in FFS training i.e. Chick pea, Green Gram and Karaya Gum (Shaw-Phyu). 5. Collection of soil samples for soil analysis that will be sent to soil lab to get the base line data of pH, soil texture, electrical conductivity, organic carbon, nutrient contents (N. P. K. Ca, Mg, S, Zn, B) and Na and related radicals (Cl, CO ₃ and HCO ₃).
June	Module 1	1. Concept of Climate Smart Agriculture and Climate Change effects. 2. Introduction to Conservation Agriculture- CA. 3. Concept of Agroforestry and growing of seasonal crops (groundnut/sesame/pigeon pea) in the plantations of Zee (<i>Zizyphus jujube</i>), Shaw-byu (<i>Sterculia versicolor</i>). 4. Analysis of existing farming systems that affect the soil, the crop/plant, and environment from the participant's perspective (putting the points on the flipcharts) and general discussion on that (brainstorming session). 5. Discussion on the forest cover in the intervention zone, especially regarding the challenges. 6. Analysis on land preparation practices, heavy tillage preparation and its adverse effects on soil erosion, soil nutrients and soil biota. 7. Concept of cropping system and cropping patterns. 8. Development of cropping pattern for Chick pea – Green gram (Brainstorming).

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 9. Analysis of Demo Plot soil by participants based on their empirical knowledge (texture, possible nutrient and organic matter content by their perspective). 10. Site clearing of Demo Plot and mulching of soil with weed residues and rubbishes collected from site clearing (no burning of organic wastes) (Practical exercise). 11. Keeping records on crop managements for each crop and data entry in every training session. 12. Keeping financial records on input costs and general expenditures. 13. Opinions and feedbacks from participants on the training session. 14. Development of individual's action plans to replicate the learning from the FFS Demonstration Plot in their own farm.
July	Module 2	<ol style="list-style-type: none"> 1. Soil conservation concepts and practices. 2. Occurrence of erosions in the area and consideration of prevention measures (water harvesting trenches and contour bunds, check-dams, growing of windbreak trees such as <i>gliricidia</i>, plants for replenishing organic matter such as <i>gliricidia</i>, <i>leucaena</i> and <i>daincha-Sesbania spp.</i>). 3. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species by observing <i>Gliricidia Sepium</i> trees available elsewhere. 4. Establishment of soil erosion prevention measures (digging of water harvesting trenches, mounding of contour bunds with soil collected from digging trenches, construction of check-dams) (Practical exercise). 5. Sowing of <i>leucaena</i> seeds at both sides of contour bunds and mulching sown seeds (to become hedgerows and will be cut down at the height of 2-2.5'). 6. Transplanting of <i>gliricidia</i> seedlings in the pits already dug and mulching at the base after transplanted with organic residues. <p>Transplanting of Shaw-Phyu in the pits already dug and filled with soil and mulching at the base after transplanted with organic residues.</p> <p>The source of tree saplings should be from an already established and functional and reliable community tree nursery source.</p> <ol style="list-style-type: none"> 7. Heavy mulching of sown lines with any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise). 8. Preparation of home-made organic fertilizers and pesticides (EM, Indigenous Micro Organism-IMO, Fish Amino Acid-FAA,

Month	Module	Subject and Competences
		<p>Bocashi, Tobacco-ginger-chilli-EM pesticide, etc.) (Practical exercise).</p> <p>9. Introduction of rearing of earthworms for compost production</p> <p>10. Group Dynamic Exercises.</p> <p>11. Special topics.</p> <p>12. Recording of expenditures in financial record book.</p> <p>13. Observation on the effectiveness of mulching on the performance of hedgerow plants.</p> <p>14. Review on the individual's activities undertaken according to the plan and comments on that.</p> <p>15. Development of individual's action plans.</p> <p>16. Opinions and feedbacks from participants on the establishment of erosion prevention measures.</p>
August	Module 3	<p>1. Introduction to IPM.</p> <p>2. Survey and collection of insects and classification of beneficial insects and pests.</p> <p>3. Forms of fertilizers – organic and inorganic, and their effects on soil and environment.</p> <p>4. Spraying of EM and home-made organic fertilizers and organic pesticides including neem pesticide.</p> <p>5. Discussion on how to maintain and protect tree seedlings growth.</p> <p>6. Recording of hedgerow plants performances in crop management record books.</p> <p>7. Review on the individual's activity undertaken and analyzing the strengths and weakness.</p> <p>8. Production of individual's action plan to undertake at their farms.</p> <p>9. Open discussion on the whole training session of the day and recording of participants feedbacks.</p>
September	Module 4	<p>1. Agroecosystem Analysis Exercise – Groups comprising of five Participants will study and make records on the following in Demo Plot.</p> <p>1) the effectiveness of erosion control measures, 2) effects of mulching, 3) soil organic matter and soil moisture conditions, 4) crop performances and incidences of pest and diseases.</p> <p>2. Recording of findings by groups.</p> <p>3. Group presentations on their findings and responding to questions raised by other groups.</p> <p>4. Making decisions and recording of important points for further actions for improvement</p> <p>5. Review on participants understanding on CSA based on the practices undertaken in Demo Plot. The level of knowledge and skills of male</p>

Month	Module	Subject and Competences
		<p>and female farmers will be assessed, and agreement will be made on how to better involve them in the agroecosystem analysis.</p> <p>6. Review on the individual's activities undertaken against their plans and comments.</p> <p>7. Production of individual's action plan.</p> <p>8. Open discussion on the whole training session of the day and recording of participants feedbacks (Agroecosystem Analysis – AESA should be carried on at available times).</p>
October	Module 5	<p>1. Green manure.</p> <p>2. Post-harvest handling.</p> <p>3. Observation on the conditions of water harvesting in the trenches, silt depositing at the base of check-dams and situation of soil erosion in Demo Plot comparing to nearby plots.</p> <p>4. Review on the individual's activities undertaken against their plans and comments Production of individual's action plan.</p> <p>5. Open discussion on the training session and recording of opinions and suggestions from participants.</p>
November	Module 6	<p>1. Introduction to Good Agricultural Practices.</p> <p>2. Sowing of chickpea: (opening of sowing lines by plough/harrow depending on the texture of soil, application of manures and neem-cakes in the sowing lines, sowing seeds, spraying of EM in sown lines if available) (Practical exercise).</p> <p>3. Recording of expenditures in financial record book.</p> <p>4. Review on the individual's activities undertaken against their plans and comments.</p> <p>5. Production of individual's action plan.</p> <p>6. Open discussion on the training session and recording of opinions and suggestions from.</p>
December	Module 7	<p>1. Repetition of Agroecosystem Analysis</p> <p>2. Exercise – Groups comprising of five Participants will study and make records on the following in Demo Plot.</p> <p>1) the effectiveness of erosion control measures, 2) effects of mulching, 3) soil organic matter and soil moisture conditions, 4) chickpea performances and incidences of pest and diseases.</p> <p>3. Recording of findings by groups.</p> <p>4. Group presentations on their findings and responding to questions raised by other groups.</p> <p>5. Making decisions and recording of important points for further actions for improvement.</p> <p>6. Review on participants understanding on CSA based on the practices undertaken in Demo Plot Review on the individual's activities undertaken against their plans and comments.</p> <p>7. Discussion on lessons learned and on how and when to start harvesting from the perennial trees included in the FFS such as Shaw Phyu in a sustainable manner.</p> <p>8. Production of individual's action plan.</p>

Month	Module	Subject and Competences
		9. Open discussion on the whole training session of the day and recording of participants feedbacks (Agroecosystem Analysis – AESA should be carried on at available times).
January 2019	Module 8	<p style="text-align: center;">Exchange Visits</p> <p>An adequate participation of women and girls in such exchange visits will be ensured.</p> <ol style="list-style-type: none"> Visits to other FFS in the Township (Building up the relationship among farmer groups). Observation on the progress in other FFS and making comparisons with each other. Sharing of experiences among farmer groups. Dissemination of new findings to other farmer Groups. Specific discussion during the exchange visits is on CSA based on their experiences in FFS and why the practices in FFS are relevant to CSA.
February	Module 9	<p style="text-align: center;">Farmer's Field Day</p> <p>An adequate participation of women and girls in Farmer Field Day will be ensured.</p> <ol style="list-style-type: none"> Visitors observation on the performances and achievements undertaken in FFS. Presentations on the activities undertaken in FFS by FFS trainees (putting emphasis on CSA). Sharing of technologies and ideas to visitors by FFS trainees. Presentations of FFS participants on their experiences throughout the whole school session, emphasizing on why Climate Smart Agriculture becomes important in their farming, climate change effects and resilience of crops and plants grown in the Demo Plot to the changes because of proper crop and soil management practices. Contribution of opinions, ideas, comments and suggestions from visitors. Harvesting of chickpea and recording of yield. Practical exercises on yield estimation of Chickpea. Sowing of green gram following chickpea with no tillage and then mulching of sown lines.
March	Module 10	<p style="text-align: center;">Farming As A Business (FAAB)</p> <ol style="list-style-type: none"> Group discussion on the following (Groups comprising of five participants). <ol style="list-style-type: none"> What is agriculture as a business? How can agriculture be done as a business? What is the difference between food crop and cash crop? Why intercropping can optimize output per acre? Group presentations of their outputs and defending feedbacks from participants. Documentation of important points for further actions.

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 4. Group discussion on essentials of agriculture as a business (plans of production, keeping of financial record book, keeping the cash flow, knowing of cost of production, main cost drivers and alternatives). 5. Discuss and explore the potential business opportunities for women and the most marginalized farmers to ensure their participation and equal benefits. 6. Group presentations of their outputs and defending feedbacks from participants. 7. Documentation of important points for further consideration. 8. Group discussion on their understanding of the market system (role of brokers and traders, price variation in market systems, importance of linkages for market information, market prospects for a crop, as recommended in value chain analysis). 9. Group presentations of their outputs and defending feedbacks from participants. 10. Determination of ways to improve market system to benefiting to individual farmers and documentation of important points for further actions. 11. Presentations of individuals on their activities undertaken in between the FFS sessions. 12. Production of individual's action plan. 13. Open discussion on the whole training session of the day and recording of participants feedbacks.
April	Module 11	<p style="text-align: center;">Morning</p> <ol style="list-style-type: none"> 1. Harvesting of green gram and recording of Yield. 2. Practical exercises on yield estimation of Green gram. <p style="text-align: center;">Afternoon Graduation Day</p> <ol style="list-style-type: none"> 3. Review on the whole FFS training session by participants and their awareness on CSA and its practices. 4. Review on the awareness of participants on CA, GAP, Agroforestry, Agroecosystem Analysis-AESA, IPM, and Agriculture as a Business. 5. Development of plans of actions to undertake beyond FFS. 6. Lessons learned from the FFS. 7. Evaluation of training session by participants. 8. Provision of Completion Certificate to participants. 9. Ending of FFS successfully.

3. FFS Curriculum for Nyaung-U

Irrigated area: Winter groundnut (Nov planting) - Green gram (Feb planting)

Month	Module	Subject and Competences
May	Pre-FFS Introductory Meeting	<ol style="list-style-type: none"> 1. Objectives of FFS, guiding principles, FFS Farmers selection, FFS Committee formation, selection of Lead Farmer, etc. 2. Introduction of participants: Facilitator, technical specialist, participants from villages. 3. Site selection for establishing demonstration plot (in Lead Farmer's Field) also discussion and agreement on size (one acre), treatments to be included and layout of the demonstration plot. 4. Introduction of crops that will be covered in FFS session: Groundnut, Green Gram and Shaw-Phyu (Karaya Gum). 5. Collection of soil samples for soil analysis that will be sent to soil lab to get the base line data of pH , soil texture, electrical conductivity, organic carbon, nutrient contents (N. P. K. Ca, Mg, S, Zn, B) and Na and related radicals (Cl, CO₃ and HCO₃).
June	Module 1	<ol style="list-style-type: none"> 1. Concept of Climate Smart Agriculture and Climate Change effects 2. Introduction to Conservation Agriculture- CA. 3. Concept of Agroforestry and growing of seasonal crops (groundnut/sesame/pigeon pea) in the plantations of Zee (<i>Zizyphus jujube</i>), Shaw-byu (<i>Sterculia versicolor</i>). 4. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species. 5. Analysis of existing farming systems that affect the soil, the crop/plant, and environment from the participant's perspective (putting the points on the flipcharts) and general discussion on that (brainstorming session). 6. Discussion on the forest cover in the intervention zone, especially regarding the challenges. 7. Analysis on land preparation practices, heavy tillage preparation and its adverse effects on soil erosion, soil nutrients and soil biota. 8. Concept of cropping system and cropping patterns. 9. Development of cropping pattern for groundnut and green gram (Groundnut – Green gram) (Brainstorming). 10. Analysis of Demo Plot soil by participants based on their empirical knowledge (texture, possible nutrient and organic matter content by their perspective). 11. Site clearing of Demo Plot and mulching of soil with weed residues and rubbishes collected from site clearing (no burning of organic wastes) (Practical exercise). 12. Keeping records on crop managements for each crop and data entry in every training session.

Month	Module	Subject and Competences
		13. Keeping financial records on input costs and general expenditures. 14. Opinions and feedbacks from participants on the training session. 15. Development of individual's action plans to replicate the learning from the FFS Demonstration Plot in their own farm.
July	Module 2	1. Soil conservation concepts and practices. 2. Occurrence of erosions in the area and consideration of prevention measures (water harvesting trenches and contour bunds, check-dams, growing of windbreak trees such as <i>gliricidia</i> , plants for replenishing organic matter such as <i>gliricidia</i> , <i>leucaena</i> and <i>daincha-Sesbania spp.</i>). 3. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species by observing <i>Gliricidia Sepium</i> trees available elsewhere. 4. Establishment of soil erosion prevention measures (digging of water harvesting trenches, mounding of contour bunds with soil collected from digging trenches, construction of check-dams) (Practical exercise). 5. Sowing of <i>leucaena</i> seeds at both sides of contour bunds and mulching sown seeds (to become hedgerows and will be cut down at the height of 2-2.5'). 6. Transplanting of <i>gliricidia</i> seedlings in the pits already dug and mulching at the base after transplanted with organic residues. 7. Transplanting of Shaw-byu in the pits already dug and filled with soil and mulching at the base after transplanted with organic residues. The source of tree saplings should be from an already established and functional and reliable community tree nursery source. 8. Heavy mulching of sown lines with any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise). 9. Preparation of home-made organic fertilizers and pesticides (EM, Indigenous Micro Organism-IMO, Fish Amino Acid-FAA, Bocashi, Tobacco-ginger-chilli-EM pesticide, etc.) (Practical exercise). 10. Introduction of rearing of earthworms for compost production. 11. Group Dynamic Exercises. 12. Special topics. 13. Recording of expenditures in financial record book. 14. Observation on the effectiveness of mulching on the performance of hedgerow plants. 15. Review on the individual's activities undertaken according to the plan and comments on that. 16. Development of individual's action plans.

Month	Module	Subject and Competences
		17. Opinions and feedbacks from participants on the establishment of erosion prevention measures.
August	Module 3	<ol style="list-style-type: none"> 1. Introduction to IPM. 2. Survey and collection of insects and classification of beneficial insects and pests. 3. Forms of fertilizers – organic and inorganic, and their effects on soil and environment. 4. Spraying of EM and home-made organic fertilizers and organic pesticides including neem pesticide. 5. Discussion on how to maintain and protect tree seedlings growth. 6. Recording of hedgerow plants performances in crop management record books. 7. Review on the individual's activity undertaken and analyzing the strengths and weakness. 8. Production of individual's action plan to undertake at their farms. 9. Open discussion on the whole training session of the day and recording of participants feedbacks.
September	Module 4	<ol style="list-style-type: none"> 1. Agroecosystem Analysis Exercise – Groups comprising of five Participants will study and make records on the following in Demo Plot. <ol style="list-style-type: none"> 1) the effectiveness of erosion control measures, 2) effects of mulching, 3) soil organic matter and soil moisture conditions, 4) crop performances and incidences of pest and diseases. 2. Recording of findings by groups. 3. Group presentations on their findings and responding to questions raised by other groups. 4. Making decisions and recording of important points for further actions for improvement. 5. Review on participants understanding on CSA based on the practices undertaken in Demo Plot. The level of knowledge and skills of male and female farmers will be assessed, and agreement will be made on how to better involve them in the agroecosystem analysis. 6. Review on the individual's activities undertaken against their plans and comments. 7. Production of individual's action plan. 8. Open discussion on the whole training session of the day and recording of participants feedbacks (Agroecosystem Analysis – AESA should be carried on at available times).
October	Module 5	<ol style="list-style-type: none"> 1. Green manure. 2. Post-harvest handling. 3. Observation on the conditions of water harvesting in the trenches, silt depositing at the base of check-dams and situation of soil erosion in Demo Plot comparing to nearby plots.

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> Review on the individual's activities undertaken against their plans and comments. Production of individual's action plan. Open discussion on the training session and recording of opinions and suggestions from participants.
November	Module 6	<ol style="list-style-type: none"> Introduction to Good Agricultural Practices. Sowing of groundnut: (opening of sowing lines by plough/harrow depending on the texture of soil, application of manures and neem-cakes in the sowing lines, sowing seeds, spraying of EM in sown lines if available) (Practical exercise). Recording of expenditures in financial record book. Review on the individual's activities undertaken against their plans and comments. Production of individual's action plan. Open discussion on the training session and recording of opinions and suggestions from.
December	Module 7	<ol style="list-style-type: none"> 1. Repetition of Agroecosystem Analysis Exercise – Groups comprising of five Participants will study and make records on the following in Demo Plot. <ol style="list-style-type: none"> the effectiveness of erosion control measures, 2) effects of mulching, 3) soil organic matter and soil moisture conditions, 4) chickpea performances and incidences of pest and diseases, Recording of findings by groups. Group presentations on their findings and responding to questions raised by other groups. Making decisions and recording of important points for further actions for improvement. Review on participants understanding on CSA based on the practices undertaken in Demo Plot Review on the individual's activities undertaken against their plans and comments. Discussion on lessons learned and on how and when to start harvesting from the perennial trees included in the FFS such as Shaw Phyu in a sustainable manner. Production of individual's action plan. Open discussion on the whole training session of the day and recording of participants feedbacks (Agroecosystem Analysis – AESA should be carried on at available times).
January 2019	Module 8	<p style="text-align: center;">Exchange Visits</p> <p>An adequate participation of women and girls in such exchange visits will be ensured.</p> <ol style="list-style-type: none"> Visits to other FFS in the Township (Building up the relationship among farmer groups). Observation on the progress in other FFS and making comparisons with each other.

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> Sharing of experiences among farmer groups. Dissemination of new findings to other farmer Groups. Specific discussion during the exchange visits is on CSA based on their experiences in FFS and why the practices in FFS are relevant to CSA.
February	Module 9	<p style="text-align: center;">Farmer's Field Day</p> <p>An adequate participation of women and girls in Farmer Field Day will be ensured.</p> <ol style="list-style-type: none"> Visitors observation on the performances and achievements undertaken in FFS. Presentations on the activities undertaken in FFS by FFS trainees (putting emphasis on CSA). Sharing of technologies and ideas to visitors by FFS trainees. Presentations of FFS participants on their experiences throughout the whole school session, emphasizing on why Climate Smart Agriculture becomes important in their farming, climate change effects and resilience of crops and plants grown in the Demo Plot to the changes because of proper crop and soil management practices. Contribution of opinions, ideas, comments and suggestions from visitors. Harvesting of groundnut and recording of yield. Practical exercises on yield estimation of groundnut. Sowing of green gram following chickpea with no tillage and then mulching of sown lines.
March	Module 10	<p style="text-align: center;">Farming As A Business (FAAB)</p> <ol style="list-style-type: none"> Group discussion on the following (Groups comprising of five participants). <ol style="list-style-type: none"> What is agriculture as a business? How can agriculture be done as a business? What is the difference between food crop and cash crop? Why intercropping can optimize output per acre? Group presentations of their outputs and defending feedbacks from participants. Documentation of important points for further actions. Group discussion on essentials of agriculture as a business (plans of production, keeping of financial record book, keeping the cash flow, knowing of cost of production, main cost drivers and alternatives). Discuss and explore the potential business opportunities for women and the most marginalized farmers to ensure their participation and equal benefits. Group presentations of their outputs and defending feedbacks from participants. Documentation of important points for further consideration. Group discussion on their understanding of the market system (role of brokers and traders, price variation in market systems, importance of linkages for market information, market prospects for a crop, as recommended in value chain analysis).

Month	Module	Subject and Competences
		10. Group presentations of their outputs and defending feedbacks from participants. 11. Determination of ways to improve market system to benefiting to individual farmers and documentation of important points for further actions. 12. Presentations of individuals on their activities undertaken in between the FFS sessions. 13. Production of individual's action plan. 14. Open discussion on the whole training session of the day and recording of participants feedbacks.
April	Module 11	<p style="text-align: center;">Morning</p> 1. Harvesting of green gram and recording of Yield. 2. Practical exercises on yield estimation of Green gram. <p style="text-align: center;">Afternoon Graduation Day:</p> 1. Review on the whole FFS training session by participants and their awareness on CSA and its practices. 2. Review on the awareness of participants on CA, GAP, Agroforestry, Agroecosystem Analysis-AESA, IPM, and Agriculture as a Business. 3. Development of plans of actions to undertake beyond FFS. 4. Lessons learned from the FFS. 5. Evaluation of training session by participants. 6. Provision of Completion Certificate to participants. 7. Ending of FFS successfully.

4. FFS Curriculum for Nyaung-U

Rain-fed areas: Pigeon pea + Sesame Intercrop (May) - Groundnut (July)

Month	Module	Subject and Competences
April (First Week)	Pre-FFS Introductory Meeting	<ol style="list-style-type: none"> 1. Objectives of FFS, guiding principles, FFS Farmers selection, FFS Committee formation, selection of Lead Farmer, etc. 2. Introduction of participants: Facilitator, technical specialist, participants from villages. 3. Site selection for establishing demonstration plot (in Lead Farmer's Field) also discussion and agreement on size (one acre), treatments to be included and layout of the demonstration plot.
May	Module 1	<ol style="list-style-type: none"> 1. Concept of Climate Smart Agriculture and Climate Change effects. 2. Introduction to Good Agricultural Practices. 3. Concept of Conservation Agriculture- CA (Permanent Organic Soil Cover, Continuous Minimum Mechanical Soil Disturbance, Diversification of Crop Species Grown in Sequences and / or Associations). 4. Analysis of existing farming systems that affect the soil, the crop/plant, and environment from the participant's perspective (putting the points on the flipcharts) and general discussion on that (braining storming session). 5. Discussion on the forest cover in the intervention zone, especially regarding the challenges. 6. Analysis on land preparation practices, heavy tillage preparation and its adverse effects on soil erosion, soil nutrients and soil biota. 7. Concept of cropping system and cropping patterns. 8. Development of cropping pattern for groundnut, sesame and pigeon pea for monsoon as mix-cropping (sequences and spacing of individual crop) (Braining storming). 9. Concept of Agroforestry and growing of seasonal crops (groundnut/green gram/pigeon pea) in the plantations of Zee (<i>Zizyphus jujube</i>), Shaw-byu (<i>Sterculia versicolor</i>). 10. Introduction of crops that will be covered in FFS: Groundnut, Sesame, and Pigeon Pea. 11. Varietal selection of crops: e.g., Sesame – Sin Yadana-3 and Sin Yadana-14, Pigeon Pea Gwa Tayar (Hundred junctures, recommended by local farmers) Groundnut – Sinpadathar 11, (varietal characteristics on life-period, resilience to climate effect, drought and pest resistance, and marketable prices will be explained and their preference will be noted down).

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 12. Analysis of Demo Plot soil by participants based on their empirical knowledge (texture, possible nutrient and organic matter content by their perspective). 13. Collection of soil samples for soil analysis that will be sent to soil lab to get the base line data of p^H, organic carbon and nutrient contents. 14. Site clearing of Demo Plot and mulching of soil with weed residues and rubbishes collected from site clearing (no burning of organic wastes) (Practical exercise). 15. Sowing of sesame and pigeon pea as mixed cropping (opening of sowing lines by plough/harrow depending on the texture of soil, application of manures and neem-cakes in the sowing lines, sowing seeds, spraying of EM in sown lines if available) (Practical exercise). 16. Heavy mulching of sown lines with any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise). 17. Opinions and feedbacks from participants on the training session. 18. Development of individual's action plans to replicate the learning from the FFS Demonstration Plot in their own farm.
June	Module 2	<ol style="list-style-type: none"> 1. Occurrence of erosions in the area and consideration of prevention measures (water harvesting trenches and contour bunds, check-dams, growing of windbreak trees such as <i>gliricidia</i>, plants for replenishing organic matter such as <i>gliricidia</i>, <i>leucaena</i> and <i>daincha-Sesbania spp.</i>). 2. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species by observing <i>Gliricidia Sepium</i> trees available elsewhere. 3. Establishment of soil erosion prevention measures (digging of water harvesting trenches, mounding of contour bunds with soil collected from digging trenches, construction of check-dams) (Practical exercise). 4. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species. 5. Preparation of home-made organic fertilizers and pesticides (EM, Indigenous Micro Organism-IMO, Fish Amino Acid-FAA, Bocashi, Tobacco-ginger-chilli-EM pesticide, etc.) (Practical exercise). 6. Sowing of <i>leucaena</i> seeds at both sides of contour bunds and mulching sown seeds (to become hedgerows and will be cut down at the height of 2-2.5').

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 7. Digging of pits for Shaw-byu (<i>Stercularia versicolor</i>) 20'x20' apart and filling of pits with top soil and organic manures. 8. Digging of pits for <i>Gliricidia</i>, 1.5' apart in twin-rows as zigzag pattern. 9. Observation on the effectiveness of mulching on the performance of sesame and pigeon pea. 10. Review on the individual's activities undertaken according to the plan and comments on that. 11. Development of individual's action plans. 12. Opinions and feedbacks from participants on the establishment of erosion prevention measures.
July	Module 3	<ol style="list-style-type: none"> 1. Introduction to IPM. 2. Survey and collection of insects and classification of beneficial insects and pests. 3. Spraying of EM and home-made organic fertilizers and organic pesticides including neem pesticide. 4. Forms of fertilizers – organic and inorganic, and their effects on soil and environment. 5. Transplanting of <i>gliricidia</i> seedlings in twin rows as zigzag pattern at a spacing of 1.5' with East- West direction (to avoid shading on the crops if grown North-South direction). 6. Mulching of <i>gliricidia</i> seedlings around their bases with organic residues. 7. Transplanting of Shaw-byu in the pits already dug and filled with soil and mulching at the base after transplanted. <p>The source of tree saplings should be from an already established and functional and reliable community tree nursery source.</p> <ol style="list-style-type: none"> 8. Discussion on how to maintain and protect tree seedlings growth. 9. General discussion on the practices already done and recording of opinions and suggestions from participants. 10. Review on the individual's activities undertaken against their plans and comments. 11. Production of individual's action plan.
August	Module 4	<ol style="list-style-type: none"> 1. Harvesting of sesame and calculation of yield in an acre. 2. Observation on the growth of other crop and hedgerow plants grown in Demo Plot. 3. Observation on the effects of mulching and weed growth 4. Participants understanding on CSA based on the practices undertaken in Demo Plot. The level of knowledge and skills of male and female farmers will be assessed, and agreement will

Month	Module	Subject and Competences
		<p>be made on how to better involve them in the agroecosystem analysis.</p> <p>5. Review on the individual's activities undertaken against their plans and comments.</p> <p>6. Production of individual's action plan.</p>
September	Module 5	<p>1. Root nodules in pulses and use of Rhizobium inocula for seed treatment.</p> <p>2. Sowing of groundnut with no tillage in the same plot where sesame and pigeon pea have been sown (removal of mulches done in previous session, opening of sowing lines by plough/harrow depending on the texture of soil, application of manures, neem-cakes and chemical fertilizer (if necessary with minimum level) in the sowing lines, sowing rhizobium treated seeds without, spraying of EM in sown lines if available) (Practical exercise).</p> <p>3. Heavy mulching of sown lines with sesame residues and any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise).</p> <p>4. Observation on the conditions of water harvesting in the trenches, silting at the base of check-dams and situation of soil erosion in Demo Plot comparing to nearby plots.</p> <p>5. Open discussion on the training session and recording of opinions and suggestions from participants.</p> <p>6. Discussion on lessons learned and on how and when to start harvesting from the perennial trees included in the FFS such as Shaw Phyu in a sustainable manner.</p> <p>7. Review on the individual's activities undertaken against their plans and comments.</p> <p>8. Production of individual's action plan.</p> <p>9. Planning for exchange visits in coming session.</p>
October	Module 6	<p style="text-align: center;">Exchange visit</p> <p>An adequate participation of women and girls in such exchange visits will be ensured.</p> <p>1. Visits to other FFS in the Township (Building up the relationship among farmer groups).</p> <p>2. Observation on the progress in other FFS and making comparisons with other FFS.</p> <p>3. Sharing of experiences among farmer groups.</p> <p>4. Dissemination of new findings to other farmer groups.</p> <p>5. General discussion on the experience during exchange visits.</p> <p>6. Preparation for field day coming in next session (venue and time, temporary booth construction, selection of topics and FFS presenters, list of visitors including village authority and neighboring farmers, etc.).</p>
November	Module 7	Farmer's Field Day

Month	Module	Subject and Competences
		<p>An adequate participation of women and girls in such Farmer Field Day will be ensured.</p> <ol style="list-style-type: none"> 1. Visitors observation on the performances and achievements undertaken in FFS. 2. Presentations on the activities undertaken in FFS by FFS trainees. 3. Sharing of technologies and ideas to visitors by FFS trainees. 4. Presentations of FFS participants on their experiences throughout the whole school session, emphasizing on why Climate Smart Agriculture becomes important in their farming, climate change effects and resilience of crops and plants grown in the Demo Plot to the changes because of proper crop and soil management practices. 5. Contribution of opinions, ideas, comments and suggestions from visitors.
December	Module 8	<ol style="list-style-type: none"> 1. Introduction to post harvest losses, postharvest practices, storage of seeds/grains (use of airtight zero fly hermetic bags). 2. Harvesting of sample yield, yield component factors, calculation of per acre yield of groundnut. 3. Harvesting and picking up of groundnut pods. 4. Harvesting and threshing of pigeon pea and calculation of per acre yield. 5. Residue management. 6. Observation on the effects of mulching and weed growth. 7. Observation on the mulching effects on crop performances. 8. Strengthening of structures of soil erosion prevention measures. 9. Pruning of <i>leucaena</i> twigs at the height of 2-2.5 feet and green manuring of soil with cut pieces. 10. Essentials of Agriculture as Business. 11. Discussion and planning on recommendations from Value Chain Analysis such as market information, linkages establishment with inputs/outputs market, financial institutions. 12. Review on the individual's activities and suggestions by participants. 13. Open discussion and recording of opinions and suggestions from participant.
January	Module 9	<p>Graduation Day</p> <ol style="list-style-type: none"> 1. Review on the whole training session by participants and their feedbacks on awareness of Climate Change, Conservation Agriculture – CA and CSA.

Month	Module	Subject and Competences
		2. Finalizing of developed plans of actions to undertake beyond FFS (strengthening of land management practices, caring of soil erosion prevention measures, and nurturing of hedgerow plants). 3. Lessons learned from the FFS. 4. Evaluation of training session by participants. 5. Development of individual's action plans to undertake after FFS training. 6. Provision of Completion Certificate to participants.

5. FFS Curriculum for Kyaukpadaung

Rain-fed area: Pigeon Pea + Mid-monsoon Groundnut (July)

Month	Module	Subject and Competences
May	Pre-FFS Introductory Meeting	1. Objectives of FFS, guiding principles, FFS Farmers selection, FFS Committee formation, selection of Lead Farmer, etc. 2. Introduction of participants: Facilitator, technical specialist, participants from villages. 3. Site selection for establishing demonstration plot (in Lead Farmer's Field) also discussion and agreement on size (one acre), treatments to be included and layout of the demonstration plot. 4. Introduction of crops that will be covered in FFS session: Pigeon Pea Groundnut and Shaw-Phyu (Karaya Gum). 5. Collection of soil samples for soil analysis that will be sent to soil lab to get the base line data of pH, soil texture, electrical conductivity, organic carbon, nutrient contents (N, P, K, Ca, Mg, S, Zn, B) and Na and related radicals (Cl, CO ₃ and HCO ₃).
June	Module 1	1. Concept of Climate Smart Agriculture and Climate Change effects. 2. Introduction to Good Agricultural Practices. 3. Introduction to Conservation Agriculture- CA. 4. Concept of Agroforestry and growing of seasonal crops (groundnut/sesame/pigeon pea) in the plantations of Zee (<i>Zizyphus jujube</i>), Shaw-byu (<i>Sterculia versicolor</i>). 5. Discussion on the forest cover in the intervention zone, especially regarding the challenges. 6. Analysis of existing farming systems that affect the soil, the crop/plant, and environment from the participant's perspective (putting the points on the flipcharts) and general discussion on that (brainstorming session). 7. Analysis on land preparation practices, heavy tillage preparation and its adverse effects on soil erosion, soil nutrients and soil biota.

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 8. Concept of cropping system and cropping patterns. 9. Development of cropping pattern for groundnut and pigeon pea (Pigeon Pea + Mid monsoon Groundnut) (Brainstorming). 10. Analysis of Demo Plot soil by participants based on their empirical knowledge (texture, possible nutrient and organic matter content by their perspective). 11. Site clearing of Demo Plot and mulching of soil with weed residues and rubbishes collected from site clearing (no burning of organic wastes) (Practical exercise). 12. Keeping records on crop managements for each crop and data entry in every training session. 13. Keeping financial records on input costs and general expenditures. 14. Opinions and feedbacks from participants on the training session. 15. Development of individual's action plans to replicate the learning from the FFS Demonstration Plot in their own farm.
July	Module 2	<ol style="list-style-type: none"> 1. Soil conservation concepts and practices. 2. Occurrence of erosions in the area and consideration of prevention measures (water harvesting trenches and contour bunds, check-dams, growing of windbreak trees such as <i>gliricidia</i>, plants for replenishing organic matter such as <i>gliricidia</i>, <i>leucaena</i> and <i>daincha-Sesbania spp.</i>). 3. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species by observing <i>Gliricidia Sepium</i> trees available elsewhere. 4. Establishment of soil erosion prevention measures (digging of water harvesting trenches, mounding of contour bunds with soil collected from digging trenches, construction of check-dams) (Practical exercise). 5. Sowing of <i>leucaena</i> seeds at both sides of contour bunds and mulching sown seeds (to become hedgerows and will be cut down at the height of 2-2.5'). 6. Transplanting of <i>gliricidia</i> seedlings in the pits already dug and mulching at the base after transplanted with organic residues. 7. Transplanting of Shaw-Phyu in the pits already dug and filled with soil and mulching at the base after transplanted with organic residues. <p>The source of tree saplings should be from an already established and functional and reliable community tree nursery source.</p> <ol style="list-style-type: none"> 8. Sowing of pigeon pea and groundnut: (opening of sowing lines by plough/harrow depending on the texture of soil, application of

Month	Module	Subject and Competences
		<p>manures and neem-cakes in the sowing lines, sowing seeds, spraying of EM in sown lines if available) (Practical exercise).</p> <p>9. Heavy mulching of sown lines with any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise).</p> <p>10. Preparation of home-made organic fertilizers and pesticides (EM, Indigenous Micro Organism-IMO, Fish Amino Acid-FAA, Bocashi, Tobacco-ginger-chilli-EM pesticide, etc.) (Practical exercise).</p> <p>11. Introduction of rearing of earthworms for compost production.</p> <p>12. Group Dynamic Exercises.</p> <p>13. Special topics.</p> <p>14. Recording of expenditures in financial record book.</p> <p>15. Observation on the effectiveness of mulching on the performance of sesame and pigeon pea.</p> <p>16. Review on the individual's activities undertaken according to the plan and comments on that.</p> <p>17. Development of individual's action plans.</p> <p>18. Opinions and feedbacks from participants on the establishment of erosion prevention measures.</p>
August	Module 3	<p>1. Introduction to IPM.</p> <p>2. Survey and collection of insects and classification of beneficial insects and pests.</p> <p>3. Forms of fertilizers – organic and inorganic, and their effects on soil and environment.</p> <p>4. Spraying of EM and home-made organic fertilizers and organic pesticides including neem pesticide.</p> <p>5. Discussion on how to maintain and protect tree seedlings growth.</p> <p>6. Recording of crop performances in crop management record books.</p> <p>7. Review on the individual's activity undertaken and analyzing the strengths and weakness.</p> <p>8. Production of individual's action plan to undertake at their farms.</p> <p>9. Open discussion on the whole training session of the day and recording of participants feedbacks.</p>
September	Module 4	<p>1. Agroecosystem Analysis Exercise – Groups comprising of five Participants will study and make records on the following in Demo Plot.</p> <p>1) the effectiveness of erosion control measures, 2) effects of mulching, 3) soil organic matter and soil moisture conditions, 4) crop performances and incidences of pest and diseases.</p> <p>2. Recording of findings by groups.</p>

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> Group presentations on their findings and responding to questions raised by other groups. Making decisions and recording of important points for further actions for improvement. Review on participants understanding on CSA based on the practices undertaken in Demo Plot. The level of knowledge and skills of male and female farmers will be assessed, and agreement will be made on how to better involve them in the agroecosystem analysis. Recording of expenditures in the crop management record book, estimation of income from sesame after selling out and estimation of cost and benefit. Review on the individual's activities undertaken against their plans and comments. Production of individual's action plan. Open discussion on the whole training session of the day and recording of participants feedbacks (Agroecosystem Analysis – AESA should be carried on at available times).
October	Module 5	<ol style="list-style-type: none"> Green manure Post-harvest handling. Harvesting of groundnut and green gram. Yield estimation of groundnut and green gram and pigeon pea. Recording of expenditures of groundnut in financial record book. Observation on the conditions of water harvesting in the trenches, silt depositing at the base of check-dams and situation of soil erosion in Demo Plot comparing to nearby plots. Review on the individual's activities undertaken against their plans and comments. Discussion on lessons learned and on how and when to start harvesting from the perennial trees included in the FFS such as Shaw Phyu in a sustainable manner. Production of individual's action plan. Open discussion on the training session and recording of opinions and suggestions from participants.
November	Module 6	<p style="text-align: center;">Exchange Visits</p> <p>An adequate participation of women and girls in such exchange visits will be ensured.</p> <ol style="list-style-type: none"> Visits to other FFS in the Township (Building up the relationship among farmer groups). Observation on the progress in other FFS and making comparisons with each other. Sharing of experiences among farmer groups. Dissemination of new findings to other farmer Groups.

Month	Module	Subject and Competences
		5. Specific discussion during the exchange visits is on CSA based on their experiences in FFS and why the practices in FFS are relevant to CSA.
December	Module 7	<p style="text-align: center;">Farmer's Field Day</p> <p>An adequate participation of women and girls in Farmer Field Day will be ensured.</p> <ol style="list-style-type: none"> 1. Visitors observation on the performances and achievements undertaken in FFS. 2. Presentations on the activities undertaken in FFS by FFS trainees (putting emphasis on CSA). 3. Sharing of technologies and ideas to visitors by FFS trainees. 4. Presentations of FFS participants on their experiences throughout the whole school session, emphasizing on why Climate Smart Agriculture becomes important in their farming, climate change effects and resilience of crops and plants grown in the Demo Plot to the changes because of proper crop and soil management practices. 5. Contribution of opinions, ideas, comments and suggestions from visitors.
January	Module 8	<p style="text-align: center;">Farming As A Business (FAAB)</p> <ol style="list-style-type: none"> 1. Group discussion on the following (Groups comprising of five participants). <ol style="list-style-type: none"> 1) What is agriculture as a business? 2) How can agriculture be done as a business? 3) What is the difference between food crop and cash crop? 4) Why intercropping can optimize output per acre? 2. Group presentations of their outputs and defending feedbacks from participants. 3. Documentation of important points for further actions. 4. Group discussion on essentials of agriculture as a business (plans of production, keeping of financial record book, keeping the cash flow, knowing of cost of production, main cost drivers and alternatives). 5. Discuss and explore the potential business opportunities for women and the most marginalized farmers to ensure their participation and equal benefits. 6. Group presentations of their outputs and defending feedbacks from participants. 7. Documentation of important points for further consideration. 8. Group discussion on their understanding of the market system (role of brokers and traders, price variation in market systems, importance of linkages for market information, market prospects for a crop, as recommended in value chain analysis). 9. Group presentations of their outputs and defending feedbacks from participants.

Month	Module	Subject and Competences
		10. Determination of ways to improve market system to benefiting to individual farmers and documentation of important points for further actions. 11. Harvesting of pigeon pea. 12. Presentations of individuals on their activities undertaken in between the FFS sessions. 13. Production of individual's action plan. 14. Open discussion on the whole training session of the day and recording of participants feedbacks.
February	Module 9	<p style="text-align: center;">Graduation Day</p> 1. Review on the whole FFS training session by participants and their awareness on CSA and its practices. 2. Review on the awareness of participants on CA, GAP, Agroforestry, Agroecosystem Analysis-AESA, IPM, and Agriculture as a Business. 3. Development of plans of actions to undertake beyond FFS 4. Lessons learned from the FFS. 5. Evaluation of training session by participants. 6. Provision of Completion Certificate to participants. 7. Ending of FFS successfully.

6. FFS Curriculum for Kyaukpadaung

Irrigated areas: Monsoon Sesame + Pigeon Pea (May planting) – Mid-monsoon Groundnut (Aug planting)

Month	Module	Subject and Competences
April (First Week)	Pre-FFS Introductory Meeting	1. Objectives of FFS, guiding principles, FFS Farmers selection, FFS Committee formation, selection of Lead Farmer, etc. 2. Introduction of participants: Facilitator, technical specialist, participants from villages. 3. Site selection for establishing demonstration plot (in Lead Farmer's Field) also discussion and agreement on size (one acre), treatments to be included and layout of the demonstration plot. 4. Introduction of crops that will be covered in FFS session: Sesame, Pigeon Pea, Groundnut, Shaw-Phyu (Karaya Gum). 5. Collection of soil samples for soil analysis that will be sent to soil lab to get the base line data of pH, soil texture, electrical conductivity, organic carbon, nutrient contents (N, P, K, Ca, Mg, S, Zn, B) and Na and related radicals (Cl, CO ₃ and HCO ₃).
May	Module 1	1. Concept of Climate Smart Agriculture and Climate Change effects. 2. Introduction to Good Agricultural Practices.

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 3. Introduction to Conservation Agriculture- CA. 4. Analysis of existing farming systems that affect the soil, the crop/plant, and environment from the participant's perspective (putting the points on the flipcharts) and general discussion on that (brainstorming session). 5. Analysis on land preparation practices, heavy tillage preparation and its adverse effects on soil erosion, soil nutrients and soil biota. 6. Concept of cropping system and cropping patterns. 7. Development of cropping pattern for groundnut, sesame and pigeon pea for monsoon as mix-cropping (sequences and spacing of individual crop) (Brainstorming). 8. Concept of Agroforestry and growing of seasonal crops (groundnut/sesame/pigeon pea) in the plantations of Zee (<i>Zizyphus jujube</i>), Shaw-byu (<i>Sterculia versicolor</i>). 9. Discussion on the forest cover in the intervention zone, especially regarding the challenges. 10. Varietal selection of crops: e.g., Sesame – Sin Yadana-3 and Sin Yadana-14, Pigeon Pea Gwa Tayar (Hundred junctures, recommended by local farmers) Groundnut – Sinpadathar 11, (varietal characteristics on life-period, resilience to climate effect, drought and pest resistance, and marketable prices will be explained and their preference will be noted down). 11. Analysis of Demo Plot soil by participants based on their empirical knowledge (texture, possible nutrient and organic matter content by their perspective). 12. Site clearing of Demo Plot and mulching of soil with weed residues and rubbishes collected from site clearing (no burning of organic wastes) (Practical exercise). 13. Sowing of sesame and pigeon pea as mixed cropping pattern with no tillage (opening of sowing lines by plough/harrow depending on the texture of soil, application of manures and neem-cakes in the sowing lines, sowing seeds coated with particular rhizobium inoculant, spraying of EM in sown lines if available) (Practical exercise). 14. Heavy mulching on sown lines with any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise). 15. Keeping records on crop managements for each crop and data entry in every training session. 16. Keeping financial records on input costs and general expenditures. 17. Opinions and feedbacks from participants on the training session.

Month	Module	Subject and Competences
		18. Development of individual's action plans to replicate the learning from the FFS Demonstration Plot in their own farm.
June	Module 2	<ol style="list-style-type: none"> 1. Occurrence of erosions in the area and consideration of prevention measures (water harvesting trenches and contour bunds, check-dams, growing of windbreak trees such as <i>Gliricidia</i>, plants for replenishing organic matter such as <i>Gliricidia</i>, <i>Leucaena</i> and <i>Daincha-Sesbania spp.</i>). 2. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species by observing <i>Gliricidia Sepium</i> trees available elsewhere. 3. Establishment of soil erosion prevention measures (digging of water harvesting trenches, mounding of contour bunds with soil collected from digging trenches, construction of check-dams) (Practical exercise). 4. Sowing of <i>Leucaena</i> seeds at both sides of contour bunds and mulching sown seeds (to become hedgerows and will be cut down at the height of 2-2.5'). 5. Digging of pits for Shaw-byu (<i>Stercularia versicolor</i>) 20'x20' apart and filling of pits with top soil and organic manures. 6. Digging of pits for <i>Gliricidia</i>, in twin rows as zigzag pattern at a spacing of 1.5" with East- West direction (to avoid shading on the crops if grown North-South direction) and filling of pits with top soil and organic manures. 7. Preparation of home-made organic fertilizers and pesticides (EM, Indigenous Micro Organism-IMO, Fish Amino Acid-FAA, Bocashi, Tobacco-ginger-chilli-EM pesticide, etc.) (Practical exercise). 8. Compost making exercise. 9. Introduction of rearing of earthworms for compost production. 10. Recording of expenditures in financial record book. 11. Observation on the effectiveness of mulching on the performance of sesame and pigeon pea. 12. Review on the individual's activities undertaken according to the plan and comments on that. 13. Development of individual's action plans. 14. Opinions and feedbacks from participants on the establishment of erosion prevention measures.
July	Module 3	<ol style="list-style-type: none"> 1. Introduction to IPM. 2. Survey and collection of insects and classification of beneficial insects and pests. 3. Forms of fertilizers – organic and inorganic, and their effects on soil and environment. 4. Spraying of EM and home-made organic fertilizers and organic pesticides including neem pesticide. 5. Transplanting of <i>Gliricidia</i> seedlings in the pits already dug and mulching at the base after transplanted with organic residues.

Month	Module	Subject and Competences
		<p>6. Transplanting of Shaw-Phyu in the pits already dug and filled with soil and mulching at the base after transplanted with organic residues.</p> <p>The source of tree saplings should be from an already established and functional and reliable community tree nursery source.</p> <p>7. Discussion on how to maintain and protect tree seedlings growth.</p> <p>8. Recording of crop performances in crop management record books.</p> <p>9. Review on the individual's activity undertaken and analyzing the strengths and weakness.</p> <p>10. Production of individual's action plan to undertake at their farms</p> <p>11. Open discussion on the whole training session of the day and recording of participants feedbacks.</p>
August	Module 4	<p>1. Agroecosystem Analysis Exercise – Groups comprising of five Participants will study and make records on the following in Demo Plot: 1) the effectiveness of erosion control measures, 2) effects of mulching, 3) soil organic matter and soil moisture conditions, 4) crop performances and incidences of pest and diseases.</p> <p>2. Recording of findings by groups.</p> <p>3. Group presentations on their findings and responding to questions raised by other groups.</p> <p>4. Making decisions and recording of important points for further actions for improvement.</p> <p>5. Review on participants understanding on CSA based on the practices undertaken in Demo Plot. The level of knowledge and skills of male and female farmers will be assessed, and agreement will be made on how to better involve them in the agroecosystem analysis.</p> <p>6. Harvesting of sesame and calculation of yield in an acre</p> <p>7. Recording of expenditures in the crop management record book, estimation of income from sesame after selling out and estimation of cost and benefit.</p> <p>8. Review on the individual's activities undertaken against their plans and comments.</p> <p>9. Production of individual's action plan.</p> <p>10. Open discussion on the whole training session of the day and recording of participants feedbacks (Agroecosystem Analysis – AESA should be carried on at available times).</p>
September	Module 5	<p>1. Root nodules in pulses and use of Rhizobium Inoculants for seed treatment.</p> <p>2. Sowing of groundnut with no tillage in the same plot where sesame and pigeon pea have been sown (opening of sowing lines by plough</p>

Month	Module	Subject and Competences
		<p>or harrow depending on the texture of soil, application of manures, neem-cakes in the sowing lines, sowing rhizobium treated seeds without, spraying of EM in sown lines if available) (Practical exercise).</p> <ol style="list-style-type: none"> Heavy mulching on sown lines with sesame residues and any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise). Recording of expenditures of groundnut in financial record book. Observation on the conditions of water harvesting in the trenches, silt depositing at the base of check-dams and situation of soil erosion in Demo Plot comparing to nearby plots. Review on the individual's activities undertaken against their plans and comments Production of individual's action plan. Discussion on lessons learned and on how and when to start harvesting from the perennial trees included in the FFS such as Shaw Phyu in a sustainable manner. Open discussion on the training session and recording of opinions and suggestions from participants.
October	Module 6	<p style="text-align: center;">Exchange Visits</p> <p>An adequate participation of women and girls in such exchange visits will be ensured.</p> <ol style="list-style-type: none"> Visits to other FFS in the Township (Building up the relationship among farmer groups). Observation on the progress in other FFS and making comparisons with each other. Sharing of experiences among farmer groups. Dissemination of new findings to other farmer Groups. Specific discussion during the exchange visits is on CSA based on their experiences in FFS and why the practices in FFS are relevant to CSA.
November	Module 7	<p style="text-align: center;">Farmer's Field Day</p> <p>An adequate participation of women and girls in Farmer Field Day will be ensured.</p> <ol style="list-style-type: none"> Visitors observation on the performances and achievements undertaken in FFS. Presentations on the activities undertaken in FFS by FFS trainees (putting emphasis on CSA). Sharing of technologies and ideas to visitors by FFS trainees. Presentations of FFS participants on their experiences throughout the whole school session, emphasizing on why Climate Smart Agriculture becomes important in their farming, climate change

Month	Module	Subject and Competences
		<p>effects and resilience of crops and plants grown in the Demo Plot to the changes because of proper crop and soil management practices.</p> <p>5. Contribution of opinions, ideas, comments and suggestions from visitors.</p>
December (First week)	Module 8	<p>Doing Agriculture as a Business</p> <ol style="list-style-type: none"> 1. Group discussion on the following (Groups comprising of five participants). <ol style="list-style-type: none"> 1) What is agriculture as a business? 2) How can agriculture be done as a business? 3) What is the difference between food crop and cash crop? 4) Why intercropping can optimize output per acre? 2. Group presentations of their outputs and defending feedbacks from participants. 3. Documentation of important points for further actions. 4. Group discussion on essentials of agriculture as a business (plans of production, keeping of financial record book, keeping the cash flow, knowing of cost of production, main cost drivers and alternatives). 5. Discuss and explore the potential business opportunities for women and the most marginalized farmers to ensure their participation and equal benefits. 6. Group presentations of their outputs and defending feedbacks from participants. 7. Documentation of important points for further consideration. 8. Group discussion on their understanding of the market system (role of brokers and traders, price variation in market systems, importance of linkages for market information, market prospects for a crop, as recommended in value chain analysis). 9. Group presentations of their outputs and defending feedbacks from participants. 10. Determination of ways to improve market system to benefiting to individual farmers and documentation of important points for further actions. 11. Presentations of individuals on their activities undertaken in between the FFS sessions. 12. Production of individual's action plan. 13. Open discussion on the whole training session of the day and recording of participants feedbacks.
December (Third week)	Module 9	<ol style="list-style-type: none"> 1. Introduction to post harvest losses, postharvest practices, storage of seeds/grains (use of airtight zero fly hermetic bags). 2. Harvesting of sample yield, yield component factors, calculation of per acre yield of groundnut. 3. Harvesting and picking up of groundnut pods.

Month	Module	Subject and Competences
		4. Harvesting and threshing of pigeon pea and calculation of per acre yield. 5. Residue management and observation on the effects of mulching on crops performances and weed growth. 6. Strengthening of structures of soil erosion prevention measures. 7. Pruning of <i>Leucaena</i> twigs at the height of 2-2.5 feet and green manuring of soil with cut pieces. 8. Review on the individual's activities and suggestions by participants 9. Open discussion and recording of opinions and suggestions from participant.
January	Module 10	Graduation Day 1. Review on the whole FFS training session by participants and their awareness on CSA and its practices. 2. Review on the awareness of participants on CA, GAP, Agroforestry, Agroecosystem Analysis-AESA, IPM, and Agriculture as a Business. 3. Development of plans of actions to undertake beyond FFS (strengthening of land management practices, caring of avocado and coffee plantation) (Yam harvest can be in January or February). 4. Lessons learned from the FFS. 5. Evaluation of training session by participants. 6. Provision of Completion Certificate to participants. 7. Ending of FFS successfully.

7. FFS Curriculum for Kyaukpadaung

Rain-fed areas: Monsoon Sesame (May planting) - Winter Groundnut (Sep)

Month	Module	Subject and Competences
April (First Week)	Pre-FFS Introductory Meeting	1. Objectives of FFS, guiding principles, FFS Farmers selection, FFS Committee formation, selection of Lead Farmer, etc. 2. Introduction of participants: Facilitator, technical specialist, participants from villages. 3. Site selection for establishing demonstration plot (in Lead Farmer's Field) also discussion and agreement on size (one acre), treatments to be included and layout of the demonstration plot.
May	Module 1	1. Concept of Climate Smart Agriculture and Climate Change effects.

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 2. Introduction to Good Agricultural Practices. 3. Concept of Conservation Agriculture- CA (Permanent Organic Soil Cover, Continuous Minimum Mechanical Soil Disturbance, Diversification of Crop Species Grown in Sequences and / or Associations). 4. Analysis of existing farming systems that affect the soil, the crop/plant, and environment from the participant's perspective (putting the points on the flipcharts) and general discussion on that (braining storming session) 5. Discussion on the forest cover in the intervention zone, especially regarding the challenges. 6. Analysis on land preparation practices, heavy tillage preparation and its adverse effects on soil erosion, soil nutrients and soil biota. 7. Concept of cropping system and cropping patterns. 8. Development of cropping pattern for groundnut, sesame and pigeon pea for monsoon as mix-cropping (sequences and spacing of individual crop) (Braining storming). 9. Concept of Agroforestry and growing of seasonal crops (groundnut/green gram/pigeon pea) in the plantations of Zee (<i>Zizyphus jujube</i>), Shaw-byu (<i>Sterculia versicolor</i>). 10. Introduction of crops that will be covered in FFS: Groundnut, Sesame, and Pigeon Pea. 11. Varietal selection of crops: e.g., Sesame – Sin Yadana-3 and Sin Yadana-14, Groundnut – Sinpadathar 11, (varietal characteristics on life-period, resilience to climate effect, drought and pest resistance, and marketable prices will be explained, and their preference will be noted down). 12. Analysis of Demo Plot soil by participants based on their empirical knowledge (texture, possible nutrient and organic matter content by their perspective). 13. Collection of soil samples for soil analysis that will be sent to soil lab to get the base line data of p^H, organic carbon and nutrient contents. 14. Site clearing of Demo Plot and mulching of soil with weed residues and rubbishes collected from site clearing (no burning of organic wastes) (Practical exercise). 15. Sowing of sesame (opening of sowing lines by plough/harrow depending on the texture of soil, application of manures and neem-cakes in the sowing lines, sowing seeds, spraying of EM in sown lines if available) (Practical exercise).

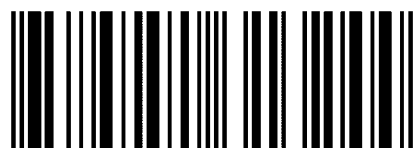
Month	Module	Subject and Competences
		<p>16. Heavy mulching of sown lines with any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise).</p> <p>17. Opinions and feedbacks from participants on the training session.</p> <p>18. Development of individual's action plans to replicate the learning from the FFS Demonstration Plot in their own farm.</p>
June	Module 2	<p>1. Occurrence of erosions in the area and consideration of prevention measures (water harvesting trenches and contour bunds, check-dams, growing of windbreak trees such as <i>gliricidia</i>, plants for replenishing organic matter such as <i>gliricidia</i>, <i>leucaena</i> and <i>daincha-Sesbania spp.</i>).</p> <p>2. Establishment of soil erosion prevention measures (digging of water harvesting trenches, mounding of contour bunds with soil collected from digging trenches, construction of check-dams) (Practical exercise).</p> <p>3. Practical demonstration on how to tend to and manage a mature <i>Gliricidia Sepium</i> tree species by observing <i>Gliricidia Sepium</i> trees available elsewhere.</p> <p>4. Preparation of home-made organic fertilizers and pesticides (EM, Indigenous Micro Organism-IMO, Fish Amino Acid-FAA, Bocashi, Tobacco-ginger-chilli-EM pesticide, etc.) (Practical exercise).</p> <p>5. Sowing of <i>leucaena</i> seeds at both sides of contour bunds and mulching sown seeds (to become hedgerows and will be cut down at the height of 2-2.5').</p> <p>6. Digging of pits for Shaw-byu (<i>Stercularia versicolor</i>) 20'x20' apart and filling of pits with top soil and organic manures</p> <p>7. Digging of pits for <i>Gliricidia</i>, 1.5' apart in twin-rows as zigzag pattern.</p> <p>8. Observation on the effectiveness of mulching on the performance of sesame and pigeon pea.</p> <p>9. Review on the individual's activities undertaken according to the plan and comments on that.</p> <p>10. Development of individual's action plans.</p> <p>11. Opinions and feedbacks from participants on the establishment of erosion prevention measures.</p>
July	Module 3	<p>1. Introduction to IPM.</p> <p>2. Survey and collection of insects and classification of beneficial insects and pests.</p> <p>3. Spraying of EM and home-made organic fertilizers and organic pesticides including neem pesticide.</p>

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> Forms of fertilizers – organic and inorganic, and their effects on soil and environment. Transplanting of <i>gliricidia</i> seedlings in twin rows as zigzag pattern at a spacing of 1.5” with East- West direction (to avoid shading on the crops if grown North-South direction). Mulching of <i>gliricidia</i> seedlings around their bases with organic residues. Transplanting of Shaw-byu in the pits already dug and filled with soil and mulching at the base after transplanted. <p>The source of tree saplings should be from an already established and functional and reliable community tree nursery source.</p> <ol style="list-style-type: none"> Discussion on how to maintain and protect tree seedlings growth. General discussion on the practices already done and recording of opinions and suggestions from participants. Review on the individual’s activities undertaken against their plans and comments. Production of individual’s action plan.
August	Module 4	<ol style="list-style-type: none"> Harvesting of sesame and calculation of yield in an acre Observation on the growth of other crop and hedgerow plants grown in Demo Plot. Observation on the effects of mulching and weed growth Participants understanding on CSA based on the practices undertaken in Demo Plot. The level of knowledge and skills of male and female farmers will be assessed, and agreement will be made on how to better involve them in the agroecosystem analysis. Review on the individual’s activities undertaken against their plans and comments. Production of individual’s action plan.
September	Module 5	<ol style="list-style-type: none"> Root nodules in pulses and use of Rhizobium innocula for seed treatment. Sowing of groundnut with no tillage in the same plot where sesame has been sown (removal of mulches done in previous session, opening of sowing lines by plough/harrow depending on the texture of soil, application of manures, neem-cakes and chemical fertilizer (if necessary with minimum level) in the sowing lines, sowing rhizobium treated seeds without, spraying of EM in sown lines if available) (Practical exercise). Heavy mulching of sown lines with sesame residues and any kind of available organic residues (crop residues and cut pieces of weed collected after weeding) (Practical exercise).

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> 4. Observation on the conditions of water harvesting in the trenches, silt deposits at the base of check-dams and situation of soil erosion in Demo Plot comparing to nearby plots. 5. Open discussion on the training session and recording of opinions and suggestions from participants. 6. Review on the individual's activities undertaken against their plans and comments. 7. Discussion on lessons learned and on how and when to start harvesting from the perennial trees included in the FFS such as Shaw Phyu in a sustainable manner. 8. Production of individual's action plan. 9. 9. Planning for exchange visits in coming session.
October	Module 6	<p style="text-align: center;">Exchange visit</p> <p>An adequate participation of women and girls in such exchange visits will be ensured.</p> <ol style="list-style-type: none"> 1. Visits to other FFS in the Township (Building up the relationship among farmer groups). 2. Observation on the progress in other FFS and making comparisons with other FFS. 3. Sharing of experiences among farmer groups. 4. Dissemination of new findings to other farmer groups. 5. General discussion on the experience during exchange visits. 6. Preparation for field day coming in next session (venue and time, temporary booth construction, selection of topics and FFS presenters, list of visitors including village authority and neighboring farmers, etc.).
November	Module 7	<p style="text-align: center;">Farmer's Field Day</p> <p>An adequate participation of women and girls in such Farmer Field Day will be ensured.</p> <ol style="list-style-type: none"> 1. Visitors observation on the performances and achievements undertaken in FFS. 2. Presentations on the activities undertaken in FFS by FFS trainees. 3. Sharing of technologies and ideas to visitors by FFS trainees 4. Presentations of FFS participants on their experiences throughout the whole school session, emphasizing on why Climate Smart Agriculture becomes important in their farming, climate change effects and resilience of crops and plants grown in the Demo Plot to the changes because of proper crop and soil management practices. 5. Contribution of opinions, ideas, comments and suggestions from visitors.
December	Module 8	<ol style="list-style-type: none"> 1. Introduction to post harvest losses, postharvest practices, storage of seeds/grains (use of airtight zero fly hermetic bags).

Month	Module	Subject and Competences
		<ol style="list-style-type: none"> Harvesting and picking up of groundnut pods. Harvesting of sample yield, yield component factors, calculation of per acre yield. Observation on the mulching effects on crop performances. Strengthening of structures of soil erosion prevention measures. Pruning of <i>leucaena</i> twigs at the height of 2-2.5 feet and green manuring of soil with cut pieces. Essentials of Agriculture as Business. Discussion and planning on recommendations from Value Chain Analysis such as market information, linkages establishment with inputs/outputs market, financial institutions. Review on the individual's activities and suggestions by participants. Open discussion and recording of opinions and suggestions from participants.
January	Module 9	<ol style="list-style-type: none"> Harvesting and threshing of pigeon pea and calculation of per acre yield. Residue management. Observation on the effects of mulching and weed growth. Open discussion on work done and recording of opinions and suggestions from participants.
February	Module 10	<p style="text-align: center;">Graduation Day</p> <ol style="list-style-type: none"> Review on the whole training session by participants and their feedbacks on awareness of Climate Change, Conservation Agriculture – CA and CSA. Finalizing of developed plans of actions to undertake beyond FFS (strengthening of land management practices, caring of soil erosion prevention measures, and nurturing of hedgerow plants). Lessons learned from the FFS. Evaluation of training session by participants. Development of individual's action plans to undertake after FFS training. Provision of Completion Certificate to participants.

ISBN 978-92-5-131324-4



9 7 8 9 2 5 1 3 1 3 2 4 4

CA3628EN/1/03.19