

Doing good business with quality irrigated dry season lowland rice

Producer's reference Nigeria

Name:
Community / Local Government Area:
Telephone number:
Name of FBS Focal Person:
Name of Agricultural Extension Agent:
GES No:

Attendance of extension sessions

Farmers will be meeting every 2 weeks in 16 weeks for 8 sessions, see proposition below:

Topic	Date of session	Approved by AEA
1 Rice cropping calendar Choosing the good plot Measuring		
2 Land clearing, preparation and inputs needed		
3 Nursery operations and Transplanting		
4 Safe use of pesticides Weeds and fertility management		
5 Spraying insecticides		
6 Harvesting, threshing, winnowing & storing		
7 Sales Reimbursement of loans		
8 Evaluation of the season		

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Planning the key to success

Good day,

My name is **Aminat**. I am a rice farmer from Nigeria.

My objective is to have a lot of quality rice for my family and to earn a lot of money. To achieve that, I use the **Good Agricultural Practices**.

My husband **Yakubu** helps me on the rice farm.

To be sure of the market, I prepare my sales with the rice buyer before sowing.

To succeed in my production year, I plan my activities with the cropping calendar and with my knowledge of the growth cycle of my rice variety.

In this booklet I share with you my secrets how to produce quality rice. Follow me on the next pages to learn.



Understand the growth of rice for proper planning

For best yields I do my farming operations in line with the important periods of rice growth:

1. The Vegetative Phase → “Laying the foundation”
This is the first 2 months of a 4 month variety or the first 3 months of a 5 months variety. I do most of my farm operations in this important phase and I do them well because laying a good foundation for my rice is very important for a good harvest.
2. The Reproductive Phase → “Building the store”
This is when the rice plant begins to develop panicles and starts to develop flowers. This phase is about one month long.
3. The Maturity Phase → “Filling the store”
This is from when the flowers are fully formed to the harvest. This phase is about one month long.

I have also understood that for all rice varieties in the world, it is only the vegetative phase that is variable.

The last two phases (reproductive and maturity) are invariable but fixed at about one month each.

Only bird scaring and last day's water drainage from plots just before harvested will be the only activities.

So I do everything possible to do all activities well within the first two month. (Remember this example of a two month “foundation laying phase” is for a 4 months variety)

Knowing more about rice growth

Why is it likened to “**laying the foundation**”? This is because to have high yields the rice plant needs to have many tillers which will in turn give many panicles and grains. The plant also needs to be fully green (a sign that the plant has enough food to be used later to fill the grains). All farm activities during this phase e.g. producing good seedlings, good soil preparation, early transplanting, early weeding, NPK and N fertilizer application, etc. are all meant to positively influence the number of tillers, the greenness (the food to be used later) and to achieve maximum plant growth.

What does “**building the store**” represent? The rice grains found on the panicles are actually the end product of rice farming efforts. The more the panicles the more the grains. The grains represent the store and the larger the store the more space that can be filled. In fact the farm activities at about this period such as second weeding, second application of nitrogen fertilizer and proper water management are aimed at helping the plant maximize the formation of large panicle, plenty and large stores in which the rice plant can store its product.

















What does “**store filling**” represent? At this phase, the rice plant fills the grains from what is produced in the plant leaves. As soon as the flowers appear, the food already produced in the leaves and stored in the plant begins to be mobilized into filling the grain. If the foundation was well laid and the stores were well built, then the store will be well filled, meaning there will be many panicles with full grains and harvest shall be plenty.



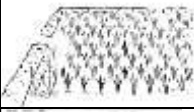

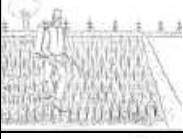
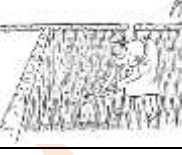
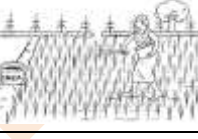



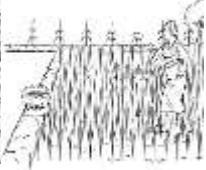





It is important to carry out the activities at the optimum time.


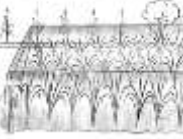





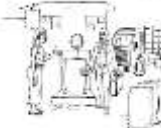


W0	W11	W12	W15	W16	W20
Week 0	to	Week 11	Week 12	to	Week 15
<i>Foundation of store</i>			<i>Building store</i>		<i>Filling store</i>






1. Cropping calendar






Timeline/ Weeks	Growth Stages	Activities		
-W3				
-W2				
-W1				
W0				
W1				
W2				
W3				

Timeline/ Weeks	Growth Stages	Activities		
W4				
W5				
W6				
W7				
W8				
W9				
W10				
W11				
W12				
W13				
W14				

Timeline/ Weeks	Growth Stages	Activities		
W15				
W16 to W19				
W20				
W21				
W22				
W22				

I plan all my farming activities using the activity and the rice growth calendar (see an example of a time-line calendar laid out in weeks below)

Cropping Week		Month	Price of paddy
W1		December	 Low price
W2			
W3			
W4			
W5	W1	January	 Medium price
W6	W2		
W7	W3		
W8	W4		
W9	W5		
W10	W6	February	
W11	W7		
W12	W8		
W13	W9		
W14	W10	March	
W15	W11		
W16	W12		
W17	W13	April	
W18	W14		
W19	W15		
W20	W16		
W21	W17		
W22	W18		

Cropping Week	Month	Price of paddy	
Ready for sales	W19	May	
	W20		
	W21		
	W22		
Ready for sales	June	 Good price	
	July		
	August		
	September		

2. Know buyers and prices of rice



Rice needs a lot of work and inputs. For this reason, I study who buys rice at a good price, when and where.

- Paddy prices are high in June and July
- Paddy prices are low from October to December

Good quality rice is needed all year round.

I get organized in a group of rice farmers. Like this, we can sell the paddy at a good price.



At the beginning of the season, my farmer's group does a contract with buyers of rice. We make sure we keep the contract at the end of the season.


3. Units to know

I have measured my plot because this helps me to buy the quantity of seed, pesticides and fertilizer needed and to plan work.

My plot measures one hectare. One hectare is 100mx100m

To know the **size of your plot** of land:

You measure		For plot size you multiply Length with Width
Length of your plot in meters	Width of your plot in meters	
		 m ²

You divide the size in m² by 10,000 to know the size in hectare. Register here  the size of your rice field

hectare

Attention: All quantities of seed, fertilizer and pesticides, which I give you, are for 1 hectare

If your plot size is	Multiply quantities by
500 m ²	0.05
1,000 m ²	0.10
2,000 m ²	0.20
3,000 m ²	0.30
4,000 m ²	0.40
5,000 m ²	0.50
6,000 m ²	0.60
7,000 m ²	0.70
8,000 m ²	0.80
9,000 m ²	0.90

Weight: 10 bags of 100 kg of paddy are one metric ton of paddy (1 ton).

4. Choosing the good plot of land



1 month before the rains stop, I choose the field where I want to grow rice. If I am using the previous field I cultivated during the first season, I make sure my crop is out latest end of October.

I choose a fertile land with good drainage and high water retention capacity such as clayey and loamy soils because my rice needs a lot of water to grow well. I do not use sandy soils.

I only use land with access to irrigation systems such as a dam, river, or tube well. If I can, I use fields on which I have planted rice, groundnut, cowpea or soy beans the year before because this is very good for the soil fertility.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5
X								

5. Choosing the right variety

I only use improved varieties and certified seeds that are recommended by the extension staff and Agricultural Development Programme (ADP).

Here you see what yields can be made with quality seed of improved varieties and if you apply all Good Agricultural Practices:

Variety	Possible Yield kg/ha	Days until harvest	Other strengths
FARO 44 (SIPI)	6,000	115 to 125 Medium maturing	Long grain
FARO 57	6,000	110 to 120 Medium maturing	Long grain
FARO 60 (Nerica L19)	6,000	120 to 130 Late maturing	Long grain Moderately tolerant to iron toxicity
FARO 61 (Nerica L34)	6,000	120 to 130 Late maturing	Long grain
FARO 52 (WITA 4)	6,000	125 to 135 Late maturing	Tolerant to iron toxicity and drought Long grain

Remember: 6,000 kg of paddy are 6 tons.

6. Buy quality seed and fertilizer



I buy quality seed and fertilizer from authorized dealers, from Agricultural Development Programmes (ADP), National Agric. Seed Council or multipliers of certified seed at least 2 weeks before sowing. For 1 hectare of land, I need 30 kg of seeds.

I also buy mineral fertilizer because it helps my rice plants to grow and tiller well and to produce big, well-filled panicles. This is the fertilizer I need for 1 season and 1 hectare:

- 200 kg NPK 15.15.15 (4 bags)
- 100 kg urea (2 bags)

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5
	X							




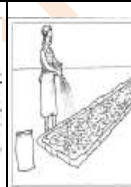
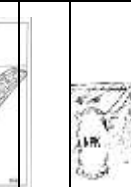


7. Good Soil Preparation and Nursery Management

I always have my focus on the date I intend to transplant. I start my soil preparation six weeks before transplanting and my nursery activities 3 weeks to transplanting date. These are the advantages of starting soil preparations well in time:

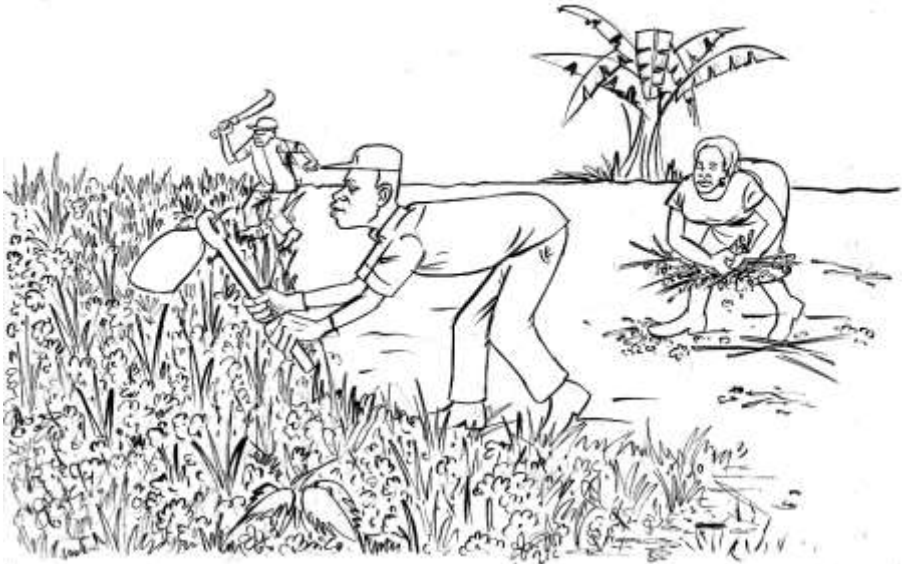
- a) Organic matter decomposes well
- b) Weeds are reduced
- c) Harmful insects die.

2 to 3 days before first plough, I flood my field. I then leave the field fully flooded for 2 to 3 weeks before the second soil preparation.

I have enough time to raise my nursery 3 weeks to when I want to transplant and also get all my farm inputs ready.

						
-W3	-W2	-W1	W0	W1	W2	W3

8. Clearing the land manually



My neighbours clean their field with hoe and cutlass

- 2 weeks before preparing the main plot and
- Shortly before I sow onto the nursery. This is when the rains have stopped.

After cleaning, they put the residues at the side of the field on heaps to dry. They told me that the nutrients are not getting lost by doing so. When the vegetation was infected, they burn the residues.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
X									

9. Safe use of pesticides

For safe use of pesticides I respect and make my workers respect these rules:

1. I only use pesticides approved by Ministry of Agriculture and Rural Development of Nigeria.
2. Cautious storage, use of pesticides and recycling of used packing material out of children's reach
3. I read the label of the pesticides to know the correct dosage and utilization or I contact my extension officer for assistance
4. I wear protective clothes and mask
5. I maintain my sprayer well to ensure that the sprayed quantity is correct. This saves money and work time.
6. During spraying, I do not eat, drink or smoke.
7. Spraying is work for adult professionals. Children do not touch pesticides and stay away from spraying!
8. I wash the training materials thoroughly and store them
9. I bury or burn empty containers in a metallic barrel far from houses when there is no wind.
10. After spraying, I wash myself and change clothes.



Attention!
Always wear protection cloths and equipment when spraying pesticides!

My advantages:

My plants are in good health and give good harvest.

My workers and me do not poison ourselves during and after the spraying

There will be no danger for my family, particularly my children.

10. Cleaning the land with herbicides



My husband Yakubu cleans my field 2 weeks before preparing the main plot and shortly before I sow onto the nursery. This is done when the rains have stopped.

We use the following herbicide because it makes work faster and easier:

Ingredient	Example of product	Dosage per 15l sprayer	Dosage per ha	Ltrs of Water/Ha	15 litre Knap-sack loads/ha
Glyphosate	Veesate, Roundup, Wuta-Wuta, Touch-down etc.	157 ml (1 peak milk tin)	4 litres	400	26


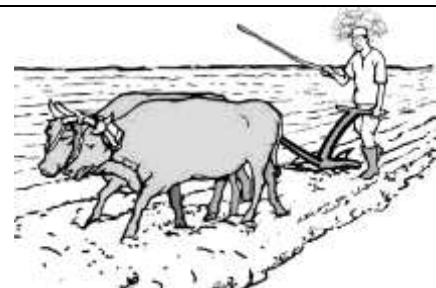
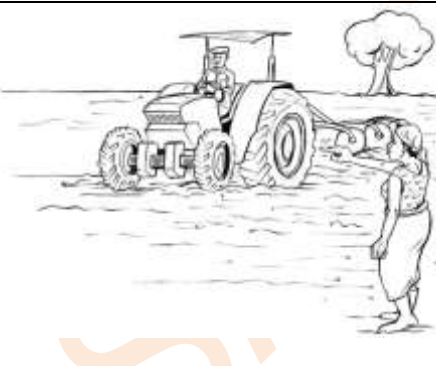
Yakubu sprays the field on a sunny and not windy day. **He respects the safety rules in chapter 9.**

After spraying, I wait 10 days before preparing the land.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
X									

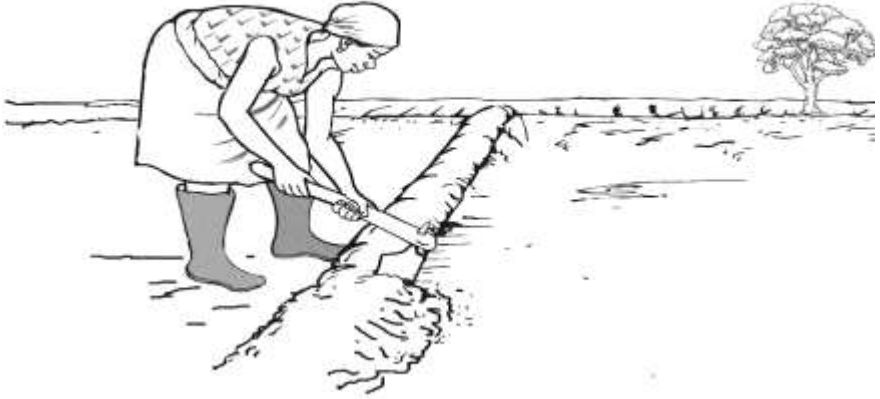
SAMPLE

11. Techniques to prepare land

	<p>My neighbour prepares her land manually well between 20 and 25 cm depth and harrows it to get a good seed bed.</p>
	<p>Several of our neighbours plough and harrow their field well between 20 and 25 cm depth. They do not plough deeper because that will push the food for the rice too far into the ground.</p>
	<p>I hire Tractor to plough and harrow my field during land preparation as it saves me lot of work and time. I also level the field with a rake or flat wooden bar.</p>

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
		X							

12. Establishing bunds



After preparing the land, I build bunds.

I divide the field into basins (5m x 5m or 10m x 5m), I level each basin properly well and build bunds around the basins to control the water in the basin.

I plant maize around the field. This will stop stem borers from attacking my rice.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
		X							

13. Flooding the field



After establishing the bunds, I let water into the basins just so that the field is covered with water.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
		X							

14. Preparing the seeds



3 days before sowing to the nursery, I treat the seeds to protect them against pests and diseases and to make them grow well:

- I put the seeds into water for 24 hours.
- I remove the bad, floating seeds and other impurities.
- I put the seeds into a jute bag
- I put the bag into a warm and shady environment for 48 hours so that they sprout.
- I also do a viability test. I put 2 to 3 sets of 100 seeds each in wet medium (like sand, soil or tissue) upon a saucer for 4 days. Then I count the germinated seed from each set of 100 seeds to know the germination percentage of my seeds.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
			X						

15. Establishing the nursery



I raise my seeds in nursery beds to get strong seedlings and to save seed.

- I choose a field close to the main paddy that is sunny, fertile, well drained and which I can water well. I do not choose a field which is at the risk of being flooded.
- For 1 hectare of paddy, I need 10 nursery beds.
- I prepare my nursery beds 1 day before I sow.
- Each nursery is 10m long, 1m broad and 4 to 6 cm above the ground level so that the seeds are not taken away by the water.
- I build bunds around the nursery to control the water.
- I let water in the nursery, labour and level the nursery beds.
- After levelling, I remove the excess water.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
			X						

16. Nursery operations



I sow onto the nursery when the rains have stopped.

I broadcast the sprouted seeds on the wet nursery bed.

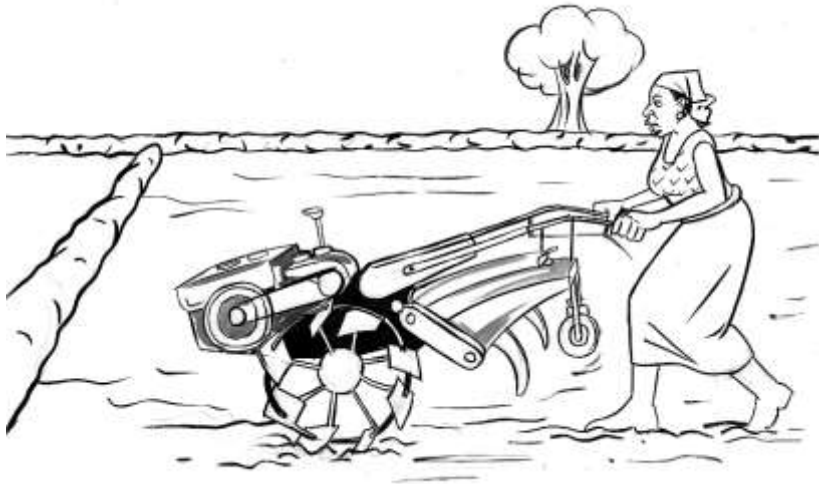
I cover the seeds slightly with soil (half a cm max.) and a 1cm layer of mulch.

For 1 nursery bed, I use a maximum 2 kg of seeds (weight before germination). For 10 to 13 nurseries I need a maximum of 25 kg seeds before germination.

7 days after sowing, I flood the nursery to a depth of 2 to 3 cm. I slowly increase the depth to 5 cm until the day of transplanting.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
			X						

17. Use of power tiller



I till my main field to break the soil when the rains have stopped. Before ploughing and harrowing I flood my field for 2 to 3 days so that the soil becomes softer.

After flooding my field, I use a power tiller to puddle the soil. This goes very fast and saves me a lot of hard work and time.

After labouing, I flood my field at 10 cm depth so that the weeds rot and insects on the field die.

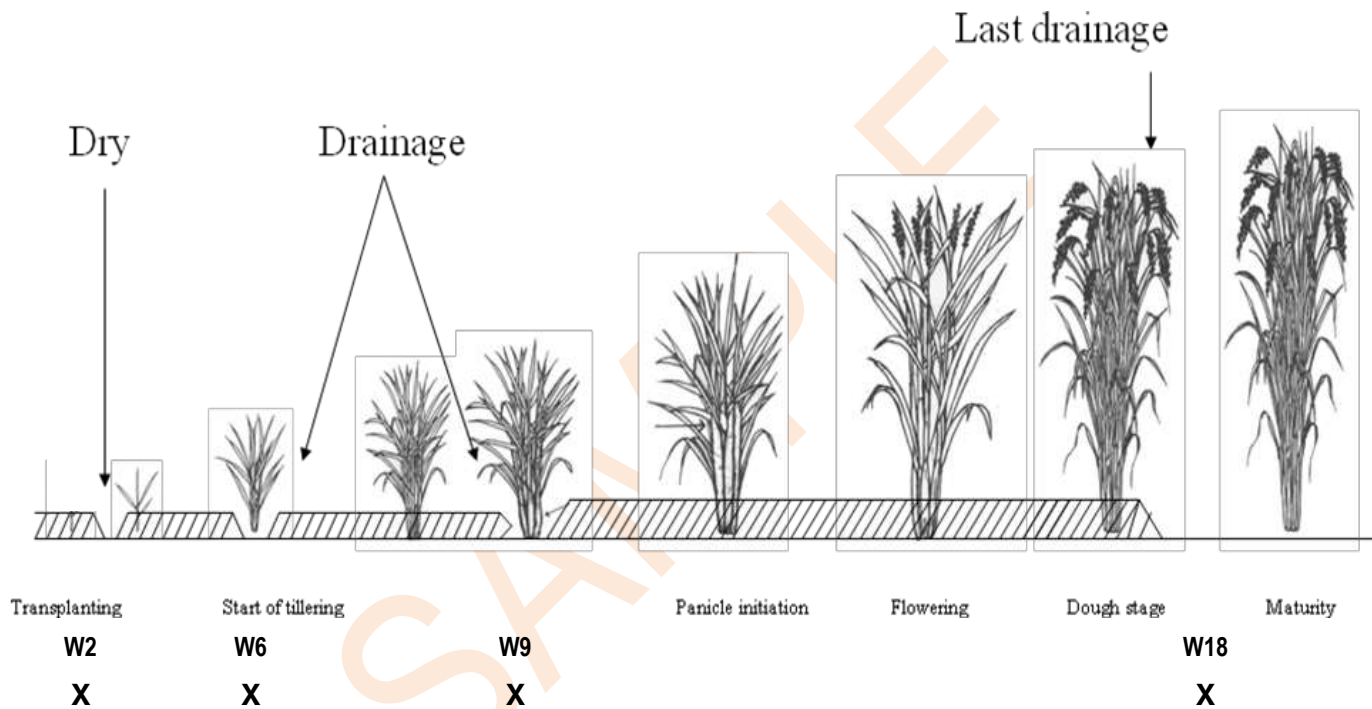
After 2 weeks I remove the water from the field and again I use the power tiller to plough the field at 10 cm depth, harrow and puddle to kill the germinated weed seeds.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
					X				

18. Timely water management

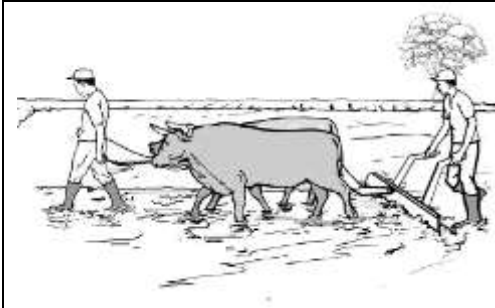
I have five important periods during which I bring in water or drain water from the rice plots:

1. Before transplanting I drain water from the plot. I leave only 2 to 3 cm of water on the field.
2. 2 to 3 days after transplanting I bring in water to 3 to 5 cm level.
3. 2 days before the first weeding or application of herbicide, I drain water from the plot so that the herbicide and first Urea fertilizer application are successful. 3 to 4 days later, I flood the plot to 10-15 cm depth.
4. Again, 2 to 3 days before the second urea application or second weeding I drain water from the plot to a level between 5 to 10 cm . I do this to make sure that the urea is not lost in too much water. 3 to 4 days after, I flood the plot again to -15 cm depth.
5. 1 week before the start of the harvest, I drain the water from the field so that the rice grains can dry well.



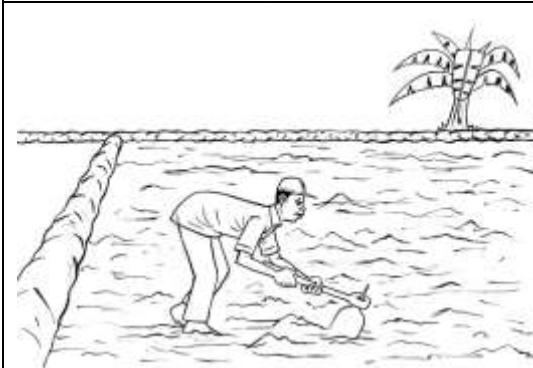
Adapted from Africa Rice publication (Defoer et al. 2009)

19. Leveling

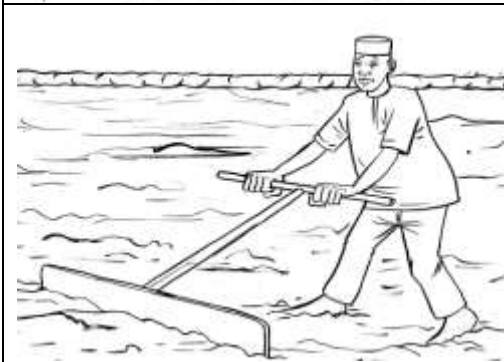


My husband together with our neighbour levels the field well.

Levelling helps all my plants to get water, become strong, grow at the same rate and it keeps the weeds little.



If you do not have oxen, you can do the levelling manually using hoe.



... or a flat wooden bar.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
					X				

20. Fertilizing with NPK 15.15.15



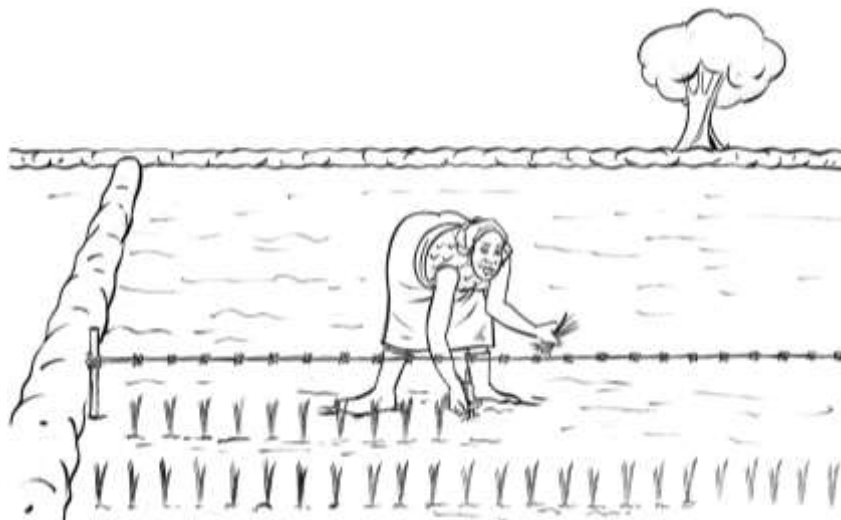
After levelling, I remove the excess water from the field.

I broadcast the fertilizer NPK 15.15.15 on the field. This fertilizer helps the plants to grow, to be healthy and to produce a lot of tillers. I work the fertilizer well by feet into the wet soil.

For 1 hectare, I need 4 bags of 50 kg each of NPK 15.15.15.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
					X				

21. Transplanting and refilling



I transplant my seedlings 3 and not later than 4 weeks after sowing. This is when they are strong enough and not in danger of tearing or over flown with water.

I wet the nursery just before uprooting to soften the ground. I uproot the seedlings carefully and plant them quickly into the rice paddy.

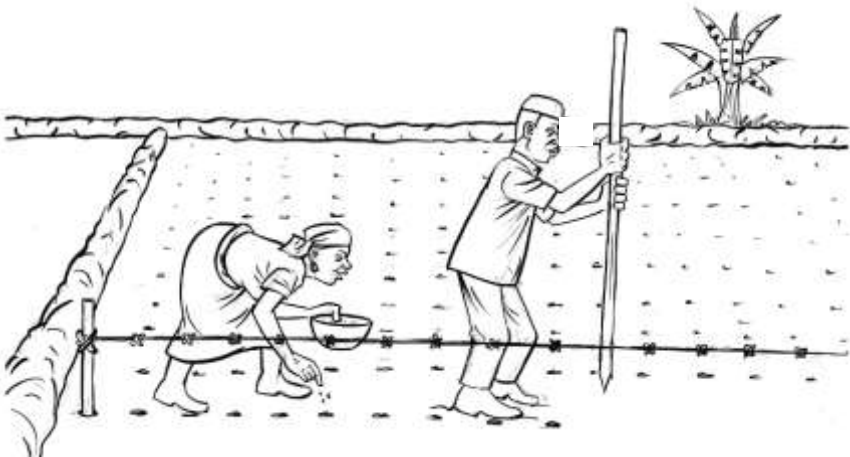
Planting rice in lines makes work easier. I put pegs on two parallel borders of the field. I place a cord between two pegs. I build hills along the cord with a distance of 20 cm between each hole. I put 3 plants per hill. I leave 20 cm between lines.

I plant the seedlings such that the **green part of the plant remains above the ground surface**. This is at about 3 cm depth. Like this, the plant will develop many tillers.

7 days after transplanting I refill the gaps in which plants have not settled down with leftover seedlings from the nursery.

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
						X			

22. Direct sowing of seeds



Only if my field is wet throughout the year, I can plant the seed directly into my paddy.

Sowing rice in lines makes all other work easier. I put pegs on 2 parallel borders of the field. I place a cord between the 2 pegs. I dig seed holes along the cord with a distance of 20 cm between each hole. I leave 20 cm between lines. I put 2 to 3 seeds per seed hole at 3 to 4 cm depth. By doing so, I have 250,000 seed holes on one hectare.

Attention: If my field is not wet throughout the year, I do not seed directly because my plants cannot grow well. Seed quantity for direct sowing is 50kg/ha

-W3	-W2	-W1	W0	W1	W2	W3	W4	W5	W6
			X						

23. Buying good insecticides and fungicides



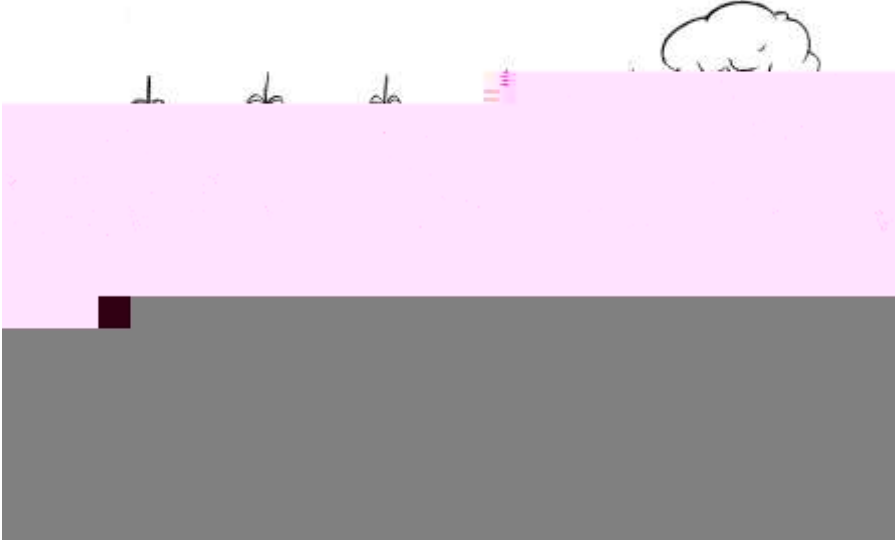
Only when I see attacks, I buy **approved and recommended insecticides and fungicides**. I do not buy them in the open market. I buy **only from authorized sellers**

Every season I inform myself well because the recommendations change. These are the fungicides and insecticides I need for my rice:

Type	Ingredient	Example of product	Dosage for 1 ha
Fungicide	Dithane M-45	Mancozeb	2 kg/ha
Insecticide	Cypermethrin/Lambda-cyhalothrin Deltamethrin	Cymbush Cyper-1 Karate Deltaforce	1 Litre/ha

W0	W1	W2	W3	W4	W5	W6	W7	W8	W9
				X					

24. Fighting diseases and insects



I look out for signs of diseases or insects every time I work in my rice field. I do this until the harvest seasons. If I see signs of diseases (rice blast, brown spot or grain discoloration) or insects, my husband sprays my field with insecticides or fungicides.

Before he sprays, we remove excess water. He sprays only in the morning or evening on a clear and not windy day. He follows the safety instructions in chapter 9.

Recommended fungicides and insecticides are on the next page.

1 day after spraying I increase the water level to the same level as before the spraying.

W0	W1	W2	W3	W4	W5	W6	W7	W8	W9
				X					

Good luck and good bye



Dear friends,

Now, you know all my secrets on doing good business with the production of quality rice.

Do it like me, do good business with the production of quality rice.

I wish you good luck and a lot of success,

Goodbye, your friend Aminat.

Editorial work

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