

Direct Seeded Rice (DSR) System in Terrace Farming of Senapati District, Manipur

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Paddy cultivation is an important agricultural activity for the economy of the Senapati district, Manipur, which provides livelihood-cum-employment opportunities to 90 % of the rural farmers. Traditional method of growing rice seedlings in nursery bed and transplanting into puddle fields are commonly followed by the farmers of the district. But in past few years, paddy productivity remains consistently low. It may be due to increase in labour number, higher cost of labour, crop risk due to endemic incidence of pest and disease and weather aberration. Temperature increases every year in the district and annual rainfall received was consistently becoming below normal. These very facts lead farmers to shun from cultivating rice. After initiation of NICRA project implemented by KVK-Senapati, DSR was introduced initially in the NICRA villages during 2017. KVK Senapati endeavored to develop direct seeding for rice with the help of a drum seeder in Hengbung village, Senapati district during Kharif season in 2017.

Advantages of direct seeding

- No significant reduction of yield under optimal conditions
- Savings on irrigation water by 12-35% under efficient water management practices
- Reduces labor and drudgery by eliminating seedling uprooting and transplanting
- Reduces cultivation time, energy, and cost
- No plant stress from transplanting
- Faster maturation of crops
- Lower green house gas emissions
- Mechanized DSR provides employment opportunities for youth through service provision business model
- Increases total income by reducing cost of cultivation

Details of the direct-seeding technology (on per-acre basis)

1. Land preparation: Paddy field is thoroughly puddled with the help of mechanized or animals plough before sowing of paddy seed. Excess water is drained before sowing of seed and maintained at 2-3 cm water level. Pyrazosulphupuron ethyl 10% WP was applied at 80 gm per acre before one day sowing of seed to suppressed the pre emergence weed.
2. Seed rate: 15 kg paddy seed required for 1 acres of land.
3. Time consumption – Approximately 120 minutes (2 hours)



required for direct seeding using drum seeder.

4. Labour required - 3 persons [one for pulling the drum seeder, one to help the puller to lift the machine at the end of the field, and one to fill/refill the seed in the drums] are required for sowing of seed. Rs. 4000-5000 per acres is required as labour cost for inter culture of paddy crop.
5. Spacing: Spacing of seed is maintained by drum seeder at spacing of 15 cm X 5-8 cm.
6. Water management: At sowing 2-3 cm of water level is maintained. After 3-4 days of sowing, water totally drained out (no standing water) from the paddy field so as to keep the new germinated plant to grow stronger. Meanwhile moisture content of soil is checked at 75-80 per cent. After 20 days water is again drained in to keep the field wet until panicle initiation stage and from then on 2-3 cm standing water until 10 days before harvesting.
7. Weed management: Weedicide is a must for suppression of weed. Bispyribac Sodium 10% SC was applied at 15-20 days after sowing. After 3-4 days of application of weedicide, water is drained in to 2-3 cm level and if necessary 2,4-D Sodium salt application at 30-35 days after seeding.

Spread of the direct-seeding technology in Senapati district of Manipur

The KVK introduced DSR method by using drum-seeder from 2017 in 2 ha of area. After the success of DSR method in NICRA project adopted village, it was spread to neighboring villages considering its advantages. With the expansion of project area in 2021-22, DSR was adopted by 44 farmers in 18 ha of paddy field by 2023-24. Adoption of DSR by the farmers was facilitated by availability of drum seeder on hire basis from Custom Hiring Centre (CHC).

The critical factors aided in gaining the confidence of the farmers

1. Direct seeding method avoids any raising of nursery, pulling up seedlings and transplanting them so that labour requirement for crop establishment is negligible. The demand for agricultural labour is at its peak during planting time, forcing farmers to pay high wages for regular field operations.
2. Farmers can take up paddy cultivation at any time, right away, as there is no requirement or delay of raising a nursery.
3. Paddy cultivation using direct seeding method can be taken up in fields which have heavy weed infestation; although this means that weedicide application is a must.
4. Duration of the crop is found to be reduced by 7-10 days compared to traditional practice.