mDSR + FDP: Mechanized Rice Row Seeder with Deep Fertilizer Placement

Sow and fertilize rice in one pass.



Mechanized Direct Seeding with Fertilizer Deep Placement (mDSR-FDP) sows rice in rows and places fertilizer near the root zone in one mechanized operation. It supports public priorities for rice mechanization, efficient input use, farm competitiveness and low-emission production, although emission reductions also require appropriate water and straw management.

International Rice Research Institute

CGIAR

International Rice Research Institute (IRRI)

Nguyen Van Hung

This technology is pre-validated.

8·7 Scaling readiness: idea maturity 8/9; level of use7/9

Inclusion assessment 4 3 5

Climate impact 7

Problem

- **Low productivity:** Uneven establishment limits yields.
- **High costs:** Excessive inputs weaken farmer incomes.
- **Input waste:** Poor application reduces resource efficiency.
- **Mechanization gaps:** Smallholders lack timely services.
- **Environmental pressure:** Inefficient input use increases losses and emissions.

Solution

- **Raise yields:** Pilot increases reached 2.6–15.8%.
- **Lower costs:** Total input costs fell by 18–36%.
- **Improve incomes:** Net profits increased by 26–79%.
- **Save inputs:** Seed fell by 30–65% and fertilizer by 11–43%.
- **Expand access:** Deliver equipment through shared services.

Key points to design your project

Mechanized Rice Row Seeder with Deep Fertilizer Placement (mDSR + FDP) supports government priorities by improving rice establishment, input efficiency, mechanization, and farmer profitability. Public support is most justified where smallholders need shared access, training, field infrastructure, and reliable machinery services.

- Prioritize rice-producing areas with suitable fields, water control, tractor access, and enough demand to keep machines in use.
- Deliver the technology through cooperatives and custom-hire providers, supported by training, field levelling, maintenance, spare parts, and affordable finance.
- Track hectares served, input use, yield, costs, income, machine utilization, emissions, service prices, and timely access for women and resource-poor farmers.
- Scale only after confirming local performance, commercial viability, operator capacity, maintenance support, and benefits across multiple seasons.

8750 USD	16000 USD	7250 USD	83 %
Cost per year	Revenue per year	Net income per year	ROI per year

IP

No formal IP rights

Commodities

Rice, Maize

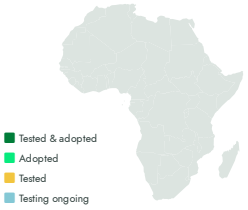
Sustainable Development Goals



Categories

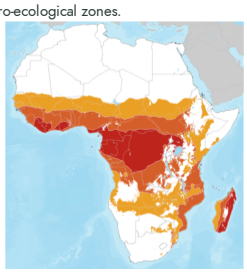
Production, Pre-production, Practices, Water management, Fertilizer management

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.



Target groups

Farmers, Seed companies, Cooperatives and Agribusinesses