

₹80/-

OCTOBER 2024

# AGRICULTURE The National Agriculture Magazine TODAY

VOLUME XXVII | ISSUE 10

[www.agriculturetoday.in](http://www.agriculturetoday.in)



*Farm Mechanization*  
**THE NEW PARADIGM**

# RESILIENT CATALYSTS

## Can Regenerative Agriculture Revolutionize Rice Farming for Smallholders in Asia?

**Regenerative agriculture boosts food security and water conservation for Asia's smallholder farmers**

Rice has been cultivated for millennia. Today, it sustains billions of people all over the world. But as the planet grapples with population growth, water scarcity, and climate change, the environmental cost of rice farming has become impossible to ignore.

Consuming 43% of the world's irrigation water and contributing 12% of global methane emissions, rice production stands at the intersection of food security and environmental challenges.

Rice is resource heavy, and continuing with current practices is no longer an option; the time for change is now and regenerative agricultural practices can drive the change.

### The Reality of Farming: Livelihood Protection Vs Climate Change Mitigation

These global challenges are not just concepts and numbers; they are daily realities for smallholder farmers who depend on farming for their livelihoods and food for their families.

One such farmer is Shanti Lata Basiwal. As a smallholder rice farmer in the state of Odisha, India, her north star has always been to take care of the needs of her family. Letting go of her business in the town to manage a few acres inherited from her father, she labours to continue the legacy of this land but it is not without challenges.

She experienced firsthand the chal-

The adoption of DSR is not just about improving individual farming practices and reducing environmental impact. It's about addressing a larger global challenge—food security.

lenge of hiring sufficient labour to transplant rice from the nursery patch to the field—a crucial step in the crop's early phase. For every acre of land growing rice, farmers need no less than 10 laborers to carefully transfer rice seedlings, one at a time, into a flooded paddy.

Urban migration and an aging farming population are contributing to the labour shortage in rural India, which poses a significant problem for Shanti and the millions of farmers who engage in this time-sensitive activity.

Transplanting delays can stunt the growth of rice plants, resulting in reduced tillering and ultimately, lower grain yields. This, in turn, diminishes the income smallholder farmers rely on to sustain their families.

Aside from labour shortage, Shanti's dependence on water to flood the rice paddies puts her field at the mercy of the weather, with climate change increasing erratic rainfall patterns and drought. This is a stark reality for millions of smallholder farmers who are most vulnerable to these conditions.



About the **AUTHOR**

**Malu Nachreiner,**  
Head of Asia Region,  
Crop Science Division  
of Bayer



DSR can also improve soil nutrition and help avoid erosion

farmers to pass on the land to generations to come.

With 150 million smallholder farmers worldwide, DSR has the potential to change agriculture.

### The Bigger Picture: Striking A Balance Between Food Security and Sustainable Farming

The adoption of DSR is not just about improving individual farming practices and reducing environmental impact. It's about addressing a larger global challenge—food security.

With the global population expected to reach nearly 10 billion by 2050, the demand for rice will rise. The FAO estimates that agriculture will need to produce 50% more food to feed the growing world population. Meeting this demand will require not just increasing production, but doing so in a way that is both sustainable for the planet and resilient to the impact of climate change. DSR has the potential to play a key role in this effort.

The need to shape a more economically viable and sustainable rice cultivation system has never been so pressing.

### Sowing the Seeds of Regenerative Agriculture: Direct-Seeded Rice

Shanti was introduced to direct-seeded rice 2 years ago.

Instead of recruiting a large labour base to carry out transplanting work, in the absence of standing water, DSR allows machinery to enter the paddy including sowing machines. This saves time and ensures each plot is optimized with the right spacing and depth to boost the chances of crop success.

Digital technologies, namely Farm-Rise and the Chatbot Deena, allow farmers to contact machinery providers and obtain specialized hybrid seed and crop protection solutions as well as advice on how best to manage these new practices.

With the right formula—seeds, crop protection and digital support—Shanti is confident in her decision to evolve the way she, her father, and earlier generations have been cultivating the land to produce the grain that sustains both her community and the world export market.

### The Way Forward: Focusing on Water Conservation and Soil Health

Yet, the benefits of DSR go beyond the farm gate.

4,000 to 5,000 liters of water are needed to produce one kilogram of grain using the traditional method of rice cultivation. DSR eliminates the need for flooding fields, cutting water usage by up to 40%.

DSR also plays a critical role in reducing greenhouse gas emissions. Without the flooded conditions and thus the methane creating bacteria that thrive in water, DSR fields can reduce emissions by up to 45%, contributing to global climate change mitigation efforts.

DSR can also improve soil nutrition and help avoid erosion. Healthier soil not only supports current crops, but also enhances long-term productivity, allowing

The benefits of DSR are already being experienced in countries including India, Indonesia and the Philippines. Indeed, in India - where innovative farmers like Shanti are adopting the practice and harvesting its rewards - it's expected that DSR adoption will grow by about 10% year on year.

### What Next? Shifting Towards Regenerative Agriculture

The history of rice farming is one of adaptation and resilience, with each generation building on the knowledge and practices of those who came before. Modern technologies have already increased farmer productivity exponentially, reduced world hunger and lowered farming's impact on the environment. But as an industry, we must continue to do more.

Today, as we face new and complex challenges, a transformation of the rice system at scale is going to be hugely challenging. But I believe it is achievable if all stakeholders work together and embrace this transformation towards a more regenerative way to cultivate rice, a way that improves the livelihoods of farmers, has the potential to produce enough food for more people while contributing to a healthier planet for future generations.