



# **GRET Farmer Field School experience in Northern Rakhine State of Myanmar**

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***Introduction of Farmer Field Schools (FFS), Integrated Pest Management (IPM) and System of Rice Intensification (SRI) to restore food security and sustainable livelihoods in Myanmar***

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## Executive summary

GRET (*Groupe de Recherche et d'Echanges Technologiques*) has been working in the three Townships (Maungdaw, Buthidaung and Rathedaung) of Northern Rakhine State since 1996, implementing projects aiming at improving food security and livelihood promotion of Northern Rakhine State population.

The **first Farmer Field School** was tested in **2004** rainy season for rainy rice cultivation as part of technical assistance and capacity building for Northern Rakhine State farmers. It was soon identified as one of the most suitable way to **disseminate tested innovative practices** and **promote experience sharing and mutual learning amongst farmers**. Three different kinds of Farmer Field Schools (**rainy rice, winter vegetable and summer rice**) have been, then, yearly carried out by GRET.

From Rainy Season 2004 to Rainy Season 2008, **120 Farmer Field Schools** were held in **47 different Village Tracts** involving **1805 participants**: 880 participants in Rainy Rice FFS, 523 participants in Winter Vegetable FFS, and 402 participants in Summer Rice FFS.

Farmer Field School activity was launched with the following objectives:

- To increase crop production by assisting farmers and landless to access improved technologies through season long practical field trainings
- To disseminate tested innovative practices and promote experience sharing and mutual learning among small, medium and landless farmers.
- To let the participants have the capacity to conduct farmer led experiments in groups through which the nearby farmers can learn some simple improved innovative practices
- To let some of the participants become local facilitators to enable them to conduct self-running FFSs

Over the years, GRET undertook different evolution of the FFS methodology in order to develop a specific approach toward, as much as possible, self run and sustainable FFS.

*The first FFS methodology: an important support from project and limited number of participants but wide range of experiments led by farmers at grass root level*

From 2004 to 2007, GRET has implemented FFS following the same methodology, mainly relying on a **limited number of participants per FFS** and providing an **important support from the project**. In the same time, such approach has contributed at developing **in depth agronomic researches and field experiments at grass root level with a high involvement of the farmers**. Most of important technical issues and constraints for paddy and vegetable cultivation in NRS have been studied along with the farmers over this period. This learning process was double and iterative, providing farmers with new technologies and eventually contributing deeply at increasing GRET understanding of the area (from agronomic point of view).

FFS sessions dealt mostly with **agronomic management** (System of Rice Intensification principles, water management, nursery preparation, variety selection and seed quality), **Integrated Pest Management** (and safe use of pesticides), **fertility management** (basal fertilization, balanced fertilization, compost making...) and **experiment management** (experiment design, economic analysis, and agronomic data record / harvest management).

Introduction of improved innovative technologies through FFS was carried out by the deployment of existing project **Agriculture Field Agents (AFA)** as FFS facilitators, who have been trained by both international and national agronomists for more than five years in conducting agricultural project activities in the field with farmers and were already skillful in some adaptive technologies established in NRS. Local and international agronomists together with the AFA defined a number of tentative technical sessions (themes) to be included in the season long curriculum. Agronomists developed the contents (materials) of each technical session both presumably fit for the area and suitable for AFA to animate.

*The new methodology: a way forward to self run FFS initiated by farmers themselves and supporting sustainable wider diffusion of tested improved innovative practices*

Following experience observed in the field and findings from FFS impact survey carried out by GRET, the overall FFS methodology was reviewed during the Rainy Season 2007 and a new kind of FFS was implemented starting from the Winter Vegetable season 07-08. The review of the FFS methodology was driven by the need to **decrease the high cost of FFS implementation** and ensure their **sustainability**. In the meantime, in order to scale up the number of participants and their involvement, project has decided to rely on **FFS farmer facilitators (FF)**.

Implementation of the new methodology led to a **decreasing of project support** (especially for building, land renting and fencing which were very costly), an **increasing of farmer involvement** and **sense of ownership**, a better **capacity building** at village level with identification and promotion of farmer facilitators. Step by step the animation of the FFS and the group of farmers has shifted from the GRET AFA to the FFS FF.

*Impacts, lessons learnt and constraints as a conclusion...*

Based on the findings of the impact assessment carried out by GRET in 2007, it can be pointed out that FFS has been a powerful tool to **improve paddy yields and crop quality**. Besides, it has promoted **farmer capacity building by group work approach** and **sharing of the knowledge amongst farmers**.

From a technical point of view, **SRI and the use of the weeder** was seen as the major knowledge farmers got from the FFS. Then, other main “ideas or new practices” said to be learnt by the participants through the FFS were linked either to the **soil fertility management** or to **plant protection**. FFS has deeply contributed at promoting various aspects of crop production such as: SRI, variety selection, use of good quality seeds, Fertility management, some agronomic management (spacing, transplant method, weeding and water management), field pest and disease management with safe use of pesticides, Yield measurement and economic benefit calculation.

Beyond technical capacity building and dissemination of tested innovative practices, FFS has played an important role in **empowering farmers, creating group cohesion and promoting some active local facilitators**. Besides, continuous encouragement to actively participate greatly improves the **confidence of farmers** to express his views and ideas to others, the presentation skills and the capacity to find out the local solution in group brainstorming approach.

As far as constraints are concerned, **Northern Rakhine State context** is very specific and, in itself, generates some constraints regarding the implementation of FFS such as **gender** (religious constraints preventing involvement of women in FFS), high level of **illiteracy in Myanmar language amongst FFS participants**, **high limitation of NRS population mobility** preventing exposition to new ideas and approaches of contemporaries.

Then, although the **first FFS approach** implemented has been very effective and significantly beneficial to the farmer participants in yield improvement, better quality of the crops, and higher income, it has developed a **complete farmers’ dependency on the project assistance** (both technical and financial) and a **strong lack of “sense of ownership”** in some groups, motivation of the farmers to exert their own effort / contribution in the activity being spoiled by the total free support.

The evolution of FFS approach with fewer topics, most relevant to the specific area, less number of sessions, less number of experiments in the season in order to enable farmers to find more time to work in their own field or other activities has contributed to alleviate these constraints. But, this **methodology evolution is not yet finished** in order to reach full sustainability and replicability. Some costs and inputs are still borne by the project as well as incentive for FFS FF, and facilitation by project staff is still needed.

Lastly, a **cost-effective way** to sustain such extension approach and to secure the minimum agricultural services for small farmers is by building and empowering **local community based agricultural development institutions**. In the case of Northern Rakhine State, such building capacity is part of GRET strategy and some local institutions are already in place. It would contribute at sustaining an access to agriculture innovations, practices and knowledge and to develop both contacts with outside NRS agriculture and rural development stakeholders, and appropriate, replicable and low cost methodologies and agriculture activities. Support to such local institutions is still under process and unfortunately faces currently important **lack of funding** issues.

# GRET Farmer Field School experience in Northern Rakhine State of Myanmar

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## 1. Background and brief overview of Farmer Field School activity in Northern Rakhine State of Myanmar

GRET (*Groupe de Recherche et d'Echanges Technologiques*) has been working in the three Townships (Maungdaw, Buthidaung and Rathedaung) of Northern Rakhine State since 1996, implementing projects aiming at improving food security and livelihood promotion of Northern Rakhine State population.

Northern Rakhine State is a strip of flat plain lying between Bay of Bengal and Western Yoma with high annual rainfalls. Rain fed low land rice is grown as a major crop. After the rainy season, a small amount of upland crops, such as sesame, groundnut, maize and, wherever fresh water supply is available, some vegetables and summer rice are grown. Most farmers are very poor and landless<sup>4</sup> facing food insecurity because of high return payment for rented land and low crop yields due to limited access to improved production technologies.

Starting from 2004, under *Agriculture and Food Security project* (2002-2005), and mostly under *Food Security and Poverty Alleviation project* (2006-2008), both funded by European Commission, GRET has developed and widely implemented agriculture extension activities. Farmer Field School (FFS) has been soon identified as one of the most suitable way to **disseminate tested innovative practices** and **promote experience sharing and mutual learning amongst farmers**.

The **first Farmer Field School** was tested in **2004** rainy season for rainy rice cultivation as part of technical assistance and capacity building for Northern Rakhine State farmers. As land renting does not cost much during dry season, the project has also tested winter vegetable and summer rice FFS in order to support poor farmers and contribute at filling the food gap (which occurs mostly at the beginning of the rainy season). These three different kinds of Farmer Field Schools (**rainy rice, winter vegetable and summer rice**) have been, then, yearly carried out by GRET.

Farmer Field School activity was launched with the following objectives:

- To increase crop production by assisting farmers and landless to access improved technologies through season long practical field trainings
- To disseminate tested innovative practices and promote experience sharing and mutual learning among small, medium and landless farmers.
- To let the participants have the capacity to conduct farmer led experiments in groups through which the nearby farmers can learn some simple improved innovative practices
- To let some of the participants become local facilitators to enable them to conduct self-running FFSs

From Rainy Season 2004 to Rainy Season 2008, **120 Farmer Field Schools** were held in **47 different Village Tracts** involving **1805 participants**: 880 participants in Rainy Rice FFS, 523 participants in Winter Vegetable FFS, and 402 participants in Summer Rice FFS.

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<sup>4</sup> Average of 68% of the Muslim population is landless (and up to 90% for the returnees) according to “*Strategic assessment and evaluation of assistance to NRS*”, February 2007, EU report.

The table below shows the FFS carried out by the projects all over the years 2005 up to 2008:

| Year    | Season | Crop         | Number of Village Tracts | Total Beneficiaries | Cumulative Total |
|---------|--------|--------------|--------------------------|---------------------|------------------|
| 2005-06 | Winter | Winter crops | 5                        | 87                  | 304              |
| 2005-06 | Summer | Rice         | 5                        | 69                  | 373              |
| 2006    | Rainy  | Rice         | 16                       | 194                 | 567              |
| 2006-07 | Winter | Winter Crops | 10                       | 125                 | 692              |
| 2006-07 | Summer | Rice         | 7                        | 84                  | 776              |
| 2007    | Rainy  | Rice         | 18                       | 227                 | 1003             |
| 2007-08 | Winter | Winter Crops | 14                       | 272                 | 1275             |
| 2007-08 | Summer | Rice         | 11                       | 206                 | 1481             |
| 2008    | Rainy  | Rice         | 22                       | 324                 | 1805             |

The objectives of the following parts of this paper are first to present the different steps and evolution of the methodology followed by GRET over the years to implement FFS in Northern Rakhine State and to develop a specific approach toward, as much as possible, self run and sustainable FFS. Then, one will focus especially on the lessons learnt and the impacts of FFS on paddy yield improvement, other crops development and introduction of new technologies, and on the constraints (main difficulties encountered for implementation, related or not to the specific context of Northern Rakhine State).

## 2. Original FFS methodology and its evolution toward self-run FFS

*a. The first FFS methodology: an important support from project and limited number of participants but wide range of experiments led by farmers at grass root level*

From 2004 to 2007, GRET has implemented FFS following the same methodology, mainly relying on a **limited number of participants per FFS** and providing an **important support from the project**. In the same time, such approach has contributed at developing **in depth agronomic researches and field experiments at grass root level with a high involvement of the farmers**. Most of important technical issues and constraints for paddy and vegetable cultivation in NRS have been studied along with the farmers over this period. It has provided a wide range of experiments and field trials suitable and relevant for NRS context without preventing farmers to raise other issues according to their own specific requests and constraints / difficulties. This learning process was double and iterative, providing farmers with new technologies and eventually contributing deeply at increasing GRET understanding of the area (from agronomic point of view).

### Overview of FFS modalities and contents

The number of sessions ranged from 15 to 20 in Rainy rice FFS over 7 months (June-December), from 16 to 25 sessions in Winter Vegetable FFS over 5 to 6 months (October-March), from 15 to 18 sessions in Summer Rice FFS over 5 months (December-April).

FFS sessions dealt mostly with **agronomic management** (System of Rice Intensification principles, water management, nursery preparation, variety selection and seed quality), **Integrated Pest Management** (and safe use of pesticides), **fertility management** (basal fertilization, balanced fertilization, compost making...) and **experiment management** (experiment design, economic analysis, and agronomic data record / harvest management). Most important topics addressed by FFS according to the crop season can be summarized as below:

#### *Rainy rice FFS*

- Nursery and Transplanting Management
- Variety and Seed selection
- Pest & Disease and Fertility management

- System of Rice Intensification (SRI)

#### *Winter Vegetable FFS*

- Introduction of high valued winter vegetable and new practices (cabbage, onion seed to bulb and bulb to seed cultivation, watermelon, potatoes virus free...)
- Improved crop management for vegetables
- Pest and disease management

#### *Summer paddy FFS*

- Water Management and Weed control
- Pest Management
- System of Rice Intensification (SRI)

Each session gathers around 12 participants per FFS which mostly are small (0.4-2 acres) and medium farmers (2-4 acres). Indeed, the overall objective of such extension activity being introducing new technologies and agriculture practices for a general improvement of the food security and poverty alleviation, GRET is of the opinion that it is important to involve all kind of farmers who have the capacities to disseminate the knowledge and play a key role in the replication process. Such activity relying on farmers' experiences' exchanges, it is also important to promote meetings with Landless, Very Small Farmers (up to 0.4 acre), Small Farmers and Medium Farmers. It is part of the sustainability process.

Lands rented by the project for each FFS range from 1.2 to 2 acres in rice FFS, and 0.6 to 1.2 acre in winter vegetables FFS. All costs are supported by the project and participants benefit from the harvest of the FFS (equal sharing amongst the participants).

#### Preliminary steps for FFS implementation and capacity building of animators / facilitators:

To promote the introduction of improved innovative technologies, GRET has deployed existing project Agriculture Field Agents (AFA) as FFS facilitators. They have been trained by both international and national agronomists for more than five years in conducting agricultural project activities in the field with farmers and were already skillful in some adaptive technologies established in NRS.

While the first FFSs' were conducted, local and international agronomists together with the AFA defined a number of tentative technical sessions (themes) to be included in the season long curriculum. Agronomists developed the contents (materials) of each technical session both presumably fit for the area and suitable for AFA to animate. Then, the AFA were monthly trained for the tentative sessions planned for the month.

Regarding facilitation skills, GRET AFA have received initial local workshop and training on facilitation. Then, an international training of trainers has been organized with the Cambodian Center for Study and Development in Agriculture (CEDAC). Afterwards, they developed and improved their skills during practical sessions as occasionally corrected and advised by project agronomists.

GRET Agriculture Field Agents (AFA) are originally from the areas where the project activities are implemented and, thus, are in charge of assessing the suitable locations for establishment of FFS taking into consideration following criteria: farmers' request to open FFS, needs for the area, availability of land to be rented, suitable place for the FFS building, actual motivation of farmers to participate... Eventually, such location are evaluated and confirmed (or not) by GRET Senior Agronomists. Before the beginning of a season, a group of participants to the FFS is formed in every selected village tract, regular (weekly) sessions of meetings facilitated by GRET AFA are organized through which some major issues and constraints in crop production are discussed, some tested improved innovative practices are introduced and local experiences are shared in mutually learning style.

### Implementation stages of the FFS

| <b>Stages</b>                                  | <b>Activities</b>  | <b>Actors</b>  |
|--|--|--|
| Getting started                                | - Setting the locations (village tracts) of FFSs and the target number of participants for the whole season during the seasonal workshop done at GRET office level.  | Determined together with Agriculture Field Agents (AFA), Technical Coordinator and Senior Agronomists        |
| Forming groups of participants for each school | - Local meeting organized by an Agriculture Field Agent to explain the objectives of the FFS, the clarification on what to contribute by the farmers and what by the project and to form one or two groups for one FFS in a village tract.   | Facilitated by the AFA and conducted by local farmers  |
| Preparation of school opening                  | - Renting suitable land chosen with farmers and FFS construction/renovation<br>- Preparation of learning hands out and other material supports   | Done by AFA with the participants<br>Prepared by agronomists and provided by logistics                       |
| Conducting Sessions                            | - Except the first sessions where some common agreements and regulations are set up, every technical session (theme) of the week is determined by the participants depending on the growth stage of the crop, the problem facing and field work prevailing at the time.<br>- Preparation of the program of a session: review of the last week discussion, ice breaking, brief discussion of the theme of the day, field visit, tea break, discussion about the field observation and analysis, planning the week operations, summary of the day session, and next session organization | Determined by participants as assisted by AFA<br><br>Prepared by AFA as occasionally assisted by agronomists |
| Conducting field trials                        | - Identification of the main problems of the area and setting of some specific field trials together with a set of agreed treatments   | Participants and AFA as occasionally validated by agronomists  |
| Result and Analysis                            | - Season long observations and record keeping<br>- Analysis of the results (both technical & economic)<br>- Summary of participants' findings  | Recorded by AFA<br>Analyzed by participants as facilitated by AFA  |
| Sharing experience and knowledge               | Conduction of field day and exchange visits among other FFS participants and other nearby farmers.   | Organized by corresponding AFA of the area to exchange   |

At the end of every cropping season, a workshop is organized at project level in order to assess all the results (both agronomic and economic) from the different FFS implemented by the AFA. Main achievements and satisfaction of farmers are deeply discussed as well as major constraints, failures in order to plan and adjust the FFS for the next season.

*b. The new methodology: a way forward to self run FFS initiated by farmers themselves and supporting sustainable wider diffusion of tested improved innovative practices*

At first, a request from farmers confirmed by the impact assessment... and fitting with overall objectives of the project (sustainability and replicability)

By the end of 2006, a motivated group of farmers from Rathedaung Township, well guided and assisted by the local GRET AFA, has established the first self run FFS. The main principle of such kind of FFS is that it relies on the willingness of the farmers to continue experimenting new varieties, new practices and setting up new agronomic trials. The GRET AFA provides technical guidance from time to time, mainly at the beginning for the experiment design and project decreases its support by lowering the input provision. As far as the land renting, the group formation and the animation of the sessions are concerned, farmers organize themselves locally. Lastly, the building used for such FFS is an old FFS building handed over to the community by the project.

However, it has to be mentioned that this area, unlike other locations in NRS, benefits from less constraints over the land access, and group of farmers presents higher social cohesion and sense of ownership as well as willingness to undertake their own experiments.

Along with this first attempt of implementing self run FFS, results from FFS impact study, carried out by GRET in early 2007, has shown the interest of farmers to develop new kind of FFS which would involve more participants and rely on their contribution (especially for the land renting).

Thus, the overall FFS methodology was reviewed during the Rainy Season 2007 and a new kind of FFS was implemented starting from the Winter Vegetable season 07-08. This latter was again revised after summer paddy season 2008 in order to establish the latest FFS methodology. It aimed at involving a **higher number of participants, using a simpler and cheaper FFS building, focusing on fewer but important agriculture issues and relying on more participation from farmers.**

It is important to note that these reviews of the FFS methodologies took place also in the framework of the phasing out strategy of the GRET project. Indeed, support to FFS activities has been finished by December 2008 with the end of the Food Security and Poverty Alleviation project run by GRET in NRS. As it will be described in the last part of this presentation, FFS had an important impact in disseminating new techniques and improving rice cultivation as well as vegetable cultivation. Thus, it was really important to ensure before the end of the project, as much as possible, the setting up of low cost and self run FFS, established by farmers themselves at village tract level.

#### Different steps of methodology review and implementation of new kind of FFS

The review of the FFS methodology was driven by the need to decrease the high cost of FFS implementation and ensure their sustainability. Moreover, in order to scale up the number of participants and their involvement, project has decided to rely on FFS farmer facilitators (FF).

Implementation of FFS farmer facilitators (FF) has always been an objective of the project but faced the difficulties to identify and train properly such local relay. At the beginning, most farmers (even tentative facilitators) were found poor in organizing time, planning and scheduling activities, and animating sessions (how to settle the disputes, how to trigger the brain storming condition, how to persuade the passive participant to become active). Animating requiring certain skills such as communicative skills, it was decided to select FF within most active former FFS participants and to associate them to the AFA (as assistant) in the animation of the FFS for 1 or 2 cropping seasons. Besides, specific trainings were also provided by the project agronomists and AFA.

As project used to fully support the implementation of the FFS, it was decided to change the approach in two times. First, during the winter vegetable FFS 2007-200 and the summer paddy FFS 2008, the project has introduced the following changes summarized in the table below:

|   | <b>1<sup>st</sup> methodology<br/>(2004-2007)</b>  | <b>2<sup>nd</sup> methodology<br/>(winter and summer 2007-08)</b>   | <b>3<sup>rd</sup> methodology<br/>(rainy season 2008)</b>  |
|---|--|---|--|
| <b>Participants per FFS</b>                 | 12 participants / FFS / village tract or hamlet  | 3 groups of 10 farmers / FFS at village tract / Hamlet level  | 4 groups of 10 farmers / FFS at village tract / Hamlet level   |
| <b>FFS building</b>                         | Bamboo building with thatched roof fully provided with agri-tools, office supplies, insect collection box, scissors, insect catching net, magnifying hand lens, mat nursery frame, SRI weeder, Steel sprayer, plastic sprayer... | Light bamboo open shelter with thatched roof provided with basic materials for FFS animation (posters and other learning materials) or when possible rehabilitation of former FFS handed over to the community                              | Light bamboo open shelter with thatched roof provided with basic materials for FFS animation (posters and other learning materials) or when possible rehabilitation of former FFS handed over to the community |
| <b>Project support and incentive</b>        | Full support for FFS building construction, land renting, fencing, seeds and other inputs (fertilizers, pesticides...) FFS harvest shared equally amongst the participants   | Full support for building construction or rehabilitation (much cheaper), seeds, fertilizers and pesticides, Half support from the project for land renting and fencing  | No support for land renting and fencing as farmers rely on their own plots<br>15 kg of urea and 7.5 kg of TSP / participant<br>1000 MMK / session provided to the FFS FF                                       |
| <b>Animation</b>                            | AFA with support from project agronomists<br>1 session / week animated by AFA  | AFA with support from one FFS farmer facilitator<br>1 session / week at FFS building level for the 3 groups facilitated by the AFA  | FF FFS with support from AFA<br>1 session per month animated by AFA, 3 sessions / month animated by FFS FF   |
| <b>Experiment design and FFS curriculum</b> | 15 to 20 sessions in average covering a wide range of experiments and improved practices<br>Experiments selected and designed by farmers and AFA   | About 15 sessions focusing on specific experiments according to each group of participants interests<br>4 experiments / groups in average selected and implemented by farmers with assistance of AFA  |  |
| <b>Knowledge sharing</b>                    | Field day with surrounding farmers   | Along with field days involving surrounding farmers, exchange visits and common meetings with the different groups are used in order enhance the knowledge and experience sharing as well as to demonstrate other experiences to each group |  |

In total, **708 farmers** participated to **new methodology FFS** (both 2<sup>nd</sup> and 3<sup>rd</sup> one). It was implemented in 11 different Village Tracts for winter vegetable FFS (236 participants), 8 Village Tracts for summer paddy FFS (172 participants) and 20 Village Tracts for rainy rice (300 participants). The multiplier effect was considerable and feedbacks from farmers were highly positive.

From the 1<sup>st</sup> to the 3<sup>rd</sup> methodology, it is important to notice a **decreasing of project support** (especially for building, land renting and fencing which were very costly), an **increasing of farmer involvement** and **sense of ownership**, a better **capacity building** at village level with identification and promotion of farmer facilitators. Indeed, step by step the animation of the FFS and the group of farmers has shifted from the GRET AFA to the FFS FF.

One can notice that such **methodology evolution** is **not yet finished** in order to reach full sustainability and replicability. Some costs and inputs are still borne by the project as well as incentive for FFS FF, and facilitation by project staff is still needed. Besides, it has to be taken into consideration that due to very specific context of NRS (important proportion of landless farmers, who rent land and swing between cultivation and casual labor, and small farmers with high vulnerability status and low financial capacity), and the objective of targeting such farmers' population in order to improve their food security and from a general point of view their agriculture production, project support and farmer incentive is an important issue.

### 3. Impacts, lessons learnt and constraints as a conclusion...

Based on the findings of an impact survey about FFS participants and non participants carried out by GRET in 2007<sup>5</sup>, one can point out the following **lesson learnt and positive impacts** of the FFS approach:

- The high majority of the participants have shown a **deep satisfaction** regarding the activity, the innovations or techniques they learnt and the support provided by GRET. Participants feel very happy with their new practices and techniques which led to **improvement / increasing in their yields and in the quality of their crops**. They did appreciate a lot to **work in group** and to **share the knowledge amongst each others**. The findings show as well that participants do continue to work in group after attending the FFS and try to organize the farmers in their own area.
- From a technical point of view, it is quite impressive to point out that **100% of the participants** who attended FFS in rice production quoted the **SRI and the use of the weeder** as the major knowledge they got from the FFS. Then, the 3 main “ideas or new practices” said to be learnt by the participants through the FFS are linked either to the **soil fertility management** for nearly 60% of the participants (compost making nearly 35% and balance fertilization 25%) or to **plant protection** (pest and disease control, 46.8%).
- Regarding all the innovations or techniques introduced through the FFS and the impacts (improvements or changes) they could have brought, more than **75% of the participants** said that they manage **to get more yield** thank to them. For nearly **30%**, it increased also the **quality of their crops**. Then, for nearly **15%** of the participants, the new techniques or practices did have a **positive impact on their income and the cultivation cost** (decreasing of the cost for fertilization and labor).

It is also worth mentioning the fact that such agriculture extension activity highly contributed to an overall **increasing of the paddy production at the household level**, which benefits directly to the most vulnerable of them. Thus, a survey from 2004<sup>6</sup> has pointed out that the **average paddy yield was 2 t/ha in rainy season** with a constant yearly increasing of the production of about 4%. In 2008, based on project records and close follow up of agriculture activities, it has been shown that the average paddy yield in rainy season has deeply increased and ranges from **3 to 3.5 tons/ha**. This improvement is mostly explained by a **better access to means of production and basic agriculture services**.

Thus, FFS implementation in Northern Rakhine State has deeply supported farmers to:

- Introduce new available species/varieties and test innovative technologies suitable for the local condition
- Conduct research trials on some small plots of their cultivated fields
- Understand basic concept of crop production
- Analyze the field observation and results
- Build up their confidence in finding the local solution
- Improve their communication skills
- Recognize the importance of exchanging knowledge and experience
- Undertake economic analysis as well as field trial analysis

From a technical point of view, FFS has contributed at promoting various aspects of crop production:

- Systems of rice intensification (SRI)
- Variety selection
- Use of good quality seeds
- Improved methods of nursery preparation
- Fertility management and Balance fertilizer application
- Some agronomic management (spacing, transplant method, weeding and water management)
- Field pest and disease management with safe use of pesticides
- Yield measurement and economic benefit calculation

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<sup>5</sup> Farmer Field School Impact survey (participants and non participants), July 2007, GRET-NRS: Survey addressing participants from 24 GRET FFS from Rainy Season 2004 to Summer Season 2005-06 (368 participants). 26% of the total participants have been individually interviewed.

<sup>6</sup> undertaken by S. Royer in *local economy of paddy in NRS*, GRET mission report, 2004

Lastly, it is worth saying that beyond technical capacity building and dissemination of tested innovative practices, FFS has played an important role in **empowering farmers, creating group cohesion and promoting some active local facilitators**. Besides, continuous encouragement to actively participate greatly improves the **confidence of farmers** to express his views and ideas to others, the presentation skills and the capacity to find out the local solution in group brainstorming approach.

Main constraints of FFS implementation related to both the specificity of the NRS context and the methodology approach:

First of all, as presented previously in this presentation, the Northern Rakhine State context is very specific and, in itself, generates some constraints regarding the implementation of FFS.

Thus, **gender**, and more especially participation of women, remains a serious issue in FFS as they are very often prevented to access such FFS due to **religious constraints**. Experiences of mixed FFS (especially for winter vegetable cultivation) with physical partition in the building to separate women participants from men participants have shown very good impact and results. However, such experience is very difficult to replicate as it relies mostly on local religious leaders who tolerate or not such activities mixing men and women.

As the local farmer participants do **not have script invented for their own dialect** and most of them are **illiterate in Myanmar language** to speak or read either, the improved innovative practices with the specific required facts developed by them cannot be easily put into a booklet/pamphlets for future review by them and/or dissemination to others unless graphics familiar to them are major composition of the booklet. Therefore the **channel of dissemination of the improved practice is solely dependent on the actual arrival to the field sites and verbal exchange of the knowledge** during meetings organized by the project.

**Mobility** to outside Northern Rakhine State of the animators / facilitators is **not easy** and, as a consequence, they are **poorly exposed to new ideas and approaches of contemporaries**.

Then, as far as the FFS methodology is concerned, although the **first FFS approach** implemented has been very effective and significantly beneficial to the farmer participants in yield improvement, better quality of the crops, and higher income, it has developed a **complete farmers' dependency on the project assistance** (both technical and financial) especially regarding land renting and fencing, FFS building construction and inputs provision (seeds, fertilizers, pesticides) costs.

Beyond the high cost in term of materials and inputs, such kind of FFS being directly and weekly animated and facilitated by GRET Agriculture Field Agent, required important man power and time. This "full support by project" approach has led to a **strong lack of "sense of ownership"** in some groups, motivation of the farmers to exert their own effort / contribution in the activity being spoiled by the total free support. Lastly, lands for FFS practical field experiments being rented, lack of availability of such land could sometimes restrict the location of the FFS.

Project has, then, modified its approach toward **less project support** (especially for building, land renting and fencing which were very costly), **more farmer involvement and sense of ownership**, and **better capacity building** at village level with identification and promotion of farmer facilitators. The evolution of FFS approach is meant for developing FFS with fewer topics, most relevant to the specific area, with less number of sessions, less number of experiments in the season in order to enable farmers to find more time to work in their own field or other activities. This **methodology evolution is not yet finished** in order to reach full sustainability and replicability. Some costs and inputs are still borne by the project as well as incentive for FFS FF, and facilitation by project staff is still needed.

Following table is summarizing the main positive impacts and limits of the different methodological approaches implemented by GRET over the years:

|  | 1 <sup>st</sup> methodology<br>(2004-2007)   | 2 <sup>nd</sup> and 3 <sup>rd</sup> methodologies<br>(2007-2008)   |
|--|--|--|
| Positive impacts / success                                       | <ul style="list-style-type: none"> <li>- <b>In depth agronomic researches and field experiments</b> at grass root level with a high involvement of the farmers</li> <li>- <b>Double and iterative learning process</b> providing farmers with new technologies and contributing at increasing project understanding of the area</li> <li>- FFS as <b>demonstration experiments</b> at village level</li> </ul> | <ul style="list-style-type: none"> <li>- <b>Higher number of participants</b> through implementation of <b>FFS Farmer Facilitators</b></li> <li>- Lower project support (land renting and input provision) and better involvement of farmers (<b>higher sense of ownership</b>)</li> <li>- <b>Farmer capacity building</b> with shifting of FFS animation from project AFA to Farmer Facilitators</li> </ul> |
| <b>Empowerment of farmers / self-confidence / Group cohesion</b> |  |  |
| Constraints / limits   | <ul style="list-style-type: none"> <li>- <b>High cost</b> in material, inputs, man power and time for the project</li> <li>- <b>Limited number</b> of participants per FFS</li> <li>- Complete <b>farmers' dependency</b> on the project assistance</li> <li>- Strong <b>lack of "sense of ownership"</b> in farmers' group</li> </ul>   | <ul style="list-style-type: none"> <li>- Even if self-run mechanisms for FFS animation and implementation have been put in place, <b>project still needs to bear some costs</b> (FF incentive, animation support through project AFA...)</li> <li>- <b>Local context</b> preventing full sustainability of FFS as well as full participation of all farmers (women for instance)</li> </ul>                  |

Lastly, it worth saying that a **cost-effective way** to sustain such extension approach and to secure the minimum agricultural services for small farmers would be to build and empower **local community based agricultural development institutions**.

In the case of Northern Rakhine State, such building capacity is part of GRET strategy and some local institutions are already in place. It would contribute at **sustaining an access to agriculture innovations, practices and knowledge and to develop both contacts with outside NRS agriculture and rural development stakeholders, and appropriate, replicable and low cost methodologies and agriculture activities**. Support to such local institutions is still under process and unfortunately faces currently important **lack of funding** issues.

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