ScaleDirect

# Engaging Women Farmers in Direct Seeded Rice System in Jharkhand

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## The challenges of rice farmers in Jharkhand

Jharkhand ("The land of the forest"), a state in eastern India, is home to many resource-poor tribal farmers. Rice is grown in 1.5 million hectares annually with a poor productivity of 2.4 tons per hectare. Depending on the topography, rice is grown in upland or medium-low land. Poor water holding capacity, rainfed system, sloping land, and acidic soils are the major characteristics of upland agricultural land. Merely 16% of the agricultural area has irrigation facilities in the wet season. Frequent drought and water shortages, more so in recent years due to the impact of climate change, adversely affect rice cultivation. Rice seeds in many districts are sown mainly by broadcast without precision in crop establishment and management practices. Consequently, these constraints prevent farmers from harvesting reasonable yields.

## Scope and relevance of direct-seeded rice (DSR)

Given the scarcity of water and upland topography, dry direct seeding is a science-backed option to maximize yield. However, for the DSR system to succeed, farmers need good access to improved varieties, machines, crop management practices, and other crop advisories. Smallholder farmers lack knowledge about better varieties, provision of seed drills, and weed management advisories, according to a specialist at the Krishi Vigyan Kendra (KVK) Knowledge Network. DSR should be considered as an essential package for smallholder farmers to optimize their yields. However, DSR has not been picked up significantly despite its advantages and critical role in the future of rice cultivation in Jharkhand.

The ScaleDirect Initiative introduced new varieties, machine-driven DSR crop establishment, and better weed management practices to the farmers in Hazaribagh District. The initiative also partnered with the KVK in the community to mobilize a group of farmers for on-farm trials of different DSR-suitable crop varieties. Pre-sowing training on machine sowing, judicious weed management, and field preparation for farmers were organized. The initiative placed particular emphasis on the participation of women and empowered them to be DSR diffusers.

**DSR flagbearer**

The experience of Sangeeta Devi is an inspiring story and a testament to the potential of DSR to transform rice cultivation in Jharkhand. Mrs. Devi, aged 35, is a smallholder woman farmer who lives with her husband and two daughters in Lodhama, a village 10 km from the district headquarters in Ramgarh in Jharkhand. Mrs. Devi practices share-cropping on 2 hectares of land to support her family and cultivates crops on her 0.8 hectares plot. She is a member of the Adarsh Ajeevika Mahila Samooh, one of the 25 women self-help groups (WSHG) in her village. She has been working as a community agriculture care service provider for several years. Twelve female farmers from Lodhama are members of her SHG. Mrs. Devi collaborates with all 25 SHGs, providing information on the numerous benefits and schemes provisioned through the state government programs to female farmers, including subsidies for seeds, fertilizers, and equipment and support for crop insurance and market access.

Mrs. Devi has been farming for 17 years and has been actively involved in agriculture for the past ten years. She cultivates rice on 0.8 hectares, vegetables on 1.6 hectares, pulses on 0.6 hectares, and maintains a mango orchard on 0.2 hectares. The river is the sole source of irrigation in her village. Mrs Devi uses a diesel pump to irrigate her entire field.

Mrs. Devi has been cultivating Lalat and other local paddy varieties for several years, typically producing a marginal yield of 2 to 3 tons per hectare annually. On several occasions, she faced total crop loss due to severe drought. To address these challenges, she contacted the KVK in Mandu, Ramgarh, where she received training on crop improvement technologies like DSR.

**Photo 1: Dr. Sarvesh Shukla from IRRI Robust Seed System briefing Mrs. Sangeeta Devi on dry DSR methodologies.**

**About the intervention**

Small and marginal farmers in Jharkhand have hesitated to adopt new technologies, primarily due to the lack of suitable varieties for the dry direct seed establishment method. However, the potential of DSR to increase farm returns under the upland ecosystems of Jharkhand is significant. IRRI seed system research unit conducted field testing of rice varieties from the direct seeded breeding pipeline in the 2023 kharif season CR dhan-320 and Swarna Shreya were identified as adaptable for DSR from rigorous on-farm testing (OFT). Through the KVK, Mrs. Devi learned about the suitability of these varieties under dry DSR conditions. Intrigued by their potential to alleviate her drought-related challenges, she expressed keen interest in testing the new varieties in her fields.

In the 2024 kharif season, IRRI, in collaboration with KVK Mandu, provided Mrs. Devi with 5 kg each of CR dhan-320 and Swarna Shreya seeds. She planted these seeds on her 0.8 hectares plot of land. With the support and guidance of the IRRI Seed System, Mrs. Devi planted the seeds using the DSR system with a tractor-drawn seed drill. This approach saved labor, which would have been needed for transplanting, and reduced the additional fuel costs associated with irrigation during puddling. The labor and water-saving benefits of dry DSR and suitable stress-tolerant varieties bring new hope to marginalized women farmers like Mrs. Devi. The DSR package enables them to increase their farm returns from the upland ecosystems of Jharkhand. Interestingly, the community has never witnessed machine-driven DSR demonstrations of appropriate varieties.

**Photo 2: Seeds of CR dhan-320 and Swarna Shreya sown using dry DSR-CE in Lodhama.**

**What next**

ScaleDirect and its network partner will monitor the DSR plots and organize travel seminars for other farmers in surrounding villages. The activity will showcase the benefits of DSR when practiced with the machines and suitable varieties. Furthermore, a concrete roadmap exists to measure the yields to estimate net economic gains. It will enable enterprise budgeting for DSR technologies and facilitate informed decisions to adopt and disseminate DSR as a better crop establishment practice.

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About the Project:

ScaleDirect is a unique Public-Private Partnership engaging IRRI-Bayer, supported by USAID and implemented by IRRI and its NARES Partner networks in 6 countries; namely India, Bangladesh, Nepal, Kenya, Tanzania, and Mozambique