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"Walking the Extra Mile"

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CONTENTS

Foreword by Director.....	2
From the Program Director's Desk.....	4
Review of Technology Parks: Lessons and Recommendations.	4
Community Fodder Nursery.....	5
Can Private forest contribute to food security?.....	5
Ap Sangchu adopts Bajo Maap II rice variety.....	7
Composite Feed Block from paddy straw.....	7
Enriching paddy straw with cattle urine and Ara residues	8
Nahi farmers take up fruit crop improvement.....	9
SRI : An innovative way to grow rice.....	11

NEWSLETTER

SRI: An Innovative Way to Grow Rice

The System of Rice Intensification (SRI) was developed in Madagascar by Father Henri de Laulanie in the 1980s. Since then many countries have successfully tried this system of rice cultivation. It is now being studied and evaluated by scientists and rice growers in several countries. In Bhutan, research and extension personnel, and students and lecturers of CNR have been testing out SRI for the past 3-4 years. While the SRI technique is being refined and adapted to our local situations, this article intends to spread awareness and interest to our extension colleagues and rice growers.

There are certain basic principles and practices in SRI. These are briefly summarized here.

Seedlings are transplanted early

Seedlings of 8-15 days old or 2-3 leaf stage are transplanted without removing soil particles attached to the roots as soon as the seedlings are removed from the nursery. Extra care is taken to prevent the seedlings from shock and seed sac needs be attached during transplanting which supplies food to the infant roots. Young seedlings have greater capacity to tiller and grow vigorously, producing more rice grains.

Seedlings are transplanted singly rather than in clumps

Single seedlings are transplanted per hill and not in clumps of 2-3 or more. This facilitates individual plants to spread their roots and prevent competing with other rice plants for space, light and nutrients. Tiller formation will be optimized.

Wide spacing

Seedlings are transplanted in a square pattern usually at least 25 cm X 25 cm spacing, but this will depend on the soil fertility status of the location. Generally, the higher the fertility status, the wider

the planting space required. Wide spacing expose plants to more sunlight, air and nutrients resulting in more root growth and more tillering.

Moist but unflooded soil conditions

In SRI, the soil is kept moist for about 10-12 days after transplanting but not flooded all the time like traditional practice. The field is allowed to slightly crack once in a week which allows oxygen to enter. Alternative drying and wetting method of irrigation is ideal. However, optimum water level of 3-5 cm is maintained once the crop reaches flowering stage for grain formation.

Early weeding and soil aeration

It is important to do first weeding early, after about 2 weeks after transplanting. Even if there are no weeds, disturbing the soil helps in supplying air to the growing roots as well as smothering the germinating weeds. Soil aeration can be achieved by using any mechanical weeder or hand rake that can be made locally. Here are some practical tips to try out SRI for a beginner.

Choosing rice varieties

Both HYVs and local rice varieties are amenable to SRI method of rice cultivation. However, we do not recommend at this stage to use very long duration varieties (maturity problem if planted late) and very tall traditional varieties due to possible lodging and shattering problem. Any popular variety of the locality, either local or modern, can be subject to SRI.

Growing rice seedlings

Seedlings have to be raised quickly within 2 weeks, so conventional dry bed method will not work. We recommend semi-dry bed method with raised seed

beds for easy management. Seeds need to be pre-germinated by soaking seeds for 18-24 hours and incubating for about 36-48 hours before sowing. Sow seeds two weeks prior to intended transplanting time. For mid-altitudes areas, sow nursery in the last week of May to first week of June. For higher altitudes, sowing should be earlier. Use low seed density per bed to achieve healthy seedlings. A seed rate of 3-5 kg per acre is enough.

Preparing land for transplanting

As the seedlings are young, tender and small, land preparation should be thorough and land leveling done as perfectly as possible. Follow recommended land preparation practices, ensuring removal or incorporation of weeds and a finely puddled field with minimum standing water to avoid seedling drown.

Transplanting

Transplant single seedling per hill at a spacing of 25 x 25 cm. If possible, transplant in straight rows or lines using a nylon rope that is marked with indelible ink (marker pens) or making knots on string or rope of recommended spacing. This will facilitate in using a rotary weeder or a hand rake. The recommended time of transplanting for the mid-elevation areas is early to mid-June. For higher altitudes, transplanting should be a little earlier (research is under progress to determine accurate time).

Manures and fertilizers

SRI emphasizes more on the use of organic manures rather than inorganic fertilizers as the experiences in other countries show high yield with organic inputs, probably due to increased microbial activities. However, there are no hard and fast

rules, and one can exercise flexibility in the use of chemical fertilizers or a combination of manures and inorganic sources. Caution should however be made in over fertilizing the local varieties as it may lead to excessive vegetative growth, sterility and lodging.

Weeding and soil aeration

Early weeding is important, the first weeding not later than 2-3 weeks after transplanting. This should be followed by a second weeding 2-3 weeks after the first weeding. A minimum of two hand weedings are recommended. Hand weedings not only get rid of weeds but equally importantly disturb the soil and root zone of rice plants for better aeration. Use of rotary or any mechanical weeder is highly recommended.

Irrigation

The old perception of 'more water more rice' or 'standing water in rice fields all the time' does not hold true. There are critical growth stages where water is crucial (like flowering), but rice grows best under periods of dry and wet soil regimes. So, alternate drying and wetting (AWD) of fields is recommended. Drain out water if there is too much and for too long in the field. Also, it is enough to just saturate the soil and not really flood the fields. Newly transplanted seedlings should not be submerged.

Other management operations

There are no specific recommendations for pest control, harvest or post harvest operations for SRI. Follow the current recommended practices.

Mahesh Ghimiray (RC Bajo)
Karma Lhendup (CNR)