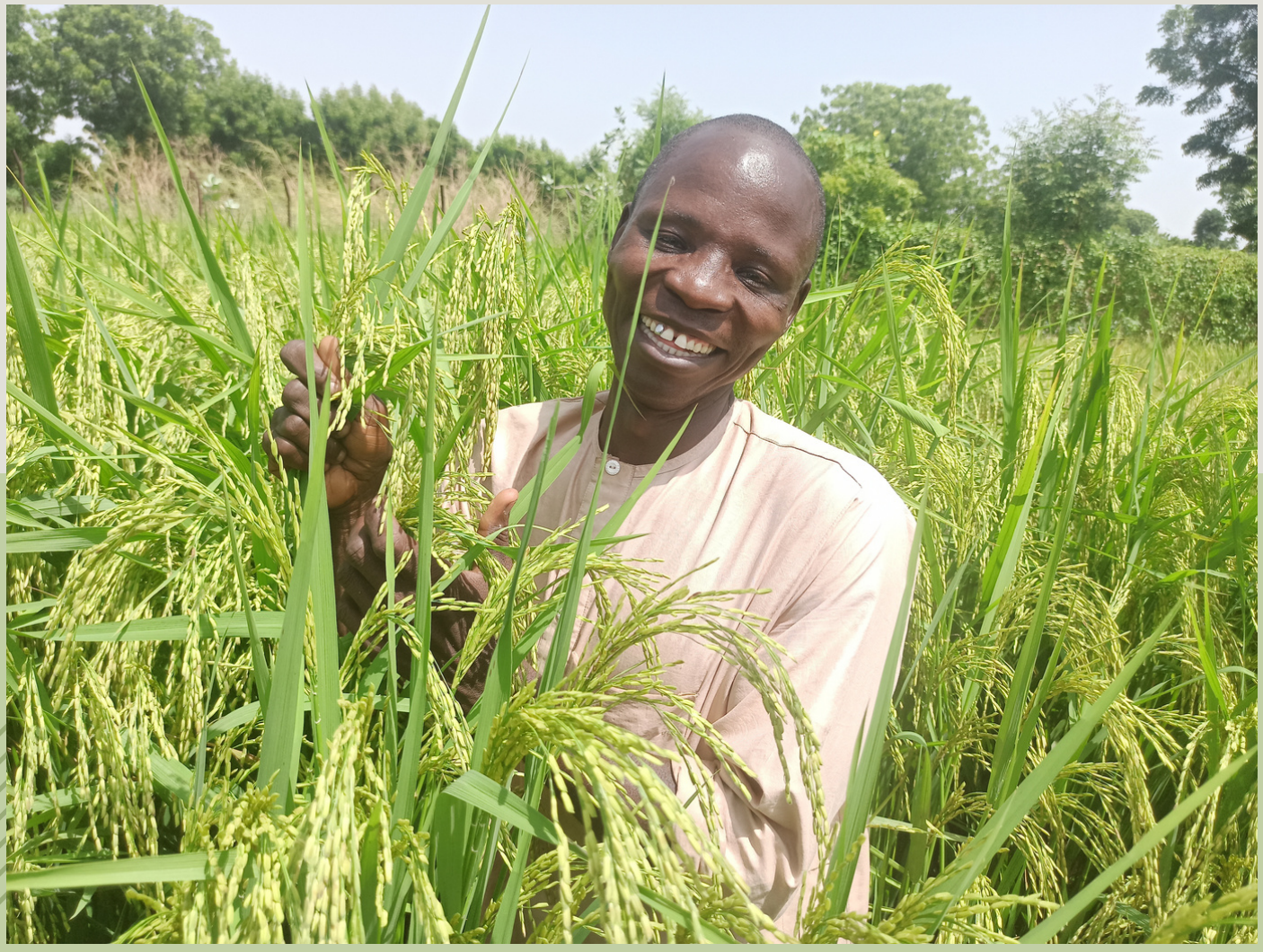
LINKS
Catalysing Economic Growth for Northern Nigeria

TETRA TECH
International Development

TRAINING GUIDE ON SYSTEM OF RICE INTENSIFICATION (SRI)



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INTRODUCTION

System of Rice Intensification (SRI)is a climate-smart practice that uses a cultivation system of early establishment, reduced population, use of organic fertilizer and alternate wetting and drying that creates aerobic soil conditions that reduce the production of methane and other GHGs (by between 22% and 64%). It allows farmers to increase their yield per unit area (by between 50 – 100%) using less seed, water, and inorganic fertilizer.
As part of the LINKS Project to create more awareness and practice of SRI in Nigeria, this technical manual is designed to assist SRI adopters in implementing trainings and establishment of SRI-compliant farms.

Rice Yield Components

To achieve higher productivity in rice:

- More number of effective tillers are required,
- More number of grains per panicle are required,
- High grain weight is required, and
- The roots should have extensive and healthy growth.

SRI Practices and Implementation

SRI was originally developed for irrigated rice, and much of the adoption to date has taken place in Asia, where irrigated rice systems tend to dominate. A wealth of good practices has developed and proven efficient for using SRI with irrigated rice production.

The Six most widespread and most often cited practices are:

1.Transplant early, at the 2-leaf stage (about 8-12 days after germination)
2.Plant only one seedling per hill
3.Adopt wide spacing (30 cm x 30 cm), in a square grid
4.Fertilize with organic matter, and add chemical fertilizer only as needed
5.Apply alternate wetting and drying irrigation during the vegetative growth phase; and
Use mechanical weeders

SECTION 1: SEED PREPARATION

Clean and healthy seeds should be used. Ensure that seeds are sourced from reliable seed producers. if you don't have access to seed sources contact your extension officers for guidance. Farmer saved seeds should not be used for more than three cycles of production.

For eliminating non-viable seeds (which will not germinate), a simple method can be used: Seeds are placed in a container of water: the seeds that are not fully mature (partially or fully unfilled) will be lighter and will float to the surface, while fully mature seeds will be heavier, and sink to the bottom.

Most farmers seed their conventional nurseries without soaking first the seeds. Seed soaking will help to initiate the germination process and obtain a more regular germination of the seed and is highly recommended for the SRI method.

After separating out the viable seeds:

• Soak seeds in clean warm water for 24 hours to start the germination process

• Drain the water and either:
  - Sow seeds directly into the nursery; or
  - Dry them in a shady place and use dry seeds for direct seeding into the field.

• For colder climates: proceed to pre-germination of seeds, where seeds are kept in a burlap sack or piece of jute sack in a warm place for an additional 24-48 hours. Special care must be given not to damage the small roots and shoots when handling pre-germinated seeds. This step is recommended for colder climates or season only (where germination can be slow) but is not necessary in a warm and hot climate (where germination is typically fast).

Figure 1: Pre germinated seeds before sowing

SECTION 2: NURSERY BED PREPARATION

With SRI, plants don't spend a long time in the nursery, so it is recommended that farmers first finish their land preparation before sowing the nursery. It is advisable to decide on the transplanting technique before the nursery is installed, so there is time to make, purchase or find the necessary tools needed for it.

Site selection

- The site of the nursery should be as close to the field as possible, or even in a section of the field, as seedlings are ideally transplanted within 15-30 minutes after leaving the nursery to minimize transplanting shock
- Have a reliable source of water close by for frequent watering (1-2 times/day)

Nursery bed size

- SRI nurseries are 1% the size of the field because less seeds are needed
- Beds are ideally 1m wide. This width:
  - Allows easy access to the nursery bed from both sides
  - Prevents the need to step on the nursery bed

3. The bed length depends on how large your nursery needs to be:

- For large nurseries, split into multiple beds, each 1m wide
- E.g., a 10 m2 nursery can be 1m x 10m, or two beds each 1m x 5m
- Always maintain the 1m bed width, regardless of the length or number of beds
- Mark out the beds in a straight rectangle using twine and stake

Nursery bed size

1.Mix equal parts of soil, compost/well dried fine manure and sand to create a well- textured and fine soil. When seedlings are uprooted, soil should be loose enough that plants can be easily separated during transplanting, but not so loose that the soil falls off the roots

2.Create a raised bed with mixed soil to a height of 10-15cm. At the time of transplanting (8-12 days of age) seedling roots will extend to about 10-15cm, so the nursery bed will need to be sufficiently deep to allow for easy uprooting in a manner that doesn't damage the young seedlings' roots

3.Pre-water the nursery 1-3 days ahead of sowing to create a consistent seed bed; the soil will settle, and the seedbed will become denser and more regular, which will improve germination and seedling development.

4.Sow seeds at a low density. One of the secrets to a good SRI nursery is to sow seeds at a low density. 100 grams of seeds are used for each 1m2 of nursery bed

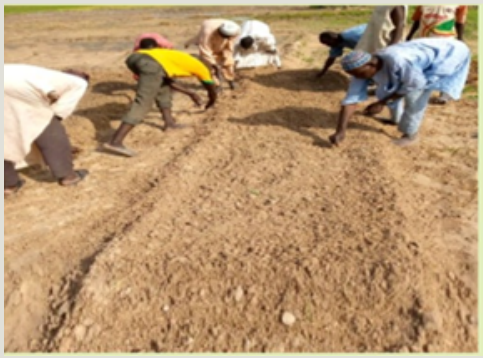


Figure 2: Nursery bed preparation

Figure 3: Sowing of seeds

Covering the Seeds

- Cover the seeds with a thin layer of fine soil to protect them from drying out, washing away, or being eaten by birds, insects, or rodents. Tap the soil with your hands to eliminate any air space between seeds and soil, which will improve the germination process
- Cover with a thin layer of straw or palm fronds and water the nursery well

Nursery Management

- Water nursery 1-2 times per day, preferably with a watering can so as to disperse the water and prevent channeling and erosion
- Check the nursery regularly, and guard against pests like birds, rodents, and ants
- Ones the rice shoots push through the soil (already at 2 days after sowing), remove the straw gradually.

Figure 4: Mulching of nursery

Figure 5: A well established Nursery

SECTION 3: LAND PREPARATION

Proper land preparation helps unlock the potential of System of Rice Intensification (SRI). Field preparation ensures that the rice field is ready for planting. A well-prepared field helps in breaking down of pest lifecycle including weeds, recycles plant nutrients as well as provides a fine tilt for root anchorage and less transplanting shock. Land preparation starts with burning of crop residue, watering the field for germination of last crop seeds, followed by harrow. Depending on the history of the soil, ploughing and double harrow is used in virgin land or land not recently cultivated.

The following routine operations are recommended for SRI production:

- Plough and Harrow the soil after organic matter incorporation
- Double harrow is encouraged for adequate aeration
- Good bunding and leveling
- Make bounds to retain moisture in the field
- Construct 5m x 5m basins or according to soil types. Bigger basins ensure effective land utilization

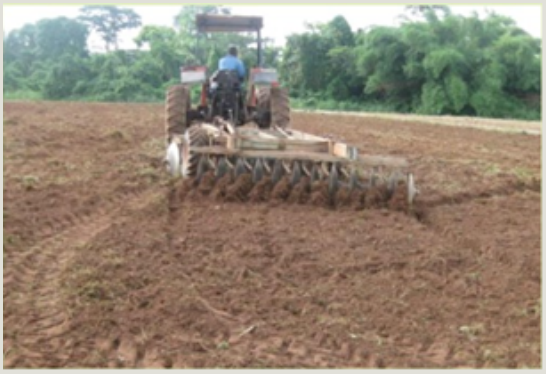


Figure 6: Land preparation

Figure 7: Bed levelling

Incorporating of Organic Matter

Improving soils through additions of organic matter (OM) is one of the four principles of SRI, and represents the basis for SRI fertilization, in addition to providing other important benefits, such as increased soil water retention, enhanced soil microbial life, and improved soil structure.

- Organic matter can be applied before the field is plowed or harrowed
- A well-decomposed OM can be applied after land preparation operations
- Broadcast thoroughly on the basins if the field has been prepared
- Apply OM uniformly across the field
- Add chemical fertilizer only as needed.

Bed levelling

Carefully leveling the plot or field is very important when using SRI, especially under irrigated conditions. Well-leveled fields have a series of advantages; for irrigated rice these include:

- Water distribution is more even across the field
- Less water is needed to irrigate the field
- Small seedlings require a well-leveled field, so as to not drown or remain dry during irrigation
- Crop stands develop more evenly, increasing yields and making harvest easier
- If fertilizer is applied, distribution across the field is more even
- If fields are uneven, surface-applied fertilizers tend to accumulate in lower-lying areas of the field

Well-leveled fields also have advantages for rain-fed systems, with similar benefits as mentioned under irrigated systems. Under rainfed conditions, a big challenge can be water management, with either too much or too little water available during the cropping season. The challenge posed underwater management can be corrected/ addressed with earthen bunds.

Pre-transplanting Irrigation

Once seedlings are about to be transplanted, the well levelled bed formed are irrigated to field capacity about 12 hours to the transplanting activity. Similarly, the nursery bed is also irrigated to allow for healthy seedling uprooting operation.

SECTION 4: TRANSPLANTING

Seedlings are ready for transplanting at the 2-leaf stage, which is generally 8-12 days after germination. During transplanting, a spacing of 30 cm × 30 cm should be maintained.

The range of days to reach the two-leaf stage depends on how quickly and well the seeds germinate and the seedlings grow. The variety used, seedbed quality, temperature, and watering all impact seedling development.

MARKING STRATEGIES

SRI uses a precise grid for plant spacing, ensuring that each plant has plenty of space and that mechanical weeding is fast and efficient. To achieve this spacing, SRI practitioners use a system for marking where each plant goes. The three most common marking strategies are ropes, rakes, and rollers. Many other methods exist, however, and there is much room for innovation

A. Transplanting with Ropes

Ropes are most used for planting rice in lines, and many technicians and farmers are already familiar with the technique. Nevertheless, there are some technical details that can make planting with ropes for the first time much easier and faster. Transplanting can be done with one single rope but using three separate marked ropes will make transplanting easier and faster.

Preparing the ropes

- ·Measure three lengths of rope:
  - Two pieces long enough each to cover the length of the plot, with some extra length.
  - One piece long enough to cover the width of each planting bed, with some extra length.
  -

In every 30 cm, mark the rope by tying a piece of colored string or plastic into the rope (i.e., between the strands of the rope). To do this, the string can be laid on the floor with a measuring tape, and with a pen or marker the string gets marked exactly at 30 cm interval. Old cloth is ripped, or colored string is cut into long pieces that will then be tied into the rope. Below is an image of a marking rope using small sticks instead of cloth or string for the markings.

Figure 8: Measuring Rope

Things not to do:

- **Do not** tie a string or plastic piece around the rope: the string might slide along the rope and thus the spacing will not be correct anymore
- **Do not** mark the rope with a colored marker or with tar: once the rope is immersed into mud, the marks will not be visible anymore
- **Do not** tie knots with the rope itself—there are two problems with this: i) once the rope is immersed into mud, the marks will be difficult to see; ii) when tying a knot with the rope, precise spacing of 30 cm will be difficult to be maintained as the rope shortens with each knot. We have tried this out several ways, but at the end there has always been some irregularity with the spacing.

B. Marking Rakes

Marking rakes are simple wood, metal or bamboo rakes that are custom made for a specific spacing, such as 30 cm. How to use a marking rake?

- Drag the rake along one straight edge of the field (if there is no straight edge, use a rope and stakes to create one, preferably along a long edge of the field), checking continuously to make sure that marks are visible, and the lines are straight and in line with the edge of the field. When you reach the far end, turn around and repeat, using the last row of the previously marked lines as the first row of the next set of lines.
- Next, begin marking a straight line along an edge of the field perpendicular to the first edge marked (using stakes and a string again if the edge is not yet straight). Lines marked need to be perpendicular to the first set of marking, creating a square grid. Repeat as above, until the entire field is marked.
- Transplanting is done at the intersections, where the two sets of lines cross

Figure 9: Use of rakes for creating transplanting intersections

IMPORTANT: when using a rake, transplanting is done moving forward—not backward—in order to control where to put the feet and not to step on the marks. When using a rope, however, transplanting is done by moving backwards.

C. Marking Rollers

Rollers are an adaptation based on marking rakes, but unlike marking rakes, rollers mark the entire grid in one pass.

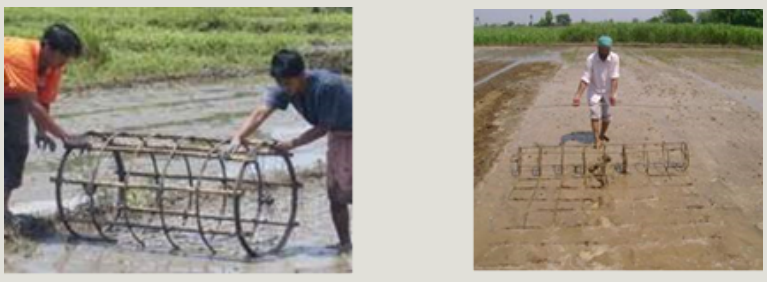


Figure 10: Uprooting and Transporting Seedlings from Nursery to Field

Uprooting and Transporting Seedlings from Nursery to Field

The most important part of transplanting is to minimize stress and trauma to each seedling. Be gentle, careful, and quick.

- Water the nursery the morning before transplanting
- In a very hot climate, this is important, as it will minimize the danger of desiccation and improve how quickly the seedlings can get reestablished after transplanting
- Carefully remove seedlings from the nursery
- If the nursery was lined with plastic sheets or banana leaves, lift the soil and seedlings together
- If the nursery bed was not lined, carefully cut in with a shovel, parallel to the soil surface and well underneath the roots (about 15-20cm deep), then lift the seedling/root mat in whole sections, and place them carefully on a tray
- Leave the soil intact on each plant's roots as much as possible, don't shake the seedlings to get rid of the soil and don't wash the roots—farmers might be used doing this traditionally, so explain the logic for protecting the roots to the workers
- Transplant uprooted seedlings within 15-30 minutes and take care to not let them dry out before transplanting. Uproot only as many seedlings as your group will be able to transplant within this 15–30-minute window
- Designate 1-2 people for uprooting and transporting seedlings to assure the constant supply of seedlings.

    - During transplanting, plant only one seedling per hill
    - Gently place Seedlings in the soil
    - Water the field lightly after Transplanting to ensure root/soil contact
    - Supervise all workers to make sure that they are:

All these elements are not difficult to do; they just need to be explained well in the beginning, and farmers need to understand the reasons behind each of them

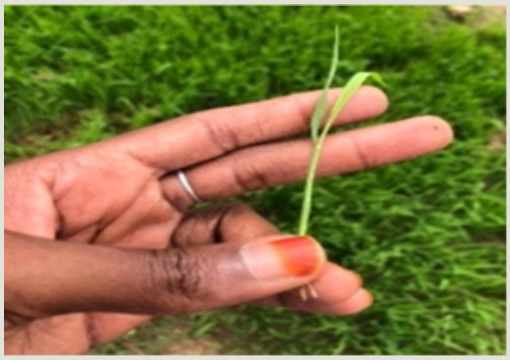


Figure 11: Seedlings at two leaves stage

Figure 12: Transplanting in progress

SECTION 5: PLANT ESTABLISHMENT (AFTER TRANSPLATNING OR DIRECT SEEDING)

- Until the young plants are well established it's important to keep them from experiencing drought stress. In irrigated fields, keep the soil moist, not flooded or only slightly flooded, and do not let the soil dry out.
- Check plants daily and water as necessary. Alternate wetting and drying irrigation can start when plants are well established, which is typically 1-2 weeks after transplanting, or 3-4 weeks after direct seeding.
- In rainfed fields, take whatever measures are available to minimize stress to the establishing plants, and assure the soil stays moist for the first 1-2 weeks after transplanting, or 3-4 weeks after direct seeding.

Plant establishment covers the first 1-2 weeks after transplanting, or the first 3-4 weeks after direct seeding.

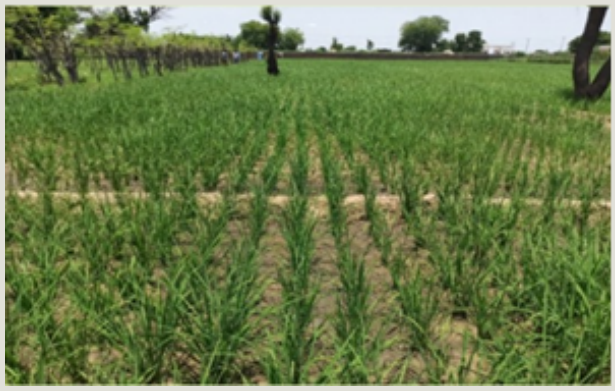


Figure 13: A well established SRI field at 4 weeks

SECTION 6: VEGETATIVE GROWTH STAGE

The vegetative growth stage lasts from plant establishment until flowers emerge.

Water Management

Once the plants are well established, allow the soil to dry between each watering, which is called intermittent irrigation, or alternate wetting and drying (AWD). How this is done will vary depending on irrigation water availability, local soil conditions, amount of organic matter added to the soil, weather conditions, the quality of field preparation (leveling and bunding), and the variety of rice used.

The key with watering is to find a balance that works for your local conditions. There is no fixed watering schedule for SRI, but the principle of creating aerated soil conditions in-between waterings should be respected. Make sure the plants have enough water that they are not stressed or wilting, yet at the same time allow enough time between waterings for the soil to aerate, and the rice roots to grow deeper - being able to breath and looking for water

Figure 14: A well soaked rice field

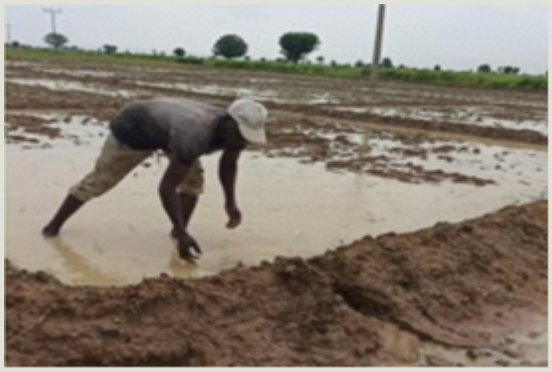


Figure 15: A farmer draining out excess water

Some Guiding Ideas are:

- Water as needed, about every 7 to 10 days (or according to soil conditions and weather)
- Water enough to saturate the field, but not more
- Both irrigation intensity (the amount of water given and the duration of each watering) and irrigation frequency (how often waterings occur) can be varied and are interdependent.

Timing within the Rainy Season

Time your trial carefully to make sure it coincides with the best possible period of the rainy season. Since rice cultivation under SRI uses less water, planting early is a real advantage: the crop can get a good head start while conditions are not too humid, and once the rainy season is in full swing, the crop is already in the reproductive phase. This kind of timing requires of course a careful balance to avoid planting too early in the season. If water is available during the dry season, it is possible to start planting rice far ahead of the normal cropping season, as is done by the SRI practitioners in Liberia. Before the heavy rains set in—which often flood and damage the rice fields—the rice crop can already be harvested.

SECTION 7: WEED MANAGEMENT

In conventional flooded rice systems, standing water is used as a primary means of weed control. Because SRI doesn't use flooding to control weeds, a different strategy is required. Weed suppression can be achieved by using a cover mulch or can be done with mechanical weeding.

Mechanical Weeders

Mechanical weeding (using a rotary weeder, chisel hoe, hand hoe or other device) does not start until after the plants are established. After about 1-2 weeks for transplanted rice or 3-4 weeks for direct seeded rice, the fields can begin to be left to dry between each watering, and mechanical weeding can start
Mechanical weeding has several important advantages.

- Besides simply killing weeds, mechanical weeding helps to aerate the soil and reincorporate weeds into the soil to enrich it with more organic matter.
- It further helps to improve the leveling of the field, to reduce the areas of ponded water and to redistribute water across the field more evenly.
- When using a weeder after irrigation, soil nutrients solubilize more readily, providing a flush of nutrients to the rice plants and contributing to a clear fertilizing effect.
- All these roles are vital to SRI, and using a weeder is therefore an important management intervention for improving yields.
- Furthermore, with each additional weeding (farmers can typically do up to four weeding with 7 – 10 days interval in a season), yields will continue to increase

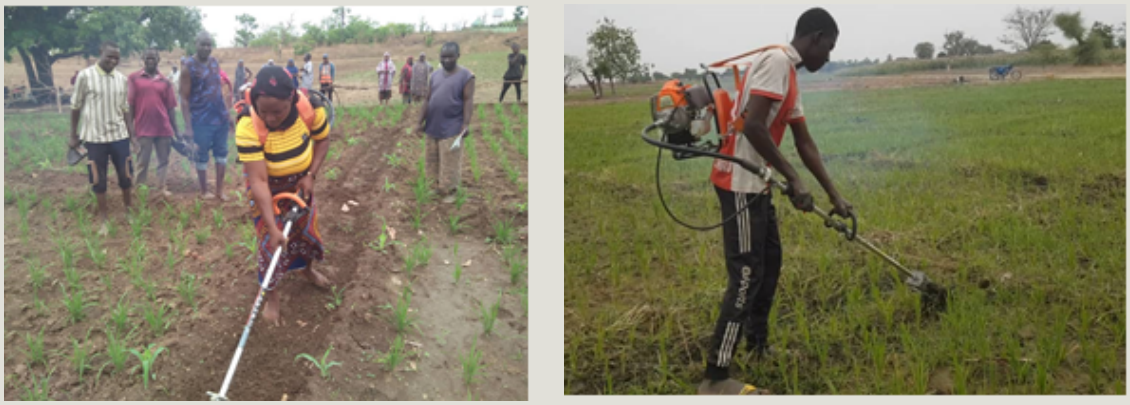


Figure 16: Weeding using mechanical weeders

You can use other locally available methods of mechanical weed control if they can work with the wider spacing of SRI. In Senegal, for instance, animal drawn weeding 'machines' are common, and can be adapted for weeding SRI plots.

SECTION 8: FERTILIZATION

Using Organic Matter (OM)

Organic matter (OM) application represents the basis of soil fertilization using SRI. Applications of nitrogen or other chemical fertilizers may be needed to maintain a balanced uptake of nutrients, but use of OM is fundamentally important to SRI, and in most cases will allow farmers to substantially reduce their need for chemical fertilizer. Furthermore, OM offers many benefits that synthetic fertilizers like urea lack. Application of OM helps to:

- Improve soil fertility and create a healthier soil
- Enhance soil biota, most importantly soil microbial life, which is essential in making nutrients and water more readily available to plants—soil microbes also help protect against diseases, etc.
- Improve fertilizer use efficiency
- Improve the moisture retention capacity of the soil
- Reduce input costs, as locally available organic material can be used to improve soils.

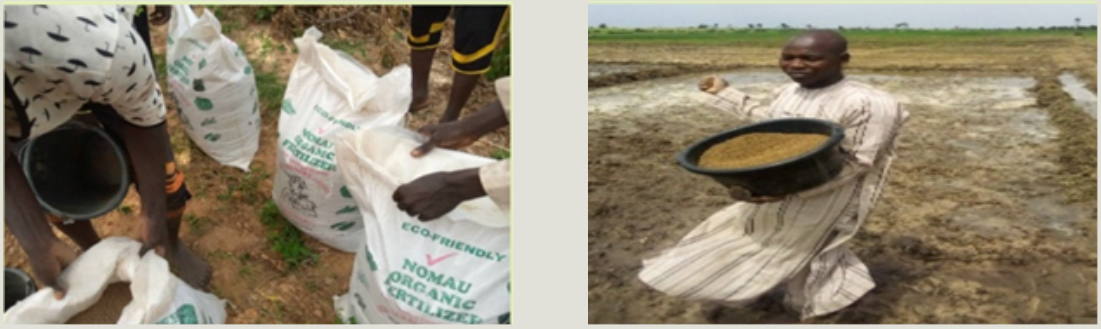


Figure 17: Application of organic fertilizer

Categories of Organic Matter

- **Compost:** all available biomass (decomposed plants and food waste)
- **Animal Manure:** Especially from sheep and goat, though well decomposed poultry litter and cattle dung can also be used
- **Green manure:** Green-leaf manure trees, other leguminous shrubs can be grown along field bunds and foliage can be cut and directly incorporated into the soil during soil preparation

Application Rate

Field Size	@ 2t/ha	@5t/ha	@10t/ha
100 m2	20kg	50kg	100kg
200 m2	40kg	100kg	200kg
250 m2	50kg	125kg	250kg
500 m2	100kg	250kg	500kg
0.1 ha	200kg	500kg	1t
0.125 ha	250kg	625kg	1.25t
0.165 ha	330kg	825kg	1.65t
0.25 ha	500kg	1.25t	2.5t
0.33 ha	660kg	1.66t	3.33t
0.5 ha	1t	2.5t	5t
1 ha	8t	10t	15t
1 acre	3t	5t	8t

When and how to use Urea

In addition to organic matter, many SRI farmers use some nitrogen fertilizer, most often urea. Urea is ideally applied at the tillering stage (or 15-20 days after transplanting) and during panicle initiation, which coincides with the beginning of internode elongation.

With SRI it is recommended to apply urea to the soil after watering or irrigation—just before the water dries up—and ideally slightly incorporated with a weeder. Having urea superficially incorporated into the soil allows for a slower nutrient release, which is directly beneficial to the plants, prevents volatilization of Nitrogen as well as surface runoff into local waterways. Good field leveling and bunding is also important for preventing fertilizer from running off the field.

Benefits of using Urea Super Granule (USG)

- Increases efficiency of N fertilizer use in rice due to reductions of N loss through gaseous emissions and floodwater run-off.
- With broadcast application of urea, volatilization losses could alone account for 30-50 % of applied N.
- Low floodwater N concentration encourages algal biological nitrogen fixation.
- Reduces weed competition as fertilizer is placed near the rice plant.
- Fertilizer use efficiency under irrigated rice is increased by 40%.
- Irrigated rice cropping yield is increased by at least 50%.

Figure 18: Urea Super Granule

SECTION 9: MATURATION AND HARVESTING

(These guidelines can be used for undertaking a rice yield evaluation, whether for a demonstration plot, a farmer's plot, a SRI or farmer's practice plot, or any other rice plot).

This stage lasts from the beginning of flower emergence until harvest (10-13 WAS). SRI management is most important in the early phases of the crop. Once flowers emerge, SRI management interventions are limited. Drying periods as applied during the vegetative phase should be avoided, but soils should be kept moist, so that flowering and grain filling can be optimal.

Shortening of the crop cycle

SRI typically shortens the growing cycle by 1-2 weeks. This can result in earlier harvest compared to neighboring plots, and has several implications.

Advantages for earlier harvest can include:

- Birds who feed on the rice crop might not have arrived yet on location
- Crop might mature before the cold period arrives, a problem in some areas in the Sahel, obviously reducing yields when grain filling is still in process.
- In locations with restricted length in the growing seasons, farmers might be able to switch from short-cycle to medium-cycle varieties, with higher yield potential, as seen in some locations in Northern Mali
- Farmers can gain some time for preparation and planting of the off-season crops in a timely manner, which influences the yield potential.

Disadvantages of an earlier harvest can include:

- If grain-feeding migratory birds have arrived early on location, the early maturing SRI fields could be heavily attacked. If this seems to be the case, plan ahead to have a strategy for preventing bird damage, such as the use of nets, scarecrows, cassette tape, camping in the field with a slingshot, or other methods farmers use in the area.

Stop water the field two weeks before harvesting

SECTION 10: HARVESTING

Paddy harvesting activities include reaping, stacking, handling, threshing, cleaning, and hauling. These can be done manually and conventionally or mechanically with machines such as slasher or a combined harvester can be used to perform the operations simultaneously. It is important to apply good harvesting methods to be able to maximize grain yield and minimize grain damage and quality deterioration.

The following practices are advised during harvest:

- Paddy is ready for harvest when about 85% of the panicles are yellow or brown
- Cut the mature panicles and straw above the ground
- Bundle the straw together, exposing the panicle out to dry further
- Separating the paddy grain from the rest of the cut crop
- Removing immature, unfilled, non-grain materials
- Move the cut crop to the threshing location
- Leave the cut crop in the field and expose it to the sun for drying (optional)
- Use of serrated Chinese sickle is better than the local one.
- Temporarily storing the harvested crop in stacks or piles (optional)
- Harvesting at the right time and moisture content
- Avoiding delay in threshing after harvesting
- Putting the threshed grain in bags for transport and storage

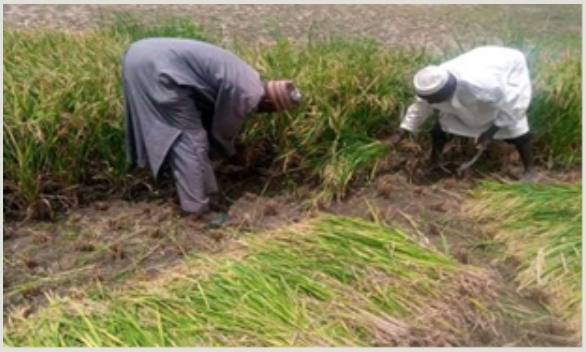


Figure 19: Manual Harvest using sickle

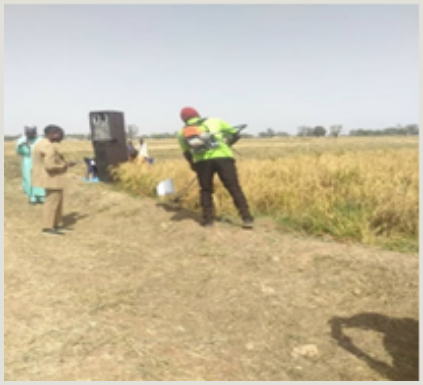


Figure 20: Motorized Harvest using Slasher

Figure 21: Harvesting with Combined Harvester

SECTION 11: HARVEST AND POST-HARVEST PRACTICES

- Postharvest losses remain a major challenge to food security and income growth in Nigeria.
- The quantity and quality of final milled rice depend on the efficiency of farming management, field operations and post-harvest operations.
- The nutritive and market values of an agricultural product depend largely on its quality.
- Quality is thus an important property that should be always ensured.
- After maturity and harvest, handling, processing, and storage conditions are the major determinants of the products quality.

Threshing:

- Process of separating the grain from the panicle, after the grain has fully matured.
- During threshing, the paddy grain is detached from the panicle, an operation which can be carried out either by rubbing, impact or stripping.
- Threshing should be done on a tarpaulin or on a concrete threshing floor to avoid mixtures with sand, stones, and other impurities.
- Clean the grain properly after threshing

Figure 22: Manual threshing

Figure 23: Mechanical Threshing

Losses can occur during threshing for various reasons:

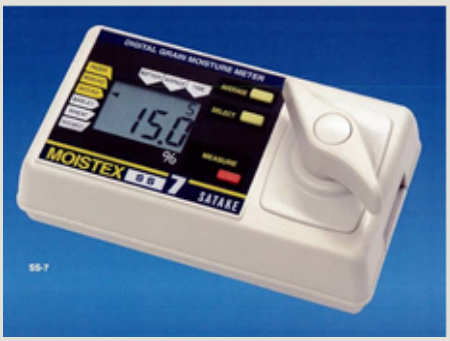
- Grain is scattered when the bundles are lifted just before threshing.
- Grain can stick in the mud floor.
- Birds and domestic fowls feed on the grain.
- Incomplete threshing in one operation, needs for repeat threshing.

Cleaning:

- The quality of milled rice is affected by the level of cleanliness of the paddy.
- The paddy can be cleaned through the process of winnowing.
- There are manual and mechanical winnowers of varying capacities available to farmers.
- Clean paddy demands a higher price than non-clean paddy.
- Processing machines can be damaged if the stones or pebbles or other contaminants are mixed with the rice.

Drying:

- Rice is harvested with moisture content ranging from 24% to 26% (higher in the rainy season and lower in the dry season).
- Paddy with high moisture is susceptible to attack by micro-organisms, insects and other pests.
- The heat generated by paddy with high moisture results in losses in terms of both quantity and quality.
- Paddy must be dried to 12-13 % moisture content as soon as possible before storage. This can be ascertained by use of Grains Moisture Meter.
- Delayed drying results in browning (stack-burning), microbial growth and mycotoxin production in parboiled rice.



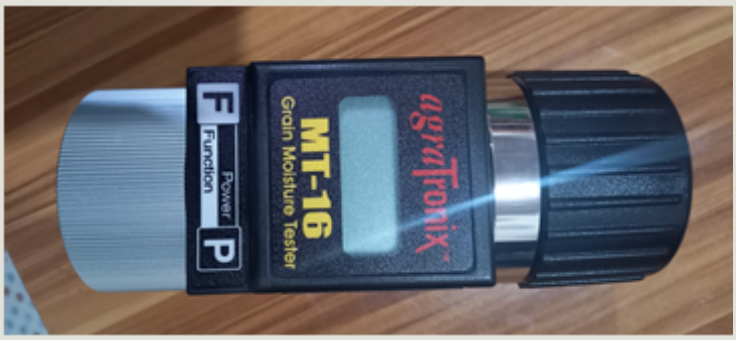


Figure 24: Grains Moisture Meters

Bagging:

- Cleaned, fully dried paddy can be bagged in 75kg or 100kg bags.
- Bagging plays a critical role in prolonging the shelf life of paddy.
- Bags must not be punctured, to ensure proper protection against insects and minimize respiration.

Storage:

Requirement of good storage system include:

- Prevention of moisture re-entering the grain after drying
- Protection from insects, rodents and birds.
- Ease of loading and unloading
- Ease of maintenance and management
- Bagged rice must be packed in cool, dry and aerated conditions and must not be kept directly on the floor or against a wall but on a raised platform.

Figure 25: Good storage system