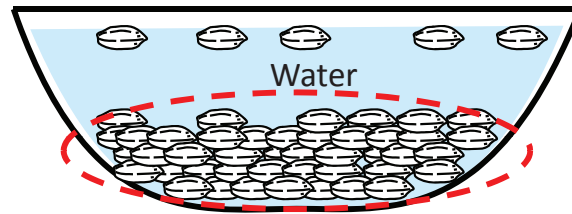


Method - Seed Selection

Sorting



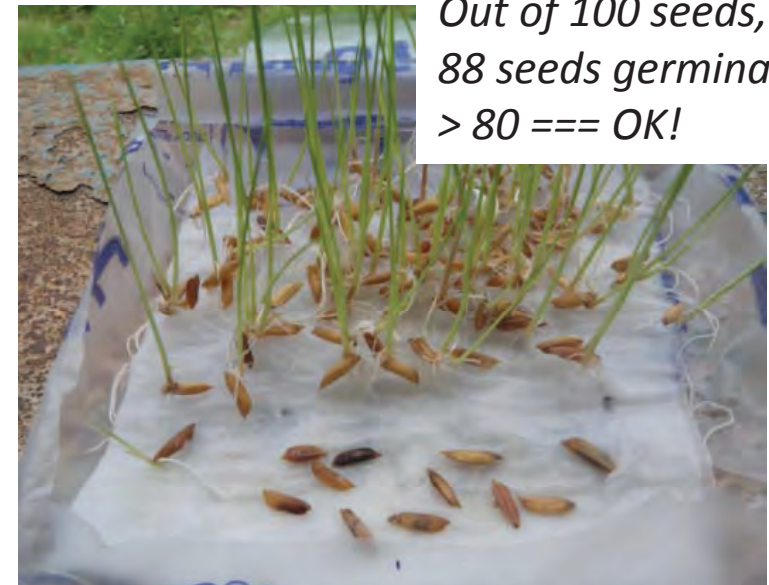
Selection with water



Remove

Use as seeds

Germination Test



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

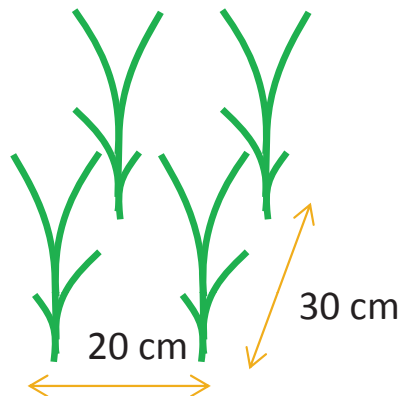
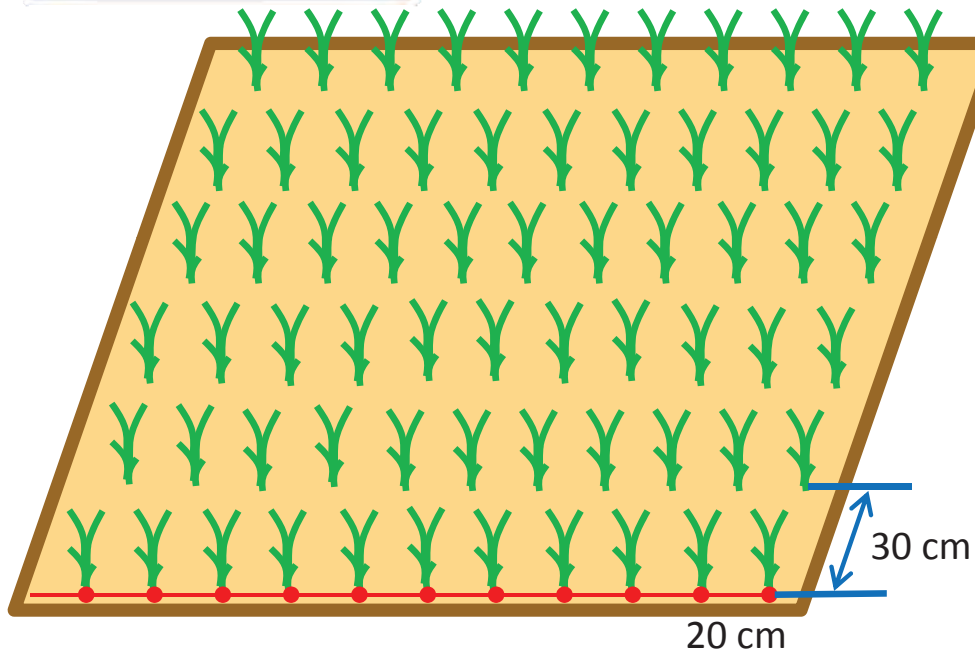
Method - Transplanting

Line Planting

To remove rice plants in irregular places.

Single seedling per hill

To remove off-type Plants completely.



Purifying seed

Height



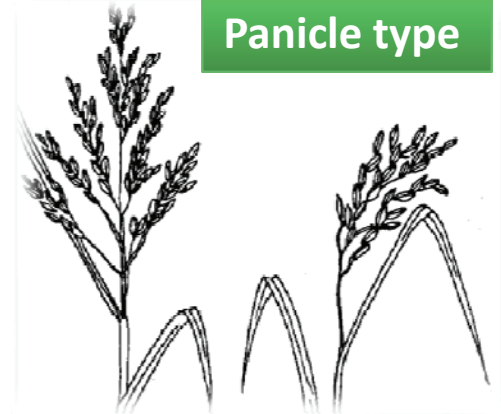
Leaf, culm, grain color



Panicle exertion



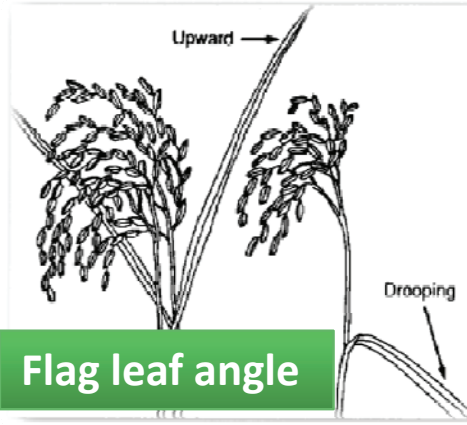
Panicle type



Heading time



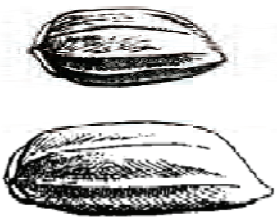
Leaf angle



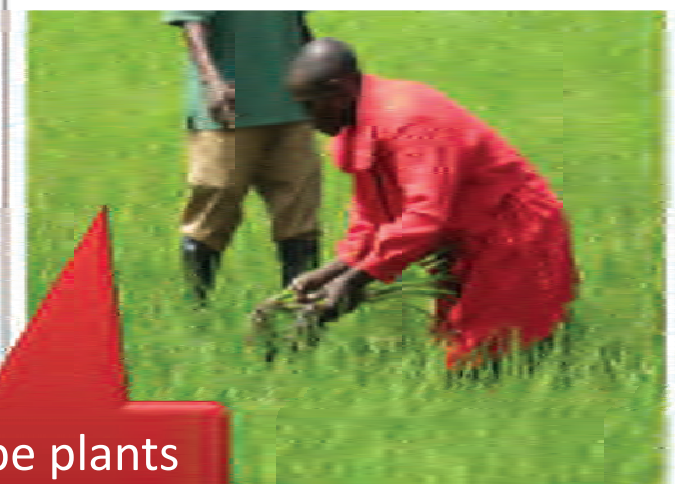
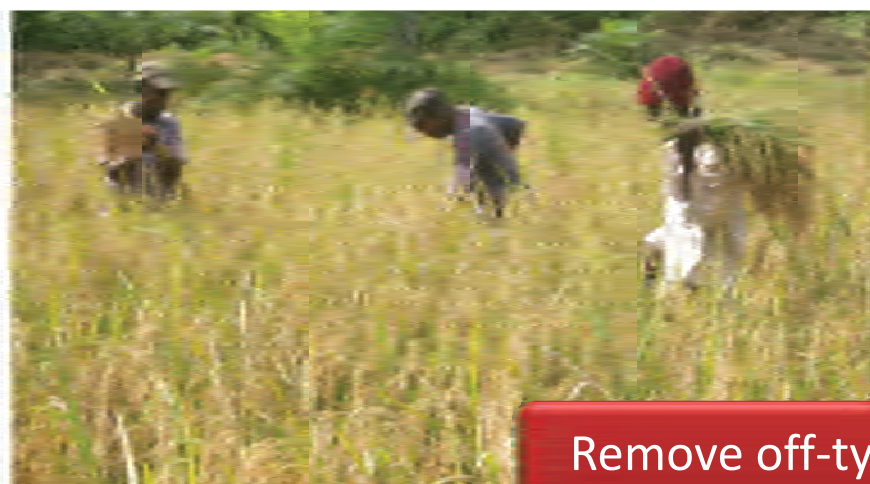
Flag leaf angle



Awns



Grain shape



Remove off-type plants

Source: Purifying seed through roguing; IRRI; 1988

Seed Production (Trial in 2013)

Site	Variety	Area (m ²)	Production (kg)	Yield (ton/ha)	Remarks
Masineh	NERICA L19	166	43	2.6	July 5 - Nov. 15 25 x 30 cm
Laya	NERICA L19	160	38	2.4	July 15 - Nov. 22 20 x 30 cm
Tawuya Munu	NERICA L19	100	17	1.7	Aug. 23 - Jan. 3 20 x 30 cm



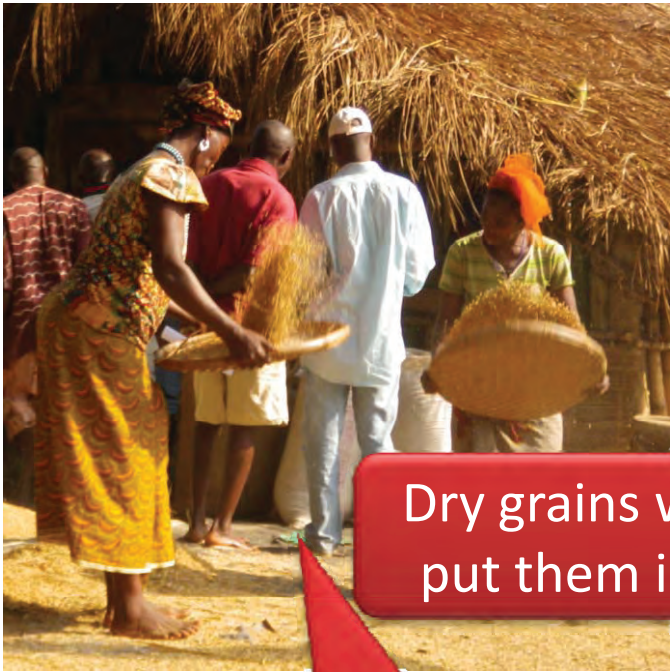
Good field management



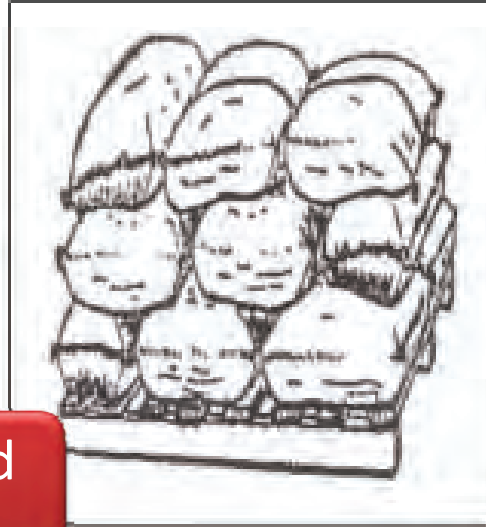
Seed production plot with an area of 100 m² could produce 17 - 26 kg of seeds of NERICA L19.



The seeds can be used for 0.5 - 1 ha of main field in the next season.



Dry grains well and put them in sacks



Keep rice sacks on wooden pallet

Remove foreign materials incl. weed seeds by winnowing

Keep cool and dry until next season



Dry once a month

Summary 1

- Seeds should be produced by farmers themselves because access to quality seeds is limited in SL.
- Seed rice should have high germination rate and high purity.
- Mixture of more than two rice varieties with different growth duration makes it difficult to harvest in one time.
- Cleaning of seeds is done through sorting out, and selection of healthy seeds is done by floating.

Summary 2

- Germination test is conducted to confirm the viability of the seeds. Pre-germination treatment is recommended for wet nurseries to promote uniform germination.
- Single seedling is transplanted in a hill, in line.
- Off-types of rice should be removed from the plot, because grains are hardly separated after threshing. Periodical removal of off-type plants is necessary (three times).
- To maintain its viability, seed rice should be kept in cool and dry place until next season.

FFS Trial Plot and Field Trial

*Training on Rice Production
-Essence of Technical Package-*

*The Sustainable Rice Development Project
in Sierra Leone (SRDP)*

JICA-MAFFS

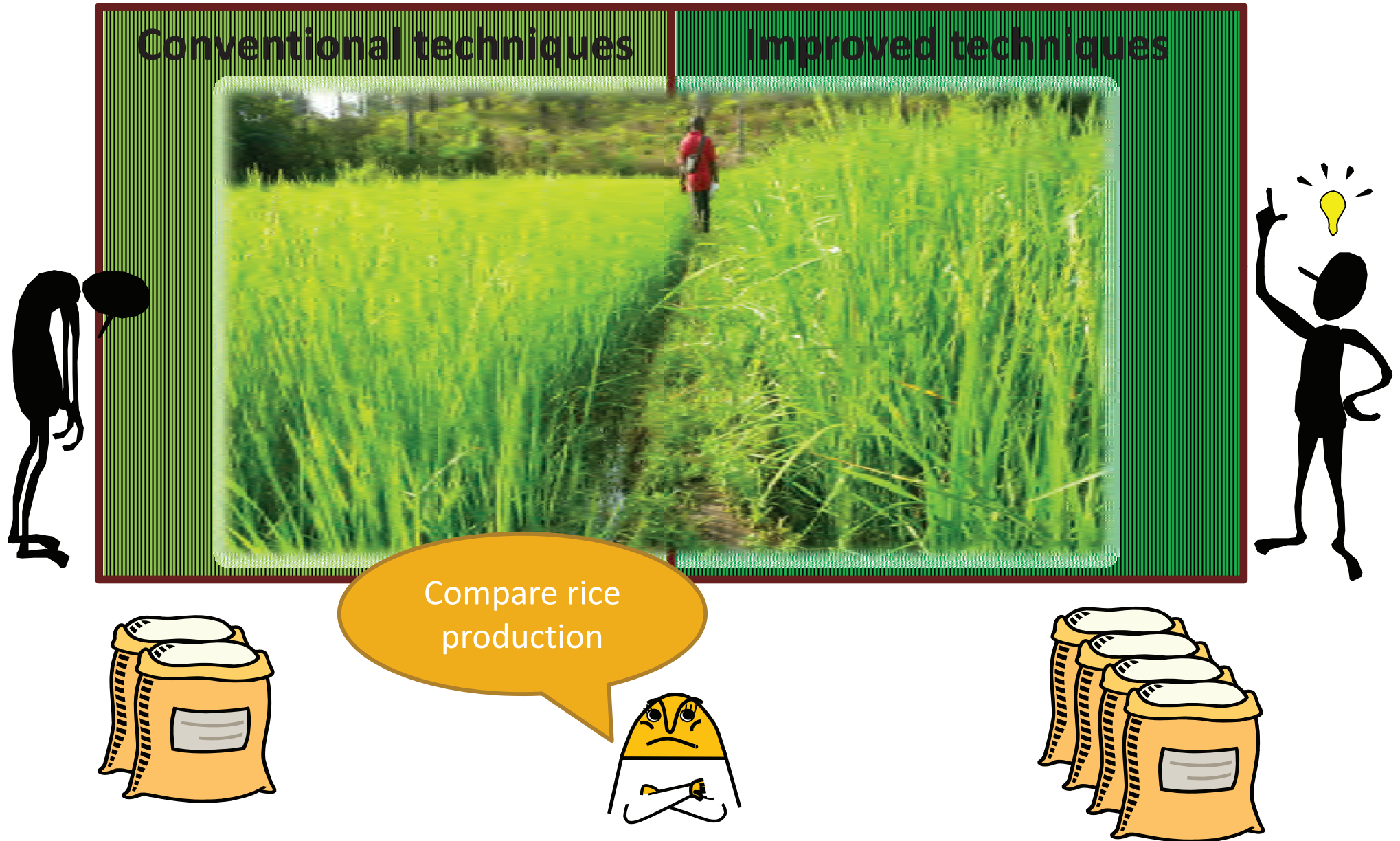
Contents

- FFS trial plot
 - Principle
 - Establishment of FFS trial plot
 - Evaluation
 - Summary
- Field trial on fertilizer application under SRDP
 - A series of experiments in FBO fields
 - Findings
 - Summary

FFS Trial Plot - Principle

- FFS trial plot provides the farmers with opportunities to **verify the value of new techniques** on rice production.
- New techniques should be adopted when their effectiveness or values are verified in the field.

FFS Trial Plot - Concept



Establishment of FFS Trial Plot - Determination of the themes for trial

Select one theme for trial/verification, for example...

Theme for trial

1. With and without land leveling
2. Transplant a few seedlings and many seedlings per hill
3. Transplant young seedlings and old seedlings
4. Fertilizer application with and without bund construction
5. Different dosage of fertilizer application
6. Weeding time and frequency

Establishment of FFS Trial Plot - Selection of suitable site

- The FFS trial plot should be established within or nearby the FBO group farm (not newly developed area), so that all the member farmers can easily observe the trials.
- The entire FFS trial plot should also be homogeneous in terms of topography, soils, water regime so that the trial results would not be affected by other factors than the theme of the trial itself.

Establishment of FFS Trial Plot - Design

- Two plots are needed for one trial or demonstration to compare new techniques with farmers' (conventional) techniques.
- The size of the plots shall be determined considering topographic condition. One plot size should not be too small. Recommended plot size is at least 100 m².

Photos - Good performance

Village - T

30/09/2011



27/10/2011



16/11/2011



Village - M

01/02/2013



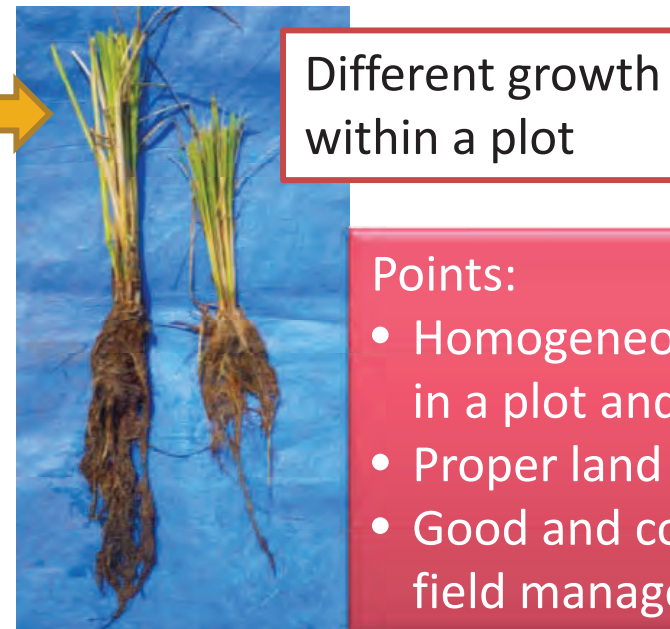
22/02/2013



23/03/2013



Photos - Poor performance



Points:

- Homogeneous condition in a plot and between plots
- Proper land preparation
- Good and continuous field management

Yield Survey - Whole area cutting method

Whole area cutting method

- Harvest rice of each plot
- (Dry), thresh and winnow
- Weigh grains
- Measure moisture content (MC) of grains
- Calculate yield



Example... (Plot A)

- Area: 500 m²
- Weight of grains: 90 kg
- Average moisture contents: 19 %
- Adjusted weight of grains (MC = 14 %) :
 $90 * (100 - 19) / (100 - 14) = 85 \text{ kg}$
- Yield: $85 / 500 = 0.17 \text{ kg/m}^2$
 or 1,700 kg/ha or 1.7 ton/ha

Evaluation

Conventional techniques	Improved techniques
Area: (_____)	Area: (_____)
Treatment:(_____)	Treatment:(_____)
Variety used: (_____)	Variety used: (_____)
Date of Sowing: (_____)	Date of Sowing: (_____)
Date of Transplanting: (_____)	Date of Transplanting: (_____)
Date of harvesting: (_____)	Date of harvesting: (_____)
Rice production (_____ kg)	Rice production (_____ kg)
Seed: (_____ kg)	Seed: (_____ kg)
Fertilizer: (_____ kg)	Fertilizer: (_____ kg)
Labor: (_____ person-day)	Labor: (_____ person-day)



Profitability



Productivity



Evaluation

■ Productivity (production per unit area)

■ Areas of plot A and B are the same;

■ Compare amount of production

■ Areas of plot A and B are different;

■ Compare “Yield” (= production / area, kg/m²)

■ Profitability (balance of cost and benefit)

■ **Net profit** = production value - production cost

■ 100 kg of rice: Le 50,000/bu. x 4 bu. = Le 200,000

■ 3 kg of seed: Le 3,000/kg x 3 kg = Le 9,000

■ 15 kg of NPK 15-15-15: Le 200,000 x (15/50) = Le 60,000

■ 10 man-days: Le 10,000/man-day x 10 man-days = Le 100,000

Net profit: Le 200,000 - (Le 9,000 + Le 60,000 + Le 100,000) =

Le 31,000

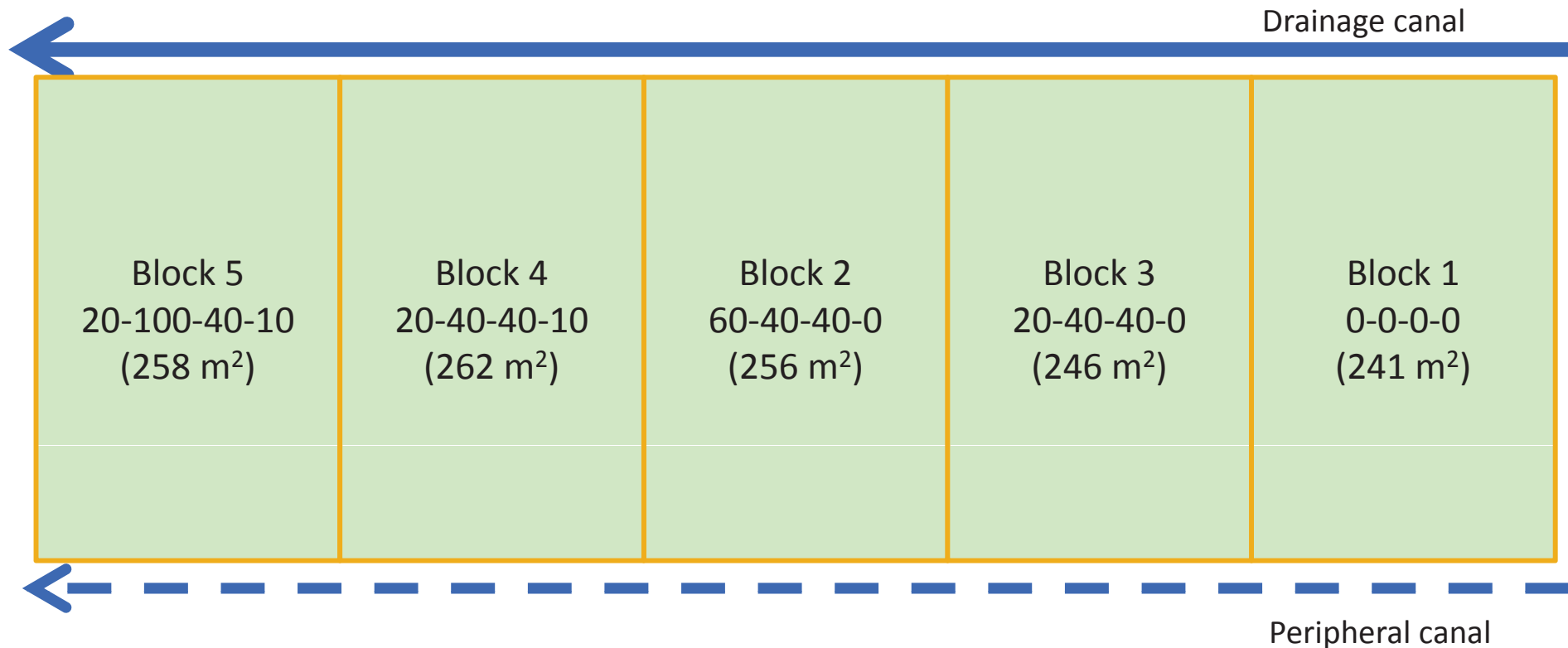
Summary

- **Timely preparation of FFS trial plot with willing participation of farmers** is necessary to implement the trial smoothly and to get reasonable results.
- **Simple trial regarding only one technique** is recommended. Other production techniques and field conditions should be the same between two plots.
- **Flexible design** of the plot is acceptable. Selection of suitable site is more important.

Sample of field layout

Variety: NERICA L19
 Sowing: Dec. 27
 T/planting: Jan. 17
 Harvesting: (end of April)

N:P₂O₅:K₂O:S =
 0-0-0-0 (Control)
 60-40-40-0 (Recommended by RARC)
 20-40-40-0 (Low N)
 20-40-40-10 (Low N, Add S)
 20-100-40-10 (Low N, High P, Add S)



Masineh
05/07/2013



Masineh
31/07/2013



Masineh
26/07/2013



Masineh
04/11/2013







Rotifunk
20/01/2014



Laya
05/02/2014



Masiaka
20/01/2014



Tawuya Munu
05/02/2014

Field Trial on Fertilizer Application Findings

- Repetition is necessary to obtain reliable data, because unexpected field conditions may affect the results of the trial.
- High yield record (more than 3 ton/ha) has increased season by season. The maximum yield was 4.2 ton/ha in the trial.

Summary

- Field trial is similar to FFS trial but more scientific. It needs more sub-plots and repetition to get reliable data.
- Simple design is suitable for FFS trial plot, because farmers learn rice production techniques on it.
- Even in FFS trial, uniform conditions and proper field management are crucial to verify the effectiveness of a new technique to be introduced.