

Water Management

SRI requires the root zone to be kept moist, not submerged. Water applications can be intermittent, leaving plant roots with sufficiency, rather than surfeit of water. Through regular drying and wetting, a flow of oxygen to the roots is maintained properly, and this facilitates the coming out of more tillers. This practice in SRI leads to less water consumption.

Application of fertilizers

SRI principles strongly advocate the use of organic manures and fertilizers then synthetic fertilizers. In 1 bigha of land 1 ton of dried cow dung and 4-5 kgs of microbial bio-fertilizers can be applied. Commonly used fertilizers like urea, SSP and MOP may be applied at one-fourth of the recommended dose.

Precautions to be taken in the main field

- Lowland (paddy) rice farmers are recommended to apply Alternate Wetting and Drying (AWD) technology to reduce their water use in irrigated fields. In this method irrigation water is applied to flood the field a certain number of days after the disappearance of ponded water. Hence, the field is alternately flooded and non-flooded. The number of days of non-flooded soil in AWD between irrigations can vary from 1 day to more than 10 days.

- Excess or surplus water must be drained out to avoid water stagnation. Farmers are suggested to use 25 % of the fertilizer dose provided by agricultural departments of these areas.



Rice production

Proper application of SRI principles ensures the production of healthy tillers ranging from 40 to 80 numbers per plant. Each productive tiller develops 25 to 50 panicles and each panicles contain 150 to 200 grains. Under this system of rice cultivation an yield of 80 to 100 mounds (1 mound=40 kgs) is achieved from 1 acre of land.



SRI methodology is based on four main principles-

- Early, quick and healthy plant establishment
- Reduced plant density
- Improved soil conditions through enrichment with organic matter
- Reduced and controlled water application

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System of Rice Intensification

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System of Rice Intensification (SRI) emerged in the 1980's as a synthesis of locally advantageous rice production practices encountered in Madagascar. This system is therefore, also known as the 'Madagascar system'. SRI is not a fixed package of technical specifications, but a system of production with four main components, viz., soil fertility management, planting method, weed control and water (irrigation) management.

The System of Rice Intensification, known as SRI, can reduce water requirements, increase land productivity, and promote less reliance on artificial fertilizers, pesticides, herbicides, and other agrochemicals, all while buffering against the effects of climate change and reducing greenhouse gases (GHG).

Important features of SRI

8 to 14 days old rice seedlings are transplanted on the main field. 1 Seedling is transplanted per hill, maintaining a spacing, usually 25 X 25 cm². 2 kg of seeds is required for transplanting in one acre of land. Minimum three weeding is to be done. Healthy rice plants give out 40-80 tillers. Paddy weeder not only controls the weeds but churns the soil facilitating aeration, formation of organic humus and enhanced microbial activity. Yield is two to three times more than traditional system.



Wide planting:

With wide spacing each plant gets more space, air and sunlight. As a result each plant gives more tillers. The roots would grow healthily and extensively and take in more nutrients. As the plant is strong and healthy the number of tillers would be more.

METHODS-

(a) Selection of site in SRI method, utmost care should be taken in the preparation of nursery bed, as 8-12 days Old seedlings and in some places 14-15 days old seedlings (2-3leaf stage) are transplanted. The Nursery bed should be preferably prepared in the centre / corner of the plot for quick / efficient Transplanting.

b) Seed selection and treatment

2 kgs of seeds is required in one acre of land. For selecting seeds, a bucket is half filled with water and an egg is immersed into it. As the egg sinks to the bottom, salt is added slowly until the egg floats to the top of the water. The egg is removed and the seeds are immersed into the saline solution. It will be observed that all empty and unhealthy seeds floats in the saline solution. The floating seeds are discarded and the healthy and disease-free seeds are selected for sowing in the nursery bed. The seeds so selected are washed with clean water and kept soaked for 12 hours. The seeds are placed in a jute bag and 5 gms of Bavistin powder is added. The seeds are then wrapped up and kept in shade for 24 hours.



c) Seed Bed Preparation

- Seed bed must be prepared near to the mainfield . The bed must be 1 meter wide and length as per convenience.
- The beds must be raised to a height of 5 inches and leveled at the top.
- To prevent soil from eroding from the edges of the bed because of heavy showers or other plausible reasons, wooden logs or bamboo or any other such materials may be placed along the edges. Finely sieved soil, dried coddung, and saw dust is uniformly spread on the top of the seedbed.
- 2 kgs of seeds can be sown in a seedbed of 40 sq. mts, which can be used to transplant 1 acre (1 bigha) of land.
- The seed bed is covered with rice straws or any other mulching materials like banana leaf, dry grasses etc to protect the seeds from sunshine and rain.
- As SRI practice involves adequate application of organic manures and cow dung, the use of chemical fertilizers is limited.
- 8-14 days old seedlings are ideal for transplanting in the main field.

d) Method of transplanting in the main field

- The seedlings are transplanted in the main field when they have reached the two-leaves stage which usually takes 8-14 days.
- Seedlings must be transplanted in the main field within half an hour from the time of uprooting. The main field must not be saturated with water at the time of transplanting.
- The seedlings must be planted up to a depth of 1-2 cm
- The seedlings must be transplanted singly in a square grid pattern with their roots intact, while the seed sac is still attached. The distance of one hill to the other must be 25 cm.
- The field is irrigated after transplanting to keep the soil moist and not flooded.

Advantages of SRI

- Saving on seed cost as the seed requirement is less.
- Farmers can produce their own quality seed.
- Incidence of pests and diseases is low as the soil is allowed to dry intermittently.
- Cost of external inputs gets reduced as chemical fertilizers and pesticides are not used.
- SRI assures year round food security to the families of small and marginal farmers.



Weed Management

As there is no standing water in SRI method, weeds would be more. There are several advantages of turning the weeds into the soil

by using an implement called 'weeder'. Use the weeder on the 10th and 20th day after transplanting. The weeding problem is addressed to a large extent with this effort.

By using the weeder, the first advantage is the control of weeds and also adding organic matter to the soil. This gives the benefit of cultivating a green manure crop. Further, the soil gets aerated and the roots are exposed to air.