## To find out more:

Cornell University website: www.ciifad.cornell.edu/sri

SRI Group of Madagascar: www.groupementsrimada.org

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Video "Le riz de l'espoir" by Corinne Lalo (clalo1@free.fr)

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CTA Practical Guide Series, No. 17

# Intensive Rice Cultivation



GSRI

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## Irrigated rice

Demand for rice on the global market is on a constant rise. Yet despite the Green Revolution, production levels are unable to keep up with demand.

Irrigated rice production is practised by millions of farmers around the world. The technique is based on an almost permanent flooding of the paddy-fields, which is an enormous source of methane production. Replanting is done at a late stage and the density of plants is too high.

As a result of population pressure and frequent shortages of land and water, other methods of cultivation should be used in order to improve rice yields.

## Intensive Rice Cultivation



The system of intensive rice cultivation (or SRI – *Système de Riziculture Intensive* in French), developed in Madagascar in 1983 by Fr. Henri de Laulanié, is an innovative cultivation method that can increase yields considerably without the need for inputs that are often costly and hard to access for small-scale farmers.

The great discovery was that rice is not an aquatic plant; rather it develops with an alternating system of watering. A further discovery was that the earlier the rice is replanted, the greater the production of tillers (presence of stalks or tillers from a seedling). A single seedling can produce up to 80 stalks, or even more.

In the course of a single year, depending on soil and climate conditions, it is possible to produce three harvests of rice, as well as vegetables during the off-season.
Compost used for vegetable production also benefits rice.



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## The main stages of SRI

This guide outlines the basic ideas and practices in order to obtain good yields:

- Choice and sorting of seeds
- Pregermination of seeds
- Preparation of the dry seedbed and sowing
- Widely spaced replanting of seedlings with two leaves
- Preparation of the rice paddy and water control
- Paddy maintenance
- Harvesting
- Controlling soil fertility

## Choice and sorting of seeds



I choose quality seeds for my nursery, improved seeds or just the seeds from the previous harvest.
Next, I sort the seeds by throwing them into a bucket of water. The good grains sink and I remove the empty husks as they float to the surface.

## Pregermination of seeds

Pregerminating can save time during sowing.
For a good pregermination, I put the rice is a well-ventilated sack (cloth or hessian, for example) and place it in a stream or a bucket filled with lukewarm water (30°C) for 24 hours.





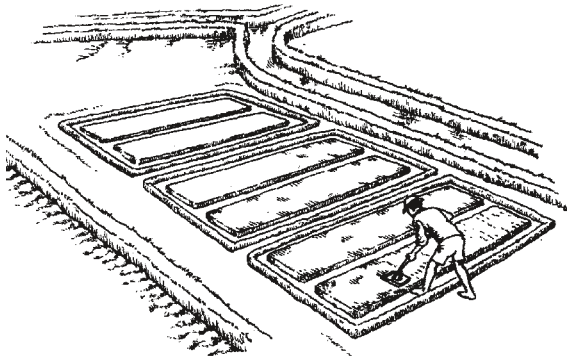


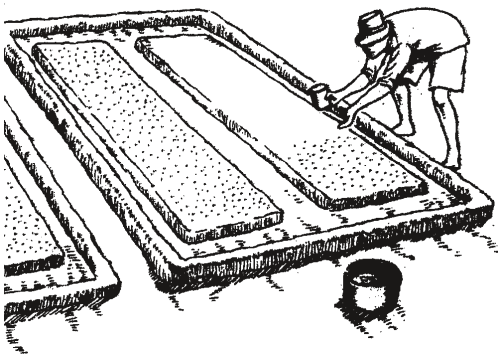


Then I take the sack out of the water and put it in a pre-warmed hole (it must be warm) for another 24 hours.

## Preparation of the dry seedbed and sowing

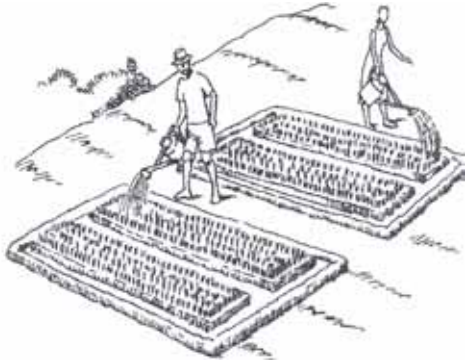
For a paddy of 1,000 square metres, I will need a seedbed of 9 square metres (three 1 x 3m plots) with about 125g of pregerminated seed per plot (that is 375g for all three plots).





I sow the seed sparsely in order to produce stronger plants.

On days it does not rain, I give my seedbeds plenty of water in the morning and/or the evening.

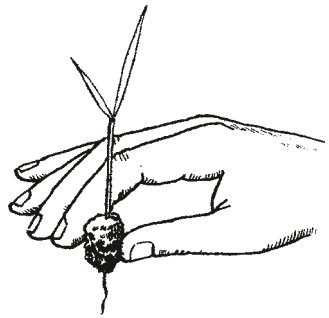




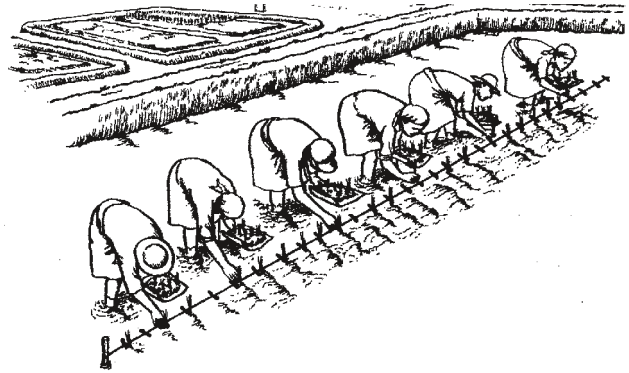


## Replanting

I can begin replanting in the paddy when I have seedlings with two leaves, that is, about 5 to 10 days after sowing, depending on the soil and climate conditions.
It is important to replant seedlings with not more than two leaves because the more the seedling grows before replanting, the less it tillers and the lower the yield.

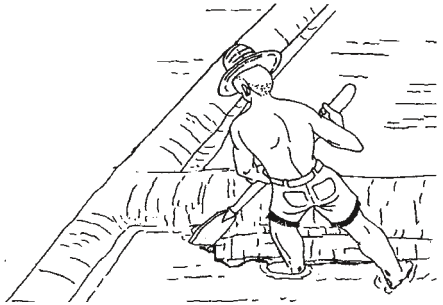


I replant the seedlings on a grid using knotted string, with a minimum space of 25 x 25cm between plants (more if the paddy is fertile) to produce good tillering and easy hoeing.

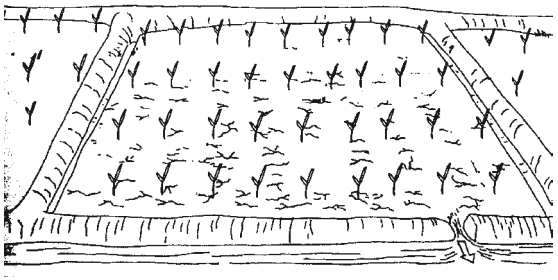


## Preparation of the rice paddy and water control

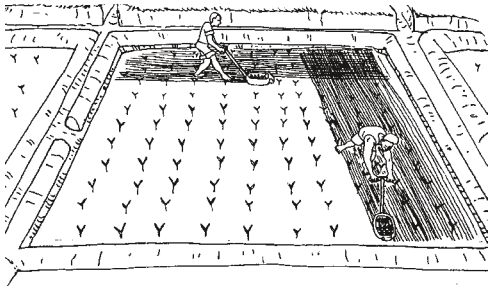
Intensive rice cultivation requires a good control of water (irrigation and drainage).
I dig irrigation channels (about 30 x 30cm) around each plot.
It is normal to leave a shallow puddle of water in the paddies (muddying).



The evening before hoeing, I flood the fields slightly so I can use a hoe more easily.
After hoeing, I drain the paddies completely for a day or so. Draining improves tillering during this phase of their growth.



As the rice grains develop, I leave a thin layer of water on the paddies for 15 to 20 days, before completely draining them 8 to 10 days before the harvest.







## Paddy maintenance

It is important to eliminate weeds and to aerate the soil by hoeing 3 to 4 times per season. As already mentioned, I flood the paddies slightly before hoeing so I can use hoeing tools more easily. I first hoe (in both directions) 8 to 10 days after replanting, and then 2 to 3 times every 8 to 10 days.

## Harvesting

To avoid losing any grains through accidental shedding, I harvest the rice even if some grains are not yet completely ripe.
During harvesting, I make sure to select the most beautiful stalks and keep them carefully for next year's seed.



## Controlling soil fertility

I spread compost when preparing my paddy field, and I grow off-season vegetables (especially leguminous plants such as peas and beans) because they enrich the soil. Alternating dry cultivation with rice growing is very important to maintain good aeration and soil fertility.