



## Seed Connect

Edition 45

A monthly newsletter of Federation of Seed Industry of India

August 2022

Rice is consumed widely in India and the rest of the world and therefore, it plays an important role in how we grow our crops, the impact on natural resources, and achieving nutritional security and food security. My article in [Agriculture Post](#) focuses on hybrid rice and its importance in increasing the yield and growing the crop sustainably.

Rice crops are susceptible to biotic stresses such as fungal blasts and bacterial blight, which hinder growth and reduce yields. Hybrid rice varieties are resistant to blast and blight through the introgression technique and are developed to build resistance to insects. Hybrid rice has more vigour, which makes it more competitive over weeds. So, seedlings are in a better position to absorb water and nutrients in the soil. Farmers can also save money as they require less seed – six kg of seeds per acre compared to 20-30 kg for the inbred varieties. All this ensures that crops remain healthy and disease-free and provide the highest possible yield.

Hybrid rice crops develop strong resilience to climate impacts. This is very important for India, where farm operations are reeling under adverse weather conditions like frequent storms, floods, droughts, irregularities and extremities in the crucial monsoon rains. Hybrid rice can do wonders for farmers as it provides solutions to the burgeoning problems such as depleting water resources, power crisis, saline soils and higher expenses on crop output. Additionally, hybrid rice varieties are suitable for all agro-climatic regions.

Studies show that hybrid paddy emits around 20 per cent less methane than inbred varieties. Moreover, it reduces methane concentration in soil pore water. Efforts are ongoing to produce new hybrid rice varieties that have the tolerance to high fluctuations in temperature, salinity and droughts in order to ensure adequate food supplies to the global population in the wake of climate change.

There is a need to increase food production through sustainable ways of farming. Given the limited availability of land, the focus will be on increasing productivity and achieving sustainability by reducing the need for water and crop inputs. It can attract farmers due to higher productivity and more profits.

Hybrid rice proved to be beneficial, as seen in China, which has managed to feed its people –20 per cent of the global population– using 10 per cent of the total arable land in the world. Hybrid rice

improved food security in China and a few south-east Asian countries as well. Hybrid rice is consumed in many parts of the world, especially in China, Indonesia and Vietnam. Adoption of hybrid rice is picking up in India as well. Besides governments, the seed industry is also investing time and resources in the development of better seeds of hybrid rice. We believe more farmers will come forward to scale up the adoption of hybrid rice and witness the benefits themselves.

In this newsletter we have also covered news around several important developments on agriculture across India, globally and in the area of research. We hope you find it a good read!



**Shivendra Bajaj**  
**Executive Director**

**Federation of Seed Industry of India and Alliance for Agri Innovation**

## **News from India and Around the World**

### **[Hybrid rice complements weather conditions of India](#)**

**(Agriculture Post)**

Since rice is consumed widely in India and the rest of the world, it plays an important role in how we grow our crops, the impact on natural resources, and achieving nutritional security and food security. Scientists believe that the rice crop has great yield potential that can be tapped. Hybrid rice proves that point as seen in China, which has managed to feed its people —20 per cent of the global population— using 10 per cent of the total arable land in the world. Hybrid rice improved food security in China and a few south-east Asian countries. It has a much better productivity rate as it produces 30 per cent more yield than the best inbred varieties available in the market. Hybrid rice is consumed in many parts of the world, especially in China, Indonesia and Vietnam. Adoption of hybrid rice is picking up in India as well.

### **[Revolutionising India's Agriculture sector; ICAR prepares 10 year roadmap](#)**

**(Newsonair)**

The Indian Council of Agricultural Research has done commendable work in rolling out thousands of high yielding varieties and increasing crop productivity by three times on average. The Government informed that ICAR has developed a clear roadmap for next 10 years aimed at doubling the farmer's income. As a result of the varieties developed by ICAR, since 1950 there has been an increase of 6.19 times in food grain production, 3.30 times in pulse production, 7.46 times in oilseed production, 10.31 times in cotton, 7.55 times in sugarcane production; and 3.42 times in horticulture crops since 1992-93. In spite of these advancements, per hectare yield of several crops, most notably, pulses and cereals is still lower in India compared to global average. On an average the world produces 4,071 kg of cereals from a hectare whereas India produces 3,283 kgs. The same is the case with pulses where India stands at 704 kgs and the world at 964 kgs.

### **[How next-gen technology in agriculture can make food safer in India](#)**

**(We Forum)**

More than 50% of India's population is directly dependent on agriculture for sustenance. Unfortunately, this core sector generates only 20% of the national GDP. This considerable efficiency gap indicates numerous productivity losses that have accumulated over time across agri-value chains owing to persistent structural and operational challenges. As a result, profitability losses are caused

by low farm incomes and the diminishing role of agriculture as a national economic engine over time. Technology can aid in turning this around by eliminating productivity and profitability losses in food value chains and reducing agrarian concerns by removing manual errors and providing a fully integrated, digital model. Taking advantage of the latest technologies, such as AI and machine learning, can provide digital, rapid and accurate quality testing of food that eliminates food wastage and provides 100% traceability.

### [How India can create opportunities for its new-age farmers](#)

(Business Insider)

the number of agritech startups are on the rise. There were about 450 agritech startups in India before the pandemic, growing at the rate of 25% year-on-year, according to a NASSCOM report. Farming, like many other sectors, is all set to be disrupted by technology. "Advanced technology and precision farming have the potential to take Indian agro economy to newer heights. The agriculture sector in India is expected to generate better momentum in the next few years due to increased investment in agricultural infrastructure such as irrigation facilities, warehousing and cold storage," said Ravi Annavarapu, President of agriculture sciences company FMC India. This means, the tech-friendly, younger generation would be taking part in new-age farming much more than the earlier generation did. It will also create employment opportunities in rural areas.

### [India has no plan to import wheat as sufficient stock ready to meet local demand, government says](#)

(The Economic Times)

India's food and public distribution department today said it has enough stock of wheat and denied a media report that said the world's second-biggest wheat producer is planning to start importing the staple foodgrain. "There is no such plan to import wheat into India. Country has sufficient stocks to meet our domestic requirements and FCI has enough stock for public distribution," the Department of Food & Public Distribution wrote in a reply to the news item on Twitter.

### [Mystery 'dwarfing' disease hits rice in Punjab and Haryana](#)

(The Indian Express)

Even as overall acreage under rice has fallen by nearly 3.1 million hectares (mh) during this kharif cropping season over last year – mostly in the monsoon-deficit states of Uttar Pradesh, Bihar, Jharkhand and West Bengal – there is a fresh source of worry. And it's emanating from the country's Green Revolution bowl of Punjab and Haryana. Over the past fortnight or more, many farmers in the two states – and even the neighbouring high-yielding Terai plains of Uttarakhand and western UP – have reported a mystery "dwarfing" disease of paddy that agricultural scientists are still to identify. The disease leads to stunting of paddy plants; the infected fields have these alongside plants with normal height and regular growth.

### [This State Is India's 1st To Use Blockchain To Distribute Seed To Farmers](#)

(NDTV)

"Jharkhand is 1st state to implement blockchain in the country which is being used to track seed distribution. The blockchain platform tracks seed supply distribution-from issuing of supply orders from the Directorate of Agriculture, placing of seed demand by District Agriculture Officer, tracking seed distribution from empanelled government seed producing agency to distributors, retailers, LAMPS/PACS, FPOs, and finally to the farmers. The move to implement blockchain is aimed at bringing transparency and authenticity of seeds which the farmers receive under the seed exchange scheme and other schemes. " It is envisioned to implement blockchain technology for tracking the distribution of seeds, inputs, implements, etc under all the schemes being implemented by the Directorate of Agriculture like State Seed Distribution Scheme, NFSM, PMKSY, and NHM.

### [The role of technology in India's nutritional security](#)

(Deccan Herald)

India has made stupendous strides in becoming self-sufficient in food, primarily driven by technological investments during the green revolution. Using hybrid varieties of plants, new irrigational methods and chemicals in the form of fertilisers and pesticides allowed India to achieve food security when most of the international community had low expectations of us. However, this

shift was more than three decades ago. An aspirational India cannot be satisfied with only achieving food security. An aspirational India has to aim at nutritional security – providing high-quality, nutritious food to all Indian citizens. Nutritional security would include not only providing necessary nutrition to those malnourished but also targeting those with diet-driven lifestyle diseases. Growing and consuming healthy food has to be at the centre of achieving this ambition. For example, the consumption of iron is a significant component of maternal service schemes – but can that excess iron requirement be met through food instead of external medicines?

### [How India can finance and scale digital innovations in agriculture](#)

(We Forum)

While India is one of the biggest agricultural technologies (agritech) markets for equity investments with nearly \$500 million invested in agritech start-ups in 2020-21, there is still unmet demand for commercial capital. A Bain and Company 2021 report estimates that the Indian agritech sector will attract \$30-35 billion in investment by 2025. Blended finance structures, by pooling different risk-taking capital (capital that's invested in high-risk high impact initiatives to demonstrate the feasibility of the initiative), can play a crucial role to kickstart investments in the sector.

### [Three challenges to overcome, for the success of agriculture 4.0 in India](#)

(The Times of India)

one fundamental question that comes up every time we talk about agriculture 4.0 in the context of Indian agriculture is how inclusive can digital technology be for the farmers, particularly the smallholders? With the skills and knowledge to boost their productivity, yields, and incomes to previously unachievable levels, digital innovation offers smallholders the opportunity to reclaim their rightful place at the forefront of a sustainable agriculture revolution. The government launched the Digital Agriculture Mission in 2021, which aims to improve the sector's overall performance by leveraging a wide range of latest technologies like AI, Blockchain, drone technology, etc.

### ['Innovations during the pandemic will have a positive impact on agriculture'](#)

(The Indian Express)

When it comes to mobile phones, India has an enviable penetration of more than 95 per cent. This figure is huge and shows that our country has the appetite for technology. Mobile phones, other than allowing for connectivity, have also opened a new world for farmers. Now, they use it to value-add to their practices and get knowledge about this. We at BAIF use this to push knowledge and services directly at the grassroot level. In fact, our E Dost project trains women in the village to run mobile-based services like filling in forms etc. Thus, technology like drones will help the farmers but they have to be made accessible. BAIF has always been working on making technology accessible both in terms of usage and fees. Low cost solutions are needed for technology to be made accessible for all. Technology will allow the sector to go to the next level and I am sure it will be seen in the next few years.

## **New Research**

### [COVID-19 disrupted the agriculture sector in India, but not agricultural practices](#)

(Science Daily)

India's agricultural system is largely based on input-intensive monocropping of staple crops. A study publishing August 18th in PLOS Sustainability and Transformation by Lindsay Jaacks at The University of Edinburgh, Midlothian, United Kingdom, Abhishek Jain at the Council on Energy, Environment and Water, New Delhi, India and colleagues suggests that while COVID-19 disrupted agricultural labor, supply chains, and farmers' access to credit and markets, the pandemic did not significantly push Indian farmers to adopt more sustainable cultivation practices.

### [Scientists track cause of mystery paddy dwarfing in Punjab and Haryana](#)

(The Indian Express)

Agriculture scientists have narrowed down the cause of a mystery disease causing “dwarfing” of rice plants in Punjab and Haryana to either grassy stunt virus or phytoplasma bacteria. The vector responsible for their transmission is the brown plant hopper, an insect pest that sucks sap from the

stems and leaves of rice plants. Scientists at the Indian Agricultural Research Institute (IARI), who had collected samples of plants from farmers' fields – which showed symptoms of stunting and yellowing — have undertaken their electron microscopy analysis and DNA isolation through PCR (polymerase chain reaction) technique.

### [TCI and ICRISAT to improve access to district-level database for Indian agriculture](#)

**(Agriculture Post)**

Tata-Cornell Institute for Agriculture and Nutrition (TCI) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) are beginning a new phase of their partnership to expand and improve the 'District-Level Database for Indian Agriculture and Allied Sectors'. The open-access platform database will feature more up-to-date data and additional variables related to nutrition, food security and sustainable agriculture in India. The database currently features socio-economic, environmental, nutrition, and health-related data for 571 districts in 20 Indian states from 1966-2017. The data is apportioned to account for changes in district boundaries, allowing researchers to look at the diversity in growth patterns across India from a historical perspective. Altogether, the database includes 74 datasets, 1,030 variables and more than 11 million data points.

### [Cotton gene-editing project aims to make plant more insect resistant](#)

**(Farm Progress)**

Scientists in the Texas A&M Department of Entomology have received a matching grant of almost \$150,000 to conduct a three-year project to research novel pest management tools for cotton production. If successful, the project, Modifying Terpene Biosynthesis in Cotton to Enhance Insect Resistance Using a Transgene-free CRISPR/CAS9 Approach, could provide positive cost-benefit results that ripple through the economy and environment. The project goal is to silence genes in cotton that produce monoterpenes, chemicals that produce an odor pest insects home in on, said Greg Sword, Texas A&M AgriLife Research scientist, Regents professor and Charles R. Parencia Endowed chair in the Department of Entomology. By removing odors that pests associate with a good place to feed and reproduce, scientists believe they can reduce infestations, which will in turn reduce pesticide use and improve profitability.

\*\*\*