



## *Driving Rice Transformation in India*

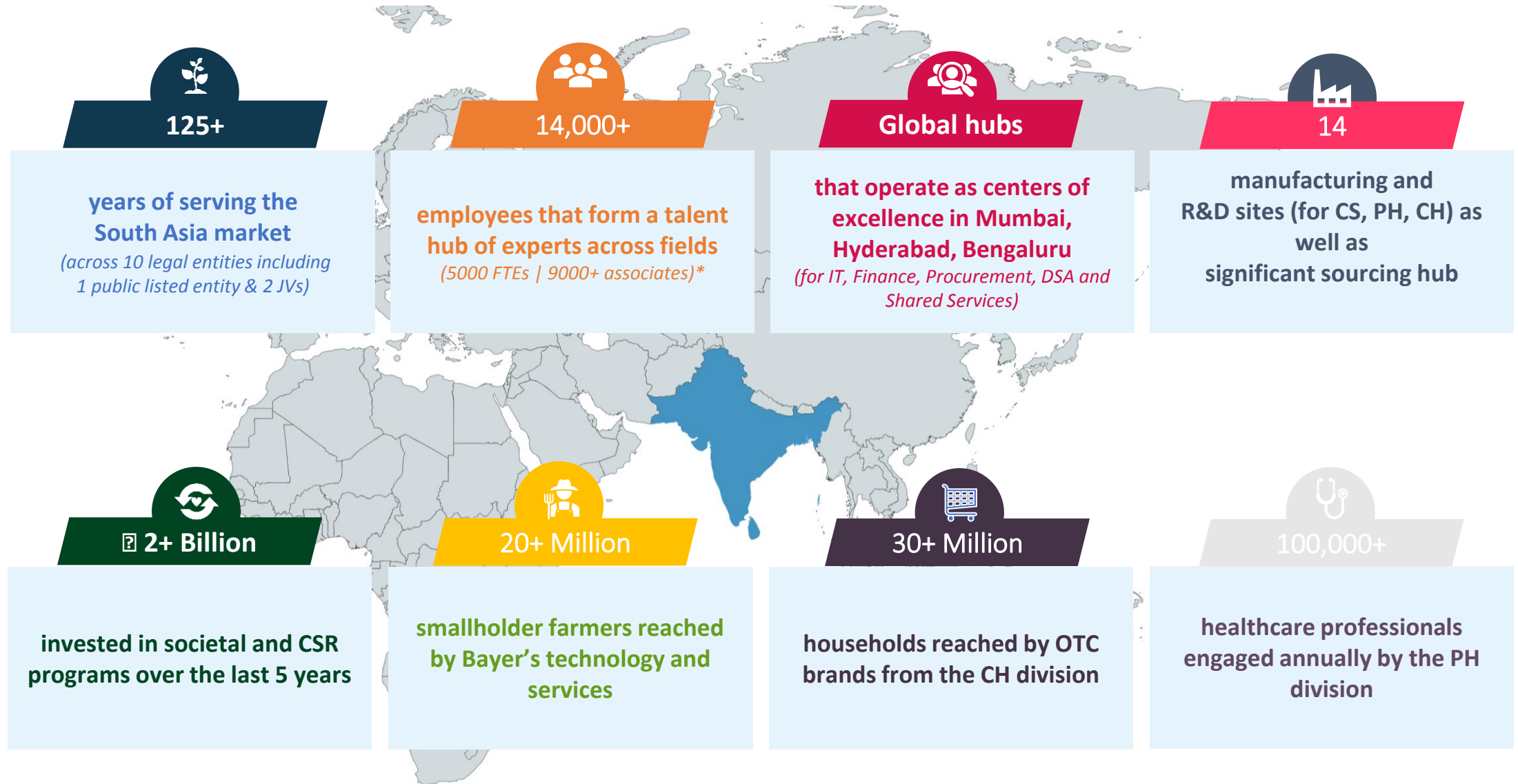


Sangeeta Dawar  
Bayer Crop Science Limited





# South Asia – a microcosm of Bayer worldwide





# *Our focus* in South Asia

*aligned with national objectives and societal goals*

**Catalyzing  
farmer  
prosperity**

**Promoting  
better food  
& nutrition**

**Improving  
healthcare  
access**

**Advancing  
digitalization**

**Developing  
talent  
& empowering  
People**

**Supporting  
rural  
development**



## **Wenovation**

- // Discover customer needs with empathy
- // Work on inclusive, collaborative solutions
- // Lead 360° ecosystems of innovation



## **Digital Leapfrogging**

- // Drive digital for discontinuous outcomes
- // Optimize data to insight
- // Plug-in to startup energies



## **Sustainability**

- // Lead thought on water sustainability
- // Forge alliances in Public Health
- // Strengthen partnerships to advance 'chosen' national priorities





# Bayer Crop Science is uniquely positioned to drive our shared vision of Health for All, Hunger for None

## Our mission



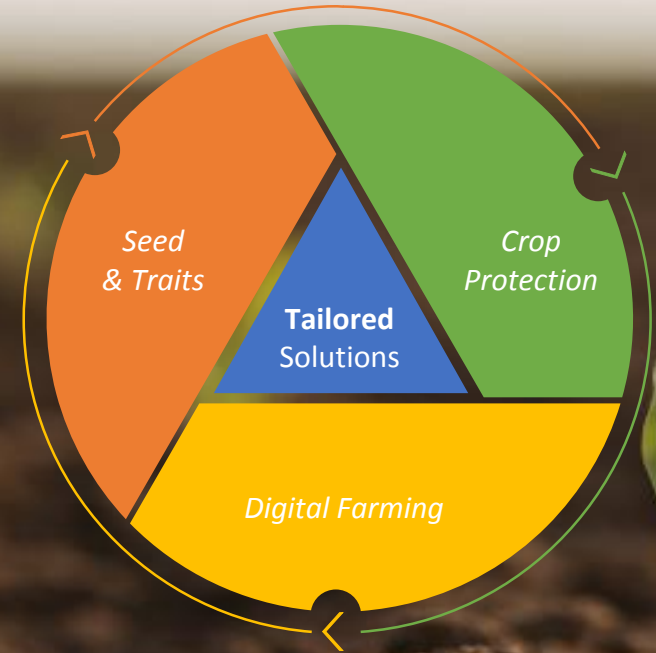
Deliver world-class  
innovation



Pioneer **digital**  
transformation



Set new standards in  
sustainability



Tailored solutions are key *to sustainably managing resources* and *improving productivity*

## // Rice is the way of LIFE

- Feeds 4 billion people – 58% of world population
- Livelihood of 25% world farmers – 150 m Smallholders
- 3<sup>rd</sup> largest crop – harvested from 160 m Ha
- Global rice consumption remains strong & would require 555 mmt milled rice by 2035 from 470 mmt of 2020

## // Input Intensive Crop

35% of global water // 15% of global fertilizer // 10 % of global ag input value )

## // Rice Importance in Asia

## // What's Changing Now?

### // Cost of cultivation for farmers

- Labor scarcity – Arrangement hassle & higher investments
- Depleting Water table – more spends on irrigation (Diesel/Electricity)

### // Govt. Push to diversify/DSR

- Depleting water table & GHGe
- Incentivization
- Focus on extension through SAUs

### // Evolving technology, mechanization & know-how (MNCs, SAUs, Machinery)

- Seeds, Non-gm HT Traits, WM solution
- Precision seed drills
- Testing, conviction & scaleup

## // Mechanized DSR

- Potential to **reduce labor & water savings** to maximum of 75% & 50% respectively\*
- **Yield & Cost efficiency** – depends on rice ecology, agronomic practices, germplasm & effective weed management
- **Peace of mind** – no hassle for labor arrangements, early establishment & harvest

## // Feasible alternatives

## Industry/ State Institutions

// Bayer - DirectAcres

// Non-gm HT trait varieties - Nuziweed

// AcreNext by Corteva

// SmartRice – Fullpage Hybrids by RiceTech

// UPL's Nurture Farm

// IARI – 2 non-gm HT trait varieties

\*ICAR Publication



## 2 Types of Rice Farming



*Transplanted Rice*



### *Direct Seeded Rice*

- **Dry seeding:** Sowing dry seeds into dry soil(Broadcast)
- **Wet seeding:** Sowing pre-germinated seeds on wet puddled soils (Broadcast of pre-germinated seeds)
- **Mechanized DSR** ( Tar wattar & Dry DSR)



# DSR Journey of a Farmer & where he/she needs support

## Challenge With TPR

Farmers have faced significant increase in TPR labour cost, when there is labour availability at all. Managing labour causes stress for land-owners.

"Labour is blackmailing for everything. They don't do the work we want. We have to manage their accommodation & food also."

"Labour availability in peak time of transplanting is becoming a big concern."



### 1. Farmer's Find out about DSR:

Farmers are generally aware of the existence of DSR practice due to Govt efforts, but they have strongly formed negative bias / skepticism against DSR.

#### Reluctance:



"I think DSR is a gamble. There is too much risk to lose my crops and money."

How we help farmers to overcome existing skepticism or bias against DSR?

### 2. Triggered to try DSR

Farmers face high fear and resistance to try DSR, but 'seeing is believing' is the common mantra that drives DSR adoption. Farmer friends are a common (believable) trigger.

#### Fear:



"I have heard horror stories about weeds and crop failure. I am afraid of trying DSR."

How we help farmers overcome their fear and resistance to try DSR for the 1st time? How might we encourage farmers to convince each other to try DSR?

### 3. Try DSR for the first time

Farmers trying DSR are often unsuccessful first, due to the difference in DSR & TPR practices. Negligence / Underestimating weeds is common.

#### Confusion:



"I think DSR is complicated. I need to follow too many precise steps."

How we ensure farmers are successful at DSR the first time? How might we increase the willingness of farmers to take a small, calculated risk?

### 4. Gradually grow DSR

Farmers prefer slow, gradual adoption of DSR. DSR needs to prove itself for several years to convince them to commit fully.

#### Scepticism:



"I don't believe in DSR. I need to see proof of benefits and ROI with my own eyes to believe it."

How we increase willingness of farmers to try DSR again after a bad experience? How might we allow farmers to scale-up DSR rapidly after a first trial?

### 5. Successful Adoption

Farmers face a long and steep learning curve for DSR adoption, but trust and adoption of external learning sources is low.

#### Confidence:



want someone to come & give awareness, with fertilizer, weedicide, fungicide management."

How might we shorten the learning curve for DSR adoption? How might we create trust in digital / remote learning sources?





# DirectAcres aims at Leading DSR Cultivation in TPR Geographies

While addressing following farmer pain points & Making them successful in their First attempt

*labor issues (Availability, wages, hassle) & water scarcity*

*Weed menace & yield penalty  
Skepticism, fear and know how access*

## Resource - intensive

## Technology driven

From Transplanted Rice (TPR) practices ...

... to Direct Seeded Rice (DSR) cultivation



Puddling & Leveling



Nursery Beds



Laser land levelling



Direct seeding with machinery



Manual transplanting



Manual reaping



Emergence of rice crop



Mechanical harvesting





# DirectAcres: Pilot testing & milestone plan

2021



## 100 Ha (POC)

// Evaluation of agronomic practices & weed management package options

-9%

Average Yields  
(=/+ Yields  
In 45 Ha)

Avg. ROI  
-6%

>80%  
Farmers  
+ ve Intent

Combination of **right agronomic practices** = equivalent / Better yields

2022



## 800 Ha DirectAcres Pilot

// Supported with Input Package + Agronomy + Assurance+ on field support & awareness

+99%

Successful Acres with  
convincing weed  
management

Future Intent  
>90% farmers with +ve Intent

Farmers with conviction  
to shift to DSR entirely in 2 years\*

2023



## 10 K Ha Test & Learn

// Upgraded input package, onboarding benefit & seeds + weed escape assurance + on field support & awareness

**Enabled By:**

**Collaborations:** IRRI –CSISA - Orissa, WRG -UP, Haryana Agriculture Department



# DirectAcres Scaleup Model (Test & Learn) -2023

DirectAcres Cluster – Driving DSR in target markets



**Each Cluster will support 40-200 Ha Mechanized DSR**

**These DSR Cluster will support farmers throughout their entire journey of DSR**

Cluster & Mechanization Infrastructure planning work in Progress



Awareness – Internal & External



Farmer Onboarding Digital



Kit Purchase at Retail Points



Online & Offline Advisory



Mechanization Enablement



On field Support



Demo Fields – Awareness & Conviction

// Bayer will support Agri. entrepreneurs/clusters /Partners to enable Awareness, education, input availability & mechanization enablement in defined clusters

// IRRI, CSISA, PAU/HAU/OUAT, KVKs collaboration to support Agronomy, awareness & education of associated farmers





# Direct Seeded Rice is gaining ground at farm level

Favorable policy environment along with crop economics to accelerate adoption

THE HANS INDIA

How DSR technique could make paddy sowing more sustainable

The Tribune

VOICE OF THE PEOPLE

ਯੋਗਸ਼ੀ ਦਿਖਿਉਨ ਦੈਨਿਕ ਟ੍ਰਿਬਿਊਨ

Bhagwant Mann launches portal for direct seeding of rice

The portal has been designed by Mandi Board in sync with the agriculture dept

HT Hindustan Times

Direct seeding of rice: Punjab's paddy farmers eye mechanical sowing to save on labour cost

DSR 'tar-wattar' (good soil moisture), a low-cost mechanical sowing technique to reduce water footprint in the cultivation of water-guzzling rice by 20%, was indigenously developed by scientists of Ludhiana-based Punjab Agricultural University

HT Hindustan Times

Haryana farmers to get ₹4,000 per acre for growing paddy using direct-seeded rice method

Encouraged by the cultivators' response to its incentive-driven policy of promoting direct-seeded rice (DSR) technique last year, Haryana agriculture department on Tuesday set one lakh acre as the target of sowing paddy with this water-saving alternative method in 12 leading paddy-growing districts

THE ECONOMIC TIMES

nurture.farm first company to successfully generate and forward sell agricultural-related carbon credits in India

AcreNext Rice Farming by Corteva Agriscience

FINANCIAL EXPRESS

Read to Lead

Environmentally sustainable agriculture: Rice farmers to get incentives through carbon credit

Carbon credits from farmers can be purchased by those industries, especially aviation, mining or manufacturers of fertiliser, who are not in a position to reduce their carbon footprints because of the very nature of their business. According to estimates, the value of one carbon credit is around \$10.

The Tribune

VOICE OF THE PEOPLE

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Direct Seeding of Rice technique: Punjab Govt's Rs 1,500 aid welcome, but farmers need training too!



# Bayer's Rice Carbon Initiative

## // Objectives of the project

### *Enrolment of right farmers in alignment to the CDM methodology*

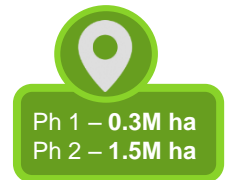
- // Practice ensuring non-flooded fields
- // Controlled irrigation and drainage facilities
- // No long-term yield reduction
- // Training, technical support & continuous handholding
- // No local regulatory restrictions

### *Implementation modality collaborative, cost-efficient & sustainable*

- // Practice Change (at scale)
- // Permanence
- // Optimum Cost of Operations
- // Integrity and Compliance
- // Reputation Risk Management



// Strong partnership for the on-ground implementation







Bayer  
**direct**  
acres

Thank You!

