

ACFI NEWSLETTER

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'Closer to doubling farmers' income'

The government's measures, including the imposition of taxes and export restrictions, have helped in cooling the prices of rice and onions, Niti Aayog member Ramesh Chand said. The government will soon undertake a study on the productivity of labour under the Mahatma Gandhi National Rural Employment Guarantee Act as the scheme is vulnerable to leakages and questions are being raised about the quality of assets created under the scheme, Chand told FE's Sandip Das and Prasanta Sahu. Edited excerpts:

Have measures like export duties on rice and onion given results in controlling inflation?

If the timely decision on imposing 40% import duty last month were not taken, it would have led to a crisis and spike in prices. In the case of rice and onion, we have succeeded. At present, the wholesale rice prices in Thailand and Vietnam have reached \$600/tonne or more than ₹50/kg. In our case, the wholesale price is around ₹37/kg and it has never crossed ₹38/kg. While there are curbs on rice exports, shipments are going. We did not want excess exports to take place. Our rice exports are still expected to cross 20 million tonne this fiscal. Recently, the government approved 75,000 tonne of non-basmati rice exports to the United Arab Emirates. The overall situation on rice supplies would be assessed once grain starts arriving in the market.

What is your assessment of the government's target of doubling farmers' income?

I can't say whether the farmers' income has doubled or not but certainly, I can say that the kind of growth in income of farmers we have seen in the last seven to eight years is unprecedented. Annual cash transfer of ₹60,000 crore to farmers under PM Kisan has also enhanced farmers' income. In real terms, the growth in the agricul-

ture sector is 4% and there is an increase in terms of trade. If you add all these, we will be moving closer to the target of doubling the farmers' income.

Is the government launching any new welfare scheme?

In the recent years lots of positive things have happened in the agriculture sector. Terms of trade in agriculture are rapidly rising, which means real prices of the agriculture sector compared to non-agriculture are rising as indicated by the recent retail food and non-food inflation. Food prices are rising at the same rate as other prices. This makes a big difference. The prices have benefited the farmers while prices of urea have not been changed since 2018. No tariff is charged on power supply to the agriculture sector. Recently, trade has become a big source of increase in farmers' income. A few years back we used

to hear about farmers suicides and, because of positive terms of trade, such incidents are rare now. In the last one decade, public procurement has increased. Earlier rice and wheat procurement was restricted to three or four states, but at present, procurement of grain is taking place in 12 states.

Procurement was earlier focussed on rice and wheat, we are now procuring pulses for buffer stock and also oilseeds.



Your assessment of the rural distress due to the rise in demand for jobs under NREGA?

The demand under NREGA (Mahatma Gandhi National Rural Employment Guarantee Act) is rising because of several reasons. It's not because people are not getting work. Over time, there is a lot of leakage in NREGA. Male members prefer normal kind of employment while women go for NREGA. NREGA employment is less taxing and productivity is also low. I do not consider the increase in work under NREGA as an indicator of distress. Reports are coming that much of the work under NREGA is done under machines. How do you do social audits? In most cases, people are looking at social audits if workers are getting payment but they seldom look at the productivity of the assets created. We will undertake a study on the productivity of labour under NREGA.

(Full interview on

www.financialexpress.com)



I CAN'T SAY WHETHER THE FARMERS' INCOME HAS DOUBLED OR NOT BUT CERTAINLY, I CAN SAY THAT THE KIND OF GROWTH IN INCOME OF FARMERS WE HAVE SEEN IS UNPRECEDENTED

Farmers' monthly income in Odisha second lowest in the country

Marginal 2.73% growth in income in six years

STATESMAN NEWS SERVICE
BHUBANESWAR, 30 SEPTEMBER

Despite the State government's claim of improving a lot in the agrarian sector with a separate budget for agriculture and cash incentives to farmers under the KALIA scheme, the farming communities in Odisha languish among the poorest in the country as far as monthly income is concerned.

As per the government's own admission in the Assembly, farmer family income in

Odisha has increased by a meagre 2.73% in 2019 as compared to 2013.

The National Sample Survey Office (NSSO) under the Union Ministry of Statistics' 59th round (January-December 2003) report states, the monthly average income of a farmer family in Odisha was Rs 1062, while as per the report of the 70th round (January-December 2013) the monthly average income of a farmer family was Rs 4,976 and as per the report of the 77th round the monthly average income of a farmer family was Rs 5112, Agriculture

& Farmers' Empowerment Minister Ranendra Pratap Swain said in the Assembly. The farming communities in Odisha languish as the second poorest in the country as far as monthly income is concerned.

Incidentally, farmers in agriculturally rich States like Punjab and Haryana earn five times more than what the coastal State's farmers earn every month from agrarian produce.

The average monthly income of Jharkhand's farmers at Rs 4,895 is the lowest in the country while farmers

in Odisha earn in a monthly average of Rs 5,112, the 2nd lowest in the country.

Punjab at Rs 26,701 topped the list of farmers' monthly income followed by Arunachal Pradesh - Rs 19,225, Meghalaya - Rs 29,348, Haryana - Rs 22,841, Jammu and Kashmir - Rs 18,918, Kerala - Rs 17,915.

The abysmally low income sources of farmers are a grim indicator towards the decline in agrarian produce and distress sale of produce much below the minimum support price.

It is disconcerting to note

that the poor economic status has come at a time when the State government had recently claimed that the coastal State has attained self-sufficiency in food production and earned the distinction of being the third largest contributor to the nation's Public Distribution System (PDS).

The government is revealing a rosy picture of agriculture while the ground realities stand on the contrary, said Umesh Chandra Singh, a member of Odisha Kisan Sabha (a left wing outfit of farmers).

'Weather may cause grain fall, affect paddy harvest'

TIMES NEWS NETWORK

Panaji: Heavy rainfall over the past three days has cast a shadow over Goa's paddy harvest.

This year, Goa's farmers faced an uphill battle as the erratic start to the monsoon season resulted in a three-week delay in sowing in June. Consequently, the paddy crop is yet to complete its vital 120-day growth cycle, especially in the hilly terrain, where it requires an additional 20 days to reach the harvest stage.

Director of agriculture, Nevil Alphonso, voiced the concerns of the farming community, stating that "farmers will not be able to harvest the paddy crop if the rain continues."



AT NATURE'S MERCY

With the rising popularity of mechanical harvesters in the region, the saturated fields make it increasingly difficult for farmers to rely on machinery, forcing many to revert to manual labour.

In certain areas like Salce-

te, Tiswadi, and Bardez, where resourceful farmers took matters into their own hands by irrigating their fields during the monsoon delay, the grains have matured and await harvest. However, the relentless rainfall is now causing premature grain fall.

"The crop is already heavy with grain formation. With the incessant rainfall, the grains become even heavier, toppling to the ground and compromising their quality. If water continues to inundate the fields, germination may occur, further complicating the farmer's predicament," said Alphonso.

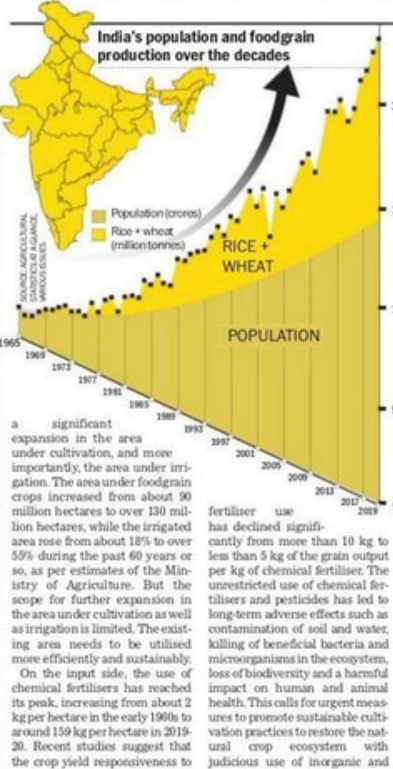
"Once the rainwater recedes, we will be able to ascertain if the crop is still salvageable," he said.

Next agricultural revolution must rein in food losses

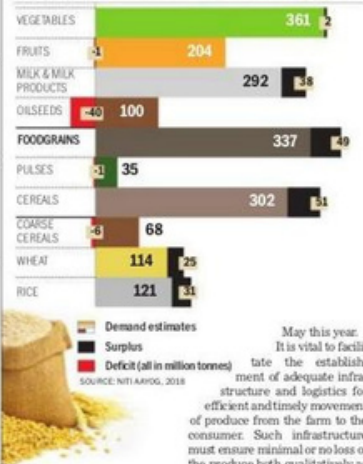
The father of the Green Revolution, MS Swaminathan, played a key role in guiding agricultural policies towards food self-sufficiency and affordability as well as nutritional security. The next agricultural revolution needs to adopt a holistic approach driven by efficient post-harvest management, eliminating wastage through the food value chain, ensuring restoration of soil organic matter and fertility, optimal resource use and the adoption of sustainable production practices. Farmers must be made a vital part of the agri commodity value chain.

A. AMARENDER REDDY AND TULSI LINGAREDDY

INDIA'S foodgrain production rose from 56 million tonnes in 1951 to a record 330 million tonnes this year, almost a seven-fold increase. Similar progress has been achieved for other agricultural products. The father of India's Green Revolution, MS Swaminathan, who passed away last week, played a key role in guiding agricultural policies towards food self-sufficiency and affordability as well as nutritional security. In keeping with Swaminathan's vision, the emphasis of the New Delhi G20 Leaders' Declaration on food and energy security brings out the need to focus on enhancing food production and its availability at affordable prices for economically weaker sections. The declaration commits to accelerate investment for increasing agricultural productivity and post-harvest management towards building sustainable and climate-resilient agriculture and food systems. While there has been a remarkable growth in the domestic food production, the progress in post-harvest management has remained subdued, resulting in supply chain inefficiencies and substantial loss and wastage of food. There is an urgent need for devising a holistic and comprehensive policy to address the challenges for bringing efficiency in post-harvest management, while promoting optimal use of input resources and sustainable agricultural production practices. The growth in the output of major food crops has been largely input-driven, accompanied by



Aggregate demand and supply projections, 2032-33



May this year. It is vital to facilitate the establishment of adequate infrastructure and logistics for efficient and timely movement of produce from the farm to the consumer. Such infrastructure must ensure minimal or no loss of the produce both qualitatively as well as quantitatively, reaching out to the remote corners. Further, it needs to enhance farmers' income by enabling their direct connection with value chains and thereby reducing the role of intermediaries. Such direct linkages with the value chain will not only help in increasing the farmers' share in the crop prices but also help them understand the changing consumer preferences with respect to their produce in terms of quality, variety, etc. In order to promote the development of requisite post-harvest infrastructure, the Union Government

established the Agriculture Infrastructure Fund of Rs 1 trillion in May 2020. The fund provides financing for projects relating to post-harvest management infrastructure and community farming assets through incentives and financial support. Under this scheme, Rs 23,711 crore has been sanctioned so far according to the National Agriculture Infra Financing Facility.

The roadmap
The phenomenal growth in agricultural production was primarily spurred by the use of inputs. However, their excessive use has had a detrimental effect on yield responsiveness to inputs, soil fertility and groundwater. Climate change is adding to the concerns about agricultural production and farm incomes. Notably, Swaminathan was keen on greater participation of farmers in climate-resilient agriculture. Hence, the next agricultural revolution needs to adopt a holistic approach driven by efficient post-harvest management, eliminating wastage through the food value chain, ensuring restoration of soil organic matter and fertility, optimal resource use and the adoption of sustainable production practices. The private sector needs to play an active role, along with the Central and state governments, to make farmers a vital part of the agricultural commodity value chain by creating awareness, building capacity and providing technological support. Reddy is Joint Director, School of Crop Health Policy Support Research, ICAR-National Institute of Biotic Stress Mgmt., Raipur; Lingareddy is a consultant economist (sustainable finance, markets & agriculture). Views are personal.

Erratic monsoon impacts agrochemicals offtake

Vishwanath Kulkarni
Bangalore

The agrochemical industry faced a double whammy this kharif season. Due to the delayed and erratic spread of monsoon, the demand was impacted in crops such as cotton, soyabean as farmers chose to apply less inputs on weather uncertainty during the cropping season. The agrochemicals industry also faced pricing pressure in case of generics due to falling prices in China, the largest supplier of raw materials. "From the herbicide point of view, it was a mixed bag for the industry as July was good, but August was worst due to the prolonged dry spell. In case of cotton, the long dry spell had impacted the sprayings on cotton in parts Vidarbha, Marathwada and Khandesh. The industry

would have lost 1 or 2 insecticide sprays due to the bad weather as farmers chose not to take up spraying due to the weather uncertainty. "As a result, 10-15 per cent of the total sales of chemicals related to cotton could be down this season," said NK Rajavelu, CEO of Godrej Agrovet's Crop Protection Business. Echoing similar views, Bhavesh Shah, Managing Director, GSP Crop Science, said the overall impact on the industry was around 15-20 per cent due to decline in volumes and the fall in prices of generics. "At least two sprays have been missed this cropping season in cotton. Farmers normally take up 6-8 sprays," he said.

PINK BOLLWORM CASES
The incidence of pest attacks especially the pink bollworm was reported more in the northern parts of the country, especially



DRAGON CONNECT. The industry also faced pricing pressure in case of generics due to falling prices in China, the largest supplier of raw materials

Punjab. "Wherever there was water availability, people have taken up spraying," he said. Shah said the fall in volumes was somewhat offset by the contribution of new products, and the prospects for rabi season looks good if the rains continue. Surplus rains in September have helped wipe off the deficit witnessed in the earlier

months, especially during August, considered crucial for the cropping cycle. "There could be recovery in the next two months if the rains are good," he said. Shah said the latest spell of September rains are seen helping recovery in case of cotton, for which cropping season extends till February. "We see some recovery in sales, especially with recov-

ery in crops such as cotton, paddy and also chilli with the latest round of rains seen helping these crops," he said. Earlier in August, farmers, who witnessed a prolonged dry spell across many parts of the country, chose not to spend on agrochemicals due to the weather uncertainty. "In many places they preferred to go for manual weeding and not spend on chemicals," Shah said. Kalyan Goswami, Director General of the Agro Chem Federation of India, said the use of agrochemicals during the kharif season was a tad lower down compared to last year, especially in crops such as cotton and soyabean. Volumes were down for the companies, which have somehow managed. However, we are expecting an increase in demand in the forthcoming rabi season, Goswami said.

Andhra Pradesh plans to provide legal guarantee to MSP

Shishir Sinha

Richa Mishra

New Delhi/Hyderabad

Andhra Pradesh is set to enact a law to ensure Minimum Support Price (MSP) for farmers, while simultaneously envisaging heavy penalty, including a jail term, for defaulters.

The relevant Bill is expected to be introduced in the next session of the State Assembly. "We wanted to bring the legislation in the just-concluded Assembly session, but could not do it as we want to ensure due diligence is done," Kakani Govardhana Reddy, State's Minister for Agriculture & Co-operation, Marketing & Food Processing, told *businessline*.

It is important that all stakeholders — millers, traders and others — are in sync with the proposal, he said, adding, "A judicial review committee is looking into it."

PRECEDENTS

Before Andhra Pradesh, States such as Maharashtra, Punjab and Rajasthan have made legislative arrangements for ensuring MSP but in a very limited manner. There has been a strong demand from the farming community for a legal guarantee.

Currently, the Centre declares MSP for 22 crops and FRP (Fair and Remunerative Price) for one crop based on recommendations of the Commission for Agricultural Costs & Prices (CACP). These crops include seven cereals (paddy, wheat, maize, sorghum, pearl millet, barley and ragi), five pulses (gram, tur, moong, urad, lentil),



EMPOWERING FARMERS. The proposed law seeks to safeguard the interests of farmers by ensuring them the MSP for produce got from agriculture, horticulture, aquaculture etc.

seven oilseeds (groundnut, rapeseed-mustard, soyabean, sesamum, sunflower, safflower, nigerseed), and four commercial crops (copra, sugarcane, cotton and raw jute). However, agriculture is a State subject and the States have the power to give MSP over and above what has been declared by the Centre. The States can also make laws for agriculture-related issues.

The copy of the draft Bill 'The Andhra Pradesh Farmer's Produce Support Price Act, 2023', seen by *businessline*, proposes to safeguard the interests of the farmers by ensuring them the MSP for the produce obtained from agriculture, horticulture, sericulture, aquaculture, animal husbandry, etc. It provides a comprehensive legislation for enforcement of MSP in the State.

The draft Bill defines MSP as a price notified by the Government under this Act regarding the farmers' produce, which shall not be lower than the price, if any, notified by the Centre for the same produce. The draft Bill proposes that MSP notified under this Act shall be enforceable on every transaction in the State

with regard to such farmers' produce, whether such transactions occur in markets, cooperative societies and any other collective activities/transactions.

SETTING UP RBKS

To ensure proper last-mile connectivity, the draft Bill also proposes setting up Rythu Bharosa Kendrams (RBKs) which will act as facilitation centres for ensuring the MSP. The RBKs shall link the farmer to the purchaser and issue transportation slips to farmers and buyers for the authorised transporter. On being satisfied that the transaction price is not lower than the MSP, RBKs will furnish an acknowledgement.

The draft Bill also prescribes that any person who enters into a transaction below the MSP will be liable for a fine of ₹50,000 for a first-time violation. In case of second and subsequent violations, the person will be liable for imprisonment up to six months or a fine of ₹1 lakh or both. Non-production of documents before the controlling officer could lead to a penalty between ₹10,000 and ₹50,000 and a three-month jail term.

'Agri sector share in economy dips, but still top job creator'

PIVOT ON BIOECONOMY. Focus on bio-resources, says Ashok Dalwai

Narayanan V
Chennai

Even as agriculture's share in the overall economy has declined, the burden of employment on the agri economy continues to be very high, according to Ashok Dalwai, Chairman, Empowered Body on Doubling Farmers Income, Union Ministry of Agriculture.

"If you look at the economic structure, the share of agriculture has dropped to 18.5 per cent today, from 63 per cent in 1951," Dalwai said, adding, "But the percentage of the population dependent on agriculture has reduced only to 48 per cent from 80 per cent in this period."

He was speaking as the guest of honour at the 187th Chamber Day of the Madras Chamber of Commerce & Industry



Ashok Dalwai, Chairman, Empowered Body on Doubling Farmers Income

(MCCI) on Friday. Dalwai said the economic principle of Say's Law, which says "supply creates its own demand" does not hold true in case of Indian agriculture. We have hit surplus in particular commodities but the prices of those commodities are only falling continuously."

He said 'global warming' is one of the major roadblocks for

India's economic growth as the country could no longer depend on fossil fuel resources, which were instrumental for the rapid industrialisation of major economies like the US and Europe. He added that the country should channel its focus on R&D, technology and science for using bio resources.

BIO-RESOURCES

Dalwai said India produces 350 million tonnes (mt) of food-grains (cereals and pulses), which generate 786 mt of crop residues but all of the residues are considered as waste. He said all this waste can be used for ethanol production and various other uses. "There is no limitation. The frontiers of biosciences and bio-resources are unlimited. So, bio-economy combined with the circular economy is the way forward," Dalwai added.

We need to uproot some of India's agricultural policies

MADAN SABNAVIS



is chief economist at Bank of Baroda and author of Corporate Quirks: The Darker Side of the Sun

Agricultural policies in India are probably the most complex. Political economy considerations often play a major role. While there has always been talk of increasing the income of farmers, the overbureaucratic is that it has to be paid by consumers. This creates dissonance, as political economics would like to see the former happen without distorting retail prices. There is an argument for a complete rethink at all agriculture-based policies, as several conflicting situations have arisen in the past few years.

First, the concept of Minimum Support Price (MSP) must be reviewed. While procurement largely takes place for rice and wheat, it is less significant for other crops, though pulses and oilseeds have been picked up in bulk at times. Since MSPs tend to only rise and not fall, one can argue that benchmark prices in the market tend to increase irrespective of output, and so the theory of prices being determined by supply-demand conditions no longer holds. In an average basis, MSPs increase by 4-8% across crops,

leading market prices an upward bias all the time. This may explain why the prices of wheat and rice have risen continuously even though the country has been registering new production peaks year after year. Clearly, our pricing policy needs to change. Also, the MSP system attracts farmers to grow mostly fair-quality produce, for which there is a price guarantee. Moving to better varieties is fraught with price uncertainty.

Food inflation worries, in turn, lead to a policy of export bans. These have become frequent, especially for wheat and rice, and also act as a disincentive to grow better crop varieties and move up value chains. While basmati is usually less likely to face export curbs, general embargoes come in the way of such migration. This is why the typical farmer's average quality of produce tends to converge to the lowest acceptable level. For better outcomes, the policy of banning exports needs a review. It may appear to serve a near-term need, but can be detrimental to commercializing agriculture. Bans are also viewed negatively at the global level, as they reduce overall supply and push up world prices. Indonesia's halt of palm oil exports after the Ukraine war, for example, spooked markets across the globe. In a globalized world, inflation is a global worry.

The third policy in need of a rethink relates to stock limits. Such caps have often been placed on pulses and sugar when production has fallen, but pose a conundrum. Normally, every crop is grown once a year (with the exception of rice to an extent); it gets categorized as *kharif* or *rabi* depending on its harvest season. Crops harvested in both seasons have to be made available to the entire country throughout the year. Until the next cycle begins. Who does this job? Food Corporation of India enables it for rice and wheat at the government level, buying output for its buffer stocks as well as public distribution system. For other crops, it is done by farmers and traders.

Farmers must monetize their harvest to earn an income. Some have a two-crop regimen, with a *rabi* or horticulture crop as the second one. Either way, farmers must access money and hence need to sell their produce right after harvest. This is a point that the government tries to address with its MSP system, ensuring that

prices do not crash as vast quantities of supply take place together. At any rate, farmers cannot stock their crop, given their limited access to finance and warehousing facilities.

This is where intermediaries like traders are required. We need players ready to buy crops and make it available to satisfy demand across the country all through the year. Therefore, logically, someone must hold these crops, stocks of which will gradually diminish as the next harvest season approaches. In this context, imposing stock limits seems illogical. If traders are unable to play their role because of such restrictions, then they would not be able to ensure continuous supply.

Traders and other such intermediaries perform the crucial function of buying and transporting the crop, supplying it to various places through other intermediaries, storing it in warehouses, taking the risk of deterioration in quality, loading trucks, and so on. There is a cost involved that has to be covered by the final price. After all, there is value being

added by active operators at both the wholesale and retail ends of this market.

Any news of a monsoon failure or market intelligence indicating shortages can lead to prices going up in anticipation. In fact, India's last two policy interventions had negative announcement effects. They exacerbated the price situation, as all participants in the value chain, from farmers to various intermediaries, got affected. In circumstances like these, such shortages can become self-fulfilling, should extra hoarding take place. Households frequently also join the bandwagon of hoarding the commodity in question, pushing up demand further.

Farm-related policies have generally been progressive over the years, with a distinct shift towards the market, helping commercialize agriculture. However, mindsets have not quite adapted yet, as seen by India's ban on the futures trading of commodities like cereals, pulses and oils, etc. Futures trading needs to be restored, for it can address to a significant extent the price-volatility problems of farmers. The latter could learn those options, with premiums paid by the government. But suspending exports and imposing stock limits are certainly counterproductive and should be eschewed.

These are the personal views of the author.

We should end support prices, export bans, stock limits, etc, and empower farmers with modern options

Navigating, nurturing FARMERS' RESILIENCE

THE FATE OF FARMING COMMUNITIES IS NOT JUST A CHAPTER IN THE ANNALS OF AGRICULTURE; IT IS A REFLECTION OF OUR ABILITY TO ADAPT, COLLABORATE AND INNOVATE IN THE FACE OF MULTIPLE ADVERSITIES, INCLUDING CLIMATE CHANGE

— PK JOSHI



“ UNLESS FARMING BECOMES BOTH INTELLECTUALLY STIMULATING THROUGH THE PATHWAY OF IT-BASED PRECISION FARMING AND ECONOMICALLY REWARDING THROUGH VALUE-ADDITION TO PRIMARY PRODUCE, IT WILL BE DIFFICULT TO ATTRACT OR RETAIN FARMER IN FARMING



— Dr. SWAMINATHAN (2001)

Over, responding to the query — what the motivation was for the Green Revolution, Dr. MS Swaminathan, the Vishwaguru in agriculture as referred to by former Vice President of India, M Venkiah Naidu, said, “the motivation was a hunger-free India — an India which will not go with the begging bowl, an India which will not go with a ship-to-mouth existence. Then the country was ripling with food for all, and today, the challenges are much wider including for the farming community. Climate change, driven by human activities, has emerged as one of the most critical challenges of our time. It has far-reaching implications, not least of which is its impact on resources and the communities who are its stewards. In fact, the world stands at a crossroads, where the undesirable consequences of climate change intersect with agriculture and the communities who till the earth and sow the seeds of sustenance.

HEAT WAVES SCORCHING FIELDS, PROLONGED DROUGHTS DESICCATING ONCE-FERTILE LAND, AND UNSEASONAL RAINS CAUSING FLOODS BRING TO FOREFRONT THAT THE VERY FOUNDATIONS OF AGRICULTURE ARE SHIFTING

The farming communities around the world form the backbone of our global food system. From the remote highlands of Nepal to the sprawling plains of the American Midwest, these communities cultivate the nourishment that sustains billions. India's agricultural story is one of unparalleled diversity, spanning a wide range of climatic zones, soil types and cropping patterns. From the rice paddies of the east to the wheat fields of the north, from the cashew groves of the west to the cotton farms of the central plains, the nation's agriculture is a mosaic of cultures, practices, and traditions. At its heart are the farmers, who not only feed the nation but also play a vital role in shaping its cultural and social fabric.

Disrupting Equilibrium

The changing climate threatens to disrupt the delicate equilibrium between humans and nature, leading to unpredictable weather patterns, altered growing seasons, and increased occurrences of extreme weather events. As we witness heat waves scorching fields, prolonged droughts desiccating once-fertile land and unseasonal rains causing floods, it is evident that the very foundations of agriculture are shifting. Monsoons, the lifeline of Indian agriculture, are becoming increasingly unpredictable. In a country where nearly 60% of the population is engaged in farming, the vagaries of the monsoon hold profound consequences. Delayed or erratic monsoons lead to water shortages, affecting crops and livelihoods. Conversely, excessive rainfall can result in floods that destroy crops and infrastructure, leaving farmers reeling from economic losses.

The steady encroachment of deserts and the loss of arable land due to sea-level rise not only reduce the land available for cultivation but also displace farming communities, creating a dire need for adaptation and resilience. Asian farming communities are resilient and resourceful, drawing upon generations of knowledge to adapt to changing conditions. However, climate change poses challenges of unprecedented magnitude. Erratic weather patterns disrupt planting and harvesting schedules, leaving farmers at a loss as to when to plant their operations. The emergence of new pests and diseases, previously unseen in certain regions, threatens crops and demands new pest management strategies.

Heretsa small and marginal farmers — as per a survey, the percentage distribution of agricultural households owning less than two hectares of land is 89% — who constitute a significant portion of India's farming community, are especially vulnerable. In addition, in Asian mountains, women, who represent almost half of the agricultural labour force, play an indispensable role in agriculture, and they constitute a significant portion of the agricultural workforce, contributing to every stage of cultivation, from sowing to harvesting. Lacking access to resources, technology, credit and decision-making power, they are often unable to adopt climate-resilient practices.

Women Farmers

According to the UN, with the same access to resources as men, women can increase their agricultural yields by 20% to 30%. Such a boost in productivity improves total agriculture output by 2.3% to 4% and reduces world hunger by 12% to 17%. Forced to rely on extant agriculture, they greatly bear the brunt of erratic monsoons and droughts. Empowering women farmers is not only a matter of gender equality but also a strategic imperative in the face of climate change.

The challenges posed by climate change have spurred the development

and adoption of innovative farming practices across India. Climate-resilient agriculture encompasses a range of strategies, from crop diversification and conservation farming to precision agriculture and agroecology. These practices not only enhance farmers' ability to adapt to changing conditions but also contribute to reducing greenhouse gas emissions.

Agroecology, for instance, promotes the use of indigenous seeds, organic fertilisers and natural pest management techniques. By promoting practices like crop rotation, cover cropping, and integrated pest management, it nurtures soil health, conserves water, and reduces the need for chemical inputs. This approach not only boosts soil health and biodiversity but also empowers farmers to become less dependent on external inputs. Similarly, conservation agriculture involves minimal soil disturbance, crop residue retention and diversified cropping systems, which enhance soil fertility and water retention. This exemplifies the wisdom of farming communities and the advancements of science.

Being Partners

While farmers are at the forefront of battling the impacts of climate change, they cannot do so alone. The onus lies on governments, policymakers and institutions to create an enabling environment that supports their efforts. Investments in rural infrastructure, such as irrigation systems, weather forecasting technology and post-harvest facilities, can enhance farmers' resilience to climatic uncertainties. Agricultural extension services, Krishi Vigyan Kendras, play a pivotal role in disseminating knowledge about climate-resilient practices. These services, if well-funded and effectively implemented, can bridge the gap between scientific research and on-ground application. Farmers need access to information about best practices, weather forecasts, market trends and risk management strategies.

Technology holds immense promise in equipping farmers with the tools needed to combat climate change. Precision agriculture, enabled by technology like developing climate-resilient, satellite imagery and data analytics, can help monitor soil moisture levels, predict weather patterns and optimise resource allocation. Mobile apps and SMS services provide farmers with real-time information about crop management, weather forecasts and market prices, empowering farmers to make informed decisions about resource allocation.

Furthermore, the adoption of climate-resilient crop varieties is crucial. By optimising irrigation, fertilizer use, and pest control, precision agriculture enhances productivity while minimising environmental impact. Research institutions and seed companies need to collaborate to develop varieties that are tolerant to heat, drought and pests. Genetic modification, if approached responsibly and ethically, could contribute to developing climate-resilient crops. Education is equally important — empowering farmers with knowledge about climate-smart techniques, modern technologies and efficient resource use can enhance their ability to adapt to changing conditions.

The plight of farmers in the face of climate change is a pressing concern that transcends national boundaries. As the agricultural sector faces disruptions, so does the global food supply chain. Price fluctuations, scarcity and compromised quality become inevitable, with the most vulnerable populations bearing the brunt of these challenges. In an interconnected world, no one remains untouched by the ripple effects of a weakened agricultural system.

KRISHI VIGYAN KENDRA, IF WELL FUNDED AND EFFECTIVELY IMPLEMENTED, CAN BRIDGE THE GAP BETWEEN SCIENTIFIC RESEARCH AND ON-GROUND APPLICATION

India, or one of the world's largest agricultural producers, has a role to play in shaping international discussions around climate-resilient agriculture. For example, recently during the G20 in India, the member nations committed to building more sustainable and climate-resilient agriculture and food systems through innovation and investment focused on increasing agricultural productivity, reducing food loss and waste across the value chain, and improving marketing and storage. Knowledge sharing, research collaboration, and policy coordination can facilitate the development of effective solutions.

The challenges posed by climate change are formidable, but they are not insurmountable. Farmers and agricultural communities, with their deep connection to the land and their resilient spirit, are ready to meet them. Innovation and adaptation are possible even in the face of adversity. However, they need comprehensive and sustained support from all quarters — governments, civil society, research institutions, and the private sector.

As the world strides towards a future where climate change is an unyieldable

reality, the nation must rally around its farmers. The challenges they face are a reflection of the challenges we all face. It is in securing their future that we secure our own — a future where the tapestry of agriculture remains vibrant and beautiful for generations to come. The government of India is committed to the welfare of farmers. It has launched various central sector and centrally sponsored schemes from time to time covering the entire spectrum of agriculture to ensure the welfare of farmers, including small and marginal ones.

ACCORDING TO THE UN, WITH THE SAME ACCESS TO RESOURCES AS MEN, WOMEN CAN INCREASE THEIR AGRICULTURAL YIELDS BY 20-30%. SUCH A BOOST IMPROVES TOTAL AGRICULTURE OUTPUT BY 2.3% TO 4% AND REDUCES WORLD HUNGER BY AROUND 17%.

Apart from the schemes, the government of India has also taken several initiatives to enhance income and improve the quality of life of farmers. As per the strategy, it has adopted and implemented several policies, reforms, developmental programmes and schemes for achieving higher incomes for the farmers directly or indirectly. For example, there is an approved credit enhancement in budget allocation in order of Rs 1,50,000 crore (2022-24), unlike the earlier years. The Pradhan Mantri Fasal Bima Yojana ensures that for every Rs 100 of premium paid by farmers, they receive about Rs 244 in claims. The benefit of concessional institutional credit through Kisan Credit Cards at 4% interest per annum has also now been extended to animal husbandry and fisheries so that the farmers can diversify their livelihood options and meet their short-term working capital needs.

Seeds of Secure Future

The urgency of the situation demands action at all levels, from individuals to global organisations. For example, consumer choice also plays a pivotal role in shaping the agricultural landscape. As consumers, our choices matter and thus the role in this narrative is equally crucial. A shift towards sustainably, locally sourced and seasonal produce can reduce the carbon footprint of food transportation and support local farmers.

Reducing food waste, a significant contributor to emissions, is another way individuals can contribute to the solution. Supporting sustainable agriculture (including organic farming, agroecology, etc.) and advocating for policies that promote climate resilience can contribute to the larger effort. The move towards plant-based diets, which have a lower environmental impact, can contribute to reducing the pressure on land and water resources. In this precarious balance, the very concept of food security is also at stake.

The nexus between climate change and farming communities underscores a fundamental truth: the challenges we face are interconnected, and the solutions must be holistic. Beyond just agricultural concerns, climate change touches on issues of social justice, food security, economic stability and the preservation of cultural heritage. As the world grapples with the urgency of climate change, we must heed the call to action. The fate of farming communities is not a distant, abstract concept of agriculture; it is a reflection of our ability to adapt, collaborate and innovate in the face of adversity. By supporting farmers, advocating for sustainable practices and prioritising climate resilience, we sow the seeds of a more secure and harmonious future.

In this narrative, farmers emerge as beacons of hope, embodying the spirit of determination that has characterised humanity's struggle for survival through the ages. Their journey through the shifting landscapes of climate change speaks to the essence of our collective human story — an ever-evolving dance between the forces of nature and the resilience of the human spirit. As we stand at this crucial juncture, let us honour their resilience and courage in the face of adversity by joining hands to shape a future where both people and the planet thrive. In doing so, we renew not just our past but also by the foundation for a nourished and resilient future.

Dr. Swaminathan had said in 2001, “Agricultural progress will determine India's economic and political future. We can shape this future in a desirable direction through synergy among technology, public policy and farmers' co-operative action. Unless farming becomes both intellectually stimulating through the pathway of IT-based precision farming and economically rewarding through value-addition to primary produce, it will be difficult to attract or retain farmers in farming”. This stands equally pertinent and accurate even today while negotiating resilience in the climate change era.

(The author is Professor with School of Environmental Studies, Jawahar Nehru University, New Delhi. Views are personal)

● FROM PLATE TO PLOUGH

IT'S TIME TO MOVE FROM A HIGHLY PRODUCTION-CENTRIC APPROACH TO A FOOD SYSTEMS ONE

A new course for *rabi* crops

INDIAN MONSOON (JUNE to September) has ended with 5.6% deficit compared to long period average (LPA). It is only a notch lower than the normal rainfall, which is 96-104% of the LPA. Despite wide deviation in its temporal spread, especially in August, which was the driest since 1901, the area planted under paddy and sugarcane is higher by 1.9% and 7.64% respectively, compared to last year. But pulses area is significantly down by 4.2%, especially arhar (tur), by 4.9%. In the days to come, one will have to watch price inflation in tur, which was already raging at 32% in August. The only way out to tame tur price inflation seems a million tonne of imports from African countries and Myanmar.

In Delhi, as we brace for smoke coming from stubble burning of paddy fields during October-November, it is also time to plan for sowing of rabi crops. The ministry of agriculture and farmers welfare (MoA&FW) organised the Rabi Conference on September 26 under the leadership of Manoj Ahuja, secretary of MoA&FW. The secretary of the department of fertilisers and director-general of ICAR were also invited. They gave the assurance that there are ample fertilisers in the country to take care of the demand of rabi season. Since wheat is the main rabi crop and it is susceptible to heat wave in February/March, Himanshu Pathak, DG-ICAR, assured that they have released numerous heat-resistant varieties, which are likely to cover roughly 60% of wheat area, up from 45% last year. Overall, in the past nine years, India's agri-research system released 2,200 varieties of different crops, out of which 1,800 are climate resilient. Going by these assurances, it seems rabi season may harvest another "record crop".

ASHOK GULATI

Distinguished professor, ICRIER
Views are personal



It is against this backdrop I would like to lay down a few questions and suggestions so that MoA&FW can move from a highly "production-centric" approach to a "food systems" approach, a topic on which I delivered a key note address in the rabi conference.

Here are some of the questions to ponder for wheat in the last two years. Per MoA&FW, production of wheat in 2021-22 was 107 million tonnes (mt) and in 2022-23, it was 112.7mt. But the trade estimates for these two years are far lower, below 100 mt in 2021-22 and below 105mt in 2022-23. This huge gap in government and trade estimates creates inflationary market expectations.

We also know that in 2022, procurement of wheat plummeted to less than 19MT, a drop of more than 50% from previous year. As a result, retail prices of wheat came under pressure. The government put an export ban on wheat on May 13, 2022, also fearing that Russia-Ukraine war may escalate prices. Wheat inflation, that was less than 10% in May, climbed to 15.7% in August, when the government banned exports of wheat atta. The wheat inflation did not stop there. It kept going up and in December 2022, it

climbed to 22% and further to 25% in January 2023.

The wholesale wheat prices in mandis were hovering around ₹2,700/quintal, while the minimum support price (MSP) for the coming marketing season of wheat was ₹2,125/quintal. The Food Corporation of India, fearing that it will not be able to procure enough for the public distribution system (PDS), started unloading its stocks at prices way below its economic cost. It was literally "dumping" to beat the market prices down to MSP. Offloading 3.4mt in February-March ensured it, and FCI was able to procure about 26mt of wheat. This success of FCI in procuring enough

wheat for PDS by forcing market prices down to MSP cost the wheat farmers a loss of ₹40,000 crore (for more details, see bit.ly/3F1WkHS). This is a transfer of resources from producers to consumers, a typical pro-consumer bias in the policy framework.

The question that I have is: when more than 800 million people are already getting free wheat or rice (5kg/person/month) under PDS, whom is the government trying to protect? The

urban middle class at the cost of farmers? Is that a rational policy to incentivise farmers to produce more? Certainly not. This is what Ann Krueger, Maurice Schiff, and Alberto Valdes called "plundering of agriculture" in their classic work on Political Economy of Agricultural Prices (1992).

The story is not very different in case of rice, which faced export restrictions through a complete ban on non-basmati white rice exports and then export duties on parboiled rice, and minimum export prices on basmati rice. The whole effort has been to beat market prices down to MSP, even if it involves "dumping". FCI's economic cost of rice is around ₹3,700/quintal, but it is selling rice at below ₹3,000/quintal. If it was some other country dumping in India, the government would have taken the dispute to WTO. But what can farmers do when the FCI itself dumps its wheat and rice at way below their economic costs?

As we go further into the rabi season, not only we need better and accurate estimates of production but we also need to see what prices farmers get. At a time when technology can track each moving car, why can't we monitor the progress of crops on weekly basis, if not daily? We need to upgrade our entire production estimation system from *patwari*-based to technology-based. It will help in settling crop insurance claims, and also give enough lead time to the government to import in time, if there is likely to be a shortfall.

Overall, my submission to MoA&FW is that we need better technology and better policies to ensure farmers get their due. Only then India can emerge as powerhouse in agriculture. Abrupt export bans/stocking limits are not the best way forward.

Upgrade production estimation from the *patwari* system to a technology-based one. It will help settle crop insurance claims, and also give enough lead time to the Centre on imports, if a shortfall seems likely

'Tepid demand, falling prices to hurt agrochem makers'

Our Bureau
Bengaluru

For the first time in a decade, Indian agrochemical makers will see a drop in revenue of up to 3 per cent in this financial year on falling global prices due to supply deluge from China, muted export prospects owing to destocking by global manufacturers and impact of lower reservoir levels on rabi sowing, according to CRISIL Ratings.

Operating margins, too, may plunge by 400-450 basis points to a decadal low of 10-11 per cent this fiscal due to the lower

volumes and realisations, impacting cash accruals, it said.

The current tepid demand is prompting agrochemicals manufacturers to prune capital expenditure plans. That, along with healthy balance sheets for most, should provide sufficient headroom to withstand business pressures.

MUTED EXPORTS

An analysis of 48 companies rated by CRISIL Ratings, accounting for nearly 90 per cent of the ₹78,000-crore agrochemical sector as of fiscal 2023, indicates as much, CRISIL said.

Poonam Upadhyay, Dir-



ector, CRISIL Ratings, said, "Increased supplies of low-priced products from China prodded global agrochemicals companies to increase inventory by about 45 days between January and June 2023.

"The subsequent de-

stocking amid a slowing global economy led to slump in exports from India in the first half of this fiscal. However, with global manufacturers restocking before the onset of the cropping season in Latin America and the US — which accounts for about 55 per cent of India's exports — a recovery in overseas demand should begin from November 2023." CRISIL expects volume growth within India will be in low single digit this fiscal given huge inventories because of lower exports. Erratic monsoon, resulting in low reservoir levels and posing a risk to rabi sowing

— which typically accounts for about 35 per cent of domestic pesticide consumption — could also be a challenge.

Already, the operating margin of most of them had shrunk 700-1,000 basis points on-year in Q1 this fiscal due to substantial inventory losses following steep price erosion.

With product realisations bottoming out and demand likely to pick up from Q3, operating profitability should improve sequentially. Yet it will be lower at 10-11 per cent this fiscal, compared with around 15.2 per cent in the last fiscal, it said.

Punjab govt bans high yield paddy variety from next year

Pusa 44 Takes Longer To Mature, Leaves More Stubble, Says CM Mann

TIMES NEWS NETWORK

Patiala: Punjab CM Bhagwant Singh Mann initiated Tuesday paddy procurement operations in the state from Chamkaur Sahib and declared a ban on the Pusa 44 variety starting from the next year.

Mann encouraged farmers to cease cultivating Pusa 44 and similar long-duration paddy types, citing their high water consumption and longer maturation periods. Paddy is grown in around 32 lakh hectares in Punjab, with an increase in basmati cultivation by 21% this season.

“These water-guzzling varieties take maximum time to ripen and produce stubble in larger quantities. Pusa 44 takes 152 days to ripen, whereas PR 126 takes 92 days, which makes a difference of around two months, leading to more use of water and electricity,” he said.

However, this ban hasn't been well-received by farmers, who claim it will lead to financial losses. They argued that Pusa 44 yields sig-



FARMERS UPSET: The ban hasn't been well-received by farmers, who claim it will lead to financial losses as Pusa 44 yields significantly more

nificantly more than PR 126, another variety, and that the yield difference is more than 10 quintals an acre.

“Pusa 44 yields up to 40 quintals an acre, whereas PR 126 gives around 25 to 30 quintals. Farmers have to see profit from the crops to repay their loans. Earlier, the government banned PR 201 because of its colour despite this variety being good for health and had a better yield. In areas with irrigation facilities, hybrid varieties were introduced, and it helped far-

mers, but those varieties were also banned later by the government,” farmer leader Jagjit Singh Dallewal said.

However, Punjab officials state that the yield gap between these two varieties is not more than 5 quintals an acre. Agriculture director Jaswant Singh said Pusa 44's cultivation had decreased to 10% this year, partly due to flood-affected farmers switching to PR 126.

Farmers' representatives and leaders highlighted the importance of providing mi-

nimum support price (MSP) for alternative crops like basmati varieties if the government intends to ban Pusa 44.

“There is no MSP on basmati varieties,” said Gurvinder Singh of BKU Ekta Azad, Patiala. The leaders also argued that the decision on crop selection should be left to the farmers, who are already facing financial challenges. “Give MSP on other crops,” said Sukhdev Singh Kokarikalan, general secretary of BKU (Ekta-Ugrahan).

Pusa 44 was developed by Indian Agricultural Research Institute (IARI) in 1994. It has an average yield of 32-40 quintals an acre, but requires more water due to its longer maturation period of around 155 days.

Punjab Agricultural University (PAU), Ludhiana, has introduced short-duration, high-yielding strains like PR 126, PR 127, PR 128, PR 129, PR 130, and PR 131 as alternatives to Pusa 44 in recent years, with shorter maturation periods and average yields of 30-32 quintals an acre.

WTO cuts 2023 goods trade growth forecast

THE WORLD TRADE Organization halved its growth forecast for global goods trade this year, saying that persistent inflation, higher interest rates, a strained Chinese property market and the war in Ukraine had cast a shadow over its outlook. The Geneva-based trade body said on Thursday merchandise trade volumes would increase by just 0.8% in 2023, compared with its April estimate of 1.7%.

For 2024, it said goods trade growth would pick up to 3.3%, a forecast virtually unchanged

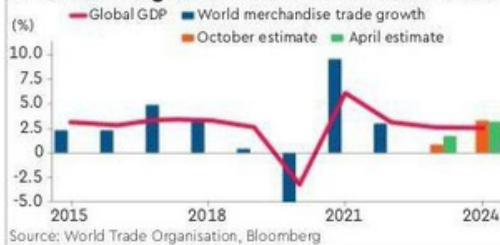
from its April estimate of 3.2%.

The WTO said the trade slowdown was broad-based, involving a larger number of countries and goods, though particularly iron and steel, office and telecoms equipment, textiles and clothing.

Cars were a notable exception, with surging sales this year.

The WTO said risks to its forecast were balanced. A sharper than expected slowdown in China and resurgent inflation, keeping interest rates higher for longer, were potential

WTO halves growth forecast for 2023 trade



Source: World Trade Organisation, Bloomberg

negatives. However, a rapid easing of inflation could raise the forecast. The 164-member trade body repeated its warning that

it saw some signs of trade fragmentation linked to global tensions, but no evidence of a broader de-globalisation that could threaten its 2024 forecast. One sign was that the share of intermediate goods in world trade, an indicator of global supply chain activity, fell to 48.5% in the first half of 2023, compared to an average of 51.0% over the previous three years.

The WTO said it was not clear if the decline was due to geopolitical tensions or the general economic slowdown. **REUTERS**

India for fixing gaps in food security

Key Takeaways

- EU offered a positive response to the chair's textual suggestions
- Draft is based on discussions amongst the member countries
- Issue of finding permanent solution public stockholding is important for developing countries
- Developed countries term these support measures as trade distorting subsidies

NEW DELHI

INDIA has urged WTO members to start text-based negotiations from this month on finding a permanent solution to the issue of public stockholding for food security purposes, an official has said.

The official added that the European Union (EU) is ready for talks with India on the stockholding issue. The issue came up for discussion at an agriculture negotiations meeting on October 2 in Geneva. It was chaired by Ambassador Alparslan Acarsoy of Turkey. At that meet-

India urges WTO members to start text-based negotiations for finding permanent solution to public food stockholding



ing, the EU offered a positive response to the chair's textual suggestions related to the safeguards mechanism aimed at preventing illegitimate exports stemming from excessive food stocks, the official said. The Geneva-based trade official also said that the EU explicitly recognized that the safeguards and anti-circumvention are indeed the key provisions which deal with the possible impact of public stockholding policies. "India urged members to commence text-based negotiations as soon as possible, preferably at the senior official level meeting scheduled for late October," the official said.

Under text-based negotiations in WTO, an agreement

is finalised around draft texts floated by the chair of a particular committee dealing with the subject

is finalised around draft texts floated by the chair of a particular committee dealing with the subject. The draft is based on discussions amongst the member countries and is fine-tuned till all the nations are in agreement with it. India reiterated the importance of discussing external reference prices to accurately assess farm sup-

port in relation to public stockholding. The issue of finding a permanent solution to the public stockholding programmes for food security purposes is important for developing countries like India as it provides support measures and procures rice from farmers at MSP (minimum support price) and sells at cheaper rates to poor populations for food security. Developed countries term these support measures as trade distorting subsidies and they are against these programmes of public stockholding of food. According to them, this procurement violates the prescribed limit of providing subsidies and WTO's agreement on agriculture.

They also demand notification to WTO (World Trade Organization) by emerging economies about their programmes. Developing economies like India are of the view that there is a need to change the way this subsidy limit is calculated. They also demand a significant cut of subsidies being given to farmers of developed countries. India has pitched for

the need to recalculate the external reference prices to reflect the impact of inflation and other economic factors on food stock prices. In 2013, it was agreed by the WTO members to find a permanent solution to these issues and till then there is a "peace clause" under which no country would file any legal complaint against another member even if the 10 per cent level is breached. As part of a permanent solution, India has asked for things like amendments in the formula to calculate the food subsidy cap and inclusion of programmes implemented after 2013 under the ambit of 'Peace Clause'.

At the agriculture negotiations meeting on October 2, the chair asked members to consider several proposed safeguards and anti-circumvention provisions as potential breakthroughs for the highly debated permanent solution for public stockholding. "This topic of public stockholding is crucial for achieving an outcome on agriculture at the next ministerial conference in February 2024.

The first of a two-part series looks at the reasons compelling farmers across Punjab to burn stubble

Water woes at the centre of Punjab's smoke screen

SARTHAK CHOUDHURY
Firozpur/Sangrur/Jalandhar,

Stubble burning or the practice wherein farmers burn crop residue to prepare their fields for sowing, has been the focus of a political slugfest between Punjab and its neighbouring states, especially the national capital region (NCR), where the phenomenon leads to a huge spike in pollution levels around this time every year.

After paddy is harvested in late September and early October, the fields are left with stalks, some of them as high as two feet. Since the sowing of wheat begins in late October, farmers are left with little time to remove the stubble and the quickest and the cheapest way to do so is to burn it.

The government of the Aam Aadmi Party in Delhi routinely blamed the Punjab government for not doing anything to solve the problem. However, after it came to power in the state last year, the ruling AAP has tried to address the issue with a number of steps such as increasing the budget for containing stubble burning and providing cash incentives to farmers who refrain from indulging in the practice.

This year Punjab has allocated nearly ₹350 crore to stop stubble burning — a 75 per cent increase from the ₹200 crore allocated to it last year. In contrast, the state had allocated ₹40 crore to the cause in FY22 and a meagre ₹1 lakh in FY21.

"Iss saal Delhi tak dhuanahi jayega" (The smoke won't reach Delhi this year), says Lakhwinder Singh, a farmer in Peer Mohammad, a village in the district of Firozpur in Punjab.

Business Standard spoke to farmers across four districts in Punjab to get a sense of the problems they face and why some of them continue to burn stubble. Nearly everyone said that the main reason for continuing the practice was the government's apathy and its reluctance to go all the way to help them.

"Do you think we enjoy burning stubble? Before the smoke reaches Delhi, it is inhaled by our children, our elders, and our women, some of whom are pregnant and have breathing problems. ... And yet we have no choice but to burn the stubble," says Pargat Singh, a farmer in Mathu, a village which lies 50 kilometres from Firozpur.

He adds that the government should adhere to the National Green Tribunal (NGT) order of



Since the sowing of wheat begins in late October, farmers are left with little time to remove the stubble, and the quickest and the cheapest way to do so is to burn it

FILE PHOTO: PTI

providing farmers with machinery to remove stubble from their fields. The NGT in 2015 had directed state governments to provide farmers with machines and facilities for the collection and removal of stubble.

"The orders said that farmers with less than 2 acres of land should get the machines free of cost and those with up to 5 acres should get ₹25,000 along with the machines," says Pargat Singh.

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A cautious approach needed while going about **genetic** modification

Genetic yield is a factor that does not only revolve under a single gene

WHEN I read reports that researchers at the Julius Kühn Institute (JKI) in Germany have developed varieties of a scab resistant apple, and that too by conventional breeding techniques, I was reminded of my visit, some decades ago, to the famed John Innes Centre in Norwich in the United Kingdom.

Accompanying a handful of farmers and civil society representatives on a visit to the acclaimed plant and microbial institute, I vividly recall an introductory briefing by a scientist.

"Conventional plant breeding is much more dangerous than genetic engineering," she stated, and added: "Genetic engineering only touches a couple of genes at best and does not disturb the genetic makeup of the plant."

Being myself a plant breeder by training, I asked "why is that I was never told that the science I was engaged in was so dangerous?"

Probably not expecting any plant breeder to be in that group, the scientist was

taken aback, and then re-composing herself went on to defend her statement. Nevertheless, this only showed how an effort was made to run down conventional plant breeding so as to justify how useful genetic engineering is.

So when scientists reported the development of a new apple variety – Pia41 – that could resist the fungal attack on apple, remaining scab free during five years of its research trials, it comes us a renewed hope for Indian apple growers, who have constantly been applying huge quanti-

ties of fungicides to keep the dreaded fungus at bay.

Not only being scab-free, the variety is also professed to have "a green-yellow skin, juicy, crunchy pulp and a sweet taste with an intense aroma."

Now let me revert back to the point I was trying to make. The new scab-free apple variety comes at a time when after 10 years of research trials at Wageningen University in the Netherlands, wherein scientists incorporated a gene to develop scab-resistant apple variety by genetic modification (GM) in 2011. Eventually as it failed to yield any satisfactory results, the GM research trials were abandoned in 2021.

This brings me to an interesting paper by a young researcher Merritt Khaiphoburch et al, published in the much respected multi-disciplinary scientific journal Nature (Sept 20, 2023), where she not only questions the claims of significant increases in crop yields by GM technology, but also writes,

'Genetic Modification can improve crop yields – but stop overselling it', asks why do scientists have to hype their claims. While it is so heartening to see a PhD student at the Cornell University questioning the claims over yield gains whereas I thought every senior scientist should have seen through it, and expressed some sort of restraint before showing exuberance that at best appear superficial.

She starts the article by what I consider as a profound statement. Saying that most



Instead of being swayed by hyperbole, perhaps GEAC has a lot to learn from this young researcher. In a Twitter thread that followed, Khaiphoburch had blasted the scientific claims calling these 'misleading'

scientific journals, including Nature, often talk of yield gains by 10 to 68 per cent emanating from modifying one or two genes in crops like rice, corn, tobacco and soybean, the reality is that most of these studies have been conducted in green houses or in small plots (and even in pots) and then extrapolated to show production jumps for crops grown in a hectare. "And hardly any findings have translated into yield increases on actual farms," she emphasised. This is what GM Watch, a formidable group that keeps track of GM research, and scientist groups like Union of Concerned Scientists besides others have also been saying.

With the entire scientific community on one side, it is commendable how a researcher, still young to take on the behemoths in the field of genetic engineering, picked up the courage to demolish an earlier scientific paper in the esteemed journal Science by a team of Chinese scientists, led by crop physiologist Wenbin Zhou of the Chinese Academy of Agricultural Sciences. The paper had claimed yield increases of 41.3 to 68.3 per cent in rice by modifying a single gene (OsDREB1).

Simultaneously, this research article was backed by an editorial in Science magazine (Supercharged biotech rice yields 40% more grain, Science, July 22, 2022) that had claimed: "The change helps the plants help absorb more fertiliser, boost photosynthesis, and accelerates flowering, all of which could contribute to large harvests."

These claims had made the scientific community go euphoric and some even blamed the environmentalists for stopping such spectacular gains to be achieved from GM research that could feed the rising populations. Media had taken the findings by storm, and even scientific journals were swayed by the research outcomes.

This takes me to a similar media hype created over a junk GM mustard variety in India, which claims a yield increase by about 25 per cent over a test variety that is much lower in yield performance. It is therefore important that the Genetic Engineering Appraisal Committee (GEAC), which grants approval over such exaggerated claims, revisits its approval framework for GM crops.

Let me explain how flawed the GEAC approval mecha-

nism is. Instead of being swayed by hyperbole, perhaps GEAC has a lot to learn from this young researcher.

In a Twitter thread that followed, Khaiphoburch had blasted the scientific claims calling these 'misleading'. In her latest peer-reviewed paper, she says that over the years, research by plant breeders, quantitative geneticists, evolutionary biologists and plant biologists has shown that yield increases by one to five per cent, though modest, is what really makes the difference. Quoting a study published in the journal Plant Science in 2021, she showed that researchers studied the impact of 1,671 genes drawn from 47 crop species and found that only one per cent of the genes tested had the potential to impact yield, and therefore needed to be studied more.

Genetic yield is a factor that does not only revolve under a single gene. Yield is a multi-gene factor. To illustrate, in maize alone, around 20-30 genes have been instrumental in increasing plant density by 3-4 times over the past 100 years. "Yield itself is a highly complex, polygene trait – meaning that it is controlled by thousands of variants, each with a small effect."

Not to be misled by the hyper claims, the authors have suggested a five-point criteria that researchers, reviewers and editors should ensure before buying the hype. It will be immensely useful if agricultural universities and head of the institutes in India (and also the regulatory bodies) share this paper widely and formulate a research template based on it. Let the society be well-informed.

(The author is a noted food policy analyst and an expert on issues related to the agriculture sector. He writes on food, agriculture and hunger)



Devinder Sharma

Rationalise taxes on fertilisers



UTTAM GUPTA

The cost of making fertilisers available to farmers by itself is substantially higher than the price the Govt wants them to pay, ideally, it should not levy any tax



In its report laid in Parliament on August 9, 2023, the Standing Committee on Chemicals and Fertilizers has recommended that the Union Government should propose to the GST Council to reduce tax rates on fertilizers from the current 5 per cent. Initially, fertilizers were placed under the 12 per cent slab. However, following representation made by various states, the tax rate was reduced to 5 per cent. Now, the Committee wants this to be reduced further.

It has also asked the Government to "consider favourably the proposal to lower GST on raw materials in the interest of fertilizer manufacturing companies and ultimately farmers". Currently, raw materials (RMs) such as sulphuric acid and ammonia used in the production of fertilizers, attract GST at a much higher rate of 18 per cent against 5 per cent levied on fertilizers (albeit finished product).

The issue of further reducing GST on fertilizers was placed before the GST Council in its 45th and 47th meetings in September 2021/June 2022, but it didn't recommend any reduction. Whether or not the GST Council will accede to the recommendation of the Standing Committee now, one can only wait and watch. Meanwhile, it is important to highlight three major flaws in the taxation of fertilizers.

First, given the critical role of fertilizers in ensuring food security, the Government controls their maximum retail price (MRP) at a low level, unrelated to the cost of production and distribution and reimburses the excess of the cost over MRP as a subsidy to the manufacturers. In the case of urea, the MRP is just about one-tenth of the cost whereas, in the case of non-urea fertilizers, the price is nearly one-third.

When, an overwhelming share of the cost (9/10th in the case of urea and 2/3rd

in the case of non-urea fertilizers) is borne by the Government - using taxpayers' money - just to make fertilizers affordable to the farmers, it makes no sense to levy tax on those very products namely fertilizers and RMs used in their production. The taxes have the effect of increasing the cost

of supplying fertilizers which has to be reimbursed as an 'additional' subsidy to the manufacturers.

It is a typical case of taking from one hand and giving back from the other. There is no justification whatsoever for levying any tax on fertilizers or RMs used for making them.

The second flaw has to do with taxing two major components of the fertilizer supply chain under two different regimes; one under GST and the other under the pre-GST regime. All finished fertilizers such as urea, dia-ammonium phosphate (DAP), muriate-of-potash (MOP) and so on are taxed under GST currently attracting a tax rate of 5 per cent. Most of the RMs used in the production of fertilizers are also covered under GST attracting a tax rate of 18 per cent on sulphuric acid and ammonia and 12 per cent on phosphoric acid.

However, natural gas (NG) which is used for the manufacture of all domestic urea (small quantities are used for making ammonia which in turn, is used for making non-urea fertilizers) is taxed under the pre-GST dispensation. Taxation of electricity, a utility intrinsic to the process of manufacturing fertilizers is also outside GST. This results in a much higher cost of these two major inputs than the cost if they were to be brought under GST.

At present, NG attracts 'nil' central excise duty (CED) on supplies to fertilizer plants and value-added tax (VAT) varying from a high of 24.5 per cent in Andhra Pradesh (AP) to a low of 5 per cent in Rajasthan. Then, there are other local taxes; for instance, the Gujarat government collects the "purchase tax" on that portion of inputs consumed for making urea that is sold outside the State. This leads to a cascading effect on the price of NG in three ways.

First, being outside GST, gas

companies viz. Oil and Natural Gas Corporation (ONGC), Oil India Limited (OIL) and so on, can't claim credit for the taxes paid on their purchase of inputs, consumables and equipment leading to higher prices. Second, the delivered price at the factory gate increases due to the levy of VAT, the impact being the highest in AP where the tax rate is 24.5 per cent. Third, the price further increases due to local levies.

Electricity too is outside GST. Further, its generation and distribution are exempt from the levy of Central VAT (CENVAT) and VAT. This results in a situation whereby power companies don't get any credit for taxes paid on inputs viz. equipment, stores and so on, used in its generation and distribution. This results in a higher cost of electricity.

Further, under the Constitution, entry 53 in the State list of the Seventh Schedule empowers States to impose a tax (or electricity duty) on the sale and consumption of electricity, except when it is consumed by the Union Government or the Railways. For electricity duty, electricity companies don't get any offset. This further exacerbates the cost of power supplied to fertilizer plants.

To put it briefly, whereas, taxation of finished fertilizer products and some inputs/RMs used in their making under GST is intended to lower the cost of making fertilizers available to farmers, taxing other major inputs viz. NG and power under the pre-GST regime militates against this objective.

The third flaw has to do with high taxes paid on inputs used in the manufacture of fertilizers as against the tax liability on the output (read: finished fertilizers) being much lower. This isn't just because of the much lower GST rate but also due to lower MRP. For instance, in the case of urea apart from a tax rate of

5 per cent, the MRP is a mere 1/10th of the cost of supply. This results in an 'unabsorbed' input tax credit (ITC) as the output tax falls far short of input tax and there is no provision in the law whereby manufacturers can claim it. Hence, the Centre has to compensate fertilizer manufacturers for unabsorbed ITC using its fertilizer subsidy budget.

To conclude, considering that the cost of making fertilizers available to farmers (sans taxes) by itself is substantially higher than the price the Union Government wants them to pay, ideally it shouldn't levy any tax. Even if it wants to levy, all components in the supply chain have to be under GST and fertilizers and all inputs/RMs should be in the lowest tax slab of 5 per cent.

While the tax rate on fertilizers is already 5 per cent (the Committee's recommendation to lower it further to say 1 per cent or 2 per cent would unnecessarily complicate an already unwieldy GST regime with multiple slabs), this will require lowering the tax rate on ammonia, sulphuric acid and phosphoric acid from their current high of 18 per cent/12 per cent to 5 per cent. The same rate should apply to NG and power after bringing them under GST.

As for the third flaw, the recommendation of the Committee to keep the tax rate on RMs lower than on fertilizers alone won't help. This is because the artificially low MRP has no linkage with the cost that results in low output tax liability vis-à-vis the value of tax paid on inputs in turn, resulting in unabsorbed ITC. To address this, the government should give subsidies directly to the farmers under the direct benefit transfer (DBT) mechanism and let manufacturers charge full cost-based or market-determined prices from the farmers.



NATURAL GAS WHICH IS USED FOR THE MANUFACTURE OF ALL DOMESTIC UREA IS TAXED UNDER THE PRE-GST DISPENSATION

(The writer is a policy analyst; views expressed are personal)

Govt launches website for chemical industry



New Delhi: The government on Tuesday launched a web portal providing statistical data related to the chemical sector for the benefit of all stakeholders. The portal www.charak.chemicals.gov.in will facilitate the collection of statistics related to various aspects of the chemical sector, such as production, installed capacity, export, import, purchases and sales. **PTI**

A plan for the winter crop

Better technology and policies must be deployed to ensure farmers get their due. Abrupt export bans or stocking limits are not the best way forward



FROM PLATE TO PLOUGH

BY ASHOK GULATI

THE INDIAN MONSOON (June to September) has ended with a 5.6 per cent deficit compared to the long-period average (LPA). This is a notch lower than the normal rainfall — 96 to 104 per cent of the LPA. Despite the wide deviation in its temporal spread, especially in August — the driest since 1901 — the area planted under paddy and sugarcane is higher by 1.9 per cent and 7.64 per cent respectively, compared to last year. But the area under pulses is significantly down, by 4.2 per cent, especially arhar (tur) which has seen a 4.9 per cent fall in cultivated area. In the days to come, one will have to watch the price inflation in tur — already raging at 32 per cent in August. The only way to tame tur price inflation seems to be a million tonne of imports from African countries and Myanmar.

In Delhi, as we brace for smoke from the stubble burning from paddy fields during October-November, it is also time to plan for sowing of rabi crops. The Ministry of Agriculture and Farmers Welfare (MoA&FW) organised the Rabi Conference on September 26, under the leadership of Manoj Ahuja, Secretary MoA&FW. The Secretary of the Department of Fertilisers and the Director General of ICAR were also invited. They assured us that the country has ample fertiliser stocks to take care of the demand of the rabi season. Wheat is the main rabi crop, and it is susceptible to a heat wave. Himanshu Pathak, DG ICAR, assured us that his organisation has released numerous heat-resistant wheat varieties, which are likely to cover roughly 60 per cent of the sown area — up from 45 per cent last year. In the last nine years, India's

agri-research system has released 2,200 varieties of different crops, of which 1,800 are climate resilient. Going by these assurances, another "record" rabi crop is in the offing.

Against this backdrop, I will raise a few queries and offer some suggestions so that MoA&FW can move from a highly "production-centric" approach to a "food systems" approach — a topic on which I delivered a keynote address at the rabi conference.

Here are some questions to ponder with respect to wheat in the last two years. As per the MoA&FW, wheat production in 2021-22 was 107 MT and in 2022-23, it was 112.7 MT. But the trade estimates for these two years are far lower, below 100 MT in 2021-22 and below 105 MT in 2022-23. This huge gap in the GoI's estimates and trade estimates creates inflationary market expectations.

We also know that in 2022, wheat procurement plummeted to less than 19MT, a drop of more than 50 per cent from the previous year. As a result, retail prices of wheat came under pressure. GoI put an export ban on wheat on May 13, 2022, fearing that the Russia-Ukraine war could escalate prices. Wheat inflation, less than 10 per cent in May, climbed to 15.7 per cent in August. When the GoI banned atta exports, the inflation did not stop there. It kept going up and in December 2022, it climbed to 22 per cent and further to 25 per cent in January 2023.

The wholesale wheat prices in mandis are hovering around Rs 2,700/quintal, while the minimum support price (MSP) for the coming marketing season of wheat is Rs 2,125/quintal. The FCI has unloaded its stocks at prices way below its economic cost, fearing that it would not be able to procure enough for the public distribution system (PDS). This was literally "dumping" to beat the market prices down to MSP levels. Offloading 3.4 MT in February-March ensured that market prices were down to MSP, and FCI was able to procure about 26 MT of wheat. Its success cost wheat farmers Rs 40,000 crore (Policy Brief 15 on ICRIER website has details of this). This is a transfer of resources from producers to consumers and indicates a typical pro-consumer bias in the

policy framework.

My question is: When more than 800 million people already get free wheat or rice (5kg/person/month) under the PDS, who is the government trying to protect? The urban middle class at the cost of farmers? Is that a rational policy to incentivise farmers to produce more? Certainly not. This is what economists Ann Krueger, Maurice Schiff and Alberto Valdes called the "plundering of agriculture" in their classic work, *Political economy of agricultural prices*.

The story is not very different in the case of rice which faced export restrictions when there was a complete ban on non-basmati white rice exports. Then export duties were imposed on parboiled rice and a minimum export price was set for basmati rice. The whole effort has been to beat market prices down to the MSP, even if that involves "dumping". FCI's economic cost of rice is around Rs 3,700/quintal, but it is selling rice at below Rs 3,000/quintal. If some other country had been dumping its products in India, the government would have taken the dispute to WTO. But what can farmers do when the FCI dumps its wheat and rice at way below their economic costs?

As we go further into the rabi season, we not only need better and more accurate estimates of production, but also need to monitor the prices that farmers get. At a time when technology can track each moving car, why can't we monitor the progress of crops every week — if not daily? We need to upgrade our patwari-based production estimate system to one that is based on high technology. This will help settle crop insurance claims, and also give enough lead time to the government to import in time if there is likely to be a shortfall.

Overall, my submission to MoA&FW was that we need better technology and better policies to ensure farmers get their due. Only then India can emerge as a powerhouse in agriculture. Abrupt export bans/stocking limits are not the best way forward.

Gulati is Distinguished Professor at ICRIER. Views are personal

We need to upgrade our patwari-based production estimate system to one that is based on high technology. This will help settle crop insurance claims, and also give enough lead time to the government to import in time, if there is likely to be a shortfall.

Agri Ministry invites EoI from start-ups for collaborative innovation in nine key areas

Prabhudatta Mishra
New Delhi

Agriculture Ministry has invited expression of interest (EoI) by November 7 from start-ups/companies to work with the government for leveraging their innovations in nine specific areas such as weather-based information products and services, crop yield estimation and weather-pest modelling.

The Ministry has identified nine broad areas where companies are already working and

all the proposals will be evaluated by a 17-member screening committee, headed by an additional secretary of the ministry and members drawn from ICAR, IIT, IIM and NITI Aayog, officials said.

During consultative process, the committee will seek presentations from applicants to identify specific technologies in targeted interventions relevant to the Indian agriculture sector that have the potential to be scaled up, according to a government note seen by *businessline*.

The committee shall exam-

ine the concept, value proposition and action plan of the idea to understand the potential feasibility and its scalability, and accordingly recommend suitable entities, which will be finalised by Agriculture Ministry. The selected projects will be partially funded by government through grants, sources said.

WEATHER-BASED INFO

The Ministry invites companies to propose the adoption of advanced satellite meteorology techniques for obtaining weather data with a 1-3 km

granularity. The Ministry also wants simplified and scalable innovative models to generate crop yield estimates of major crops such as paddy and wheat at village/panchayat level.

The technology-driven solution should undertake periodic assessments during crop season starting from a month after sowing till the end of season, with increasing accuracies.

PEST ATTACKS

Taking note of the pink bollworm attack in cotton crops that caused havoc in many

northern States this year, the Ministry wants solution for weather-pest modelling and farmer advisories in which data-driven models will be preferred.

The ministry seeks collaboration with private entrepreneurs in various areas, including mapping soil organic carbon at the farm level, assessing carbon sequestration potential in crop lands and current cropping systems, conducting photo analytics and crop assessments, and evaluating the impact of hailstorms on crops.

The profit paradox

The volatility in food commodities prices in last few years have coincided with global food traders reporting record profits, necessitating the need for monitoring the global food system



RICHARD MAHAPATRA

Massive profiteering by global food traders poses an existential threat not only to producers but also to consumers

A farmer not turning a profit doesn't make news. That is why when tomato prices reached an all-time high in India, there were headlines about a few farmers earning their lifetime profits from an agricultural product. Soon after, the price plummeted and farmers were seen dumping hundreds of tonnes of tomatoes in the streets.

In this period of high volatility in food prices, one often wonders who makes the profit or who bears the loss. During the period of high tomato rates, most farmers did not earn enough to be taken note of. But consumers paid heavily for the commodity. The question is: Where did the profits go?

This question becomes a multi-billion dollar one when one considers the global agri-economy.

Several reports have found that since 2014, climatic events have made crop production uncertain and resulted in periods of high food inflation, implying that markets have become highly volatile. While farmers suffer losses in such situations, the question is whether those involved in agriculture businesses face losses as well.

The United Nations *Trade and Development Report 2023* has answered this question. The report revealed the massive profit made by global food traders from this situa-



Indian farmers suffer losses during price crashes but rarely make profits when the prices shoot up

tion, which poses an existential threat not only to producers but also to consumers — high food inflation has left millions of food insecure.

The volatility in the prices of food commodities in the last few years have coincided with global food traders reporting record profits, the analysis in the report found.

According to the report, the four companies that control nearly 70 per cent of the global food market — also called ABCD, representing the initials of the four biggest commodity traders — Archer Daniels Midland, Bunge, Cargill and Louis

Dreyfus Company — share recorded highest ever profits in 2021-2022.

The report has quoted data from a study by non-profit Oxfam that said, "18 food and beverage corporations made on average about USD 14 billion a year in windfall profits in 2021 and 2022." To make sense of this, the corporations' profit was more than double of the funding gap for delivering life-saving food assistance in East Africa. Similarly, profiteering accounted for 20 per cent of food inflation in Europe.

The UN's latest report has attributed this "profiteering"

by a few corporations to "systemic crises" that have gripped the world food system. "Growing cross-sectoral control over the food system by major agri-corporations raises the risk that extreme food price swings will become the norm," said the report.

"Through decades of mergers and acquisitions, such firms have been able to expand their influence up and down the supply chain, while amassing huge amounts of market data," the report added.

These companies are now financiers, trade influencers, and price setters for agri-

cultural commodities, to the point where they assist governments in hedging volatility in commodity markets. In one sense, they are the absolute rulers of agribusiness, seeking only to profit from crisis situations.

Since the Russia-Ukraine war, global food prices have spiked to record levels. The latest report attributes the spike to a significant level without the systemic profiteering by the big agri-corporations.

"...ABCD-type companies have come to occupy a privileged position in terms of setting prices, accessing funding, and participating directly in the financial markets. This not only enables speculative trades in organised market platforms, but a growing volume of transactions between individuals, or over-the-counter trades, over which most governments in the advanced countries have no authority or control," said the report.

The report quoted a reply from a former senior economist with the Food and Agriculture Organization to the question of who monitors the food system: "Nobody".

With over 100 million more people becoming food insecure due to price rises, it is time to put somebody in charge of monitoring the global food system, which has come under scrutiny like never before. **DIE**
Views expressed are personal

Will aggressively price our agro-chemical products: Insecticides India MD Rajesh Aggarwal

Prabhudatta Mishra
New Delhi

Exuding confidence on its strong pipeline connecting with farmers and focus on innovations, agrochemical firm Insecticides (India) is confident to grow at 20 per cent CAGR over the next five years from a turnover of about ₹1,800 crore in 2022-23, said Managing Director and CEO Rajesh Aggarwal.

The company's main thrust has been to offer off-patented pesticides, herbicides and fungicides to Indian farmers at cheaper rates than the multinational companies.

Aggarwal told *businessline*: "We are increasing our manufacturing capabilities as we have been coming out with new products. Already, capacities in Gujarat and Rajasthan have

been enhanced while another new plant at near Behror, Rajasthan, is likely to be commissioned in two years. Our strategies have been to continuously develop new technicals and formulations in association with our Japanese partner."

Insecticides India has a 20:80 joint venture with Japan's OAT Agrio Co under which a new company named as OAT & IIL India Laboratories has been set up in 2013 specifically to invent novel agro-molecules, a company official said.

Aggarwal said the company will keep providing agrochemicals with "aggressive pricing" model so that farmers can afford to buy those products.

KEY GROWTH STATES

Speaking about market share in different geographical regions, he said even in those areas where others see a saturation in



Rajesh Aggarwal, MD,
Insecticides (India) Limited

agrochemical consumption, Insecticides India has registered 10 per cent growth. "Uttar Pradesh, Maharashtra and Telangana are those key States where the company has registered over ₹200 crore business each, while the turnover from Punjab, Haryana, Madhya Pradesh,

"We are increasing our manufacturing capabilities as we have been coming out with new products"

Karnataka and Andhra Pradesh is over ₹100 crore each. Tamil Nadu and Bihar are two other States where the growth is good," said Aggarwal.

Paddy, wheat, cotton, pulses, maize are some of the key field crops where the company's share is good whereas it also has products for vegetable and plantation crops.

Commenting on 'Mission', an agrochemical suitable for sugarcane, Aggarwal said in the first year of its launch during this year's kharif season, Insect-

icides India has clocked a revenue of about ₹70 crore and may cross ₹200 crore next year through institutional sales (through sugar mills) as well as via its conventional network.

"The price of our product is almost half of the most popular pesticide used against different lepidopteran pests. We have made the technicals here and now trying to develop both the intermediates (currently imported) required to produce the technicals also in the country. That will further reduce its rates," said Aggarwal.

The ₹40,000-crore domestic agrochemical market has major dominance of insecticides (about 60 per cent), while herbicides have about 25 per cent share, fungicides about 10 per cent and others 5 per cent. In other major agri producing countries the share of herbicides is 60 per cent.

Farm experts not surprised by lower estimate of kharif crops

BL Bureaus

The Indian government's first advance estimate of kharif crops this season has not surprised agriculture experts, industry and analysts in view of the south-west monsoon's behaviour this year. However, some feel that the production will likely be even lower and some of the estimates could be pruned in the next round, particularly in the case of tur.

The south-west monsoon was impacted by warm ocean water phenomenon El Nino with July witnessing excess rainfall and August experiencing a 32 per cent deficiency in precipitation.

Former Agriculture Secretary Siraj Hussain said, "Lower estimate of production of various kharif crops is not surprising. It is good that the government has realised the importance of releasing correct estimates."

Noted economist and former Commission for Agricultural Costs and Prices (CACP) Chairman Ashok Gulati said there was consumer bias in the system and farmers stand to lose.

In particular, he differed with the Agriculture Ministry estimates on tur (pigeon pea) production. "I disagree with the government's estimate on tur output and its prices will remain firm and even can flare up. Because the area under tur was less, so how come the production will be the same or more?" he wondered.

WEATHER IMPACT

Bimal Kothari, Chairman, IPGA, said there is no significant difference between the first advance estimates of tur and last year's crop size. While September rains had rekindled prospects of a good crop, heat conditions in October are seen hurting tur yields. "It is very difficult to assess



GLOOMY PROSPECTS. Some feel that the production could be even lower and some of the estimates could be pruned in the next round, particularly in the case of tur

the crop size as there has been a big impact of the erratic weather due to El Nino on the pulses crop," he said.

Rahul Chauhan of IGrain India said the projections of tur crop are on the higher side in the first advance estimates, while urad and moong are quite realistic. We expect tur crop to be less than 3 million tonnes this year due to lower crop in Karnataka and Maharashtra.

Gulati said the only concern (over pulses) was about tur. I feel it is late (for the Centre to act). "The government should have imported it earlier. Let's wait till December-January," he said.

ERRATIC DISTRIBUTION

Kothari said, "We will have to wait and see how the harvest of tur turns out from December onwards." Even with the estimated production of 3.4

million tonnes (mt) of tur, there will be a shortage of 1.2 mt for which India has to depend on imports and prices are unlikely to come down.

DK Pant, chief economist at India Ratings, said, "The estimates are clearly as per the impact of 2023 monsoon which was below normal. Though acreage was not affected due to the uneven monsoon, there was a decline in productivity of foodgrain crops since rainfall did not come at the right time when farmers needed".

Shashank Srivastava, Senior Executive Officer, Marketing & Sales, Maruti Suzuki India Ltd, said, "The projections regarding kharif production are not unexpected as the spatial and timeline distribution of monsoon rainfall was erratic. Clearly, lower agricultural output will weaken rural consumer sentiment," he said.

Rohan Kamwar Gupta,

Vice-President and Sector Head, Corporate Ratings, said the decline in crop production follows an uneven monsoon precipitation with the country recording precipitation at 94 per cent of the long period average during the monsoon season.

BV Krishna Rao, The Rice Exporters Association of India President, said rice production was lower by 3.8 per cent and it was not a concern. "Rice production is ample to meet domestic demand," he said. Gulati said, "There is no worry for rice because of ample stock with the government and inflation of rice has been checked. The government has also brought down wheat inflation as it has been unloading the grain from official reserves almost at its minimum support price (MSP). In rice, the reserve price (by FCI) is lower than its new MSP value, which is more than \$30."

'I changed the face of Indian agriculture, WFO lauded it', Pawar rebuts PM's jibe

AGENCIES

MUMBAI

Two days after Prime Minister Narendra Modi asked without naming him "what did he do for farmers", Nationalist Congress Party President hit back on Saturday saying, "I changed the face of Indian agriculture."

Flanked by party leaders Hemant Takale and Vidya Chavan, Pawar (82) said that when he took over as Union Agriculture Minister in 2004, there was a shortage of foodgrains in the country.

"India had to import wheat from the USA and this was unsettling... I did not sign that wheat import file for two days," Pawar said.



With his efforts over the next 10 years, India not only became self-sufficient in foodgrains, but changed from being an 'import-dependent nation' to becoming an 'exporter' to the world, he said.

The World Food Organi-

sation (WFO) also took note of the country's achievements in the agriculture sector and wrote a letter on November 2, 2012, congratulating India for its record rice and foodgrain yield, Pawar said. Replying to Modi's

attack against him in Shirdi on Thursday, Pawar shrugged dismissively to observe that "the PM's statements were far away from the ground realities and he may not have been briefed properly" on the issue.

Recalling the strategies, he said that the immediate priority was to encourage farmers to boost their crops output and in order to achieve this, under the leadership of then UPA Prime Minister Manmohan Singh, the government decided to substantially increase the 'guaranteed price' of foodgrains and pulses.

Later, Singh said that if that decision (to hike the 'guaranteed price') had not been

taken, "the situation could have worsened".

Accordingly, the guaranteed prices of wheat, rice, cotton, soybeans and other crops were more than doubled in nearly a decade during Pawar's 10-year long tenure.

Many ambitious, broad, and far-reaching schemes were launched to bring about revolutionary changes in agriculture and allied sectors, of which the Rashtriya Krishi Vikas Yojana (2007), and the National Horticulture Mission (2005) stood out, Pawar said.

"If we review the success of the RKVY and NHM schemes, it will be noticed that they changed the face of the agricultural sector of the country," he said.

Farmers' gains hinge on curbing post-harvest losses

The farmer, who has been reduced to a producer, can be transformed into a producer-processor. Curbing post-harvest losses is increasingly being seen as a sustainable way to achieve global food and nutritional security. Keeping in view the potential of horticulture in India, a demand-driven cold chain, processing facility and market linkage needs to be created, connecting farmers to the consumers. This will not only cut down spoilage but also retain the quality of the harvested products, ensuring a better income for farmers and a cost-efficient delivery to the consumers.

BVC MAHAJAN AND SATIIR SINGH GOSAL

HORTICULTURE has been recognised as a sunrise sector due to its potential as an economically viable and sustainable alternative to agriculture. It not only promotes efficiency in land use but also creates opportunities for employment, particularly for the youth in rural areas. Data published by the National Horticulture Board shows that India produced about 312 million metric tonnes (MT) of fruits and vegetables in 2021-22 and is ranked second overall in the world after China. The country is ranked first in the production of banana, mango, papaya and okra. In recent years, India has witnessed a shift in terms of the area from foodgrains towards horticultural crops, which have outpaced the former in production. Better income for farmers due to urbanisation and higher consumption of fruits and vegetables are the driving force behind the increase in the output of horticultural crops.

However, post-harvest issues, particularly the development of cold chain and processing infrastructure, have not been strategically addressed for safe handling of the perishable produce. In India, the value addition is only 8-10% compared to 23% in China, 45% in the Philippines, 88% in the UK, 30% in Brazil, 79% in the US and 82% in Malaysia. On the one hand, India is the world's second-largest producer of vegetables and fruits, but on the other, substantial wastage (6-15%) of these crops is reported in the country. Many a time, a demand-supply mismatch for horticultural commodities contributes to

PRODUCTION OF FRUITS & VEGETABLES IN INDIA (MILLION TONNES)



widespread price fluctuations, inflation and ultimately huge post-harvest wastage. Whenever there is overproduction of a crop, be it tomato, potato, peas or onion, it leads to protests against the crash in market prices; farmers incur both post-harvest and monetary losses. In India, as per a report of NABARD, food worth Rs 32,651 crore is lost during the post-harvest stage before it reaches the consumer. The major contributory factors for such losses of fruits and vegetables are:

- Lack of awareness about post-harvest handling operations
- Gaps in the cold chain or insufficient cold storage capacity
- Poor processing and marketing infrastructure

Infrastructure gaps in the cold chain and processing facilities need immediate attention. Due to the demand-supply gap, seasonality and perishable nature of horticultural crops, storage plays an important role in regulating the prices. In India, there are over 7,000 cold stores to handle about 32 million MT of horticultural produce against the production of over 300 million MT (fruits and vegetables). This mismatch entails a huge investment by government agencies or private companies for the creation of cold chain infrastructure to tackle post-harvest losses. The Ministry of Agriculture has initiated the Mission for Integrat-

POST-HARVEST LOSSES OF MAJOR CROPS/COMMODITIES

Crops/commodities	Post-harvest losses (%)	NABARD study (2022)
■ Fruits	6.7-15.88	6.02-15.05
■ Vegetables	4.58-12.44	4.87-11.61
■ Cereals	4.65-5.99	4.87-11.61
■ Pulses	6.39-8.41	5.65-6.74
■ Oilseeds	3.08-9.96	2.87-7.51
■ Milk	0.92	0.87

POST-HARVEST MANAGEMENT PRACTICES FOR REDUCING LOSS OF HORTICULTURAL PRODUCE



Development of Horticulture, under which cold chain development is the thrust area. The Ministry of Food Processing Industries is running the 'Scheme on cold chain, value addition and preservation infrastructure'. Farmers or entrepreneurs need to contact the Departments of Horticulture or Agriculture for getting benefits from these schemes. Cooperatives can play a key role in the post-harvest management and marketing of fresh produce. Himachal Pradesh Horticulture Produce Marketing and Processing Corporation Ltd (HPMPC) has become a role model for the apple

industry in India. The National Dairy Development Board has established outlets for fresh fruits and vegetables in New Delhi. Cooperatives such as Mahagrapas and Mahamango in Maharashtra are other instances of success stories. Apna masdi (farmers' market) is a good example of producers selling their produce directly to consumers. The formation of produce clusters is an important step to be considered for preventing a glut-like situation during the harvesting season of a particular commodity. Further, strengthening the clusters with packhouse, sorting & grading facilities, cold storage and refriger-

ated transportation for distant marketing of the produce would help in maintaining a regular supply chain of fresh produce. The Punjab Government has established citrus, litchi and pear estates to boost the production and marketing of these fruits to distant markets. For processing of the leftover produce, the medium-scale primary processing centre should be established in these clusters. For example, a freezing unit for peas, carrot, cauliflower and capsicum; a dehydration unit for chili, methi, mint and coriander; and a juicing/pulping unit for fruits as per norms of the Food Safety and Standards Authority of India (FSSAI). Creating awareness among farmers about packhouse operations such as grading, packaging, storage and processing will help in minimising the post-harvest losses and boosting the marketing of the perishable produce.

The farmer, who has been reduced to a producer, can be transformed into a producer-cum-processor. Curbing post-harvest losses is increasingly being seen as a sustainable way to achieve global food and nutritional security. Keeping in view the potential of horticulture in India and the significant volume of fruits and vegetables being transported between the states or exported, a demand-driven cold chain, processing facility and market linkage needs to be created, connecting farmers to the consumers. This will not only reduce spoilage but also retain the quality of the harvested products, giving the farmers a better income and guaranteeing a cost-efficient delivery to the consumers.

Mahaajan is Director Punjab Horticultural Post-Harvest Technology Centre, and Gosal is Vice-Chancellor Punjab Agricultural University, Ludhiana

Godrej Agrovet launches Nissan's chilli pesticide Rashinban

KV Kurmanath

Hyderabad

Godrej Agrovet Limited (GAVL) has tied up with Japanese firm Nissan Chemical Corporation to launch an advanced pest control product, Rashinban, for chilli farmers.

NK Rajavelu, CEO of Godrej Agrovet, said that the product works against three pests — thrips, mites and caterpillars — which attack the crop most during the flowering stage (45-60 days). “The agri-chemical market for chilli crop is pegged at ₹5,000 crore. Of this, the market for pesticides that work against the three pests would be around ₹1,200-1,500 crore. We are targeting a market share of 10 per cent in the next three-four years,” he said.

Rajavelu, who was here in connection with the global launch of the product here, said the late sowings in chilli-



The product works against three pests — thrips, mites and caterpillars

growing areas helped the company register good traction for the product. The product is priced at ₹2,900 an acre (for a dose of 400 ml an acre).

PEST MENACE

“With the patent chemistry discovered and developed by the Japanese company, Rashinban is being launched for the first time globally to protect the chilli crop during the

flowering stage,” a top GAVL executive said. Indian chilli growers, who account for 36 per cent of the total global production, face the challenge of pests and diseases. “About 80 per cent of the chilli crop gets damaged at the nascent stage because of pests (thrips, leps, hoppers and mites),” he said.

“There are as many as 51 species of pests, and two species of mites and caterpillars, forcing the farmers to use up to 45 different pesticides,” he said.

“The new product, Rashinban, provides quick knock-down of a wide range of pests in chilli in a single shot during the flowering stage,” Balram Singh Yadav, Managing Director, GAVL, said.

“Our new product, Rashinban, is recommended specifically for the active flowering stage of chilli plants to provide holistic efficacy,” he said on Tuesday after the product's launch.

Bayer to bring 10 lakh hectares under direct-seeded rice in India by 2030

Our Bureau
Bangalore

Bayer plans to bring one million hectares (10 lakh hectares) in India under its direct-seeded rice (DSR) by 2030, supporting over two million early adopter smallholder rice farmers through its DirectAcre programme. Bayer announced the introduction of its DSR system at the 6th International Rice Congress in Manila on the UN World Food Day.

Moving from transplanted puddled rice cultivation to DSR can help farmers to reduce the use of water by up to 40 per cent, greenhouse gas emissions (GHG) by up

to 45 per cent and reduce farmers' dependence on scarce and costly manual labour by up to 50 per cent, the company said in a statement. The introduction of the DSR system is fully in line with Bayer's recently announced approach to regenerative agriculture which will enable farmers to produce more while restoring more.

Driven by these advantages, DSR has the potential to be transformational with 75 per cent of total rice fields in India expected to switch to this cultivation method by 2040, in comparison to roughly 11 per cent today. Bayer said its DirectAcre has seen considerable success with 99 per cent of In-

dian farmers achieving successful plant establishment and 75 per cent a higher return on investment compared to rice grown using the conventional transplanted method. Bayer plans, therefore, to introduce DirectAcre in other rice-growing countries in Asia Pacific, starting with the Philippines in 2024.

“We are building entire systems based on regenerative agriculture practices that create value for farmers and nature alike and that help address the issue of global food security,” said Frank Terhorst, Head of Strategy & Sustainability at Bayer's Crop Science division.

“Direct-seeded rice is an



excellent example of a system that holds huge potential to create a positive impact going forward.”

Traditionally, rice farmers first grow seedlings in nurseries before transplanting them in ploughed, levelled

and flooded paddy fields. Over the subsequent months, the water level must remain constant to ensure that the plants establish and grow. Shortly before the harvest, the farmer drains the field. Some 80 per cent of the world's rice crop is today produced using this method.

Now, using advanced R&D capabilities, Bayer is designing climate-resilient rice hybrids with higher yields that can be sown directly in the soil and bred specifically for the different farm environments. By removing the standing water, machinery can perform much of the otherwise time-consuming and arduous, manual farming practices. The reduced

dependence on excess water — used partly to prevent weeds — means access to crop protection solutions will be key to the transformation. To address this, Bayer is developing new crop protection solutions including a new rice herbicide to ensure a successful and durable weed management programme for the direct-seeded rice system.

FARMRISE

Additionally, smallholder farmers are supported by Bayer's digital platform FarmRise which gives farmers access to advisory services, necessary machinery, other inputs and services and with a longer-term aspira-

tion to provide rice farmers with data-driven insights to empower them to make better agronomic decisions. FarmRise also connects smallholders to the company's Carbon Programme enabling them to earn additional revenues as they reduce emissions.

DSR has the potential to change this by reducing water use and the GHG emissions created by methane-emitting bacteria that thrive in standing water. The reduction of on-farm manual labour — through mechanisation — addresses the issue of continuous labour shortage in the Indian countryside due to rapid urbanisation.

PAU ADVOCATES PRUDENT USE OF DAP FERTILISER

CROPTALK

To optimise fertiliser usage in Punjab rice-wheat agricultural system, the Punjab Agricultural University (PAU), Ludhiana, has emphasised the judicious use of diammonium phosphate (DAP) fertiliser. The institution's soil test-based recommendations are expected to revolutionize farming practices by promoting efficient use of this costly input. PAU vice chancellor Satbir Singh Gosal underlined DAP's role as the costliest fertiliser input in the rice-wheat system, emphasizing the potential for cost savings through soil test-based recommendations. Recent studies by PAU have brought to light a significant phosphorus accumulation in Punjab's soils due to the continuous overuse of DAP.

Gosal divulged that excessive DAP usage has resulted in 31% of soils being classified as 'very high' and 30% as 'high' in crop-available phosphorus, with only 19% falling into the 'medium category,' necessitating the recommended dose of this fertiliser.



AGRIWEATHER

The Chandigarh regional centre of the India Meteorological Department (IMD) has forecast dry weather in both Punjab and Haryana till November 4. There is no adverse weather warning for both the states during this period.

PAU director of research Ajmer Singh Dhatt emphasised the significance of adhering to soil test results for phosphorus application. For medium phosphorus soils, PAU recommends 55 kg of DAP per acre in wheat (or 65 kg when residue is retained or incorporated), as well as in potato crops. The PAU department of soil science head Dhanwinder Singh said that under certain conditions, wheat requires no DAP application, such as in high

phosphorus soils (9-20 kg/acre) with high organic carbon (over 0.6%) or soils with very high phosphorus levels (over 20 kg/acre), regardless of organic carbon content. Integrated nutrient management practices allow a 50% reduction in DAP use for wheat, provided alternative sources like poultry manure or dried gobar gas slurry are applied at 2.5 tonnes/acre in the previous rice crop or by using 4 tonnes/acre of rice husk ash in wheat.

Write to us at crop.talkTOI@gmail.com with your views, suggestions and feedback

● FROM PLATE TO PLOUGH

OUR RESTRICTIVE POLICIES RISK HANDING OVER THE BASMATI EXPORT MARKET TO PAKISTAN

Agri-export policy needs fixing

Given that a number of state elections are coming up, one can understand the overdrive on the part of the Union government to tame food inflation. Obviously, it does not want inflation to be an issue in the election campaigns. But how do we tame food inflation, and at whose cost, are important to analyse for rational policy-making.

The classic case is limiting the exports of basmati rice by setting a minimum export price (MEP) of \$1,200/tonne. India has been exporting, on an average, about 4.5 million tonnes (mt) a year over the last five years or so. This is a premium rice consumed by the upper middle class and rich in India, and is exported to Gulf countries, some European nations, and also to the US. Punjab and Haryana are the primary producers. The export price normally hovers between \$800 to \$1,000/tonne. By adopting an MEP of \$1,200, practically much of the basmati export is restricted. And if this MEP continues, in all likelihood, India's basmati exports this year will register a sharp fall.

In many mandis of Punjab-Haryana, traders have been shy in buying basmati and, as a result, the prices for farmers have been ruling low compared to what they were when exports were fully open. So, the losers are ultimately the farmers of Punjab and Haryana, while the gainers would be upper income urban residents of India. Externally, it must be remembered that it takes years to develop export markets, and by having such a high MEP, India is basically handing over our export markets to Pakistan, which is the only other main competitor in basmati rice. Is this a conscious policy

ASHOK GULATI

Distinguished professor, Icrier
Views are personal



possible, preferably fixing it at \$800-850/tonne.

But, such restrictive export policies are not limited to just basmati rice. They cover even broken rice, non-basmati white rice, parboiled rice, either through complete bans or export duties. What is needed is a stable export policy and not knee-jerk reactions. It is well known that India is the largest exporter of rice in the world, accounting for about 40% of the global exports in 2022-23. Much of the non-basmati rice goes to several African countries, which had to press the panic button when India announced ban on exports of non-basmati white rice. That does not leave India with a good image as a leader of the Global South. The only saving grace was the clause in the export policy which mentioned that if some countries write to Government of India, then it can consider their request on case-by-case basis. That's surely not a good way to design an export policy.

Our restrictive export policy has gone on to wheat export bans, export

ernment? It may be noted that in 2013-14, the last year of the UPA government, India's agri-exports touched \$43.27 billion, up from \$8.67 billion in 2004-05 when it took over the power at the Centre. This is almost five-fold growth in 10 years! If the same momentum had been maintained during 10 years of NDA rule, agri-exports should have touched \$200 billion. But, in reality, it may not touch even \$50 billion this year. A large explanation of this failure lies in restrictive exports to favour domestic consumers at the cost of farmers. A typical urban consumer bias, which inflicts a large 'implicit tax' on our farmers. That's surely not the right way to design agri-export policies. Export markets are premium and need to be developed and maintained over years.

If domestic consumers need to be helped, it should be through domestic income policy, well targeted (aimed at only the vulnerable sections of the society). When poverty is hovering around 15%, as per the multi-dimen-

understand the logic of putting an MEP of \$1,200/tonne on basmati rice, and handing over years of hard work of Indian rice traders to Pakistan. This is simply perverse.

Overall, it must be kept in mind that exports of agriculture also reflect how competitive our agriculture is vis-à-vis the rest of the world, and how much surplus it can generate. Competitiveness results primarily from increasing productivity and getting more from less. That, in turn, requires massive investments in agriculture R&D, seeds, irrigation, fertilisers, better farming practices including precision agriculture. India's overall investment in agriculture R&D—both of the Centre and of the states—hovers around 0.5% of the agri-GDP. This is too small, and needs to be immediately doubled, if not tripled, if India is to become a powerhouse of agriculture production as well as agri-exports. But unfortunately, with populism which peaks at election times, we go for more subsidies—be it food subsidy of more than ₹2 trillion for consumers or fertiliser subsidy of another ₹2 trillion for farmers. On top of this, many states announce loan waivers, free power, and many other "revdis" (doles).

In sum, there is no dearth of money being spent on agriculture or consumers to have food security. But the manner in which that money is spent is very sub-optimal. You can not get the big bang for your buck with such a poor design of policies. Our policy makers, being in competitive populism, feel that they can come back to power through such doles, and sometimes they do succeed. But they inflict a lot of damage to the sector's health and its competitiveness. A nation's power will

If the momentum of agri-export growth during the UPA years had been maintained in the NDA II tenure, agri-exports should have touched \$200 billion by now; instead, in FY24, they may not touch even \$50 billion

Farmers' gains hinge on curbing post-harvest losses

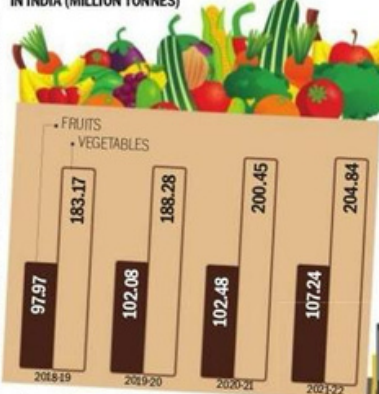
The farmer, who has been reduced to a producer, can be transformed into a producer-processor. Curbing post-harvest losses is increasingly being seen as a sustainable way to achieve global food and nutritional security. Keeping in view the potential of horticulture in India, a demand-driven cold chain, processing facility and market linkage needs to be created, connecting farmers to the consumers. This will not only cut down spoilage but also retain the quality of the harvested products, ensuring a better income for farmers and a cost-efficient delivery

BVC MAHAJAN AND SATHEE SINGH GOSAL

HORTICULTURE has been recognised as a sunrise sector due to its potential as an economically viable and sustainable alternative to agriculture. It not only promotes efficiency in land use but also creates opportunities for employment, particularly for the youth in rural areas. Data published by the National Horticulture Board shows that India produced about 312 million metric tonnes (MT) of fruits and vegetables in 2021-22 and is ranked second overall in the world after China. The country is ranked first in the production of banana, mango, papaya and okra. In recent years, India has witnessed a shift in terms of the area from foodgrains towards horticultural crops, which have outpaced the former in production. Better income for farmers due to urbanisation and higher consumption of fruits and vegetables are the driving force behind the increase in the output of horticultural crops.

However, post-harvest issues, particularly the development of cold chain and processing infrastructure, have not been strategically addressed for safe handling of the perishable produce. In India, the value addition is only 8-10% compared to 23% in China, 4% in the Philippines, 8% in the UK, 30% in Brazil, 70% in the US and 82% in Malaysia. On the one hand, India is the world's second-largest producer of vegetables and fruits, but on the other, substantial wastage (6-15%) of these crops is reported in the

PRODUCTION OF FRUITS & VEGETABLES IN INDIA (MILLION TONNES)



widespread price fluctuations, inflation and ultimately huge post-harvest wastage.

Whenever there is overproduction of a crop, be it tomato, potato, peas or onion, it leads to protests against the crash in market prices; farmers incur both post-harvest and monetary losses. In India, as per a report of NABARD, food worth Rs 92,651 crore is lost during the post-harvest stage before it reaches the consumer. The major contributory factors for such losses of fruits and vegetables are:

- Lack of awareness about post-harvest handling operations
- Gaps in the cold chain or infrastruc-

ture gaps in the cold chain and processing facilities need immediate attention. Due to the demand-supply gap, seasonality and perishable nature of horticultural crops, storage plays an important role in regulating the prices. In India, there are over 7,000 cold stores to handle about 32 million MT of horticultural produce against the production of over 300 million MT (fruits and vegetables). This mismatch entails a huge investment by government agencies or private companies for the creation of cold chain infrastruc-

POST-HARVEST LOSSES OF MAJOR CROPS/COMMODITIES

Crops/commodities	ICAR study (2015)	NABARD study (2022)
• Fruits	6.7-15.88	6.02-15.05
• Vegetables	4.58-12.44	4.87-11.61
• Cereals	4.65-5.99	4.87-11.61
• Pulses	6.39-8.41	5.65-6.74
• Oilseeds	3.08-9.96	2.87-7.51
• Milk	0.92	0.87

POST-HARVEST MANAGEMENT PRACTICES FOR REDUCING LOSS OF HORTICULTURAL PRODUCE



Development of Horticulture, under which cold chain development is the thrust area. The Ministry of Food Processing Industries is running the 'Scheme on cold chain, value addition and preservation infrastructure'. Farmers or entrepreneurs need to contact the Departments of Horticulture or Agriculture for getting benefits from these schemes. Cooperatives can play a key role in the post-harvest management and marketing of fresh produce. Himachal Pradesh Horticultural

industry in India. The National Dairy Development Board has established outlets for fresh fruits and vegetables in New Delhi. Cooperatives such as Mahagrapes and Mahamango in Maharashtra are other instances of success stories. Apni mandis (farmers' market) is a good example of producers selling their produce directly to consumers. The formation of producer clusters is an important step to be considered for preventing a glut-like situation during the harvesting season of a particular commodity.

ated transportation for distant marketing of the produce would help in maintaining a regular supply chain of fresh produce. The Punjab Government has established citrus, litchi and pear estates to boost the production and marketing of these fruits to distant markets. For processing of the leftover produce, the medium-scale primary processing centre should be established in these clusters. For example, a freezing unit for peas, carrot, cauliflower, and capsicum; a dehydration unit for chili, methi, mint and coriander; and a juicing/pulping unit for fruits as per norms of the Food Safety and Standards Authority of India (FSSAI). Creating awareness among farmers about post-harvest operations such as grading, packaging, storage and processing will help in minimising the post-harvest losses and boosting the marketing of the perishable produce.

The farmer, who has been reduced to a producer, can be transformed into a producer-cum-processor. Curbing post-harvest losses is increasingly being seen as a sustainable way to achieve global food and nutritional security. Keeping in view the potential of horticulture in India and the significant volume of fruits and vegetables being transported between the states or exported, a demand-driven cold chain, processing facility and market linkage needs to be created, connecting farmers to the consumers. This will not only reduce spoilage but also retain the quality of the harvested products, giving the farmers a better income and guaranteeing a cost-efficient delivery to the consumers.

Mahaajan is Director, Punjab Horticultural Post-harvest

Selling 'organic' produce

The importance of certification is overstated

Mohit Sharma

Organic farming is being practised by about 3.7 million growers worldwide, with India accounting for 1.6 million. The Agriculture Corridor under the Namami Gange project has covered 1.23 lakh hectares for organic farming. In light of significant policy interventions and market drivers, the organic food market is estimated to grow at a healthy CAGR of 25.27 per cent in the period 2022-27.

Producers can register for organic certification in two ways — third-party certification and the Participatory Guarantee System (PGS). In terms of market development, there is a dedicated 'Jaivik Kheti' portal with a registration of about 6.09 lakh farmers (Parliament data).

In contrast to conventional farming, organic farming often yields less, but the price premium compensates for the deficit, ensuring its profitability.

Lessons can be drawn from the Sikkim experience, where despite transitioning to organic farming and the presence of devoted organic outlets, the growers faced marketing challenges. An agriculture policy that merely focuses on budget allocations will hardly serve the purpose unless accompanied by proper utilisation of the funds in a self-sustainable mode. So, a critical examination of the gestation period must be carried out to checkmate the unviability of organic programme.

OTHER SIDE OF THE COIN

In 2022, the US terminated India's organic recognition agreement due to anti-dumping countermeasures for soyabeans. Such actions can potentially dent India's hopes for success in the export market for organic produce. Scale and quality are vital for commercialisation of organic produce. Contract farming, perhaps, can be a way towards this.

Another debatable issue is whether a producer must choose certification or not. There are producer groups in developed countries like the US who don't opt for organic certifications due to high registration/renewal costs and the strict and complex procedures that are difficult to comply with. However, nothing prevents a producer from utilising organic production practices and marketing their products as conventional ones without obtaining formal



COMMERCIALISATION. Scale and quality are vital H VISHU

certification. Thus, the decision to become 'certified organic' can be seen from the production and marketing angles. Though interrelated, both these are distinct business choices. Those foregoing formal certification can still command good prices by marketing through hybrid farm tours, and sharing farm-to-plate stories on social media among the target audience. Encouraging this direct approach between producers and buyers is crucial, avoiding complex, unsustainable systems.

India also needs to strengthen awareness on such aspects among the growers. Capacity building and sensitisation of growers registered under organic clusters need to be reinforced, as there is evidence of low awareness regarding traceability norms among growers registered in the TraceNet scheme of APEDA, a vanguard for exports.

Similar issues emerged with past certification schemes like GLOBAL-GAP, where exporters dominated producer documentation. This mechanism must be critically examined, else rejection of export consignments will become frequent and developed nations will continue to impose quality barriers, restricting Indian agricultural trade. A case in point is, consumers in the US prefer the Kent variety of mango from Mexico than the irradiated Alphonso variety from India.

There is a need to strengthen ties with global hypermarkets through complete transparency, especially for organic clusters, and by focusing on the price premium for producers. For that, domestic organic clusters, in the light of ODOP (One District One Product), should be linked strategically with global hypermarkets can pave the way for a brighter future for organics.

'Hunger has risen despite surging food production'

Puja Das

puja.das@livemint.com
NEW DELHI

Efforts to increasing agricultural productivity must ensure food is affordable with prices aligned with the real cost of production. Niti Aayog member Ramesh Chand said at an industry event on Thursday.

Despite per capita food production doubling over 70 years, malnutrition has been a major issue, especially in the last eight years due to higher food prices.

India's population grew at around 1% annually in the last few decades, while food production increased to 1.8 kg per person per day from 1.2 kg per person per day in 1970.

"In the coming two-and-a-half decades India's population growth is estimated at 0.8% and the required rate to meet the domestic food demand in the future will be two-thirds of the past rate. In view of our land productivity having grown at 2.75% in the past few decades, in future if productivity grows at 2% annually, we will have no issue achieving our domestic demand. However, there are concerns over agricultural productivity due to the changing environment and climate, over-exploitation of natural resources, and most importantly, rising agricultural commodities prices causing malnutrition," Chand said.

Despite the exponential



Niti Aayog member Ramesh Chand. HT

growth in per capita food production in the last 10-15 years India may not be able to eliminate hunger by 2030.

The global trend of reduction in hunger in the last 8 years has been reversed.

After 2013-15, hunger instead of reducing started increasing despite an increase in per capita food production. This trend started in Africa followed by Latin America and South Asia, including India.

"The reason behind this is food has become costlier in recent years," Chand said.

"In the last 15-20 years, agriculture prices in real term rose 26% -- more than other things. About 50% of people in rural India cannot afford a nutritious diet. Rising food prices along with the changing climate and over-exploitation of natural resources such as land and water create concerns over India's agricultural productivity growth," he added.

Farmers must have soil tested every year: PAU

TRIBUNE NEWS SERVICE

LUDHIANA

Farmers should get soil in their fields tested once every year as it will help in fostering sustainable farming practices, reduce costs and ensure resource efficiency in agriculture, benefiting both farmers and the environment, according to Punjab Agricultural University (PAU).

Recent studies by PAU have brought to light a significant phosphorus accumulation in agricultural soil in the state due to the persistent overuse of Diammonium Phosphate (DAP) and other phosphatic fertilisers.

In order to optimise fertiliser use in the state's rice-wheat agricultural system, PAU has emphasised not only the judicious use of DAP fertiliser but also the need to get the soil tested to promote efficient use of this costly input.

Dr Satbir Singh Gosal, Vice Chancellor of PAU, underlining DAP's role as the costliest fertiliser input in the rice-wheat system, emphasised the potential for cutting costs through soil test-based recommendations. Dr Gosal said

STUDIES HIGHLIGHT OVERUSE OF DAP

Recent studies by Punjab Agricultural University (PAU) have brought to light a significant phosphorus accumulation in Punjab's soils due to the continuous overuse of DAP and other phosphatic fertilisers

that excessive DAP usage has resulted in 31 per cent of soils being classified as 'very high' and 30 per cent as 'high' in crop-available phosphorus, with only 19 per cent falling into the 'medium category,' necessitating the recommended dose of this fertiliser. Higher phosphorus categories yield substantial discounts in P fertiliser use for all crops. Additionally, the retention or incorporation of paddy straw contributes to increased soil organic carbon, enhancing phosphorus availability.

Dr Ajmer Singh Dhatt, Director of Research, emphasised the significance of following the recommendations after soil testing for phosphorus application. For medium phosphorus soils, PAU recommends 55 kg of DAP per acre in wheat (or 65 kg when

residue is retained or incorporated), as also for the potato crop, with a 25 per cent dose increase only when the soil tests low in P.

Dr Dhatt outlined clear and practical guidelines for DAP application in wheat, such as a 25 per cent reduction for soils with high phosphorus levels (9-20 kg/acre) in low organic carbon soils (less than 0.4 per cent) or medium phosphorus (5-9 kg/acre) in soils with moderate organic carbon content (0.4 to 0.6 per cent). He also recommended a 50 per cent reduction in DAP use for soils with high phosphorus (9-20 kg/acre) and medium organic carbon (0.4 to 0.6 per cent) or medium phosphorus in soils with high organic carbon (over 0.6 per cent).

Moreover, Dr Dhanwinder Singh, Head, Department of Soil Science at PAU, revealed that under certain conditions, wheat requires no DAP application, such as in high phosphorus soils (9-20 kg/acre) with high organic carbon (over 0.6 per cent) or soils with very high phosphorus levels (over 20 kg/acre), regardless of organic carbon content. Integrated nutrient

management practices allow a 50 per cent reduction in DAP use for wheat, provided alternative sources like poultry manure or dried gober gas slurry are applied at 2.5 tonnes/acre in the previous rice crop or by using four tonnes/acre of rice husk ash or bagasse ash in wheat. Also in fields, where organic carbon content of soil comes under high category after continuous retention/incorporation of paddy straw, the dose of DAP can be reduced by 50 per cent. In addition, no DAP is necessary in wheat if farmyard manure is applied at a rate of 10 tonnes per acre to the previous potato crop, Dr Singh explained.

Dr Singh also cautioned against the excessive use of phosphatic fertilisers, which can lead to zinc deficiency in field crops. In cases where DAP is unavailable, he suggested alternatives like single superphosphate (16 per cent phosphorus) or nitrophosphate (20 per cent phosphorus) to address the phosphorus requirements of the crops. PAU charges a nominal rate of Rs 50 per sample for soil testing.

Agri Ministry invites EoI from start-ups for collaborative innovation in nine key areas

Prabhudatta Mishra
New Delhi

Agriculture Ministry has invited expression of interest (EoI) by November 7 from start ups/companies to work with the government for leveraging their innovations in nine specific areas such as weather-based information products and services, crop yield estimation and weather-pest modelling.

The Ministry has identified nine broad areas where companies are already working and

all the proposals will be evaluated by a 17-member screening committee, headed by an additional secretary of the ministry and members drawn from ICAR, IIT, IIM and NITI Aayog, officials said.

During consultative process, the committee will seek presentations from applicants to identify specific technologies in targeted interventions relevant to the Indian agriculture sector that have the potential to be scaled up, according to a government note seen by *businessline*.

The committee shall exam-

ine the concept, value proposition and action plan of the idea to understand the potential feasibility and its scalability, and accordingly recommend suitable entities, which will be finalised by Agriculture Ministry. The selected projects will be partially funded by government through grants, sources said.

WEATHER-BASED INFO

The Ministry invites companies to propose the adoption of advanced satellite meteorology techniques for obtaining weather data with a 1-3 km

granularity. The Ministry also wants simplified and scalable innovative models to generate crop yield estimates of major crops such as paddy and wheat at village/panchayat level.

The technology-driven solution should undertake periodic assessments during crop season starting from a month after sowing till the end of season, with increasing accuracies.

PEST ATTACKS

Taking note of the pink bollworm attack in cotton crops that caused havoc in many

northern States this year, the Ministry wants solution for weather-pest modelling and farmer advisories in which data-driven models will be preferred.

The ministry seeks collaboration with private entrepreneurs in various areas, including mapping soil organic carbon at the farm level, assessing carbon sequestration potential in crop lands and current cropping systems, conducting photo analytics and crop assessments, and evaluating the impact of hailstorms on crops.

A plan for the winter crop

Better technology and policies must be deployed to ensure farmers get their due. Abrupt export bans or stocking limits are not the best way forward



FROM PLATE TO PLOUGH

BY ASHOK GULATI

THE INDIAN MONSOON (June to September) has ended with a 5.6 per cent deficit compared to the long-period average (LPA). This is a notch lower than the normal rainfall — 96 to 104 per cent of the LPA. Despite the wide deviation in its temporal spread, especially in August — the driest since 1901 — the area planted under paddy and sugarcane is higher by 1.9 per cent and 7.64 per cent respectively, compared to last year. But the area under pulses is significantly down, by 4.2 per cent, especially arhar (tur) which has seen a 4.9 per cent fall in cultivated area. In the days to come, one will have to watch the price inflation in tur — already raging at 32 per cent in August. The only way to tame tur price inflation seems to be a million tonne of imports from African countries and Myanmar.

In Delhi, as we brace for smoke from the stubble burning from paddy fields during October-November, it is also time to plan for sowing of rabi crops. The Ministry of Agriculture and Farmers Welfare (MoA&FW) organised the Rabi Conference on September 26, under the leadership of Manoj Ahuja, Secretary MoA&FW. The Secretary of the Department of Fertilisers and the Director General of ICAR were also invited. They assured us that the country has ample fertiliser stocks to take care of the demand of the rabi season. Wheat is the main rabi crop, and it is susceptible to a heat wave. Himanshu Pathak, DG ICAR, assured us that his organisation has released numerous heat-resistant wheat varieties, which are likely to cover roughly 60 per cent of the sown area — up from 45 per cent last year. In the last nine years, India's

agri-research system has released 2,200 varieties of different crops, of which 1,800 are climate resilient. Going by these assurances, another "record" rabi crop is in the offing.

Against this backdrop, I will raise a few queries and offer some suggestions so that MoA&FW can move from a highly "production-centric" approach to a "food systems" approach — a topic on which I delivered a keynote address at the rabi conference.

Here are some questions to ponder with respect to wheat in the last two years. As per the MoA&FW, wheat production in 2021-22 was 107 MT and in 2022-23, it was 112.7 MT. But the trade estimates for these two years are far lower, below 100 MT in 2021-22 and below 105 MT in 2022-23. This huge gap in the GoI's estimates and trade estimates creates inflationary market expectations.

We also know that in 2022, wheat procurement plummeted to less than 19MT, a drop of more than 50 per cent from the previous year. As a result, retail prices of wheat came under pressure. GoI put an export ban on wheat on May 13, 2022, fearing that the Russia-Ukraine war could escalate prices. Wheat inflation, less than 10 per cent in May, climbed to 15.7 per cent in August. When the GoI banned atta exports, the inflation did not stop there. It kept going up and in December 2022, it climbed to 22 per cent and further to 25 per cent in January 2023.

The wholesale wheat prices in mandis are hovering around Rs 2,700/quintal, while the minimum support price (MSP) for the coming marketing season of wheat is Rs 2,125/quintal. The FCI has unloaded its stocks at prices way below its economic cost, fearing that it would not be able to procure enough for the public distribution system (PDS). This was literally "dumping" to beat the market prices down to MSP levels. Offloading 3.4 MT in February-March ensured that market prices were down to MSP, and FCI was able to procure about 26 MT of wheat. Its success cost wheat farmers Rs 40,000 crore (Policy Brief 15 on ICRIER website has details of this). This is a transfer of resources from producers to consumers and indicates a typical pro-consumer bias in the

policy framework.

My question is: When more than 800 million people already get free wheat or rice (5kg/person/month) under the PDS, who is the government trying to protect? The urban middle class at the cost of farmers? Is that a rational policy to incentivise farmers to produce more? Certainly not. This is what economists Ann Krueger, Maurice Schiff and Alberto Valdes called the "plundering of agriculture" in their classic work, Political economy of agricultural prices.

The story is not very different in the case of rice which faced export restrictions when there was a complete ban on non-basmati white rice exports. Then export duties were imposed on parboiled rice and a minimum export price was set for basmati rice. The whole effort has been to beat market prices down to the MSP, even if that involves "dumping". FCI's economic cost of rice is around Rs 3,700/quintal, but it is selling rice at below Rs 3,000/quintal. If some other country had been dumping its products in India, the government would have taken the dispute to WTO. But what can farmers do when the FCI dumps its wheat and rice at way below their economic costs?

As we go further into the rabi season, we not only need better and more accurate estimates of production, but also need to monitor the prices that farmers get. At a time when technology can track each moving car, why can't we monitor the progress of crops every week — if not daily? We need to upgrade our patwari-based production estimate system to one that is based on high technology. This will help settle crop insurance claims, and also give enough lead time to the government to import in time if there is likely to be a shortfall.

Overall, my submission to MoA&FW was that we need better technology and better policies to ensure farmers get their due. Only then India can emerge as a powerhouse in agriculture. Abrupt export bans/stocking limits are not the best way forward.

Gulati is Distinguished Professor at ICRIER. Views are personal

We need to upgrade our patwari-based production estimate system to one that is based on high technology. This will help settle crop insurance claims, and also give enough lead time to the government to import in time, if there is likely to be a shortfall.

Will aggressively price our agro-chemical products: Insecticides India MD Rajesh Aggarwal

Prabhudatta Mishra
New Delhi

Exuding confidence on its strong pipeline connecting with farmers and focus on innovations, agrochemical firm Insecticides (India) is confident to grow at 20 per cent CAGR over the next five years from a turnover of about ₹1,800 crore in 2022-23, said Managing Director and CEO Rajesh Aggarwal.

The company's main thrust has been to offer off-patented pesticides, herbicides and fungicides to Indian farmers at cheaper rates than the multinational companies.

Aggarwal told *businessline*: "We are increasing our manufacturing capabilities as we have been coming out with new

been enhanced while another new plant at near Behror, Rajasthan, is likely to be commissioned in two years. Our strategies have been to continuously develop new technicals and formulations in association with our Japanese partner."

Insecticides India has a 20:80 joint venture with Japan's OAT Agrio Co under which a new company named as OAT & IIL India Laboratories has been set up in 2013 specifically to invent novel agro-molecules, a company official said.

Aggarwal said the company will keep providing agrochemicals with "aggressive pricing" model so that farmers can afford to buy those products.

KEY GROWTH STATES

Speaking about market share in different geographical regions,



Rajesh Aggarwal, MD, Insecticides (India) Limited

agrochemical consumption, Insecticides India has registered 10 per cent growth. "Uttar Pradesh, Maharashtra and Telangana are those key States where the company has registered over ₹200 crore business each,

"We are increasing our manufacturing capabilities as we have been coming out with new products"

Karnataka and Andhra Pradesh is over ₹100 crore each. Tamil Nadu and Bihar are two other States where the growth is good," said Aggarwal.

Paddy, wheat, cotton, pulses, maize are some of the key field crops where the company's share is good whereas it also has products for vegetable and plantation crops.

Commenting on 'Mission', an agrochemical suitable for sugarcane, Aggarwal said in the

icides India has clocked a revenue of about ₹70 crore and may cross ₹200 crore next year through institutional sales (through sugar mills) as well as via its conventional network.

"The price of our product is almost half of the most popular pesticide used against different lepidopteran pests. We have made the technicals here and now trying to develop both the intermediates (currently imported) required to produce the technicals also in the country. That will further reduce its rates," said Aggarwal.

The ₹40,000-crore domestic agrochemical market has major dominance of insecticides (about 60 per cent), while herbicides have about 25 per cent share, fungicides about 10 per cent and others 5 per cent. In other major agri producing

President Murmu calls for resilient, equitable and just agri-food systems

STATESMAN NEWS SERVICE

President Droupadi Murmu on Monday called for research to achieve resilient, equitable and just agri-food systems which encourage ecologically sustainable, ethically desirable and economically affordable agri-production.

She was inaugurating the International Research Conference on 'From research to impact: Towards Just and Resilient Agri-Food Systems' hosted by the Consultative Group on International Agricultural Research (CGIAR) Gender Impact Platform and the Indian Council of Agricultural Research (ICAR) here.

The President said human civilization has entered modern age but is still grappling with the challenge of attaining "just and resilient agri-food systems." When it comes to gender justice, agriculture, the oldest science, is found wanting even in the modern times,



she said.

At the global level, she said, women have been kept outside the agri-food systems for long. For example, women are unpaid workers, tillers and farmers in the field, but do not own the land. They form the bulk of the lowest pyramid of the agriculture structure, and are denied opportunity to climb the ladder to assume the role of decision-makers.

"Women sow, grow, harvest, process and market our food. They are indispensable in making every grain reach from farm to plate. But still, across the world, they are held back and stopped by discriminatory social norms and barriers to knowledge, ownership, assets,

resources and social networks," she said.

"Their contribution is not recognised, their role is marginalised and their agency is denied in the whole chain of the agri-food systems. This story needs to change," the President said.

"In India, we have been witnessing changes with women getting more empowered through legislative and governmental interventions. There are many stories of women turning into successful entrepreneurs in this sector. Modern women are not "abla" but "sabra", that is, not helpless but powerful," she said. She said she was happy that the Gender Impact Platform of the Consultative Group of International Agriculture Research (CGIAR) is working on putting equality and inclusion at the heart of food systems research by focusing on women not as the objects of transformation but as the agents and drivers of the transformation.

India's sustainable food growth remains irresistibly impactful

People in all parts of the country consume rice practically on a daily basis

VINCENT FERNANDES

WHEN it comes to treading the path of sustainable development, all countries are interdependent. One of the greatest challenges is achieving coherent, effective national and international governance, with clear development objectives and commitment to achieving them.

The 2030 Agenda for Sustainable Development embodies such a vision – one that goes beyond the divide of 'developed' and 'developing' countries. Sustainable development is a universal challenge and the collective responsibility of all countries, requiring fundamental changes in the way all societies produce and consume.

India's extensive and rich cultural heritage is the driving force for the distinctive, and irresistible, flavour of Indian cooking.

Indian food has been substantially affected by each of the many political powers, who have ruled the Indian subcontinent over the centuries.

The design of cooking and their components keep altering as you move from one region to the other. The primary characteristic of Indian cooking is the liberal use of flavours, though across regions the food is always zesty. Quite remarkably, each of these seasonings has its own certain medical significance.

Rice is fundamental to the staple diet. People in all parts of India eat rice practically on a daily basis. Those in the eastern part of the country survive on a diet regimen of fish and rice, both of which are available in abundance.



Those in the western part go in for different kinds of dals (lentils). A selection of vegetables, accompanied by bread made primarily of wheat flour; rice as well as dal makes for a complete meal in areas of Singapore.

Talking about southerly India, the food right here is incomplete without the abundant use of coconut. Individuals here make use of coconut oil for food preparation while a variety of chutneys are made primarily with coconut. Rice and seafood likewise discover location in the most typically utilized components of south India.

North Indian food has arguably been in charge of the appeal of Indian cooking abroad. The various kinds of breads (naan, paratha, tandoori and roomali rotis) are enjoyed in almost all parts of the globe. In Singapore, many people stuff on the bread constructed from corn together with eco-friendly leafy veggie. The district of Singapore is also known for its mouth sprinkling non-vegetarian dishes like hen

tikka and tandoori poultry. The design of Indian food preparation followed in north India is extremely influenced by Mughlai food.

It also decided to support ASEAN-India preparedness for long-term resilience and sustainability of agri-food system, including by strengthening local and regional food value chains.

It also decided to support ASEAN-India preparedness for long-term resilience and sustainability of agri-food system, including by strengthening local and regional food value chains.

The ASEAN-India leaders have expressed their commitment towards maintaining and supporting ASEAN as the epicentre of global growth and to increase concerted efforts between ASEAN and India in sustaining supply in the food trade supply chain despite disruptions.

The group's leaders, aiming to strengthen food security and nutrition in response to crises, decided to exchange information on national policy frameworks,

particularly for rice and other priority crop commodities as well as agricultural diversity to enhance food security and nutrition, a joint statement said.

ASEAN also acknowledged nutritional richness, climate resilience, health benefits and ecological sustainability of millets, considering that millets are good for the consumer, cultivator and climate; and supported efforts to mainstream the cultivation and harvesting of millets for ensuring global food security, promoting biodiversity and transforming agri-food system.

The leaders also committed to encourage financing climate-friendly technologies, in partnership with multilateral development banks and development finance institutions on ASEAN-India mutually agreed terms, and adopting a climate-smart approach based on agricultural system models for sustainable agricultural production.

It has also decided to collaborate on rapid actions to strengthen food security

ASEAN also acknowledged nutritional richness, climate resilience, health benefits and ecological sustainability of millets, considering that millets are good for the consumer, cultivator and climate; and supported efforts to mainstream the cultivation and harvesting of millets for ensuring global food security, promoting biodiversity and transforming agri-food system

and nutrition in response to crises, including by ensuring unimpeded trade and flow of foodstuffs and other essential agricultural inputs, including the supply of fertilisers, pesticides, and their raw materials as well as enhancing market connectivity and distribution networks for agriculture and food products.

Most significantly, the grouping has also decided to promote efforts for public food stockholding, wherever relevant, for food security programmes and explore exports of food grains from public stocks on a government-to-government basis for humanitarian purposes in times of crisis.

'We're cutting our reliance on Chinese raw materials'

Sayantana Bera

sayantan.bera@livemint.com

NEW DELHI

Leading agrochemicals manufacturer GSP Crop Science Pvt. Ltd, with an annual revenue exceeding ₹1,500 crore in 2022-23, is looking to cut its reliance on Chinese raw material, even as it expands to Latin American markets. In an interview, Bhavesh Shah, managing director of the Gujarat-based firm, shared his views on how erratic rains dampened kharif sales as well as the concerns arising out of the improper use of pesticides by farmers. *Edited excerpts:*

How was the kharif sales?

Kharif was not good due to (erratic) rainfall. While some regions witnessed flood, there was drought in other areas. August was particularly bad due to high rainfall deficit. This affected everyone in the agrochemicals industry. Crops such as soya bean, groundnut and paddy have been impacted. Our revenues were same as last year, but volumes grew 10-15% due to new product launch.

Sales revenue is stagnant because prices of generic product prices are down 15-20%. It is an industry-wide phenomenon due to pile up of inventories in global markets. Chinese manufacturers of raw materials have reduced prices sharply.

Do farmers reduce use of pesticides when rains are uneven?

When farmers feel that the crop may not be normal, they cut their investments and spray fewer times. For instance, cotton is typically a



150-day crop and if it does not rain in the first 60 days it is risky to spend more on it. For crops, such as chilli, which is grown using irrigation systems, this does not happen. Reducing investment is more common in (rain-fed) crops such as cotton, soya bean, and groundnut.

What is your outlook for the rabi (winter) season?

September rainfall will help in improving soil moisture and the planting of rabi crops in eastern and central India. In northern states, including Haryana, Punjab, and Uttar Pradesh, irrigation facilities are better. We expect high planting and higher production of crops such as wheat, mustard, and potatoes. There are some concerns relating to the south across Andhra Pradesh, Telangana, and Tamil Nadu due to less rains. But we are hopeful the industry will be able

to cover its kharif losses in winter. **There is some concern relating to the improper use of pesticides resulting in chemical residues in fruits and vegetables. How will you respond?**

The concern is primarily related to products which are three to four decades old. New and emerging chemistry is safe and dosage is lower. While some chemicals are under review, some others have been banned by the central government. But you cannot do away with crop protection chemicals—for example, to protect against fungal diseases in rice. We are working to develop newer and safer products. In some cases, the situation is

How dependent are you on raw material imports from China?

We are focusing on self-reliance and reducing dependence on

China, which is 60-70% (of raw material requirements). We want to lower it to 30% or so. We are raising funds to expand our manufacturing capacity and aligning it with the Make-in-India initiative. Our other focus is to expand the international

footprint—we have opened an office in Brazil, which is the largest agrochemicals market globally, and plan to expand to other Latin American countries over the next five years.

Today, use of pesticides in India is very low when compared with China, Brazil and the United States.

Bhavesh Shah
MD, GSP CROP SCIENCE
PVT. LTD

 INTERVIEW

GROW RABI PULSES

For Sustainable Agriculture



CROPTALK

Pulses are the most affordable source of protein. There is a dire need to increase the area and yield of pulses to ensure nutritional security in the country. Rice-wheat cropping system causes deterioration in soil health in terms of micronutrients deficiency and an alarming fall in the ground water table, which lead to ecological disaster. Therefore, rice-wheat cropping system needs to be broken by including pulses in the cereal-based crop rotations. It is urgently required to increase productivity of pulses by adopting the following recommended package of practices:

Improved varieties: Selection of improved variety according to the area is very important to realize the yield potential of the variety. The varieties of desi gram recommended under Punjab conditions are PBG 10, PBG 8, PBG 7, PBG 5, GPF 2 and PDG 4 and of kabuli gram is L 552. PBG 10 and PBG 7 are recommended for sowing under irrigated conditions in the entire state of Punjab. PBG 5 is recommended for sowing under irrigated conditions in humid areas of the state.

Sowing time: Early or delay in sowing from its recommended sowing time causes reduction in grain yield. The optimum sowing time for desi and kabuli gram under irri-

gated conditions is from October 25 to November 10. However, under rainfed conditions, the optimum sowing time of desi gram is from October 10 to October 25.

Method of sowing: The optimum seed rate for desi gram variety PBG 10 is 30 kg, PBG 5 is 24 kg & other varieties is 15-18 kg and for kabuli gram variety LL 552 is 37 kg per acre. Under late sown conditions, for all desi gram varieties except PBG 5, increase the seed rate of desi gram to 27 kg per acre in the second fortnight of November and to 36 kg per acre in case sowing is done in the first fortnight of December.

Rhizobium inoculation: Biofertilizers (Rhizobium) inoculation increases the yield in gram and lentil. Rhizobium inoculation helps in fixing atmospheric nitrogen which not only meets most of the nitrogen requirement of pulse crops to a great extent but also benefits the succeeding crop.

Fertilizer application: Apply fertilizers on the basis of soil test report. Apply 13 kg urea in gram and 11 kg in lentil per acre for its initial growth. Apply 50 kg single superphosphate per acre to desi gram and 100 kg single superphosphate per acre to kabuli gram and lentil. For obtaining higher yield, in addition to the recommended dose of fertilizers, spray 2% urea (3 kg urea in 150 litres of water per acre) at 90 and 110 days after sowing.

Weed control: During rabi

season initial growth of pulses is very slow and, therefore, these crops often suffer from severe weed competition. In gram and lentil one or two hand weedings at 30 and 60 days after sowing are required to keep weeds under check.

Irrigation: In gram, apply heavy pre-sowing irrigation where irrigation facilities are available to ensure deep rooting. Afterwards, give one irrigation between mid-December and end-January depending upon the date of sowing and the rainfall.

Harvesting: Harvest the crop when the pods mature and the plants dry up. Harvest the crop with sickle without uprooting the plants. Lentil plants should not be allowed to over ripe as large quantity of produce may be lost due to shattering.

(By Guriqbal Singh and Harpreet Kaur Virk, Department of Plant Breeding and Genetics, PAU)

AGRIWEATHER



The Chandigarh regional centre of the India Meteorological Department (IMD) has forecast rainfall at many places Punjab and Haryana on Monday and isolated rainfall in both the states on Tuesday. Met department has forecast dry weather in both the states from October 18 to 21. There is no adverse weather warning for both states.

Need to create more jobs in farm sector: Ramesh Chand

Gireesh Chandra Prasad

gireesh.p@livemint.com

NEW DELHI

Increasing use of labour-saving technologies such as robotics and artificial intelligence in manufacturing warrants creation of more jobs in agriculture and allied sectors, where new opportunities are emerging, according to NITI Aayog member Ramesh Chand.

The idea of labour transition from agriculture to industry was envisaged in the model of economic growth pioneered by British economist Arthur Lewis but the emerging opportunities for job creation in the evolving agriculture sector needs to be explored given that manufacturing is becoming less labour-intensive with adoption of technology, Chand said in an interview.

“That (transition of labour from farm sector to industry) was the earlier model of Arthur Lewis. Now industry is not labour-intensive. It is capital- and knowledge-intensive. So we have to rethink a model, about how we make agricul-



Ramesh Chand, NITI Aayog member.

HT

ture more effective,” said Chand.

Successive governments have been trying to step up the share of manufacturing in India’s gross domestic product in order to accelerate economic growth and job creation.

The share of manufacturing in GDP is at around 15% now, compared to a goal of 25%.

The latest major initiative in this regard is the production linked incentive scheme, which has attracted interest from global companies.

The government has also been reworking the customs duty structure so that global companies are encouraged to manufacture in India to meet both local and global demand. However, extensive use of technology and automation makes the sector more capital-intensive and less labour-intensive.

Chand’s suggestion to review the growth model with special attention to the farm sector comes in the context of emerging opportunities like e-commerce in agriculture that offers greater reach for farm produce, use of crop residue and other bio-based products for generating alternative sources of energy and building materials and the emphasis the government is laying on a ‘circular economy’ to reduce the carbon footprint.

The government is also encouraging farmer producer organisations to join its Open Network Digital Commerce (ONDC) platform to enhance their market access.

“Agriculture has to play a critical role in making India a *vikasit bharat* (developed country),” said Chand.

Keep water at the centre

Minimising climate risk in agriculture will require rewarding farmers to switch from irrigation-heavy crops like paddy and sugarcane to less water-intensive crops like millets, pulses and oilseeds



FROM PLATE TO PLOUGH

BY ASHOK GULATI

OCTOBER 16 IS observed as World Food Day to mark the founding of the United Nations Food and Agriculture Organisation (FAO) in 1945. Its main purpose was to ensure food and nutrition security around the world in the aftermath of World War II. How far the world has moved to achieve this goal is an open question. While there is ample food being produced on this planet that can easily feed eight billion people, its access is quite skewed across nations.

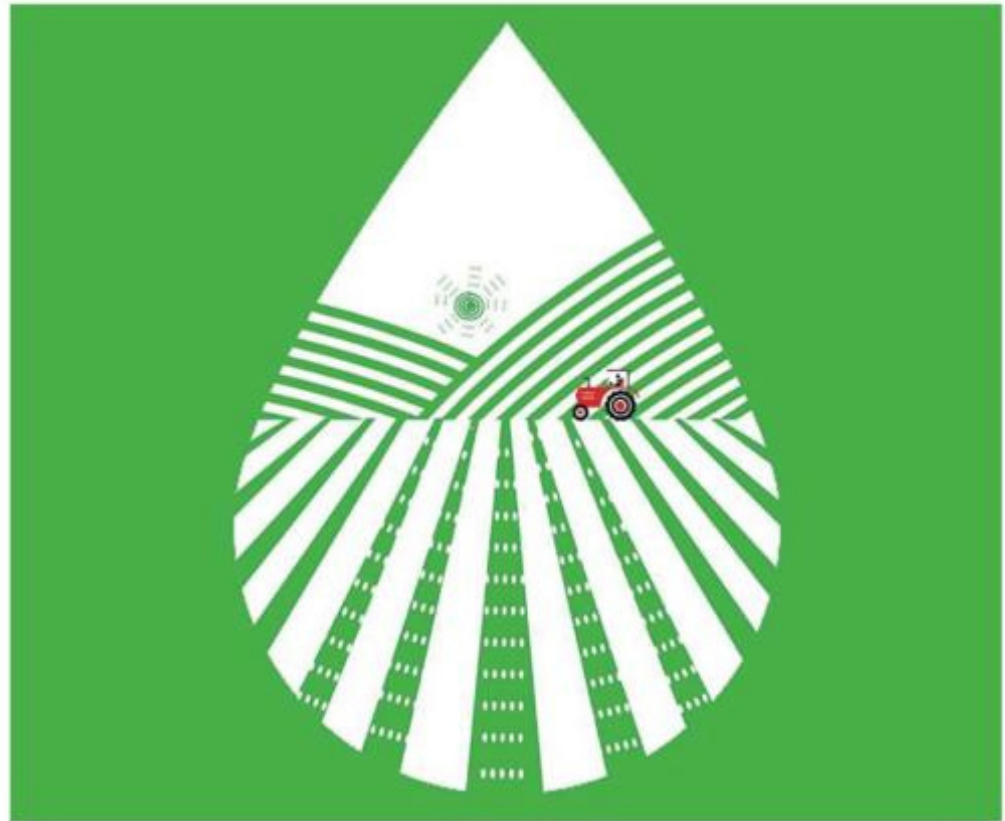
This year's theme for the World Food Day is "Water is Life. Water is Food". In this context, it would be good to review how far India has progressed in achieving food security, and how it is using its water resources in agriculture.

First on the food security front. Having been through a journey of "ship to mouth" in mid 1960s, India has come a long way. Only in the last three years, 2020-21 to 2022-23, India exported 85 million tonnes (MT) of cereals, mainly rice, wheat and corn. This it did even after giving free food (rice or wheat) to more than 800 million people under the PM Garib Kalyan Yojana. This is a stupendous achievement. India has also made major strides in milk production which has shot up from 17 MT in 1951 to 222 MT in 2022-23. The country is the largest producer of milk by far. Since 2000-01, poultry and fishery production has been growing at a fast rate. So, from the green and white revolution, India has also now ushered in a pink (poultry) and blue (fishery) revolution.

However, access to sufficient nutritious food remains a challenge for many. According to the latest National Family Health Survey, almost 16.6 per cent of India's population is malnourished (2020-22), 35 per cent of its children below the age of five years are stunted (low height-for-age) and 32 per cent are underweight (low weight-for-age). Progress on this front has been rather slow, and in a business-as-usual environment, India will not be able to achieve its Sustainable Development Goal (SDG) of zero hunger (including malnutrition) by 2030.

Now, how is India using its water resources in agriculture? It is important to note that while India is home to almost 18 per cent of the world's population, it has only 4 per cent of global freshwater resources. Much of this water is used in agriculture. While FAO puts this figure at 90 per cent, the Indian Central Water Commission says it is 78 per cent. With rising population, and rising incomes, there will be a need to produce not only more food but also save water for drinking purposes as also for manufacturing and growing urbanisation.

Thus, India needs to adopt a two-pronged strategy with respect to water in agriculture. First, on the supply side, it must augment buffer stocking of water during



C R Sasikumar

the monsoon season in its reservoirs, and recharge groundwater through check dams and watersheds, etc. Second, it must work on the demand side to ensure more rational allocation and efficient use of water across crops. This calls for not only institutional reforms in the Indian irrigation sector but also in the pricing of water and power for irrigation. While almost half of India's gross cropped area is irrigated today, we need to take it to at least 75 per cent if we have to cope with weather vagaries associated with climate change. This would require massive investments. India has not succeeded in attracting private sector investments in reservoirs and canal networks as water is almost free. The government does not have enough funds to invest in this, after doling out large food and fertiliser subsidies costing more than Rs 4 lakh crore. The state governments do not have the political will to charge for power that is used for groundwater irrigation. Under such a scenario, Indian agriculture remains a risky venture in the wake of climate change.

If we have to minimise this climate risk, we need a paradigm shift in our thinking. First and foremost, we need to shift focus from land productivity to water productivity. For example, we need not look at say so much tonne/hectare, but of kg of grain per cubic metre of irrigation water. Once we start looking at productivity from a water angle, we can identify the inefficiencies in the allocation and use of water in agriculture. In one of our studies at ICRIER on water productivity of 10 major crops, across all the major districts in which they are grown,

We need to shift focus from land productivity to water productivity. For example, we need not look at say so much tonne/hectare, but kg of grain per cubic metre of irrigation water. Once we start looking at productivity from a water angle, we can identify the inefficiencies in the allocation and use of water in agriculture. In one of our studies at ICRIER on water productivity of 10 major crops, across all the major districts in which they are grown, we found out that while in Punjab land productivity of rice is one of the highest, its irrigation water productivity is the lowest. That means that Punjab is one of the most inefficient growers of rice in terms of water used.

we found out that while in Punjab land productivity of rice is one of the highest, its irrigation water productivity is the lowest. That means that Punjab is one of the most inefficient growers of rice in terms of water used. On top of this, Punjab also emits the highest levels of carbon emissions (CO₂eq), almost 5 tonnes/ha of paddy cultivation.

All this calls for a revamping of policies, farm practices, and products, keeping water at the centre of agriculture. Can one reward farmers for switching from water-guzzling crops like paddy and sugarcane to less water-intensive crops like millets, pulses and oilseeds? Talk of green water credits! In our research on Punjab, we have found the subsidy from power and fertilisers in paddy cultivation amounts to roughly Rs 30,000/ha. Can this amount be given to farmers in Punjab who are willing to switch from paddy to pulses, oilseeds, and millets? This will create a level playing field across crops and would be good for the environment as well as nutrition. Above all, it will save Punjab from water disaster as roughly 78 per cent of its blocks are over-exploiting groundwater.

Farming practices such as direct seeded rice (DSR) and alternate wet and dry (AWD) irrigation, or zero till, etc., can also be rewarded as they will save water. And also drip irrigation, especially in sugarcane, which can save half the water. The bottom line is that unless we use water efficiently, ensuring sustainable food security is difficult.

Gulati is Distinguished Professor at ICRIER. Views are personal

The profit paradox

The volatility in food commodities prices in last few years have coincided with global food traders reporting record profits, necessitating the need for monitoring the global food system



RICHARD MAHAPATRA

Massive profiteering by global food traders poses an existential threat not only to producers but also to consumers

A farmer not turning a profit doesn't make news. That is why when tomato prices reached an all-time high in India, there were headlines about a few farmers earning their lifetime profits from an agricultural product. Soon after, the price plummeted and farmers were seen dumping hundreds of tonnes of tomatoes in the streets.

In this period of high volatility in food prices, one often wonders who makes the profit or who bears the loss. During the period of high tomato rates, most farmers did not earn enough to be taken note of. But consumers paid heavily for the commodity. The question is: Where did the profits go?

This question becomes a multi-billion dollar one when one considers the global agri-economy.

Several reports have found that since 2014, climatic events have made crop production uncertain and resulted in periods of high food inflation, implying that markets have become highly volatile. While farmers suffer losses in such situations, the question is whether those involved in agriculture businesses face losses as well.

The United Nations *Trade and Development Report 2023* has answered this question. The report revealed the massive profit made by global food traders from this situa-



Indian farmers suffer losses during price crashes but rarely make profits when the prices shoot up

tion, which poses an existential threat not only to producers but also to consumers — high food inflation has left millions food insecure.

The volatility in the prices of food commodities in the last few years have coincided with global food traders reporting record profits, the analysis in the report found.

According to the report, the four companies that control nearly 70 per cent of the global food market — also called ABCD, representing the initials of the four biggest commodity traders — Archer Daniels Midland, Bunge, Cargill and Louis

Dreyfus Company — share recorded highest ever profits in 2021-2022.

The report has quoted data from a study by non-profit Oxfam that said, "18 food and beverage corporations made on average about USD 14 billion a year in windfall profits in 2021 and 2022." To make sense of this, the corporations' profit was more than double of the funding gap for delivering life-saving food assistance in East Africa. Similarly, profiteering accounted for 20 per cent of food inflation in Europe.

The UN's latest report has attributed this "profiteering"

by a few corporations to "systemic crises" that have gripped the world food system. "Growing cross-sectoral control over the food system by major agri-corporations raises the risk that extreme food price swings will become the norm," said the report.

"Through decades of mergers and acquisitions, such firms have been able to expand their influence up and down the supply chain, while amassing huge amounts of market data," the report added.

These companies are now financiers, trade influencers, and price setters for agri-

cultural commodities, to the point where they assist governments in hedging volatility in commodity markets. In one sense, they are the absolute rulers of agribusiness, seeking only to profit from crisis situations.

Since the Russia-Ukraine war, global food prices have spiked to record levels. The latest report attributes the spike to a significant level without the systemic profiteering by the big agri-corporations.

"...ABCD-type companies have come to occupy a privileged position in terms of setting prices, accessing funding, and participating directly in the financial markets. This not only enables speculative trades in organised market platforms, but a growing volume of transactions between individuals, or over-the-counter trades, over which most governments in the advanced countries have no authority or control," said the report.

The report quoted a reply from a former senior economist with the Food and Agriculture Organization to the question of who monitors the food system: "Nobody".

With over 100 million more people becoming food insecure due to price rises, it is time to put somebody in charge of monitoring the global food system, which has come under scrutiny like never before. **DIE**

Views expressed are personal

'Women cementing their place in agriculture'

Offering women better access to education and technology can help mitigate climate change challenges; ensuring gender equity key to achieving sustainable development goals, says scientist

The Hindu Bureau
Kochi

From a central role in seed conservation and quality seed production to carbon farming, women are formalising and cementing their place in agriculture, according to speakers at the 16th Agricultural Science Congress here. Their increasing enrolment for formal agricultural education, especially in agricultural universities, is an indication of the shape of things to come.

V. Geethalakshmi, Vice-Chancellor of Tamil Nadu Agricultural University,

said that more than 70% of students in the university were women. The trend has been visible for around five years now, she said on the sidelines of the congress.

Dr. Geethalakshmi, who made a presentation on 'Empowering youth and women for entrepreneurship-driven economic development', said greater participation in education provided better opportunities for women by raising the overall level of human capital and labour productivity. The gap between girls and boys in higher educational institutions

was narrowing as 49% of students in colleges are now girls. She also said women-owned enterprises had grown in recent years.

According to her, women bring with them a different perspective and set of skills, which are needed to create a more diverse and innovative business environment. Malavika Daddani, former Joint Director (Research), ICAR-Indian Agricultural Research Institute, said achieving gender equity was integral to achieving sustainable development goals.

Equipping women by providing them better ac-

cess to education and technology can help mitigate climate change challenges.

Agricultural scientist Neeru Bhooshan made a presentation on 'Agri start-up ecosystem to empower youth and women'. Swati Nayak, International Rice Research Institute (IRRI), who made a presentation on empowering farm women through the seed system, said women farmers formed an integral part of agriculture, had sound knowledge of rice production, and showed the ability to learn and excel in groups through strong community bonding.

'Use new techniques to enhance agri production'

Sudha.Nambudiri@timesgroup.com

chi: Employing new breeding techniques like gene editing for improvement of yield, quality and nutritional quality should be the way forward for enhancing agricultural production in the country, stressed experts while speaking at the various sessions related to frontier science and emerging genetic technologies' at the 16th National Agricultural Science Congress in Kochi on Wednesday.

16TH AGRICULTURE SCIENCE CONGRESS

"Even though genomics-assisted products have been developed and released in various crops, the pace of adoption is slow due to limitations with respect to infrastructure, trained manpower, funding and logistics," said Indian Institute of Rice Research Director R M Sundaram, while delivering a presentation on reshaping the rice genome meet emerging challenges.

"Despite the significant progress in total grain production, particularly rice production in the recent years, stagnating productivity (at 2.8 tonnes/ha) is a major area of concern in rice. One of the principal reasons for low productivity of rice in the country is

that most of the rice growing area is under adverse ecologies such as hills, saline soils, rainfed areas, acid soils, etc. Therefore, genome engineering of rice needs to be focused," he said.

He said the emerging challenges of climate change, changing pest and disease scenario, grain quality and nutrition enhancement, and development of fertilizer use efficient cultivars, etc., require a roadmap and strategies for exploitation of the enormous genomics information.

"We have not increased our investment in research in public institutions to further our genomic research. The controversy over failure of BT-cotton is a case of not making the correct narrative. "The production of BT-cotton is still high, though there has been a small dip in the rainfed areas. If we had promoted BT varieties instead of BT-hybrid, it would have been a different story," said Tata Institute of Social Sciences social scientist R Ramakumar.

Speaking to TOI, Ramkumar said Kerala will have to address the issue of crop production. "The state will have to aggregate the production. This could be done through its cooperative network. It will have to develop the food processing sector," he said.

‘Scientists should strive to infuse more mechanisation in agriculture’

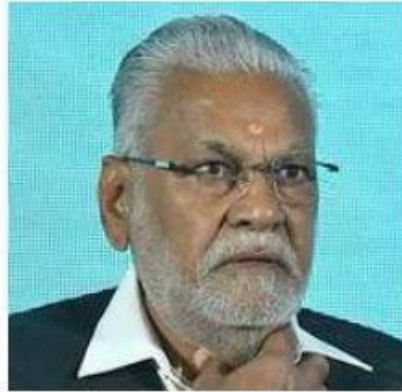
Our Bureau
Kochi

In view of the increasing demand for food, environmental degradation and challenges posed by climate change, there is an urgent need to transform agri-food systems into sustainable enterprises through scientific innovations, said Union Minister of Fisheries, Animal Husbandry and Dairying Parshottam Rupala.

He was speaking after inaugurating the 16th Agricultural Science Congress (ASC) here on Tuesday.

Rupala said agricultural scientists should strive to infuse greater mechanisation in the agriculture production process, and develop and popularise specialised farm implements for women in agriculture.

The Minister made the observation, during the *Sagar*



Union Minister for Fisheries, Animal Husbandry and Dairying Parshottam Rupala at the 3-day Agricultural Science Congress 2023 and Expo, at Le Meridien, Kochi THULASI KAKKAT

Parkirama, drive that marine and inland water pollution has seriously affected aquatic life and coastal ecology. He exhorted scientists to find lasting and sustainable solutions to address this perilous threat.

The Minister inaugurated the Agri Expo being held on the sidelines of the event

which showcases innovative agricultural technologies of public and private sector research institutes, universities, agro-industries, extension agencies and NGOs.

GENOMICS RESEARCH

Himanshu Pathak, Secretary to the Department of Agricultural Research and Education (DARE) and Director General of the Indian Council of Agricultural Research (ICAR), said India's foodgrain demand will rise to 340-355 tonnes by 2033.

Kerala Agriculture Minister P Prasad stressed on ensuring food and nutritional security for all the citizen of the country, while maintaining the health of the ecosystem and environment intact. He was emphatic that the '*Poshaka Samrudhi*' scheme recently launched by the Kerala government will contribute towards this goal.

Minister for promotion of organic agriculture

Address:

207, Prakash Deep Building, 7 Tolstoy Marg, New Delhi-
110001

Contact Us: 011-43065365 | Email Us: info@acfiindia.com
Visit Us: www.acfiindia.com

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