

PART II: The Graduate FBOs and the Independent FBOs

As explained in the Introduction, continuous support and guidance should be provided to the FBOs which have gone through the FFS in the initial season of intervention to ensure accurate application and sustainable adoption of the recommended techniques of the TP-R. This Part II describes in details the contents and modalities of the continuous support for those FBOs.

1. Support Programme for the Graduate FBOs

The FBOs who have successfully graduated from the FFS, with good performance in terms of yield as well as the commitment and collaboration among the members, will continuously be supported in the next season. They are expected to be more conversant with the recommended techniques through scaling up of the TP-R application. At the same time, they will be trained on the seed multiplication techniques and encouraged to multiply the seed to be used in the following season. They are also expected to disseminate the TP-R to other FBOs and farmers in the locality by actively inviting them to the activities in the group farm. The support programme for the Graduate FBOs is composed of the following:

1-1. Facilitation for site selection

As the FBO has already been identified, they will be contacted before the cropping season to confirm their willingness to continue and scale up with the application of the TP-R. Once their commitments are confirmed, the FBOs will secure the land for the demonstration farm in their group farm in the IVS. The area of the demo farm should be larger than the FFS demo plot but with a limitation up to a maximum of one (1) acre. Some FBO may want to establish a larger farm, but the initial scaling up should not be too ambitious because whether this first scaling up would be successful or not will definitely affect the continuous adoption of the TP-R in future.

If an FBO need to rent a land to set up the demo farm, it is strongly recommended for the FBO to have clear understanding and agreement with the landowner on the payment for the land, preferably in writing. Without such an agreement, there may be risks of dispute after harvesting, as some landowner may start demanding a lot after seeing a bumper harvest from the TP-R demo farm. It may be reasonable for both parties if the payment to the landowner is set in percentage of the harvested paddy, not the fixed amount.

1-2. Explanatory meeting

After confirming the availability of the demo farm, an explanatory meeting will be organized before the season's activities will start, in which the following issues are to be discussed, confirmed, and/or agreed.

- Confirmation of the land for the TP-R demo farm (location, size, plot layout, agreement with the landowner on payment, etc.)
- Availability and conditions of the tools and equipment that were provided for the FFS in the

previous season

- Confirmation of the membership and internal rules (by-laws) regarding the participation in the group work and penalty for absence
- Internal rules (by-laws) on how to use the proceeds from the TP-R demo farm, including how to share them among the members
- Provision of input support for the activities of the TP-R demo farm (seed, fertilizer, additional tools, etc.)
- Roles and responsibility of the extension staff
- Responsibilities of the leaders and members of the FBO
- Cropping calendar for the season's activities

It is important to emphasize in this explanatory meeting that the provision of input support is "one-go," thus that the FBO has to manage to acquire necessary inputs by their own after the current cropping season.

In addition, the FBO should clearly understand that the dissemination of the TP-R to the other farmers by inviting the representatives of the neighboring FBOs to the activities in the demo farm is an obligation of the FBO and that it is a very important condition for the FBO to receive the support as the Graduate FBO.

1-3. Signing of MOU and provision of production inputs

Similar to the case of FFS, a Memorandum of Understanding (MOU) should be signed between the FBO and the extension authorities, in which all the requirements, provisions, roles to be played and responsibilities to be borne by extension staff and the FBO farmers, and other points of concerns are clearly stipulated, based on the discussions and confirmation at the explanatory meeting.

After signing of the MOU, the date of the commencement of the farming activities in the TP-R demo farm will be determined when a refresher training on the TP-R with a new set of techniques for seed multiplication will be conducted as explained in the section 1-4 below.

Box 5 below is a sample of the MOU for the Graduate FBO.

Box 5: Sample format of the MOU on the support to the FBO for the Graduate FBOs



**MEMORANDUM OF UNDERSTANDING
ON THE SUPPORT TO FARMER BASED ORGANIZATION
BETWEEN
(Name of the FBO)
AND
MINISTRY OF AGRICULTURE AND FORESTRY (MAF)**

This Memorandum of Understanding is made to clarify the role of each of the concerned parties regarding the support to the FBO (name of the FBO) (hereinafter referred to as "the FBO") in (name of the village) Village, Block (block number), (name of the district) District.

1. Objective

The Ministry of Agriculture and Forestry (MAF) aims to disseminate the Technical Package on Rice Production (TP-R), a package of improved techniques and recommendations of rice production, to the FBO farmers cultivating rice in Inland Valley Swamps (IVS) in (name of the district) Districts.

2. Position of the FBOs supported

The FBOs supported under this MOU are those who graduated from the Farmer Field School on the TP-R conducted in (the year of FFS) and are expected to be a showcase for other FBOs as well as for extension workers to exhibit the effects of the TP-R and to play a vital role in disseminating knowledge and techniques of the TP-R among farmers in the future.

3. Contents of support

The supports of MAFFS and JICA-SRPP to the FBO are:

- a) Supply of seeds and fertilizer for the TP-R Demo Farm to be set up in the group farm of the FBO, the area of which shall be determined, after confirmation on the water control conditions, within a maximum range of one (1) acre,
- b) Provision of the refresher training on the TP-R which includes additional techniques of seed multiplication, and,
- c) Monitoring throughout the cropping season.

The provision of inputs shall be limited to this main season in (year of support) only, and the FBO is expected to manage the resource to continuously secure the necessary inputs for coming seasons, for which some guidance on financial / resource management shall also be provided by MAF.

4. Roles of each party concerned

4.1 The member farmers of the FBO are to:

- (1) Establish the TP-R Demo Farm in the FBO's group farm where all of the TP-R recommendations will be practiced (with clear agreement with the landowner on the payment after harvesting if the land of Demo Farm is rented) ,
- (2) Maintain the Demo Farm in good conditions to be able to control and manage water so that the TP-R can realize its maximum effect,

- (3) Set up a seed multiplication plot within the TP-R Demo Farm and produce the quality seeds for coming seasons,
- (4) Participate in the farming activities in the TP-R Demo Farm on the designated days of the group work on regular basis, following all of the TP-R recommendations in the main season in (year of support) and onward, the attendance to which shall duly be recorded by the executive members of the FBO,
- (5) Discuss and establish the rules among the members regarding the penalty for the absence in the group work to be conducted in the TP-R Demo Farm,
- (6) Improvise an internal mechanism to jointly plan proper utilization of proceeds from the Demo Farm as well as to secure necessary inputs (fertilizer in particular) for continuous adoption of the TP-R in the future,
- (7) Invite the representatives of neighboring FBOs to the FBO's group work to disseminate the TP-R,
- (8) Record and report the attendance of and degree of adoption of the TP-R by the representatives of neighboring FBOs,
- (9) Apply the techniques of the TP-R to the individual farms, and,
- (10) Allow MAF to take photographs and/or videos of the FBO members during the Demo Farm activities and to use them for the purposes of further dissemination of the TP-R, reporting, and public relations.

4.2 MAF is to:

- (1) Procure and provide fertilizer and seed rice to the FBO farmers,
- (2) Conduct the refresher training for the FBO including the additional techniques of seed multiplication,
- (3) Regularly visit the TP-R Demo Farm as well as the seed multiplication plot of the FBO to monitor and supervise the farming activities and the growth of rice
- (4) Facilitate the FBO to disseminate the TP-R to the representatives of the neighboring FBOs throughout the cropping season,
- (5) Provide guidance to the FBO on the financial/resource management to secure input (fertilizer in particular) for future adoption of the TP-R, and,
- (6) Conduct yield survey at harvest time.

Following the above terms and conditions, I endorse my signature below in conformity to this Memorandum.

Name
Group Head
The FBO
Date:

(name of the extension staff)
MAF- (name of the district) District
Date:

(name of the BES)
BES, MAF- (name of the district) District
Date:

(name of the DAO)
District Agricultural Officer
MAF- (name of the district) District
Date:

1-4. Refresher training on the TP-R with introduction of seed multiplication techniques

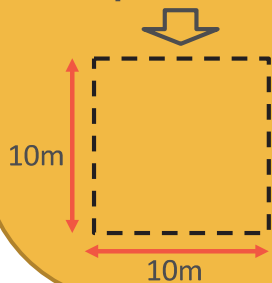
At the beginning of the season's activities, a refresher training on the TP-R with introduction of seed multiplication techniques will be conducted in line with the extension material below.

The TP-R Demonstration Farm

The TP-R Demonstration Farm



Seed Multiplication Plot



1. The TP-R Demonstration Farm

Important message:

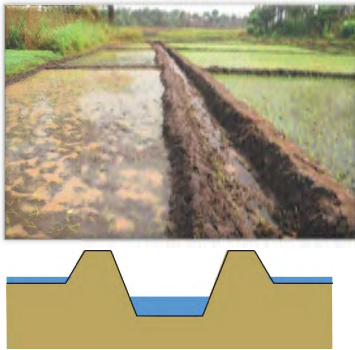
- The Graduate FBOs are expected to demonstrate the TP-R in a larger scale to disseminate the recommended techniques and showcase the effectiveness of the techniques.
- The Graduate FBOs are thus supported by SRPP in this main cropping season 2021 with some inputs to cultivate rice in the TP-R Demonstration Farm (Demo Farm) to be set in their group farm. The input support, however, is provided only once in this season, and the FBOs should manage themselves to secure the inputs to continuously cultivate rice with the TP-R for coming seasons.
- The Graduate FBOs are also taught about seed multiplication, and they have to set up a small seed multiplication plot within the TP-R Demo Farm, so that they would be able to secure the quality seed to be used in coming season.

How to facilitate the session:

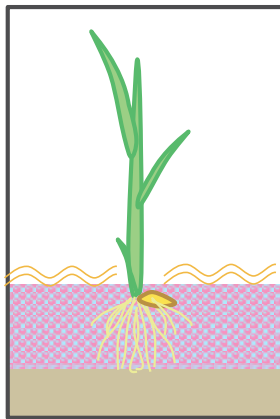
- Explain to the farmers the following about the TP-R Demo Farm:
 - a) The maximum size of the Demo Farm to be supported in the main cropping season 2021 is one (1.0) acre.
 - b) The amount of seed to be sown for the Demo Farm of one acre is 12 kg based on the TP-R recommendation.
 - c) The total amount of fertilizer (NPK15-15-15) to be applied to the Demo Farm of one acre is 108 kg, i.e. 72 kg for the basal application, and 36 kg for topdressing.
- Explain to the farmers that a part of the Demo Farm with 100 m² of area (10 m x 10 m) is to be delineated by bunds as the seed multiplication plot.

Key Components of the TP-R

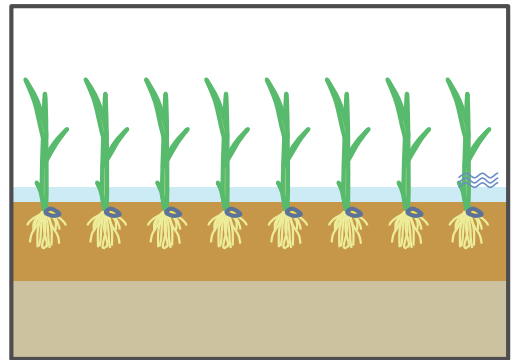
Construction of Bunds & Drainage



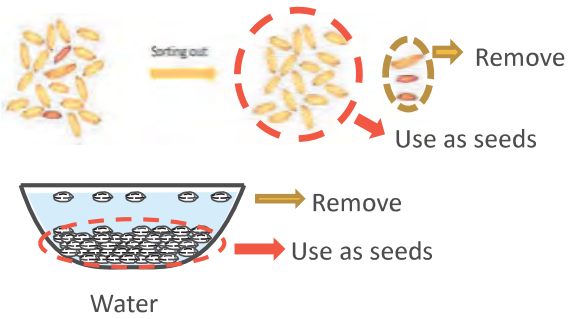
Puddling



Leveling



Seed Selection



Nursery Management



2-1. Key components of the TP-R

Important message:

- The TP-R is composed of various improved techniques which are different from the conventional practices of the farmers
- The TP-R techniques cover entire farming activities from very initial land preparation to post-harvest handling.

How to facilitate the session:

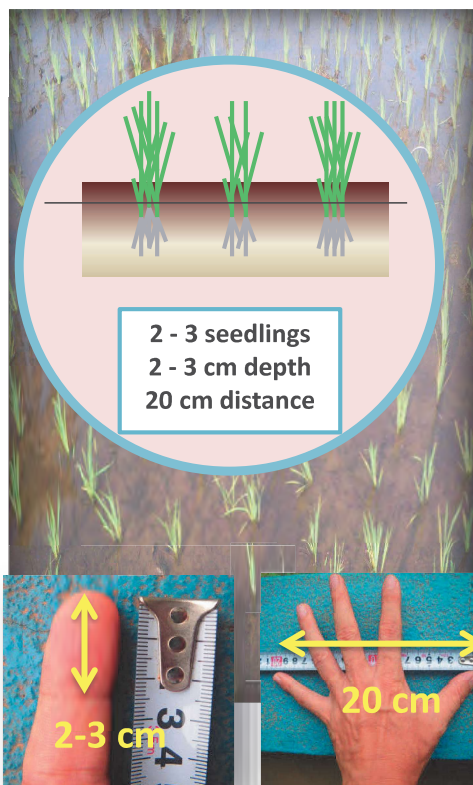
- 1) Review of the TP-R
 - Ask the farmers what are the TP-R recommendations and reasons why they are recommended at each stage of rice cultivation.

Farming activity	TP-R recommendations	Reasons why it is recommended
Land preparation	<ul style="list-style-type: none"> • Brushing, clearing, and digging should be done at early stage before sowing. 	<ul style="list-style-type: none"> • Transplanting will not be delayed if land preparation was done ahead of time.
Bund and drainage construction / rehabilitation	<ul style="list-style-type: none"> • Bunds and drainage canals should be constructed / rehabilitated at the time of land preparation. 	<ul style="list-style-type: none"> • Internal bunds and drainage can help improve water management. • Proper water intake and drainage will enhance the growth of rice plants and harvest. Proper drainage also prevents iron toxicity and some pests that may be transmitted with flow of water such as caseworm.
Puddling and leveling	<ul style="list-style-type: none"> • Puddling should thoroughly be done. • Leveling should carefully be done. 	<ul style="list-style-type: none"> • Root development can be facilitated in softer and well saturated soils. • Growth of rice plants can be uniform as water and nutrient can evenly be provided to all plants.
Seed selection	<ul style="list-style-type: none"> • For seed purification, grains with different shapes and colors, weed seeds, and other foreign matters should be removed through careful observation and sorting. • To select the viable seeds, floating method and germination test are to be conducted. 	<ul style="list-style-type: none"> • Better germination and growth can be expected by using good seeds.
Nursery management	<ul style="list-style-type: none"> • Seeding rate is 12 kg per acre (smaller amount is enough). • Nursery site should be open place with good sunlight exposure and soil should be fertile enough, not much clayey or with gravels. • Seeds should be sown uniformly in nursery beds. 	<ul style="list-style-type: none"> • With proper spacing at the time of transplanting, smaller number of seedling is sufficient considering their tillering capacity. • Seedlings can grow healthier in such nursery sites. • Uniform growth of seedlings can be ensured.

- Explain to the farmers that these TP-R techniques will be applied in a larger scale in their TP-R Demo Farm.

Key Components of the TP-R

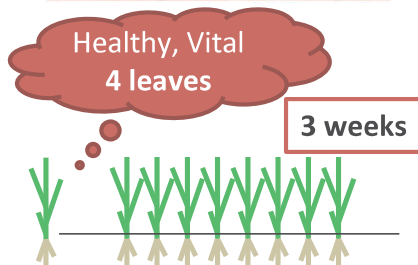
Transplanting Method



Water Management



Young Seedlings



Weeding



Fertilizer Application



2-2. Key components of the TP-R (continued)

How to facilitate the session:

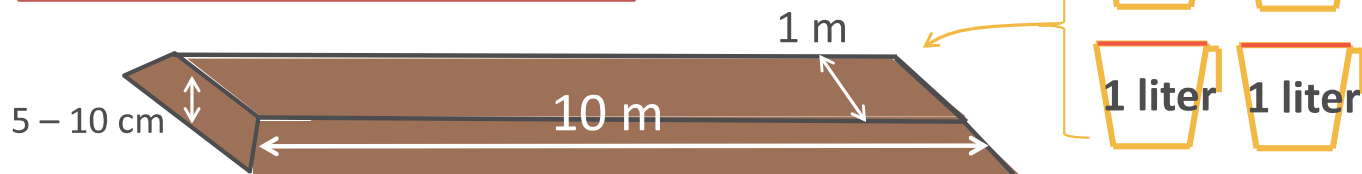
- Continue the review of the TP-R
 - Continue with the TP-R recommendations and reasons why they are recommended at each stage of rice cultivation. (This exercise may be done by using the following table on the flipchart)

Farming activity	TP-R recommendations	Reasons why it is recommended
Use of younger seedlings	<ul style="list-style-type: none"> Younger seedlings are to be transplanted. 	<ul style="list-style-type: none"> Chances for the rice plant to develop more tillers will be increased.
Transplanting method	<ul style="list-style-type: none"> Only 2-3 seedlings per hill are to be transplanted Seedlings are to be transplanted with 20cm distance between hills Planting depth should be 2-3cm. 	<ul style="list-style-type: none"> Smaller number of seedlings in wider spacing can obtain enough water, nutrients and sunlight with less competition. Deep planting reduces the number of tillers, hence panicles per hill.
Weeding	<ul style="list-style-type: none"> Weeding in paddy field should be done. The first weeding should be done at 2-3 weeks after transplanting while weeds are still small. Major weeds should be removed before application of topdressing. 	<ul style="list-style-type: none"> Rice plants will not be deprived of water, nutrients and sunlight by weeds. Growth of rice plant will not be disturbed and it will be more difficult and laborious to do weeding once weeds grow bigger. Weeding before topdressing will ensure that the nutrients will properly be absorbed by rice plants.
Fertilizer application	<ul style="list-style-type: none"> Basal fertilizer is to be applied at the time of transplanting. Topdressing should be done at the panicle initiation. Two-thirds (2/3) of the recommended amount of fertilizer should be applied as basal, while the remaining one-third (1/3) is to be applied as topdressing. 	<ul style="list-style-type: none"> Basal fertilizer will help the rice plant to grow bigger and develop more tillers. Topdressing will contribute to the increase in the number of grains per panicle.
Water management	<ul style="list-style-type: none"> Water level in the demo farm should be controlled. 	<ul style="list-style-type: none"> The water level should be kept low for several days after transplanting to promote the root development, prevent shallow-planted seedlings from floating away and keep the nutrients of the fertilizer in the soil. During the vegetative growth stage, the water level should be kept slightly high to reduce weed. Before the harvesting, the water should be drained to ease the work in the plot.

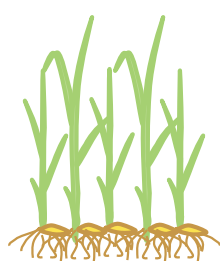
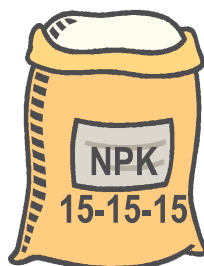
- Explain to the farmers that these TP-R techniques will be applied in a larger scale in their TP-R Demo Farm.
- Encourage the farmers to also apply these TP-R techniques to their individual farms.

Sowing Density in the Nursery for the Demo Farm (with application of fertilizer)

Seed Rice: 2 kg = 4 liters for 10 m²



Demo Farm (Main Field)



Nursery



Demo Farm



3. Different Sowing Density for the TP-R Demo Farm

Important messages:

- 1) The sowing density in the nursery can be higher if the fertilizer is applied in the main field, which can reduce the workload in nursery preparation and management.

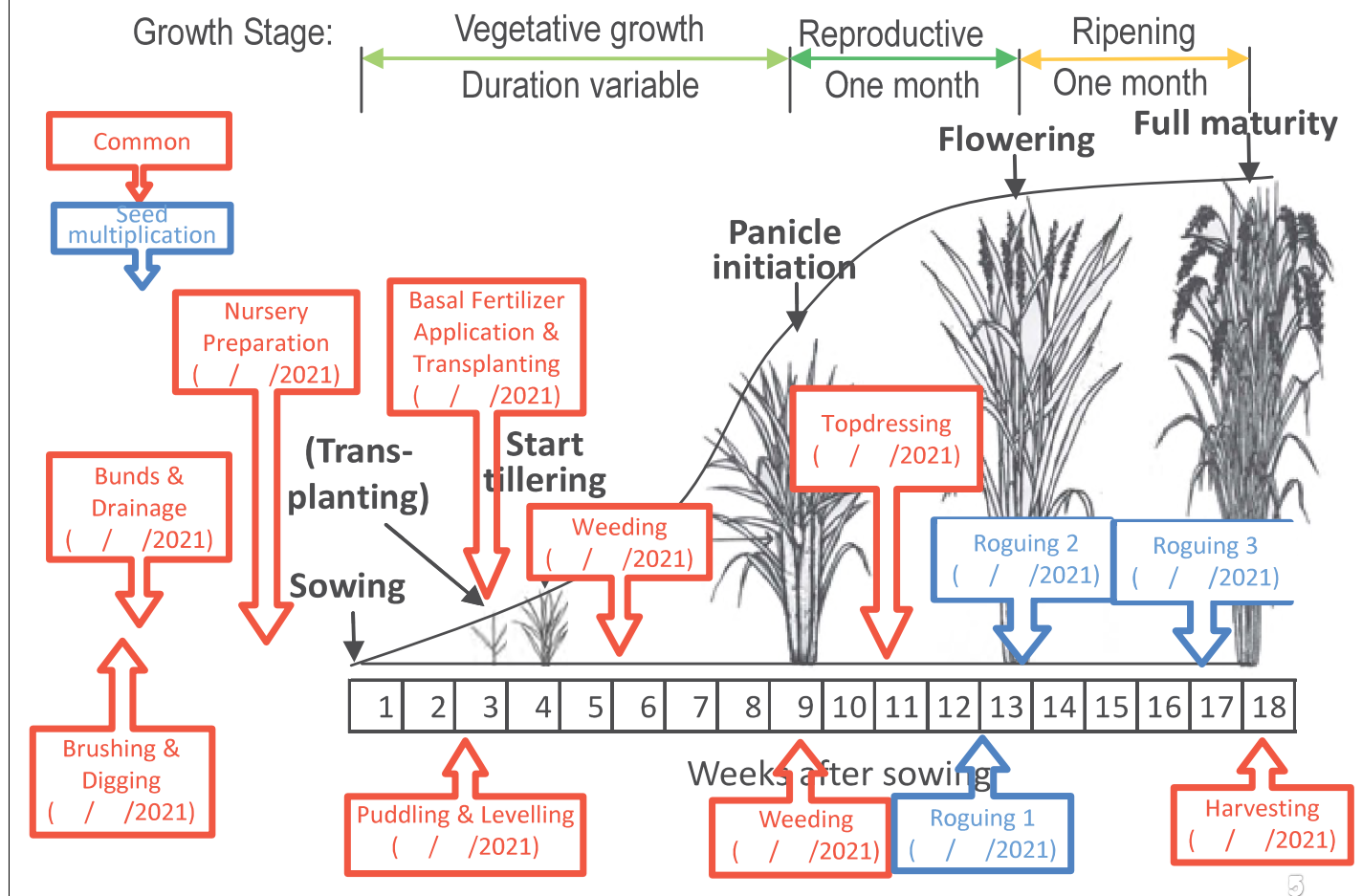
How to facilitate the session:

- 1) Review of the seed rate and sowing density recommended in the TP-R during the FFS

Ask the farmers if they remember the seed rate and sowing density applied during the FFS and remind the farmers the following:

 - Recommended seed rate: 30 kg per 1 ha = approximately 12 kg per acre
 - Sowing density: 1 kg (2 liter-cups) of seed to be sown in a nursery bed of 10 m² (1 m x 10 m).
- 2) Introduction of the result of the on-farm trial
 - Explain to the farmers that an on-farm trial was conducted in the rainy season 2019.
 - The result of the experiment indicated that the growth of seedlings from the nursery with higher density can be recovered after transplanted in the main field if fertilizer is applied in the main field.
- 3) New recommendation on the sowing density for the TP-R Demo Farm
 - a) Explain to the farmers the following:
 - Since the TP-R Demo Farm will be applied with fertilizer, the sowing density can be twice as high as the original recommendation of the TP-R, i.e., 2 kg (4 liter-cups) of seed to be sown in a nursery bed of 10 m².
 - If the area of demo farm is 1 acre, the seed can be sown in six (6) nursery beds of 10 m² with this new recommendation, instead of twelve (12) beds, which reduces the time and labor for nursery preparation and management.
 - b) Remind and emphasize that this higher sowing density is applied only if fertilizer can properly be applied in the main field. It is recommended to follow the original sowing density of 1 kg per 10 m² bed if fertilizer would not be applied, such as in cases of plots of individual members.

CROPPING CALENDAR (Example of NERICA L19)



4. Cropping Calendar

Important messages:

- 1) Farmers should prepare a cropping calendar which is appropriate for the rice variety to be cultivated. According to the plan, they should schedule the timing of land preparation, nursery preparation, sowing, transplanting, fertilizer application, weeding and harvesting.

How to facilitate the session:

1) Introduction

Ask the farmers to describe their farming practices according to a variety to be used throughout the rice growth period in the order and write them on flipcharts (e.g., brushing, digging, bund making, drainage construction, nursery preparation, sowing, puddling, leveling, uprooting, transplanting, fertilizer application, weeding, water management, bird-scaring, harvesting, transporting, threshing, bagging, etc.)

2) Discussions

Ask the farmers to identify appropriate timing of each farming activity to be conducted in the TP-R Demo Farm. Emphasize that the timing of some activities causes positive or negative influence on the growth of rice plant, thereby on the yield. Farmers should know when to do what in order to grow their rice well and thus to obtain good harvest at the end of the season.

3) Formulation of the cropping calendar

Explain the steps to formulate the cropping calendar and plan together with the farmers

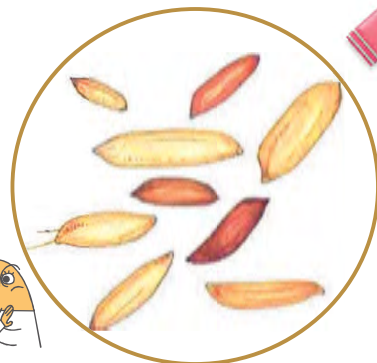
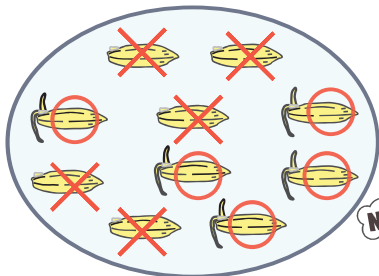
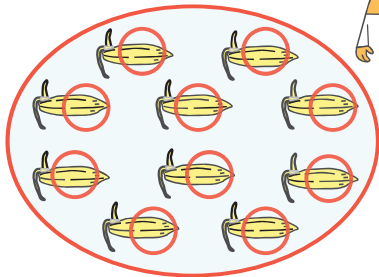
- (1) Set the expected time of harvest so that the ripening stage coincides with a period of sunny days
- (2) Avoid transplanting and topdressing during the peak rainy season
- (3) Decide when to sow the seeds, taking into account the growth duration of the rice variety to be used
- (4) Decide when to start brushing so that the first digging can be finished before sowing
- (5) Transplanting should be scheduled about 3 weeks after sowing seeds
- (6) Set the time of first weeding at 2-3 weeks after transplanting
- (7) Set the time of topdressing at about 2 months before the harvest time

Seed Multiplication



[Quality seed]

- Ensure viability and purity



Different harvesting time

6

5-1 Seed Multiplication 1

Important message:

- Seeds are the life of farmers. Without the seeds, they cannot cultivate, eat or live.
- Quality seed should have high germination rate and high purity.
- The admixture of the seeds of different varieties causes the non-uniform growth and will result in the loss of the yield.
- Under the insecure condition of supplying valuable seeds in this country, seeds must be produced by the farmers themselves.

How to facilitate the session:

1) Discussion with the farmers:

- Ask the farmers if they have ever had problems regarding the quality of the seed rice which they have been using.
- Ask the farmers what kind of problems were encountered and how the problem may be solved.
- Explain to the farmers that the quality seed may be produced by the farmers with specific techniques of seed multiplication

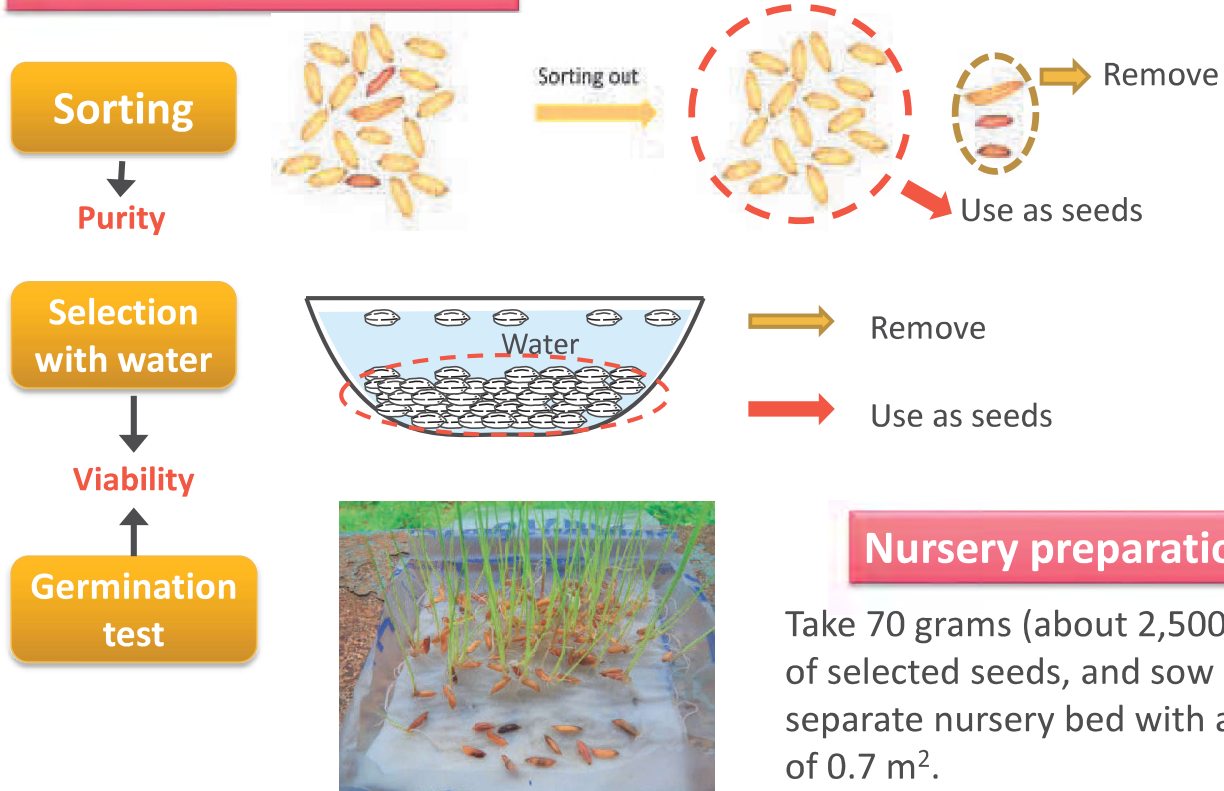
2) Purity and viability of seeds

- Explain that high germination rate and high purity of a variety are very important for the seed multiplication.
 - High germination rate ensures to produce suitable number of seedlings.
 - High purity of a variety contributes to the uniform harvesting time in a field.

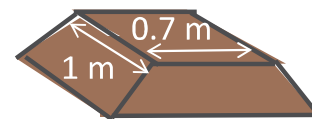
3) Negative effect of impure seeds

- A mixture of the target variety and off-types with different growth duration leads to yield reduction because the grains of the off-types are likely to be immature or overripe at the time of harvest, which leads to the loss of the yield.

Method - Seed selection



Out of 100 seeds,
88 seeds germinated.
88 > 80 === OK!



7

5-2 Seed Multiplication 2

Important message:

- To produce the quality seed rice, a seed multiplication plot should be established within the demo farm.
- Farmers need to select the seed carefully, especially for the seed to be multiplied.
- For the seed multiplication plots, a separate nursery bed should be set up, which is different from the nursery for the demo farm.

How to facilitate the session:

1) Method of seed selection

a) Sorting seeds

- For seed purification, tell the farmers to find grains with different shapes and colors, weed seeds, and other foreign matter by observing seeds carefully and to remove them. (If time allows, let the farmers exercise sorting with a small amount of seed rice.)

b) Selection of viable (high germination ability) seeds

- Explain (and demonstrate) to the farmers the method of selecting healthy seeds by soaking them in water: To eliminate infertile and unfilled seeds, soak all seeds in water and remove those that float.

c) Germination test

- Explain (and demonstrate) the method of germination test as follows:
 - Select 100 grains at random
 - Put them on absorbent material (e.g., paper, cloths, etc.) and keep them saturated for 4-5 days to 1 week at the maximum.
 - Count the number of germinated grains
 - If more than 80 grains out of 100 have germinated, the grains can be used for seed rice; If 70 to 80 have germinated, augment the amount of seeds by 15%, and if less than 70 have germinated, find another source of seed rice.

2) The seed multiplication plot:

- Inside the demo farm, a small plot for seed multiplication will be set up.
- The area of the seed multiplication plot is 100 m², (10 m x 10 m), which should be delineated with bunds.
- About 100 grams of seed is needed for the seed multiplication plot, which will first to be sorted, selected and tested. The selected seeds are to be sown in a nursery bed of 0.7 m² (1 m x 0.7 m) which should separately be set up from those nursery beds for the demo farm as a whole.

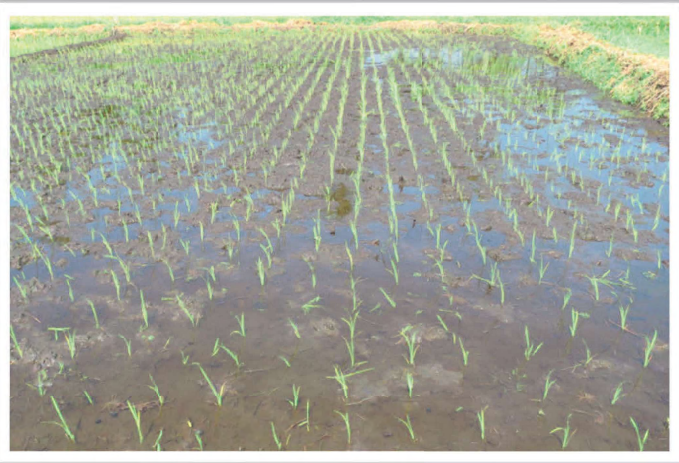
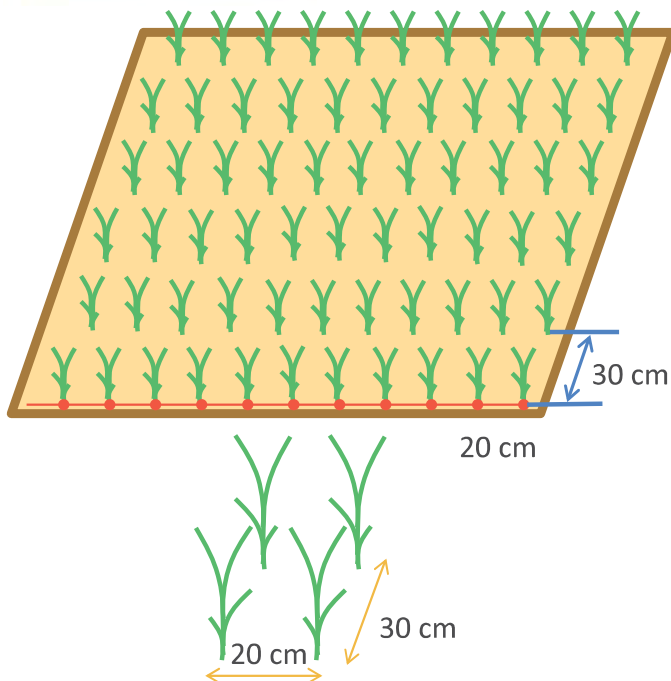
Transplanting method for Seed Multiplication Plot

Line planting

To remove rice plants in irregular places.

Single seedling per hill

To remove off-type plants completely.



8

5-3 Seed Multiplication 3

Important message:

- Single seedling is transplanted in a hill, in line, 30 cm apart and 20 cm between the hills.
- Line planting is recommended for seed multiplication.
- Seed multiplication plot should be located in an easily accessible area.

How to facilitate the session:

2) Method of seed multiplication

- Explain how seed multiplication is different from normal rice production. The main points of seed multiplication methods are as follows:
 - Line planting of seedlings with spacing, for example 30 cm x 20 cm to make it easy to weed and identify self-germinated plants.
 - Transplanting of only one seedling per hill. It is to distinguish characteristics of each rice plant. Although the plants may look very weak in a week, they will develop tillers vigorously as time goes on.

3) Selection of plots for seed multiplication

- Tell the farmers that the seed multiplication site should be in an accessible area where observation and management are easy.
- Explain to the farmers that, if the seed multiplication plot is properly managed, the amount of seed produced from the plot can be about 300 times of the amount of the sown seeds, for example, 150 kg of seed can be produced out of 500 g (1 liter cup) of the seed.
- Explain land area necessary for certain target multiplication; in general, 70 g of seed requires land about 100 m² (e.g. 10 m x 10 m) for the seed multiplication plot, assuming that germination rate of the seed is 80%.
- Discuss with the farmers and find a suitable site for the seed multiplication plot.
- Visit the site to evaluate its condition and determine if it is appropriate for the seed multiplication plot.

Purifying seed by roguing (Removal of off-type plants)

Height



Leaf, culm, grain color



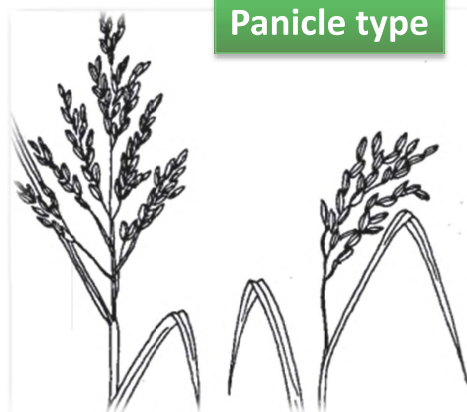
Grain shape



Panicle exertion



Panicle type



Source: Purifying seed through roguing; IRRI; 1988



5-4 Seed Multiplication 4

Important message:

- Periodical removal of off-type plants is necessary for purifying the seed through careful observation at the seed multiplication plot.
- Off-types are identified by height, maturity time, grain color and shape, leaf color and angle, and other characteristics.
- Off-types should be removed from the field periodically before harvest, as it is difficult to separate grains after harvest and threshing.

How to facilitate the session:

1) Importance of roguing (removal of off-type plants) to purify the seed

- Explain to the farmers why it is necessary to remove off-type plants.
 - A mixture of the target variety and off-types with different growth duration leads to yield reduction because the grains of the off-types are likely to be immature or overripe at the time of harvest.
 - By removing the off-types from the seed multiplication plot, pure seeds can be obtained.

2) How to identify the off-type plants

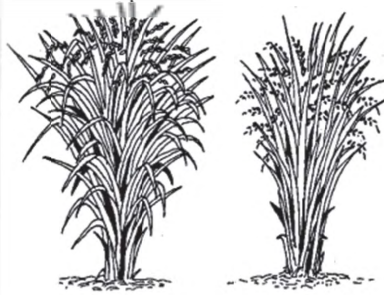
- Off-types are distinguished by several characteristics such as:
 - height of the plants,
 - grain color,
 - shape and size of grains,
 - color of the leaves,
 - panicle exertion, and,
 - type of panicles.

Purifying seed by roguing (Removal of off-type plants)

Heading time



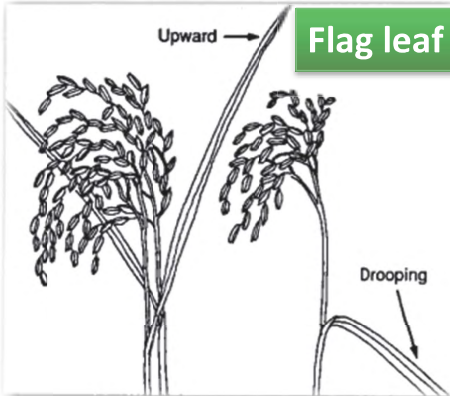
Leaf angle



Awns



Flag leaf angle



Source: Purifying seed through roguing; IRRI; 1988

Remove off-type plants



5-4 Seed Multiplication 4 – Continued

2) How to identify the off-type plants - continued

The other characteristics to be observed to identify the off-types includes;

- leaf angle and width,
- maturity time,
- presence of awn, and,
- flag leaf angle.

3) Timing of roguing

- Off-types should be removed from the field before harvest because it is difficult to separate the harvested grains after harvest and threshing.
- Removal of off-types is recommended at least three times: before flowering, at flowering and at ripening.

Maintaining the seed quality

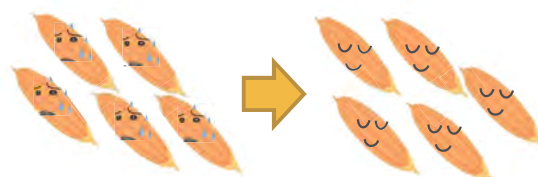
Removal of Empty Grains and Foreign Matters



Separate Storage



Periodic Drying



<https://www.naro.affrc.go.jp/org/nfri/yakudachi/gaichu/zukan/16.html>



5-5 Seed Multiplication 5

Important message:

- Careful post-harvest treatment is required to maintain the quality of the seed multiplied at the SMP.
- Removal of empty grains and cleaning of the seeds by winnowing and with manual sorting should carefully be done at the harvest as well as after every drying.
- The seed obtained from SMP should be clearly marked on the bag and stored separately from other rice bags.
- To maintain viability, seed rice should be kept under cool and dry condition until next season.
- Seeds should be dried under the sun on a regular basis to prevent possible damage by weevils and keep the viability.

How to facilitate the session:

Explain to the farmers that more careful post-harvest treatment is required for the seed to keep the viability.

1) Cleaning:

- Empty grains and other foreign matters should carefully be removed by thorough winnowing.
- Some large foreign matters should also manually be removed before bagging.

2) Storage:

- The seed bags should clearly be marked and kept separately from other rice bags to avoid any risk of mixing up.
- The seed should be stored in a dry and cool place with enough air ventilation to keep the viability.
- The storage place should always be clean to avoid the risk of attack by rats.

3) Periodic drying

- It is necessary to dry the seed periodically to prevent the weevils' attack and keep the viability. It is advisable to dry the seed at least once a month.
- Spread the seed on a tarpaulin sheet or a clean cloth to dry them under the sun.
- After drying, clean the seed by winnowing and with manual sorting before bagging.

1-5. Monitoring and field guidance

Periodic monitoring should be conducted throughout the cropping season on the cultivation practices and growth of rice in the TP-R demo farm. At every monitoring visit, the growth of rice in the demo farm and the seed multiplication plot, water conditions, occurrence of any problems to be addressed, and timely conduct of farming activities by the FBO in accordance with the cropping calendar are to be checked. It is especially important to monitor the activities and provide technical guidance to ensure that the technical recommendations of the TP-R are properly practiced at the time of following activities;

- at the establishment of demonstration farm
- at the delineation of seed multiplication plot (SMP)
- at seed selection, especially of the seeds for the SMP
- at the setting up of nursery beds and sowing
- at the transplanting, especially the line-planting in the SMP
- at the first weeding
- at the rouging (removal of off-type plants) in the SMP
- at the application of topdressing
- at the harvesting (yield survey)

Whenever any problem is reported or observed through field monitoring, proper countermeasures should immediately be taken to minimize any negative effects on the growth of rice plants.

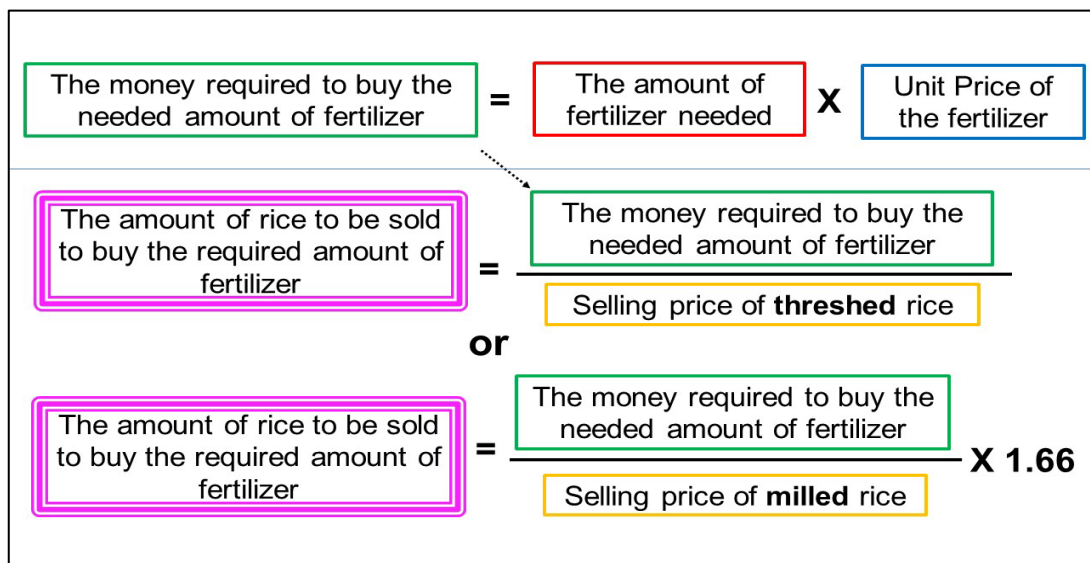
1-6. Season-end review meeting and facilitation for sustainability planning

After harvesting, one review meeting should be organized with the Graduate FBOs. In this meeting, the FBO farmers will discuss the problems encountered and countermeasures taken and evaluate the overall performance in the demo farm and SMP.

Also, they will make a plan to continue applying the TP-R in their group farm in the coming seasons. In the planning session, the FBO's willingness to continue applying the TP-R in their group farm should be confirmed at first, followed by the examination on the possibility of expansion of the demo farm based on the amount of seed produced in the SMP and availability of appropriate land. For the fertilizer, the FBO may sell a part of proceeds from the demo farm to secure the money to buy the required amount of fertilizer. They should agree on the amount of the harvested rice to sell, then the FBO as a group can decide how to utilize the remaining rice harvested from the demo farm. It is strongly recommended for the FBOs to sell rice, buy and store the fertilizer for rice cultivation in next rainy season at the earliest timing to secure the necessary amount in time as well as to avoid the potential risk of the price hike.

The required amount of rice that the FBO has to save and sell to avail the fertilizer can be calculated with the formula below.

Box 6: Formula to calculate the amount of rice to be sold to obtain the fertilizer



In this season-end meeting, it is also necessary to confirm the further dissemination effects through the programme, especially the degree of TP-R adoption by the FBO members in their individual farms, as well as the interests in and willingness for adoption of the TP-R by the invited representatives of the neighboring FBOs.

The sample format to record the results of discussions in the Season-end meeting is presented as Box 7 below.

BOX 7: Recording format on the discussion in the Season-end meeting

District:		Block No.:	
Name of the village:			
Name of the FBO:			
Name of the BES:		Name of the FEW:	
Date of the meeting:			
No. of FBO members attended	Male:	Female:	Total:
Name of the Neighboring FBO:			
Name of the village of the Neighboring FBO:			
Name of the head of the Neighboring FBO:			
Telephone number of the head of the Neighboring FBO (if any):			

1. Has there been any problem technical or organizational encountered during the rainy season cropping in terms of their activities in the Demo Farm? () Yes () No

1-1. If yes, what were the problems encountered and how did the FBO try to address the problems?

Problems encountered	Countermeasures tried by the FBO

2. How does the FBO evaluate the overall performance in the Demo Farm during this rainy season?

3. Are the FBO members willing to continue applying the TP-R in their group farm in coming seasons? () Yes () No

3-1. If yes, does the FBO wants to expand the area of demo farm or continue with the same plots?
 () wants to expand () continues with the same plots

3-2. How much area of Demo Farm will the FBO cultivate with the TP-R? _____m²

3-3. Has the FBO already secured the land? () Yes () Not yet sure

3-4. How many bags of fertilizer will the FBO need to cultivate rice in the Demo Farm?
 _____Bags (50kg)

3-5. How much is the amount of rice should the FBO sell to buy the fertilizer? _____kg

3-6. Have the FBO members agreed to save and sell the rice for the fertilizer?

() Yes () No

3-6-a. If no, how are they going to secure the fertilizer for the next rainy season?

3-7. How will the FBO utilize the remaining rice?

4. How many FBO members applied / did not apply the TP-R recommendations in their individual farms? Fill the following table.

The TP-R recommendations	No. of members who applied the technique	The members who did NOT apply the technique	
		No.	The reason(s) why the recommendation was not applied
Land preparation before nursing			
Brushing and clearing			
Removal of the brushed grass from the plots			
Construction/rehabilitation of bunds			
Sowing on the raised nursery beds			
Use of less amount of seed (12kg=half a bushel per acre)			
Puddling			
Leveling			
Planting of 2-3 weeks-old seedlings			
Planting 2-3 seedlings per hill			
Planting with the depth of about 2-3 cm			
Planting with 20cm distance between the hills			
Basal fertilizer application			
Weeding			
Weeding more than once			

4-1. How many members have already harvested the rice in their individual plots? ____ persons

4-2. How many among those who have already harvested have applied any of the TP-R techniques? ____ persons

4-3. How many persons among those who applied the TP-R could obtain better yield compared to the previous seasons when they did not apply the TP-R? _____ persons

5. How many members are interested in applying the TP-R in their individual plot in the coming seasons? _____ Persons

6. Have the representatives of **the neighboring FBO** been invited to the activities in the Demo Farm to learn the TP-R? () Yes () No () Do not know

6-1. Has the neighboring FBO demonstrate any of the TP-R recommendations in their group farm / the farm of some members of the group? () Yes () No () Do not know

6-1-a. If yes, tick the techniques that the neighboring FBO has applied in the table below.

- | | |
|---|---|
| () Land preparation before nursing | () Brushing and clearing |
| () Removal of the brushed grass from the plots | () Construction / rehabilitation of bunds |
| () Sowing on the raised nursery beds | () Use of less amount of seed |
| () Puddling | () Leveling |
| () Planting of 2-3 weeks-old seedlings | () Planting 2-3 seedlings per hill |
| () Planting with the depth of about 2-3 cm | () Planting with 20cm distance between the hills |
| () Fertilizer application | () Weeding |

6-1-b. Has the neighboring FBO already harvested the group farm / the plots where they applied the TP-R recommendations?

() Yes () No () Do not know

6-1-c. If yes, did the neighboring FBO obtain better yield than the plot where they grew rice with their conventional practices?

() Yes () No () Do not know

6-2. Has the neighboring FBO understood the benefit of the TP-R?

() Yes () No () Do not know

6-3. Any comments from the neighboring FBO on the TP-R.

7. Other issues discussed in the meeting, if any.

Date of reporting: ____ / ____ / ____

Reported by: _____

2. Continuous Monitoring on the Activities of the Independent FBOs

The FBOs who had learnt the TP-R in the initial year of FFS and had successfully gone through the support programme for the Graduate FBOs now become the Independent FBOs. They have applied the TP-R in a larger scale and equipped with seed multiplication techniques, which enables them to secure the seed for the following season. They have also made an internal arrangement to avail the fund to procure the necessary amount of fertilizer, so that they can independently continue producing rice in the IVS with application of the TP-R, without external inputs support. However, the activities of these Independent FBOs are still to be monitored and technical guidance may be provided when needs arise, although they are expected to be conversant enough to apply the TP-R. This continuous monitoring is to ensure that the FBOs accurately follow the technical recommendations in the TP-R demo farms and the SMP and continue disseminating the TP-R to the other farmers. The components of the monitoring on the activities of the independent FBOs are as follows.

2-1. Pre-season confirmation meeting

Before the rice farming activities starts, a pre-season confirmation meeting should be organized with each of the Independent FBOs. They are supposed to make necessary preparations based on the discussions at the previous season-end review meetings, and this pre-season meeting is to confirm the status of preparation for the season's activities by checking the following aspects;

- Confirmation of the land for the TP-R demo farm (change of location/expansion, plot layout, agreement with the landowner on payment, etc.)
- Confirmation on the water conditions (clearance of canals and drainages)
- Availability of (or concrete plan to secure) the necessary seed and fertilizer
- Availability, conditions, and status of repair or replacement of the tools and equipment that were provided through FFS and Support Programme for the Graduate FBOs
- Confirmation of the membership and internal rules (by-laws) regarding the participation in the group work and penalty for absence
- Internal rules (by-laws) on how to use the proceeds from the TP-R demo farm, including how to share them among the members
- Cropping calendar for the season's activities

The sample recording format of the results of the pre-season confirmation meeting is shown in the following Box 8.

Box 8: Sample Record format of Pre-season Confirmation Meeting with the Independent FBOs

District:		Block No.:	
Name of the village:			
Name of the FBO:			
Name of the BES:		Name of the FEW:	
Date of the meeting:			
No. of FBO members attended	Male:	Female:	Total:
Area of the Demo Farm (Excluding the SMP):	m ²	No. of sub-plots:	
Area of the seed multiplication plot:	m ²	Variety of rice:	

1. Has the FBO secured the seed rice to nurse for Demo Farm as well as for SMP?

() Yes () No

1-a. If yes, what is the source of the seed rice?

() multiplied in SMP in previous season () bought from _____

1-b (1). If no, what has been the problem?

1-b (2). If no, how and when the FBO will avail the seed rice?

2. Has the FBO already procured the fertilizer for the Demo Farm? () Yes () No

2-a. If no, what has been the problem?

2-b. If no, how and when the FBO will avail the fertilizer?

3. Are the following tools and materials properly being kept by the FBO?

Item	Quantity Initially provided	Quantity of the broken / lost, if any	Status of replacement of the broken or lost
Hoes			
Cutlasses			
Shovels			
Head pans			
Leveling boards			
Tarpaulin sheets			
Line planting rope			
Rotary Weeder			

4. Which days of the week were set as the group working days? _____

5. Have the FBO made internal rules on the attendance to the activities in the TP-R Demo Farm and penalty for absence?

() Yes → Describe the rule and penalty.

() No → set the deadline and record the date until when the FBO will decide the rule.

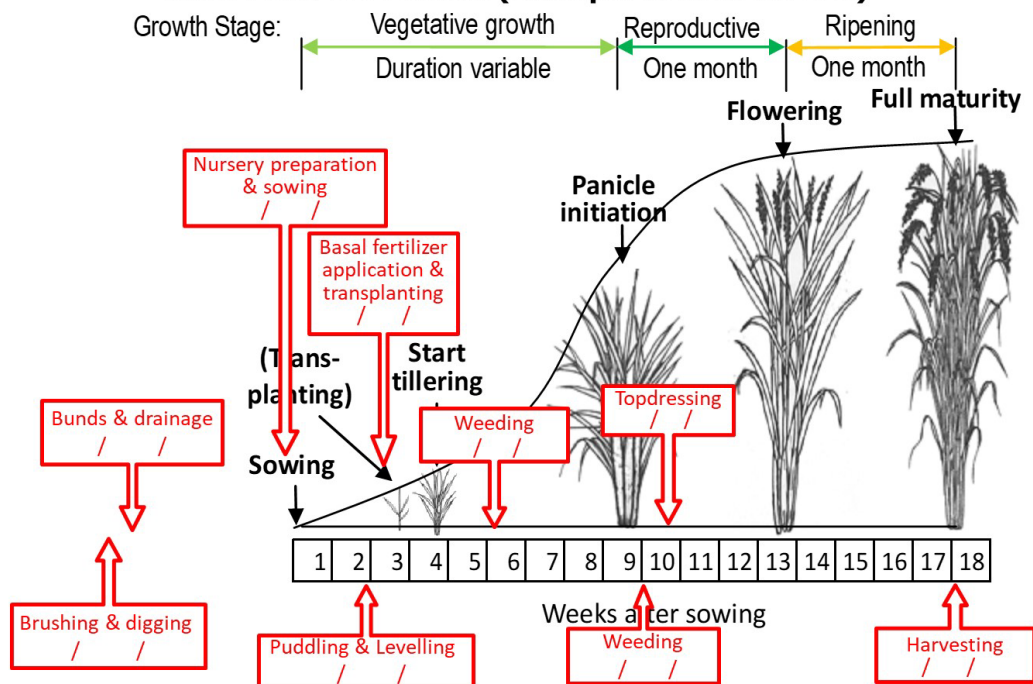
6. How many FBO members are willing to apply the TP-R in their individual farms? ____persons

7. What were the major questions / comments raised by FBO members during the meeting?

8. What were the other issues discussed during the meeting, if any?

9. Formulate the Cropping Calendar for the TP-R Demo Farm in consultation with the FBO members and record the planned dates of activities in the following format.

CROPPING CALENDAR (Example of NERICA L19)



2-2. Monitoring on the rice cultivation activities

During the cropping season, periodic monitoring on the cultivation practices will be conducted at least five (5) times at the designated farming activities, namely,

- at the setting up of nursery beds and sowing
- at the transplanting, especially the line-planting in the SMP
- at the application of topdressing
- at the flowering of the rice plants
- at the harvesting

At each monitoring visit, the growth of rice in the TP-R demo farm and SMP will be confirmed and if any problems are observed, guidance on the proper countermeasure will be provided. It also serves as an opportunity to further encourage the FBOs to apply the TP-R in the member farmers' individual farms as well as to disseminate the TP-R to the other farmers in the locality.

As for the yield performance, there is no yield survey to be conducted for the Independent FBOs. The FBOs will be requested to keep the record of the yield (such as the number of bags harvested) and share the results at the season-end review meeting. Additional provision of hanging scale may be considered if the resources are available. to improve the accuracy of the measurement of the harvested rice.

2-3. Season-end review meeting and facilitation for sustainability planning

Similar to the cases of the Graduate FBOs, a review meeting should be organized after harvesting. In this review meeting, the yield from the TP-R demo farm as well as from the SMP will be reported, and the experiences throughout the cropping season will be discussed and evaluated by the FBO farmers. The extent of adoption of the TP-R among the FBO members as well as the level of dissemination to the other farmers are also to be confirmed in this meeting.

After the overall review of the season's activities, how to continue or even expand the TP-R application in the coming seasons will also be discussed. The main agenda of the planning session include among others;

- confirmation of the requirement of seed and fertilizer
- how to mobilize the fund to procure the fertilizer
- calculation of the amount of rice to be saved and sold

