Why foodgrain exports continue to falter

Despite presenting a very vibrant and colourful picture, India food grain exports failed to hit the right spot at the international market. The unscientific use of pesticides in food grain leads to rejection of the product in the international market, adding to the burden of farmers. Several countries have strict norms regarding the permissible amount of pesticides in food grain. Apart from that, there are still various gaps that need to be filled when it comes to domestic utilisation of excessively produced food crops and managing pesticide residue. Let's get to the bottom of this ongoing 'pain point' in Indian agriculture.

Every year, when winter sets in, Delhi's air pollution peaks with the Air Quality Index (AQI) often plunging to the 'severe' and 'hazardous' categories. A major reason behind the spike in Delhi's air pollution is stubble burning by farmers in Punjab and Haryana, which has increased to about 42 per cent.

Elaborating further on the quality of the food grain produced in India, Sandeep Sabharwal, CEO, SLCM Group stated, " It is important to note that many countries in the western world have Genetically Modified (GM) Crops available abundantly in the market and although they may result in cost-cutting and better profits, the price of the exchange is seen in increasing health issues among the consumers. Although the comparison is not suitable due to multiple variables in the equation, it is safe to say that the quality of indigenous food grain produced in India is at par with global standards. The aforementioned pesticide problem is primarily a result of lack of knowledge and awareness among the farmers. Maximum Residue Limit (MRL) is fixed for fertilisers and yet, the farmers continue to spray them even 10 days before harvesting. Combine this with the unauthorised use of certain fertilisers for higher yield and you have the reason for food grain rejection in exports."

Painting a similar picture, Dr Prashant Zade, Chairman, A S Agri and Aqua LLP said, "Farmers have not been getting a fair price for their crop. And a huge part of the country's population is unable to access the quality food grains may be due to price, availability and inaccessibility. For the want of better prices (market stability), most of the food grains are stocked leading to degradation of its nutritive and quality parameters thereby leading to wastage of available produce. Grading of food grains, value addition is not being carried out as a result food grains do not occupy the top market and procurers are not able to get competitive prices for the same."

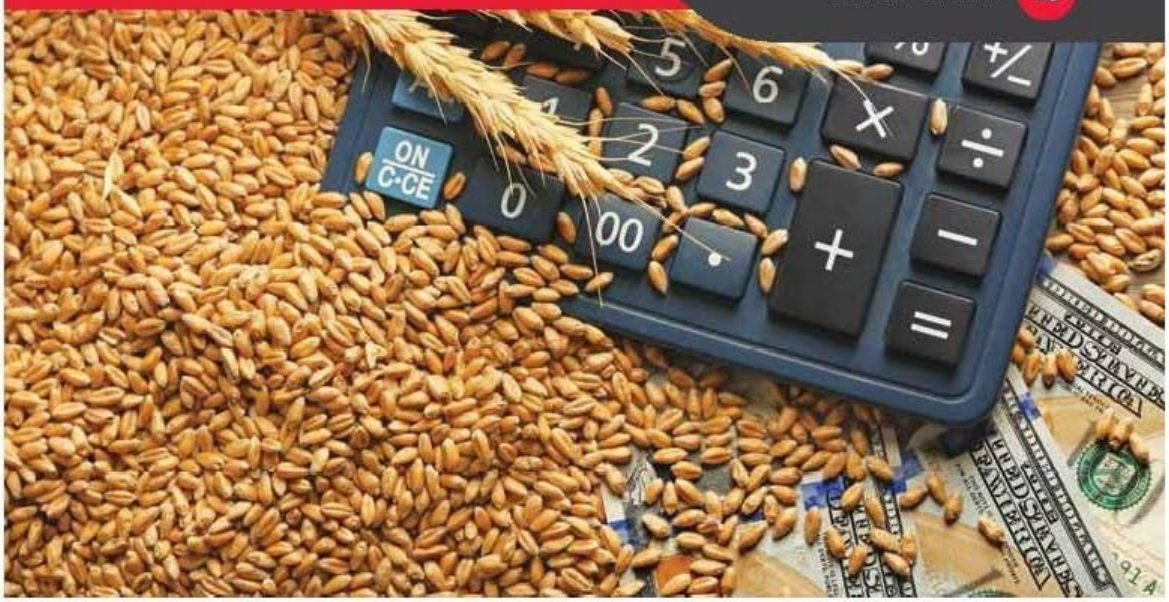
According to the stats shared by SLCM Group, in terms of profits, exports have fared well in FY22 with better access to the EU, USA, SEA, and UAE markets. From April to November 2021, farm produce exports had a net worth of nearly $29.5 billion. In the same period, non-basmati rice, sugar, and meat dominated the foreign exchange rates at over 40 per cent growth. Furthermore, other products like tea, rubber, corn, etc. have performed well in the foreign markets. The Indian government is trying to strengthen exports of items unique to local Indian states and one can expect positive results very soon.

Smart procurement system works

Procurement is driven by two major aspects: Funds and Quantity, but with the underlying understanding of agreed Quality. If one can get a mutually agreeable price for the commodity, they can buy as much quantity as they want. However, the devil is in the details. These prices are driven by the demand-supply curve, which is local as well as international. So one can say that if the prices are exorbitantly high, the trader hesitates to buy and if they are reasonably low, the seller isn't willing to make the trade. For instance, if a crop yield suffers in a certain state due to unsuitable weather or any other reason, the supply reduces, and demand increases. Now, if one has a good amount of yield in holding, this can be managed, otherwise, it increases the prices. Procurement is primarily about meeting at a mid-point for the price and quantity.

Extending his views on the subject, Sabharwal said, "With respect to quantity, procurement could face multiple barriers like the right discovery of Quality, Transportation, and storage. After agreeing on the trade, the quantity has to be tested for Quality and then, shifted from the point of origin to the loading point in a tangible frame of time. The time for this varies on multiple factors like capacity and capability of Quality Testing, Capability of handling and transportation, and finally, the capability of financing the Quantity throughput. All these factors if not managed properly can, eventually, become a procurement issue."

The adoption of an agri-technology platform is inarguably the most effective way to enhance agricultural productivity and efficiency of the field staff by digitising the various field operations and constantly improving farming practices based on the ground-truth intelligence that provide actionable insights. As a result, farming companies can provide procuring companies with a near-accurate estimate of the harvest quantity and quality, and monitor the cultivation closely to ensure the end result is as close as possible to the agreed figures. Procuring



companies can also remotely monitor the growth and the health of the crop from time to time through satellite monitoring. Subsequently, this prevents the procuring companies from incurring heavy losses after the purchase has been made.

International markets protect the interests of their consumers by way of strict import regulations on the quality of the agri-food **product. Each country has its own specifications,** and exporting organisations strive to comply with them to get the clearance for trade. While at one end it empowers the consumers to know about the product they consume in much detail, at the other end it enables food producers to establish a rapport with the consumer through the transparency of processes.

As per CropIn, companies that procure agri-commodities from one country to export to another can establish a system that allows farming companies to monitor crop cultivation and ensure that farming practices adhere to the compliance stipulated for trade. Digital farm management systems such as CropIn's enable **the field staff to capture farm data for each** activity, which can be extracted as customised reports to provide evidence of compliance with import/export regulations along with vital information from lab reports and quality control processes. The infusion of technology to achieve transparency and traceability in the cultivation process has empowered organisations involved in procuring and exporting to proceed with the process without any setbacks or delays.

While further enlarging on the company's **product profile, CropIn stated that their Web-** and mobile-based applications digitise every activity that goes into producing and distributing the produce, thereby bringing about transparency and accountability in the entire process. While SmartFarm helps agribusinesses to achieve higher farm productivity, SmartWare ensures minimal wastage during the produce's movement along the supply chain. Being a cloud-based platform, CropIn allows key players within the agribusinesses to view farm and supply-chain activities in real-time and derive actionable **insights that encourage efficient and dynamic** business operations.

Enhancing profitable quotient of food grain crop

Primarily, the discovery of quality in a consistent and scalable way is the bottleneck to be addressed in food grain crop production. To date, quality assessment has been based on physical inspection backed by testing in a laboratory. Although it gets the assurance from a reliable quality assessment body, issues such as the shortage of skilled people for conducting the test and the time consumed for the entire process cannot be ignored.

"Fortunately, I am able to say that the investments done by companies in the recent past in this arena have started yielding results. Taking

our own example, we have invested the last 6 years in developing an AI, ML digital application for testing commodities like wheat with the use of a smart mobile phone only. This was launched as a Beta version "Agri Reach" in November. Today, the test results generated by Agri Reach are 85 per cent accurate in comparison to NABL laboratory testing. Such applications have the ability to give test results in under 90 seconds as compared to physical testing which takes 4 to 5 hours including sample transportation from the **field that needs at least one working day. Such** applications address all issues like scalability, testing accuracy, short turnaround time and remove the need for redundant instrumentation and apparatus," stated Sabharwal.

"Awareness of issues in quality testing deserves a separate spotlight. A lot of companies are developing newer ways of testing, but with the same bottleneck of getting newer **equipment, hardware, etc. This reflects a myopic** perspective as you are not addressing issues such as skills required to operate new equipment, infrastructure requirements such as electricity, **static office space, etc. Also, it does not take into** account the requirement of easy mobility as crops are in a constant state of transit from production to consumption," he added.

Elaborating on the topic, Dr Zade said, " So **as to gain good profits there should be diversified** farming rather than monocropping which is best for getting good returns and maintaining a healthy state of the soil. Switching to the indigenous **pulses along with cereals can boost the profits in** today's market which believes-Eat-Right-Stay-Healthy. Switching to more sustainable and GAP **(Good Agricultural Practices), complemented** with organic resources and bio inputs such as biofertilisers, biopesticides and bio insecticides will automatically lead to good quality food grains which are residue and toxic free."

Holistic and integrated approach should be followed while carrying out crop production at a large scale. Storage system facilitated with a network of cold storage chains and good transportation facilities must be there to maintain the crop in prime condition for as long as possible. While maintaining all the above paraphernalia, one needs to also focus on sustaining grading standards as per the national and international market and that is the key **requisite for ensuring profitability.**

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Sandeep Sabharwal, CEO, SLDM Group

Lack of tech adoption

Compared to western countries, Indian farmers use very less technology while cultivating food grain crops. As per Ministry of Agriculture, in India, around 34.5 per cent are marginal farmers having land around 1-2 ha. So, they can't **afford usage of higher advanced machinery for** carrying out précised agriculture. Apart from it, due to climate change and vagaries of nature, **there has been difficulty in increasing crop** production.

Mostly, India practices resource-intensive farming, which depletes natural resources such

as groundwater, soil quality, etc. at a rapid pace. With the absence of technology to monitor and control such issues, the profits in the food grain trade are bound to take a hit.

However, India realises the losses and has, in fact, taken the initial steps in the right direction. The central government has recently decided to provide 100 per cent funding-oriented support up to Rs 10 lakh agriculture training institutes and Krishi Vigyan Kendras for drone purchase and use in agriculture. The ministry has issued specific SOPs for operations, guidelines, and training to use such drones

Furthermore, the government is working on improving the use and efficiency of the National Agriculture Market (e-NAM), which would act as a trading platform for farmers to get the best price for their agri commodities. Such a positive approach towards technology infusion in agriculture will act as a catalyst in improving the opportunities and profit returns for the farmers through data and digitisation.

Managing food grain crop's residue

Food grain crop residues are primarily used as bedding material for animals, livestock feed, soil mulching, biogas generation, bio-manure/ compost, thatching for rural homes, mushroom cultivation, biomass energy production, fuel for domestic and industrial use, etc. However, a large portion of crop residue is burnt 'on-farm' primarily to clean the field for sowing the next crop. The problem of 'on-farm' burning of crop residues is intensifying in recent years due to shortage of human labour, high cost of removing the crop residue from the field and mechanised harvesting of crops. As per available estimates, burning of crop residues is predominant in four states, namely, Haryana, Punjab, Uttar Pradesh & West Bengal.

According to the Ministry of Agriculture, It is estimated that burning one tonne of rice straw accounts for loss of 5.5 kg Nitrogen, 2.3 kg Phosphorus, 25 kg Potassium and 1.2 kg Sulphur besides, organic carbon. Generally crop residues of different crops contain 80 per cent of Nitrogen (N), 25 per cent of Phosphorus (P), 50 per cent of Sulphur (S) and 20 per cent of Potassium(K). If the crop residue is incorporated or retained in the soil itself, it gets enriched, particularly with organic C and N. Heat from burning residues elevates soil temperature causing death of beneficial soil organisms. Frequent residue burning leads to complete loss of microbial population and reduces levels of N and C in the top 0-15 cm soil profile, which is important for crop root development.

Apart from that, burning the crop residue causes a massive amount of air pollution which could be easily witnessed in the Delhi NCR region every year as the winter sets in. While stubble burning is an important factor, it is not the only factor that contributes to rising air pollution in Delhi. Vehicles and industrial emissions are also contributors to worsening air quality in the national capital.

In order to minimise or stop the stubble burning activities, the state and the central government has been working very closely to map a plan which is best suited for both the environment and farmers. One such way is the usage of Turbo Happy Seeder (THS) machines. It is a tractor-operated machine developed by the Punjab Agricultural University (PAU) in collaboration with Australian Centre for International Agricultural Research (ACIAR), for in-situ management of paddy stubble (straw). After harvesting the paddy field using a combined harvester fitted with Super-SMS (Straw Management System) equipment, which chops and evenly spreads the stubble in the field, farmers can directly sow wheat seeds using Happy Seeder with the stubble's organic value added to the soil.

Another alternative to resolve this issue is Pusa bio-decomposer and it is being highly recommended by the current Chief Minister of Delhi, Arvind Kejriwal. The Bio-Decomposer or the microbial solution has the property of decomposing the crop residue and turning it into manure when sprayed in the fields. The decomposers are in the form of capsules made by extracting fungi strains, which can produce the essential enzymes for the degradation process. Eventually these fungi strains help the paddy straw to decompose at a faster pace than the usual rate. The 'Bio-Decomposer' capsules are first used to prepare a liquid solution, which is then sprayed in fields. All these 'problems' have effective and scientific solutions. However, only a ground level conscientious implementation will determine how our produce fares in the next major export bid. AS

Nitin Konde