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ASIA

Technology at the Heart of Smarter Rice Processing

28 September 2026 | Interviews | By Shraddha Warde|shraddha.warde@mmactiv.com

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Kunal Gupta, Head – Rice Procurement & Dhuri Unit

As India’s rice industry moves towards greater automation, data-led decision-making and integrated supply chains, technology is increasingly reshaping how rice is procured, processed and delivered. From using real-time information to strengthen paddy sourcing decisions to deploying automated sorting, grading, moisture monitoring and process controls, technology is helping rice businesses improve quality, yield, traceability and operational efficiency. For the basmati segment in particular, where quality can be influenced at every stage from procurement and storage to ageing and milling, connecting these processes is becoming increasingly important.

In this interview with NUFFOODS Spectrum Asia, Kunal Gupta, Head – Rice Procurement & Dhuri Unit, discusses how data and digital tools are transforming paddy procurement, the technologies driving precision-led rice milling, and how businesses can balance cost optimisation with quality. He also shares insights into reducing wastage, improving resource efficiency and building a more connected and resilient rice value chain through integrated, technology-driven operations.

How is technology changing the way paddy procurement is managed today? What role are data, digital tools, and real-time information playing in improving sourcing decisions, supply-chain coordination, and procurement efficiency?

Technology is changing the way we approach paddy procurement, making the process more informed, transparent and responsive. Today, data helps us get a clearer picture of what is happening across different sourcing regions - from paddy quality and availability to market conditions that can impact pricing. Having access to timely information also allows our procurement, quality, supplier and processing teams to stay better connected and respond quickly when conditions change.

Digital systems are also helping us maintain more consistent records and improve traceability throughout the procurement cycle. This is particularly important in our business, where the quality of the raw material has a direct bearing on the quality of the final product. Technology, therefore, is not replacing the value of experience and on-ground understanding; rather, it is complementing them with reliable data and faster insights, enabling us to make more informed decisions at every stage.

Rice milling is increasingly moving from traditional processing towards precision-led, technology-enabled operations. What are the key technologies transforming modern rice milling, and how are they helping improve yield, consistency, and operational efficiency?

Modern rice milling is increasingly about getting greater precision and consistency at every stage of the process. Technologies such as automated sorting and grading, optical colour sorters, advanced milling equipment, moisture monitoring and automated process controls are giving mills much better visibility and control over operations.

Technology is an important part of ensuring that the quality of the grain remains consistent while also making the milling process more efficient. Automated systems can detect and separate unwanted grains and impurities with greater accuracy, while process controls help minimize variations and maintain uniformity throughout production.

The real value, however, comes from bringing these technologies together rather than using them independently. When quality, yield, throughput and overall plant performance can be tracked together, it gives the mill a much clearer picture of what is working and where improvements can be made. This combination of technology, process discipline and operational experience is helping modern rice milling become more precise, efficient and consistent.

How can data-driven procurement and processing help rice businesses balance cost optimization with quality? What are some of the key parameters or insights that can support better decision-making across the value chain?

In rice processing, cost and quality have to be looked at together. A lower purchase price does not necessarily mean better value if the quality of the raw material affects processing, yield or the final product. Hence, one should focus on factors such as moisture levels, grain characteristics, milling yield, broken percentage, head rice recovery and sorting performance to understand how a particular lot is likely to perform.

When this information is considered alongside procurement costs, inventory levels and processing data, it gives us a much more complete picture of the value of the raw material. Data helps our teams make these assessments with greater clarity and make decisions that balance efficiency and cost without compromising the quality standards our consumers expect from our products.

The basmati rice industry involves complex supply chains, from paddy sourcing and storage to processing and distribution. What are the biggest operational challenges in managing this chain, and how can technology help address them?

The basmati value chain is a long and interconnected one, with several factors shaping the final product- from the crop and availability of paddy to procurement, storage, ageing, milling, quality checks and, eventually, distribution. Keeping quality and consistency intact across all these stages is one of the biggest challenges, because what happens at one point can have a direct impact further down the chain.

Technology helps us bring greater visibility and coordination across these different stages. When procurement, quality, inventory and processing teams have access to timely information, it becomes easier to spot issues early, coordinate better and make quicker decisions. Digital traceability and monitoring also give us a clearer view of the journey of the raw material through the value chain.

The aim is not simply to digitise individual processes, but to make the entire chain more connected. By combining data with our on-ground experience, we can respond faster to changes in raw-material quality, availability and market conditions while maintaining the consistency and quality that our products are known for.

How can modern milling technologies help minimize wastage and improve resource efficiency? Are there specific areas of the milling process where you see the greatest potential for efficiency gains?

Modern milling technologies can create significant opportunities to improve resource efficiency by increasing precision and reducing avoidable losses. Better control over cleaning, dehusking, whitening, grading and sorting can help improve recovery while minimizing unnecessary grain breakage. Advanced monitoring systems can also help identify process variations early, allowing corrective action before they translate into higher wastage.

Improving milling efficiency is not simply about maximizing output; it is about achieving the right balance between recovery, quality and resource consumption. There is also growing scope to use data from individual processing stages to identify where losses occur and continuously fine-tune operations for better overall efficiency.

Looking ahead, how do you see India's rice-processing and supply-chain ecosystem evolving? What role will integrated, technology-driven facilities, traceability, and smarter procurement play in building a more efficient and resilient rice value chain?

India's rice-processing industry is steadily moving towards more integrated and technology-driven operations. The future will be about connecting procurement, storage, processing, quality checks and distribution more closely, so that decisions at one stage can support efficiency across the entire value chain.

Technology can play a key role in making this possible by giving teams better visibility, enabling smarter procurement and helping monitor processes more effectively. Traceability will also gain importance as customers and international markets increasingly look for greater assurance around quality and consistency. Ultimately, the industry will need to combine modern technology with strong processes and the experience of people on the ground.