

ACFI NEWSLETTER

DECEMBER 2022

Need to make agri credit system equitable

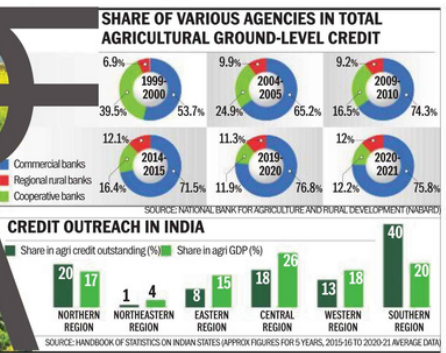
The agency-wise share indicates that agricultural credit dispensation in the country is heavily dependent on commercial banks and points towards the poor credit delivery capability of cooperative banks and regional rural banks. A study by NABARD shows that medium and large farmers, who account for barely 14% of the total number of farmers, are getting 48% of the total agricultural credit, while small and marginal farmers—86% of the farming community—are receiving 52% of the credit disbursal in the agriculture sector.

BISHWA BHASKAR CHOUDHARY

THE availability of finance is a key driver of progress in any sector. In the case of agriculture, access to adequate credit assumes vital significance since most of the agriculturists are small or marginal farmers. It has been argued that credit provides control over resources and facilitates liquidity to the farmers. A defining feature of agricultural credit is that it is an indirect input that enables the farmer to redirect agricultural activities and adopt modern production technologies, which have a bearing on what happens on his farm and, ultimately, on his income and livelihood. This criticality of agricultural credit lends it a power that no other indirect input has commanded. The provision of institutional credit has always occupied a central place in planned development of India.

The agricultural credit delivery system in the country is characterised by the coexistence of informal and formal sources of credit supply. The informal sources mainly include commission agents, traders, private money-lenders, etc. Before the beginning of the planning era in India, almost all credit requirements of agriculture were met by ubiquitous informal sources. Since Independence, interventions have been made by the Government of India for unconstrained credit expansion through institutional sources to protect the farmer's interest and spur impel agricultural growth.

It is heartening to note that the flow of institutional credit to agriculture grew by around 13% in the last decade and banks have been overachieving the long-term credit targets since 2016-17. Among the three credit-purvey-



ing agencies — commercial banks, cooperative banks and regional rural banks (RRBs) — commercial banks enhanced their agri-credit growth at a faster pace since 2004-05 and increased their share from 53.7% in 1999-2000 to 75.8% in 2020-21. RRBs accounted for a share of 12.1% in 2020-21, which is an improvement on their share of 6.9% in 1999-2000. The agency-wise share indicates that agricultural credit dispensation in the country is heavily dependent on commercial banks and points towards the poor credit delivery capability of cooperative banks and RRBs.

A recent study by National Bank for Agriculture and Rural Development (NABARD) shows that medium and large farmers, who are barely 14% of the total number of farmers, are getting 48% of the total agricultural credit, while small and marginal farmers—86% of the farming community—are getting 52% of the credit disbursal in the agri-

culture sector. The main reason for the low credit disbursal to small and marginal farmers is the worrying share of RRBs and cooperatives in total credit disbursal. The majority of the total loan disbursed by RRBs and cooperatives (66% and 70%, respectively, in 2019-20) went to small and marginal farmers, while only 47% of the total loan of commercial banks went to these farmers.

Inclusiveness in terms of regional distribution of credit should be another policy concern. Notably, the five states of southern region together account for almost 40% of the amount disbursed by scheduled commercial banks (SCBs). The next largest share in terms of amount is cornered by the northern region and is almost half of the southern one. Surprisingly, the central region, despite contributing 26% share to the agricultural GDP, receives lower outstanding amount than the southern and northern

regions. Similarly, the eastern region's share in credit outreach is quite low compared to its contribution to the agricultural GDP. Some studies claim that the higher share of the southern region may be because of better infrastructure facilities, better outreach and credit delivery outlets. But, it is important to note that the central region ranks second in terms of rural and semi-urban branches of SCBs (21.5%), just after southern India (27.74%). Moreover, these institutional outlets in the eastern region are higher (17.99%) than that in the northern region (16.62%). Therefore, the skewed distribution of agricultural credit across regions calls for policy-based redress.

The policy stakeholders might be aware of these regional distortions, but a more practical approach is needed. The Internal Working Group (IWG) report-2019 of the RBI reveals that the demand for rural credit, including agricultural cred-

it, in the states falling under central, eastern and northeastern regions is low. Therefore, concerted efforts are warranted to deepen the credit absorption capacity in these states. The Rural Infrastructure Development Fund (RIDF) of NABARD, which is mainly used for rural projects such as irrigation, connectivity, health and sanitation has the potential to create necessary credit absorption capacity in rural areas. But, as per the IWG report, allocation to the RIDF has been declining over the years, from 61 per cent in 2008-09 to 18 per cent in 2019-20. Considering its significance in stimulating rural credit demand, there is a need to increase the share of RIDF allocation.

Revisiting the uniform norm of the current priority sector lending (PSL) — 8% credit to small and marginal farmers under the 18% overall target of agricultural credit — is widely recommended by policy experts. Dr HK Bhanuwal, former Chairman,

NABARD, has opined that PSL targets should be fixed on the basis of regional realities. As small and marginal holdings constitute 95%, 82% and 86% of the total operational holdings in the eastern, north-eastern and central regions, respectively, therefore the PSL targets should be of a higher order for these regions.

Digitisation of land records, which is underway in most states, needs to be completed in the mission mode particularly in underserved regions. This can provide the much-needed reform at the bank branch-level for credit expansion at the click of a button. Digitisation of land records will also be of great help in checking over-financing on the same land and thus pave the way to bring vibrancy in developing a land lease market.

The author is a scientist at ICAR-Indian Grassland and Fodder Research Institute, Jhansi. Views are personal.

Centre works on largest global grain storage plan, proposes to merge schemes

FROM PAGE 1

people for the ministries of agriculture and farmers welfare, consumer affairs, food and public distribution; food processing on 29 November remained unanswered till press time.

India's centrally held cereal stocks, which supply subsidized grains to nearly 800 million people, slipped to a five-year low this year, Food Corporation of India (FCI) data showed.

FCI, a statutory body under the ministry of consumer affairs, food and public distribution, is responsible for the storage of grains to help meet the requirements of the public distribution system and other welfare schemes undertaken by the government of India,

such as the PM Garib Kalyan Anna Yojana.

The storage capacity for central pool stocks in the past five years varied from 75 million tonnes (mt) to 85 mt, according to FCI.

"We have been lagging behind in terms of stored grains and storage capacity. So now, the government is trying to ramp up. The most important thing in the storage plan will be to see if it's going to modern storage or if the old system will be followed, where each man carries a sack and builds a storage pyramid. A mechanized system is far more transparent and much more modern. We don't even have 2 million tonnes of storage in silos. The storage plan has been in the works for a long time, and it's only now the government is trying



On 1 October, India's wheat stocks stood at 22.7 mt and rice stocks were at 20.47 mt, FCI data showed.

to implement it," said Ashok Gulati, agricultural economist and former chairman of the Commission for Agricultural Costs and Prices.

To meet any contingency situation such as drought, a strategic reserve of 2 mt of rice and 3 mt of wheat is maintained at the national level at different

FCI godowns, out of the food-grain procured at the minimum support price, the ministry had said in a written reply to a parliamentary question in September 2020.

While India has made gains over the past decade, it is still ranked 88th in a food security index of 113 nations published

by the Economist Impact and Corteva Inc.

On 1 October, India's wheat stocks stood at 22.7 mt and rice stocks were at 20.47 mt, FCI data showed.

"It is a good idea to merge the schemes under which a grant is provided by the government of India for the creation of storage capacity through traditional warehouses, silos and cold storages. However, it must be noted that the state governments also contribute to most of the centrally sponsored schemes to the extent of 40%. The real benefit of such storage will come only if there is compulsory registration of warehouses with the Warehousing Development and Regulatory Authority," said Siraj Hussain, a former agriculture secretary.

According to a World Bank

report, Russia's invasion of Ukraine is expected to deepen poverty further and worsen food insecurity in low-income countries. Food consumption in these countries accounts for over 45% of total household

expenditure, and diets remain heavily based on staple foods, including wheat, the report said.

"All low-income countries are food-deficit and reliant on imported foods with imports of wheat from Russia and Ukraine. Disruptions to wheat imports from Russia and Ukraine, along with surging global food prices, are, therefore, expected to exert a strong drag on low-income

countries' growth and stall progress in poverty reduction, particularly in those economies where large shares of the population are already experiencing food insecurity (such as Democratic Republic of Congo, Ethiopia, Madagascar, Mozambique, South Sudan)," the report added.

At the Group of 20 Summit in Bali, Prime Minister Narendra Modi cautioned that the current shortage of fertilizers could lead to a huge crisis and that today's fertilizer shortage is tomorrow's food crisis, for which the world will not have a solution.

"We should build mutual agreement to maintain the sup-

ply chain of both manure and food grains stable and assured. In India, for sustainable food security, we are promoting natural farming and re-popularizing nutritious and traditional food-grain like millets," Modi said.

On the day India assumed G20 Presidency, Modi, in a blog post, also wrote about depoliticizing the global supply of food, fertilizers and medical products.

"For promoting harmony within the human family, we will seek to depoliticize the global supply of food, fertilizers and medical products so that geopolitical tensions do not lead to humanitarian crises. As in our own families, those whose needs are the greatest must always be our first concern," Modi said in the 1 December post.

Poor soil management will erode food security

Healthy soils are essential for our survival. They support healthy plant growth to enhance both our nutrition and water percolation to maintain groundwater levels. Soils help to regulate the planet's climate by storing carbon and are the second largest carbon sink after the oceans. They help maintain a landscape that is more resilient to the impacts of droughts and floods. As soil is the basis of food systems, it is no surprise that soil health is critical for healthy food production.

World Soil Day (WSD) 2022, annually observed on December 5, aligns with this. WSD 2022, with its guiding theme, 'Soils: Where food begins', is a means to raise awareness on the importance of maintaining healthy soils, ecosystems and human well-being by addressing the growing challenges in soil management, encouraging societies to improve soil health, and advocating the sustainable management of soil.

Degradation and its consequences

Today, nutrient loss and pollution significantly threaten soils, and thereby undermine nutrition and food security globally. The main drivers contributing to soil degradation are industrial activities, mining, waste treatment, agriculture, fossil fuel extraction and processing and transport emissions. The reasons behind soil nutrient loss range from soil erosion, runoff, leaching and the burning of crop residues. Soil degradation in some form or another affects around 29% of India's total land area. This in turn threatens agricultural productivity, in-situ biodiversity conservation, water quality and the socio-economic well-being of land dependent communities.

Nearly 3.7 million hectares suffer from nutrient



Konda Reddy Chavva

is Officer-in-Charge, Food and Agriculture Organization of the United Nations (FAO) Representation in India

Soil degradation can have irreparable consequences on human and ecosystem

wastewater are also polluting soils. Impacts of soil degradation are far reaching and can have irreparable consequences on human and ecosystem health.

India's conservation strategy

The Government of India is implementing a five-pronged strategy for soil conservation. This includes making soil chemical-free, saving soil biodiversity, enhancing SOM, maintaining soil moisture, mitigating soil degradation and preventing soil erosion. Earlier, farmers lacked information relating to soil type, soil deficiency and soil moisture content. To address these issues, the Government of India launched the Soil Health Card (SHC) scheme in 2015. The SHC is used to assess the current status of soil health, and when used over time, to determine changes in soil health. The SHC displays soil health indicators and associated descriptive terms, which guide farmers to make necessary soil amendments.

Other pertinent initiatives include the Pradhan Mantri Krishi Sinchayee Yojana, to prevent soil erosion, regeneration of natural vegetation, rainwater harvesting and recharging of the groundwater table.

In addition, the National Mission for Sustainable Agriculture (NMSA) has schemes promoting traditional indigenous practices such as organic farming and natural farming, thereby reducing dependency on chemicals and other agri-inputs, and decreasing the monetary burden on smallholder farmers.

The Food and Agriculture Organization of the United Nations (FAO) undertakes multiple activities to support the Government of India's efforts in soil conservation towards fostering

Farmers' Welfare (MoA&FW) to develop forecasting tools using data analytics that will aid vulnerable farmers in making informed decisions on crop choices, particularly in rainfed areas.

Working with target States

The FAO, in association with the Ministry of Rural Development, supports the Deen Dayal Antyodaya Yojana-National Rural Livelihoods Mission's (DAY-NRLM) Community Resource Persons to increase their capacities towards supporting on-farm livelihoods for the adoption of sustainable and resilient practices, organic certification and agri-nutri-gardens. The FAO works in eight target States, namely, Madhya Pradesh, Mizoram, Odisha, Rajasthan, Uttarakhand, Chhattisgarh, Haryana and Punjab, for boosting crop diversification and landscape-level planning. In Andhra Pradesh, the FAO is partnering with the State government and the Indian Council of Agricultural Research (ICAR) to support farmers in sustainable transitions to agro-ecological approaches and organic farming.

There is a need to strengthen communication channels between academia, policymakers and society for the identification, management and restoration of degraded soils, as well as in the adoption of anticipatory measures. These will facilitate the dissemination of timely and evidence-based information to all relevant stakeholders. Greater cooperation and partnerships are central to ensure the availability of knowledge, sharing of successful practices, and universal access to clean and sustainable technologies, leaving no one behind. As consumers and citizens, we can contribute by planting trees to protect topsoil, developing and

New agri policy by March 31, says Dhaliwal

HT Correspondent

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CHANDIGARH : With a move to improve agriculture system in the state, the Punjab government will launch new agriculture policy from March 31, 2023.

Giving this information, agriculture minister Kuldeep Singh Dhaliwal said that the new agricultural policy will be prepared keeping in mind the geography of Punjab, soil health, availability of crops and water, for which consultations are being held with renowned agricultural scientists, experts and farmers' organisations.

Dhaliwal, while declaring this during the 'Kisan Goshti' organised by the Punjab State



Kuldeep Singh Dhaliwal.

Farmers and Agricultural Workers Commission on the topic of 'Agricultural Development Model of Punjab - some policy issues', said that due to the irresponsible attitude of the previous governments and due to wrong policies, the pure water of Punjab, clean air and environment, and healthy fer-

tile land are now turning into polluted water, toxic air and infertile land, which needs to be replaced with clean policy and intention.

Announcing the creation of a separate policy for natural farming, the agriculture minister said that due to excessive use of fertilisers, chemicals, weed killers and pesticides in agriculture, people are facing health problems. In order to promote natural farming, it is necessary to work according to its climate. He said that farming is not just restricted to agricultural activities, it is an issue related to life, he added. He emphasised on the need to populate the cooperative system and said that farming should be

done according to the need. The agriculture minister emphasised the need to remove the insecurity in agriculture and said that the state government will move forward with the support of all in the direction of saving agriculture. He said that instead of buying big machines for farming, use small machines. It is necessary, with which the economy of the farmers will also improve. Announcing to hold various conferences keeping Punjab's crops, water and soil and environment at the center, he said that the state government will make every possible effort to strengthen the agricultural sector with the help of agricultural experts, agronomists and experienced people.

Insecticides India to offer new patented tech

Subramani Ra Mancombu
Chennai

Insecticides (India) Ltd, a company listed on the National and Bombay Stock Exchanges, is working on research and development (R&D) as its key focus to bring in new solutions, particularly new patented technologies, for farmers.

"Our agenda is to bring the new patented technologies either by ourselves, through our own centres or through our partners. We have been launching many new products continuously. In the past 6-7 months, we have launched a few products and achieved success in them. Our pipeline is very strong," said Rajesh Aggarwal, Managing Director, Insecticides (India) Limited (IIL).

TACKLING THRIPS

Recently, IIL launched a new

insecticide Shinwa, a patented product, with the Japanese collaboration. The chemical has been found to be good for thrips, bollworms and leaf miners.

"It is doing very well and we expect sales of not less than ₹60-65 crore in the first year itself. Similarly, we have launched a herbicide called Torry and it has given wonderful results. We plan to multiply its sales targeting ₹60-70 crore," said the MD of IIL, one of India's top 10 agrochemicals manufacturers.

The Delhi-based company has launched a new fungicide, a mixture of Nissan and another Japanese firm's products. IIL expects to top ₹30-40 crore in sales from this.

Aggarwal said his company recently introduced a fungicide Stunner for grapes, tomatoes and other such fruits and vegetables. The response to this was also good.



Rajesh Aggarwal, MD, IIL

The Shinwa insecticide can tackle thrips in the chilli crop, cauliflower and brinjal besides pulses. Last year, the chilli crop was affected in Andhra Pradesh and Telangana due to the thrips attack.

"This year too the thrips attack is high. It is very big on chillies. This product is yielding good results. It controls the pest in about three weeks with a single spray," he said.

IIL is closely working with two Japanese companies, in-

cluding Nissan, and an American partner. "With Nissan, we market half a dozen products and the range will grow further as some more are lined up. We have a joint venture with OAT Agrico Ltd of Japan to market some of their products," Aggarwal said.

IIL has filed for a dozen patents through its joint venture with OAT Agrico. "The first product is finalised and we are developing that product not just for India but for the entire world," he said.

REVERSE ENGINEERING

The company's own R&D wing has different teams with one of them working on reverse engineering.

"By doing reverse engineering, we try to make whatever gets off patented in the world and those technologies have either not entered into the country or they have entered and enjoy

a monopoly," the IIL MD said. Torry is one such product to break such a monopoly, while Stunner is another, he said.

"We try to make new formulations because I believe the consumer needs such solutions. We try to make a mixture of 2-3 products and present it to the market. These are actually giving results and the farmers and consumers appreciate those products," Aggarwal said.

IIL is into biological R&D too. It is trying to develop microbes and biological solutions for the market.

The R&D centres, which employ nearly 100 personnel, are responding well to the market demand and "a lot of products are in the pipeline," he said.

While the industry is expected to register high single-digit growth, IIL has witnessed a 30 per cent growth in the first half of the current fiscal, Aggarwal said.

Revamped crop insurance scheme from kharif 2023

AI use for yield estimate, competitive bidding by insurers on the cards

SANDIP DAS
New Delhi, December 1

THE GOVERNMENT IS restructuring the Pradhan Mantri Fasal Bima Yojana (PMFBY) through measures including use of artificial intelligence (AI)-based technologies for timely assessment of crop yield data for prompt claims settlement and introduction of competitive bidding for premium quotes from insurers.

Sources told FE that while the contours of changes in the PMFBY are still being worked out by the agriculture and finance ministries prior to the preparation of a Cabinet note, it is likely that the revised scheme would be launched from the kharif season 2023.

Since 2016, PMFBY premium has increased by more than six-fold, which has led to an increase in subsidy liability of the government. "Because of the lack of competitive bidding, some of the existing insurers are charging higher premiums," an official said.

Sources said that out of 18 general insurance companies, including 13 private firms, shortlisted through a

SHARP DECLINE IN CLAIM TO PREMIUM RATIO

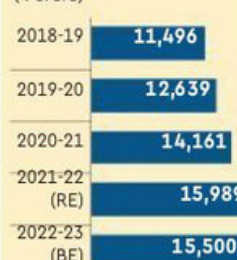
(₹ crore) Gross premium Claims
Claim ratio (%)



Source: Agri ministry, *excluding claims of Assam, **claim calculations not finalised, Data as on October 31, 2022

Budgetary allocation

(₹ crore)



Revised estimate (RE), Budget estimate (BE)

tendering process to implement the crop insurance scheme during 2019-20 - 2022-23 period, only 10 currently remain in the fray. Key insurers including state-run Agriculture Insurance Company, Cholamandalam MS General Insurance Company, HDFC ERGO General Insurance Co and Tata AIG General Insurance Company, are currently implementing the crop insurance scheme.

The claim-premium ratio, which was 98.9% in 2018-19, has declined to 43.1% in 2021-22, although claims for the last fiscal are still being settled. The gross premium collected

has been around ₹30,000 crore since 2018-19. The government is aiming to increase annual gross premium to around ₹40,000 crore.

Under the new model, the insurance companies would have to pay the claims between 60%-130% of the gross premium. If the claims are below 60% of gross premium, the companies would refund the premium amount to the government and claims exceeding 130% of premium the government would compensate the companies.

The official said by adoption of AI-based technologies for crop yield

assessment, delay in settlement of payment of claims would be reduced, which is expected to attract more players into the scheme's implementation.

Some of the technologies that are being introduced to assess crop yield data include weather information and network data systems (winds), yield-estimation systems based on technology and collection of real-time observations (Yes-tech) and photographs of crops (Cropic) for reducing delay in claim settlement. The standard operating procedure for introduction of these technologies would be issued soon.

In a major change in the policy in early 2020, the crop insurance scheme was made optional for the farmers, while earlier farmers who used to avail loans compulsorily had to take crop insurance.

Meanwhile, Punjab, which has not adopted the scheme launched in 2016, is in discussion with the agriculture ministry to launch the scheme from kharif 2023 in the state.

Telangana, Bihar, Jharkhand and Gujarat, which had dropped out of the crop insurance scheme citing the high cost of premium, have initiated discussion with the Centre to roll out the PMFBY by next year. According to an agriculture ministry official, many states opted out of the scheme because of fiscal constraints.

Deepak Fertilisers develops products to improve soil efficiency, step up crops' nutrient absorption

Subramani Ra Mancombu
Chennai

Deepak Fertilisers and Petrochemicals Corporation Ltd (DFPCL) has developed products using nutrient unlock technology (NUT) that improves the efficiency of the soil and enhances the uptake of nutrients by crops.

It will help farmers to minimise wastage and provide balanced nutrients at different stages of crop growth, said Mahesh Girdhar, President-Crop Nutrition Business of DFPCL.

The company has launched products such as Croptek, a crop nutrient solution with essential major and micronutrients, Solutek, a stage-specific product with required nutrients for crops and Bensulf Super-fast, a crop nutrient containing sulphur for crops that "love the chemical", he said.

Croptek Onion, launched

by DFPCL in November last year, has helped improve the height of the crop and its yield by 20 per cent, besides raising its shelf life.

"DFPCL has launched Croptek for sugarcane, maize, cotton and groundnut," he said.

Another unique product the company has come up with is "Smartek" which enhances NPK (nitrogen, phosphorus and potassium) efficiency and specifically provides required nutrients from crops.

The company, listed on BSE and NSE, plans to strengthen its crop nutrient portfolio with fertilizers whose efficiency is enhanced.

DFPCL has developed and launched crop and stage-specific water-soluble products to improve the yield and quality of grapes, tomatoes and pomegranates. Recently, it launched Solutek for pomegranates. It is crop-specific and stage-spe-

cific water-soluble product, he said.



Mahesh Girdhar,
President-Crop Nutrition
Business, DFPCL

DFPCL conducted numerous studies to understand the root cause of poor yield and worked towards providing a comprehensive nutrition solution. "Our journey over the last four years has been strongly driven by value-added solutions," Girdhar said.

DEMAND DESTRUCTION

On the impact of the rise in raw material, he said the impact on the bulk fertiliser segment has been low as the fluctuation in maximum retail price is limited due to subsidy.

"But in the water-soluble fertiliser segment, we are seeing demand destruction as prices have gone up significantly. We are educating farmers on efficient fertiliser products," the DFPCL official said.

The company's approach is "seeing is believing" and therefore, engages with farmers to apprise them about the products' impact on multiple crops across geographies

through demonstrations and various ground activities, he said.

"Over the last few years, we have conducted over 50,000 product demos across geographies and touched the lives of countless farmers. Our digital team continuously engages with farmers through various initiatives such as Facebook live, YouTube and contact centre programme," Girdhar said.

ARM GETS ADB GRANT

On the other hand, the Asian Development Bank (ADB) has granted \$30 million debt assistance and \$0.5 million "Technical Grant for Farm Efficiency initiatives" of the company's wholly-owned subsidiary Smartchem Technologies Limited.

The ADB loan will be used to finance capital expenditure as well as research and development of enhanced-efficiency speciality fertilizers, he said.

Behaviour of pesticides in water

DR. TAPAN KUMAR MATHRA

Water is the main means of transporting pesticides in the environment. Poisonous chemicals may get into open basins with the sewage of enterprises producing pesticides, in the aerial and surface treatment of agricultural lands and forests, with rain water and melted snow, and also upon the direct treatment of open basins to destroy algae, mollusks, vectors of disease-spreading organisms infecting man and animals, and weeds.

Soil and ground water, inland basins, rivers, and the oceans in definite conditions may become the terminal station for pesticides. Consequently, the pollution of basins first of all with persistent pesticides is possible. Residues of organochlorine compounds such as dichlorodiphenyltrichloroethane (DDT), HCH, and toxaphene have been detected in the water of open basins in different countries, but only in rare cases were concentrations reaching a dangerous level noted.

Special studies conducted in the USA in 1966-1968 showed that in 41 per cent of the analysed river water samples, the concentration of pesticides was at the level of 0.001 mg/litre, and in 8 per cent of the samples reached 0.012 mg/litre.

The accumulation of persistent organochlorine insecticides in the ooze of water basins is of great significance. This may lead to secondary pollution of the water when it is boiled. Some insecticides in insignificant concentrations may change the organoleptic properties of water (its odour, taste), have a negative effect on the processes of oxygen formation by phytoplankton, on the vital activities of the inhabitants of the water ecosystems, be transmitted along the food chains, and accumulate in food products.

The influence of pesticides on the inhabitants of water systems may manifest itself both in direct toxic



action (acute or chronic toxicity) and indirectly (diminishing of the content of oxygen dissolved in the water, a change in the chemical composition of the water, extermination of water insects, etc.).

When pesticides pass over from water into other links of the biological chain, their content grows hundreds and thousands of times. Being absorbed by a filtering organism (for example, by one of the species of plankton organisms), persistent poisonous chemicals may be deposited in the tissues and then get into the organism of a fish. In the following links of the food chain, the action of the pesticides, being cumulative, is amplified several times.

For instance, when organochlorine pesticides are washed by rain water sewage into water basins in an amount of 0.0003 mg/litre, they are

found in fish in an amount of 1-7.4 mg/kg, and in crawfish in an amount of 0.5-0.7 mg/kg (Hopkins, 1966).

The ability of toxaphene to accumulate in water-food chains is especially great. For instance, when its concentration in a lake was 0.0002-0.0006 mg/litre, there was found: in water plants 0.2-0.4, in water invertebrates 0.5-1.4, in trout 3.5-5.7, and in salmon 1.8-3.4 mg/kg (Terrier, 1966). The degradation of toxaphene occurs very slowly; for example, during six years its content in the water diminished insignificantly.

It must be noted that the toxicity of pesticides to various species of fish and other water inhabitants varies and may change within very broad limits. As a whole, organochlorine pesticides are the most dangerous, while organophosphorus ones and derivatives of carbamic acid are the least

dangerous. In certain classes of compounds, however, the fluctuations in the toxicity to fish are very noticeable, which is associated with the different mechanism of their action on fish not only for individual classes of compounds, but also for individual pesticides. Special mention must be made of the behaviour in water of herbicides introduced into closed water basins to suppress the development of either higher water plants (submerged, semi-submerged, with floating leaves) or lower algae (phytoplankton and phyto-benthos). It has been established that as the active ingredient dissolves in the water and diffuses over the basin, the herbicides affect all other components of the aqueous ecosystem: the microorganisms, bacterio-, phyto-, and zooplankton, phyto- and zoobenthos, neuston, fish, and amphibians. This influence also

extends to the hydrochemical conditions of the basin (the content of oxygen, carbon dioxide, the pH, carbonate equilibrium, the dynamics of various forms of nitrogen, organic compounds) (L. Braginsky, 1975).

The reactions of the microflora of water basins to herbicides exhibits most clearly the growth in the number of saprophytic microorganisms (in 2-3 weeks after treatment). Some herbicides (diuron, monuron) have a sterilizing action. Changes are observed in the number and functional activity of ammonifiers, nitrifiers, and denitrifiers, which results in the accumulation of ammonia and nitrites in the basin.

Herbicides have the largest action on aqueous animals. While not having a pronounced acute toxicity and not leading to phenomena of visible poisoning, herbicides nevertheless cumu-

late in the organs and tissues of hydrobionts. The most sensitive components of zoo-plankton are the Cladocera suborder, which perish in the third to fifth generation. Animals also perish because of the shortage of oxygen, which is the result of its increased consumption upon the extermination of plants or the decomposition of phytoplankton, and also because of the suppressing of the photosynthesis activity of plants and of their stopping to produce oxygen. The resultant prolonged and sharp deficit of oxygen leads to the death of fish, amphibians, and invertebrates. Violations of metamorphosis are also noted in air and water insects (midges). The embryonic and larval stages of development of fish and invertebrates were found to be especially sensitive to the action of herbicides.

The cycle of nitrogen, carbon, and oxygen in a water basin is violated. As a whole, however, the ecosystem of basins treated one time with herbicides becomes restored quite rapidly (in a few weeks or months) depending on the dose of the herbicide, its formulation, the specific composition of the plants, the biomass that was decomposed, the rate of flow of the water, the physicochemical features of the soil, and other conditions. A comparative appraisal of various formulations of herbicides (wettable powders, suspensions, emulsions, granules) showed the considerable differences in their action on aqueous ecosystems. Treatment of the bottom of unwatered or drained ponds with granulated herbicides or the local introduction of granules in spring at the earliest stages of development of weeds (at 15-16°C) is safer for the environment.

As a rule, many pesticides rapidly decompose in an aqueous medium, and in this connection their use in agriculture for managing pests, diseases, and weeds of agricultural crops does not lead to negative consequences.

(The author is Associate Professor & Former Head, Department of Botany, Ananda Mohan College, Kolkata)

GM mustard: Experts slam ICAR's 'gag order' on staff

PTI

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Bathinda: Environmentalists, agricultural experts and social activists have hit out at the move of stopping serving as well as former officials of the Indian Council for Agricultural Research (ICAR) from expressing any opinion or writing any article about the approval of environmental release of genetically modified (GM) mustard DMH-11.

The activists termed the "gag order" a move to stop reality from reaching the people. They alleged that the authorities were trying to dub the "harsh reality" about GM crops on human health and the environment "myths".

Earlier, in a press release, Department of Agriculture Research and Education secretary and ICAR director-general Himanshu Pathak had explained various issues pertaining to GM mustard approval, including risk assessment of the product.

Pathak also issued orders against presenting opinion or writing articles, different from the stated documentation and decisions made by



The activists and experts alleged that the authorities were trying to dub the 'harsh reality' about genetically modified crops

regulators under the Environment Protection Act (EPA), 1986, on the subject by serving or former officials.

Agriculture policy expert Devinder Sharma, however, said silencing scientific voices against the risky and unwanted GM crops was itself indicative that there was more to hide than reveal. "This is not the way science works. It is time to know what goes on behind regulatory barriers when it comes to GM crops. Science is open to question-

ing. By issuing a gag order, it is clear that the ICAR has a lot to hide. It does not want the lies to be exposed. I am sure even Albert Einstein must be turning in his grave as this is not the science he stood for," said Sharma. "Every claim that the ICAR makes about GM mustard can be challenged. Allowing the propagation of junked GM mustard variety is actually aimed at opening the floodgates for risky and harmful GM foods in the country," he added.



ACFI CELEBRATES THE NATIONAL FARMERS DAY

23 DECEMBER 2022



Parikshit Mundhra
Chairman ACFI
(MD - Willowood Chemicals Ltd)

On this auspicious day, wishing the Farming fraternity a Happy Healthy & Prosperous future ahead!!

We all know that the Indian Agriculture and allied segment has consistently grown and supported the economy during the tough epidemic times. But there are few concerns around agriculture as a whole. Whereas more than 50% of the Indians directly or indirectly depend on agriculture, the segment contributes to only 17% of the GDP. On one side the Indian population is growing, on the other hand, urbanization is happening without any leaps and bounds. Eventually, the land holding is coming down drastically. Fragmented land holdings and associated low farm incomes are pushing many smallholders towards non-farm economic activities.

At this point in time, we need new and affordable technology and a proper strategy to increase farmers' income. The government's initiative for doubling farmers' income has helped a lot, which needs to be taken forward. We also need a strong sustainable and resilient agriculture framework to balance food security and environmental sustainability throughout the country.

While it is required to put efforts towards making the best use of the existing resources, making agriculture sustainable and farmers self-reliant, farmers also need to use quality crop protection chemicals purchased with GST bills and use them judiciously.

In this regard, ACFI is running a farmers' awareness program for good practices for using Crop protection chemicals under the banner 'Jago Kisan Jago'. Through the same, we reiterate our Social commitment to the Agriculture fraternity and Humanity as a whole.

Jago Kisan Jago Farmers' Awareness Campaign



OBJECTIVE

1. To educate the farmers and spread the message that by using right Crop Protection Chemicals their crop yield will increase significantly.
2. To Buy crop protection chemicals with GST Bill.
3. To consult the KVK Scientists, Agriculture officers, Agri Universities professors before buying any product.
4. To use the crop protection chemicals judiciously as per prescribed on the product leaflet.

कीटनाशक रक्षक है सही समय, सही मात्रा, सही तरीका अनिवार्य है।

प्रायोजक:- **ACFI**

किसान साथियों

निवेदन

फसलों में किसी भी प्रकार की निचरी के लिए सापरवाही से कीटनाशक न खरीदें। कीटनाशक खरीदने से पहले कृपया अपने नजदीकी के.वी.के. वैज्ञानिकों, कृषि अधिकारियों या कृषि विश्वविद्यालय के शिक्षकों की सलाह जरूर लें। कीटनाशक खरीदने के बाद GST बिल अवश्य लें।

स्वस्थ फसल, समृद्ध किसान

किसान हित में जारी

JAGO KISAN JAGO CAMPAIGN SUPPORTED BY ACFI MEMBERS

 Atul Ltd.	 Albaugh LLC	 Amish Crop Sciences Pvt. Ltd.	 Astec Lifesciences Ltd.	 BR Agrotech Ltd	 Bayer Cropscience Ltd.	 Biostadt India Ltd.
 Chambal Fertilisers & Chemicals Ltd.	 Crystal Crop Protection Ltd.	 Deepak Nitrite Ltd.	 Dhanuka Agritech Ltd.	 FMC Ltd.	 Gharda Chemicals Ltd.	
 Godrej Agrovet Ltd.	 GSP Crop Science Pvt. Ltd.	 Hikal Ltd.	 Ichiban Crop Science Ltd.	 Indogulf Crop Sciences Ltd.	 Indofil Industries Ltd.	
 Krishi Rasayan Exports Pvt. Ltd.	 Mahindra Summit Agriscience Ltd.	 Mankind Agritech Pvt. Ltd.	 Mahamaya Life Sciences Ltd.	 NACL Industries Ltd.	 NATCO Pharma Ltd.	
 PI Industries Ltd.	 Parijat Industries India P. Ltd.	 Ramides Crop Science P. Ltd.	 Safex Chemicals India Ltd.	 Sinochem India Company P. Ltd.	 Shriram Fertilisers & Chemicals	
 Sumitomo Chemical India Ltd.	 Syngenta India Ltd.	 Tagros Chemicals India Pvt. Ltd.	 Tropical Agrosystem (India) Pvt. Ltd.	 Willowood Chemicals Ltd.		

Make In India Shifting Into Overdrive

Manufacturing has gained momentum as global companies look at India as a viable alternative to traditional low-cost destinations. That offers ample opportunities for investors

Ashutosh Shyam | ET Intelligence Group

India's manufacturing prowess is gradually gaining prominence in the aftermath of the Covid pandemic as global companies expand their supply chains to reduce dependence on China and other low-cost Asian manufacturing hubs. Commonly referred to as China+1, the strategy bodes well for Indian companies in sectors such as chemicals, electronic parts and automotive components. It will be prudent for investors to track companies in these sectors that will benefit over the long term.

Opportunities for Indian manufacturers are emerging due to ageing developed market capacities and improving returns on capital as China's green manufacturing mandate makes it more expensive. According to a recent Morgan Stanley report, India's share of manufacturing in total gross value added (GVA) is expected to increase to 21% by FY22 from 15.6% in FY22.

India is emerging as a viable

alternative in the \$1 trillion global speciality chemicals sector helped by process capabilities, lean cost structures, quality manufacturing assets and a track record of protection of intellectual property (IP) rights in process technologies. Companies such as Aarti Industries, Clean Science and Technology, Deepak Nitrite, Vinati Organics, SRF and Aether Industries may benefit from export and import substitution.

"Indian chemical companies are able to make products where the landed price for customers is lower than China due to process-driven R&D with superior IP," said Aman Desai, executive director at Aether Industries. "That is attracting a lot of global companies to increase their allocation to Indian companies. We have increased demand for several products from our customers who are increasing allocation to India after they have delivery on 4MEP."

Aether Industries commands over 28% market share in 4MEP, a key intermediate used in the production of metoprolol used to treat angina and hypertension. 4MEP was earlier made largely by Japanese and

Chinese companies.

Similarly, Aarti Industries and Atul have gained prominence in the production of benzene derivatives and monochloroacetate, respectively, aided by differential process engineering. These opportunities, which were absent earlier due to predatory pricing by Chinese manufacturers, surfaced under the China+1 framework.

Another speciality chemicals company Clean Science is expanding its presence in hindered amine light stabilisers (HALS) through catalytic reaction with a global market of around \$1 billion. In the agrochemicals segment, Indian companies including Heranba and Bharat Rasayan

have gained a share from Chinese counterparts in pyrethroids.

To take advantage of the emerging scenario in global manufacturing, the government has implemented the production-linked incentive (PLI) scheme worth ₹41,000 crore to attract global contract manufacturers. In the global electronics system and design manufacturing (ESDM) segment, China has a share of 45.5% owing to cost-effectiveness and technological leadership. However, in the post-pandemic era, global electronics companies are looking for alternative manufacturing locations. This is likely to increase India's share in global ESDM from the current 1.8%.

India has among the lowest labour costs and overheads, giving it a considerable advantage over China and most Southeast Asian countries.

An analysis carried out by Invest India and the Electronic Industries Association of India (ELCINA) shows wages in India are 46% cheaper than in China. This augurs well for companies such as Kaynes Technologies, Sryma SGS, Avalon and Amber Enterprises. Revenue of Indian ESDM

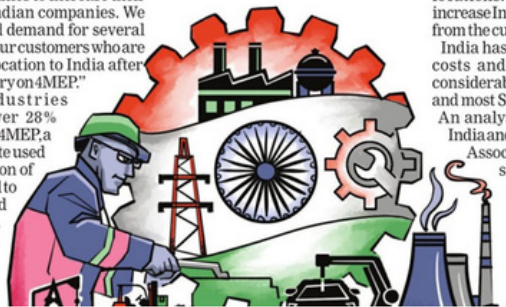
companies has grown 30-40% annually in the past two years.

Kaynes is in the process of increasing capacity by four times in the next two years with a capital expenditure of ₹250 crore. Sryma SGS has a capex plan worth ₹571 crore spread over the next three years. "We are expecting around 50% of the incremental revenue in the long term to be driven by the China+1 strategy," said Ramesh Kannan, managing director of Kaynes. The company supplies glucometers and printed circuit boards used in cars.

Global automakers are also getting into vendor diversification. After losing nearly 8 million units of production — equivalent to two years of India's annual sales — due to Covid-related supply disruptions, global automakers are increasing allocation to Indian suppliers to minimise volume risks.

Vishal Rangwala, CEO of Harsha Engineering, a bearing cage maker, said a major customer has signalled its intent to shift China production to India. "We have seen nearly ₹100-150 crore incremental revenue due to increased allocation to India," Rangwala said.

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Agricultural land reduced by 2.45L hectare in 3 years: Govt

Arunachal, Bihar, Chhattisgarh, Haryana and J&K have recorded a rise in cultivable land

DHIRENDRA KUMAR

NEW DELHI: In a shocking revelation, it has come to notice that 2.45 lakh hectare of agricultural land has been reduced in three years starting from 2016-17 to 2018-19, while it has reduced by 9.61 lakh hectare in six years starting from 2013-14 to 2018-19.

Replying to a question raised by BJP MP Mansukhbhai Vasava, Union Agriculture Minister Narendra Singh Tomar informed Lok Sabha that as per the report on Land Use Statistics for 2018-19 (latest available), cultivable land in the country has reduced to 18.09 crore hectare in 2018-19 from 18.18 crore hectare in 2013-14.

After analyzing the data provided by the minister, most states have registered a decline in agricultural lands, while some states such as Arunachal Pradesh, Bihar, Chhattisgarh, Haryana and Jammu & Kashmir have recorded an increase in the cultivable land in three



years. In Bihar, the agricultural land has increased from 65.72 lakh hectare in 2016-17 to 65.73 lakh hectare in 2018-19, while Chhattisgarh witnessed a rise of cultivable land from 55.58 lakh hectare in 2016-17 to 55.70 lakh hectare in 2018-19 and Haryana recorded a rise in agricultural land from 37.44 lakh hectare in 2016-17 to 38.17 lakh hectare in 2018-19.

Similarly, Jammu & Kashmir has recorded a rise in agricultural land from 10.78 lakh hectare in 2016-17 to 10.91 lakh hectare in 2018-19.

Gujarat, which is the home state of Prime Minister Narendra Modi, has not registered any increase or decrease in agricultural land in three years as it remained unchanged from 2016-17 to 2018-19 at 126.61

lakh hectare.

Assam witnessed a decline in agricultural land from 33.37 lakh hectare in 2016-17 to 33.05 lakh hectare in 2018-19, while West Bengal recorded a decrease in cultivable land from 56.33 lakh hectare in 2016-17 to 56.15 lakh hectare in 2018-19 and Uttar Pradesh registered a decline of cultivable land from 188.48 lakh hect-

are in 2016-17 to 187.75 lakh hectare in 2018-19.

Rajasthan has recorded a decrease in agricultural land from 254.96 lakh hectare in 2016-17 to 254.84 lakh hectare, while Manipur recorded a decline in agricultural land from 4.76 lakh hectare to 4.48 lakh hectare in three years and in Jharkhand, the agricultural land reduced from 43.67 lakh hectare in 2016-17 to 43.19 lakh hectare in 2018-19.

As land comes under the purview of state governments, the Centre supplements the efforts of states, through appropriate policy measures and budgetary support, Tomar said, adding that under the National Policy for Farmers-2007 (NPF-2007), State Governments have been advised to earmark lands with low biological potential such as uncultivable land, land affected by salinity, acidity, etc, for non-agricultural developmental activities, including industrial and construction activities.

Stay with science, go slow on GM

Evidence suggests that government must be careful and cautious on GM mustard in Indian farms



DILNAVAZ VARIAVA

THOSE WHO OPPOSE GM crops, and favour an agro-ecological or biosafety or precautionary approach, are repeatedly derided as "unscientific" and "Luddites". Let us look at the facts.

Transgenic technology, unlike other technologies, is uncontrollable and irreversible after environmental release. Living Modified Organisms (LMOs), as the Cartagena Protocol on Biosafety refers to Genetically Modified Organisms (GMOs), propagate themselves and proliferate. This process cannot be reversed. Therefore, any deliberate environmental release has to be only after thorough, independent, peer-reviewed assessment of long-term implications. The precautionary principle is a cornerstone because of the unpredictability and time lag of serious outcomes manifesting in highly complex living systems, and their irreversibility. To draw a parallel, not a single one of 330 invasive species (for example, lantana, parthenium) in India has yet been eliminated, despite estimated damage of Rs 8.3 trillion by just 10 of them!

More than 25 years after their introduction, GM crops are still globally grown in just 29 out of 172 countries. Moreover, 91 per cent of GM crop area continues to be in just five countries (USA, Brazil, Argentina, Canada, India). Most countries of Europe and Japan, Israel, Russia, Malaysia etc., do not grow GM crops. In China, a first adopter, Bt cotton area has been declining and non-GM hybrid technology is used for rapeseed/mustard.

Only two traits are present in over 85 per cent of GM crops grown — herbicide tolerance (HT, where crop plants are modified to withstand large amounts of toxic weed-killing chemicals), and/or insect resistance (pesticidal toxin, usually Bt, is produced inside the plant). In 2000, 761 scientists warned of adverse impacts. Scientific evidence shows that adverse impacts are expanding.

HT crops result in not only ecological damage, but human health impacts for consumers. Like tobacco, once declared safe, the effects take long to manifest. Beekeepers say that HT mustard will affect honey production and contaminated honey will damage exports. As regards human health, probable carcinogenicity, neuro-toxicity, reproductive health problems, organ damage etc. have been documented by independent research on GM crops and associated herbicides, once claimed by developers and regulators to be "safe". Like thousands of doctors in other countries, over 100 eminent Indian doctors have conveyed their concerns to the Prime Minister and asked that no HT food crops be released and the planted GM mustard be uprooted before flowering.

It is claimed that DMH-11 is not an HT crop as the use of the Bar gene — which confers a herbicide tolerance trait — is essentially for the pollination control technology in creating hybrids, and glufosinate herbicide will only be used during seed production. The reality is that by virtue of the Bar gene being present in both parental lines,

and thereby also in all their hybrid offspring, this GM mustard can withstand application of a toxic weedkiller, glufosinate, including in farmers' fields. It should therefore have been assessed as an HT crop. If governments, for over 10 years, have been aware of the illegal planting of herbicide tolerant cotton and rampant illegal use of glyphosate on such HT cotton, and have been unable or unwilling to stop this, what "regulatory process" will now prevent farmers in search of low-cost weeding options from spraying glufosinate on herbicide tolerant mustard?

The ongoing litigations in the Supreme Court are about serious shortcomings in our regulatory regime. Minutes of meetings of the regulatory body GEAC and the "guidelines and protocols" on the regulator's website reflect an absence of regulatory protocols for HT crops. And yet a crop with an HT trait is being released in the environment! The technical expert committee (TEC) appointed by the SC and the unanimous multi-party reports of two parliamentary standing committees have exposed serious lapses and inadequacies in bio-safety testing. They all advised that herbicide tolerant crops, which GM Mustard is, should not be released in Indian conditions. Even the government-nominated experts in the TEC asked for a ban on HT crops. The government, surely, cannot call them unscientific!

Testing on GM mustard has been done with test protocols evolved by the crop developer, and most tests were done by the applicant. No independent health expert participated in the committees that looked at GM mustard safety. To this day, biosafety data of GM mustard has not been posted on the regulator's website for independent scrutiny.

Initial publication by the developer's team publicised GM mustard's herbicide tolerance ability as a great benefit to farmers. When strong evidence of the hazards of HT crops and herbicides emerged, claims of yield increase were made, with a higher yield of 25-30 per cent being projected. When it was shown that the yield increase claims were based on comparison with an old, non-hybrid variety, and there were several higher-yielding mustard hybrids that should have been the comparators, it is claimed that DMH-11's parental lines will be very useful for breeding better hybrids, though the countries with the highest yields in the world do not use this GM HT technique. The benefits claimed, hence, are therefore questionable.

It is claimed GM mustard is necessary to reduce India's edible oil import bill. Most of the edible oil we import is not GM oil, but cheap, non-GM, palmolein oil. For mustard yield improvement, safe agro-ecological solutions such as the "system of mustard intensification" are showing significant yield increases. This technology should be promoted, not GM HT mustard of dubious yields and safety.

What is the urgent necessity for GM mustard release when the Supreme Court's Technical Expert Committee and two unanimous reports of multi-party parliamentary standing committees have recommended that HT crops should be banned in India and the precautionary principle followed?

The writer is Vice President of the BNHS and member of the GOF's National Conservation Strategy Committee, NBWL and NCEPC. She chaired a working group for Maharashtra government's 25 year action plan for agriculture.

Shriram wheat seeds

Shriram Seeds has launched Super 5-SR-05 & 3-SR-72 wheat seeds. Both the seeds have gained popularity across various regions in Punjab.

Concerns over GM mustard

The Hindu Bureau
MYSURU

The State government has been urged not to introduce Genetically Modified mustard in and around forests and national parks if it was cleared for commercial production. Vivek Ca-

riappa, a farmer from Sargur in Mysuru, has written to the Development Commissioner drawing his attention to issues as a fallout of the introduction of GM crops. He said the herbicide-tolerant GMs come with a package which include toxic herbicides.

No representative from Punjab on MSP panel

IN PARLIAMENT



KARAM PRAKASH
TRIBUNE NEWS SERVICE

NEW DELHI, DECEMBER 17

Though the Centre had formed a committee on Minimum Support Price (MSP) in July this year, Union Minister of Agriculture and Farmers Welfare Narendra Singh Tomar said there was no member from Punjab in the committee.

He said this in reply to a question by Punjab Rajya Sabha MP Vikramjit Sawhney, who has already lodged his protest in the ongoing Parliament session over the exclusion. As per the Agriculture Minister, the committee consists of representatives from both the central government and state governments and farmers, agriscientists and agri-economists to make the MSP more effective and transparent.

Lamenting the government, the MP asked why no representative, either an expert from Punjab Agricultural University or the Agriculture Commissioner or a



NON-OFFICIAL MEMBERS POST IN CACP VACANT

- The Minister in the RS revealed that two posts of non-official member of the Commission for Agriculture Costs and Prices (CACP) are lying vacant
- CACP is a body that recommends MSP for 23 crops, including wheat and rice
- The non-official members are representatives from the farmer community

government official, from the state had been included in the committee.

The committee was formed on the directions of Prime Minister Narendra Modi while withdrawing the three contentious farm laws and it still has three vacant posts for members of the Samyukt Kisan Morcha (SKM). The

State second in income per agri household

LUDHIANA, DECEMBER 17

Punjab ranks second across the country as far as average monthly income per agricultural household is concerned. This has been revealed in a data produced by Union Minister of Agriculture and Farmers Welfare Narendra Singh Tomar in the Rajya Sabha on Friday.

The Minister gave this information in reply to a question about the income of farmers asked by Rajya Sabha MP from Ludhiana Sanjeev Arora.

As per the data, Meghalaya tops the country with average monthly income per agricultural household at Rs 29,348, while Punjab ranks second at Rs 26,701.— TNS

reason: the union has rejected proposal of the committee formed by the government.

Reiterating their stand, Jagmohan Singh, a member of the SKM, said, "We have already rejected the committee. The chairman of the committee should be an agriculturist or an economist, but that is not the case."

Agriculture varsity releases fifteen new high-yielding seed varieties

The Hindu Bureau
HYDERABAD

Professor Jayashankar Telangana State Agricultural University (PJTSAU) has released 15 new high-yielding seed varieties of paddy (rice), sesame, fodder bajra and black gram through the Central and State Variety Release Committees (CVRC and SVRC) this year.

Giving the details to the media here on Friday, in-charge vice-chancellor of the university M. Raghunandan Rao said that the institution had been striving hard to develop high-yielding varieties in different crops to help farmers, keeping in mind their needs, particularly to improve their income through focused research and extension.

Although the university had come into existence only in 2014, it had released 61 seed varieties in different crops so far. New varieties such as Telanaga-

New seed varieties



RICE

Rajendranagar Vari-1 (RNR 11718), Telangana Rice-5 (RNR 28362), Telangana Rice-6 (KNM 7048), Telangana Rice-7 (KNM 6965), Telangana Rice-8 (WGL 1487)

SESAME

Telangana Til-1 (JCS 3202)

FODDER BAJRA

Telangana Fodder Bajra-1 (TSFB 17-7), Telangana Multi-cut Fodder Bajra-1 (TSFB 18-1)

(all CVRC)



RICE

Rajendranagar Vari-3 (RNR 15459), Rajendranagar Vari-4 (RNR 21278), Rajendranagar Vari-5 (RNR 29325), Jagtiala Vari-2 (JGL 28545), Jagtiala Vari-3 (JGL 27356)

BLACKGRAM

Madhira Minumu-1 (MBG 1070)

SESAME

Jagtiala Til-1 (JCS 1020)

(all SVRC)

na Sona, KNM 1638, KNM 118, JGL 24423, Bathukamma and WGL 962 in rice, Karimnagar Makka-1 in maize, PRG-176 and WRGE 97 in red gram and WGG 42, MGG 385 in green gram released earlier had already become very popular not only in Telangana but in the adjoining States too,

Mr. Raghunandan Rao said.

This year, eight new varieties developed by the university - five in rice, two in fodder bajra and one in sesame were approved and released through CVRC for cultivation in different States. Another seven varieties - five in rice and one

each in black gram and sesame were recommended for release through SVRC meeting held on September 3. The CVRC too, reviewed the seven varieties on October 26 and approved for release in Telangana after identifying them as promising, the in-charge VC said. About the newly released rice varieties, Mr. Raghunandan Rao said that they have high head rice recovery, resistance to different biotic and salinity, and super fine grain with very good cooking qualities as their important traits. Further, an aromatic short grain variety in rice, Rajendranagar Vari-3 having similar features of popular local variety, Chittimutyalu with high yield and less height was also included in the list.

The in-charge VC, Registrar S. Sudheer Kumar, and Director of Research R. Jagadeeshwar congratulated the scientists on development of new seed varieties.

RESTRUCTURING BUSINESS

Demerger to open new doors for Deepak Fertilisers: CMD

GEETA NAIR
Pune, December 19

THE DEMERGER OF Deepak Fertilisers and Petrochemicals (DFPCL) business and the creation of three distinct companies could open up a number of doors for the company including listing these companies, getting strategic investors in a specific business, raising funds from private equity players, Suresh C Mehta, chairman and managing director, DFPCL, said.

This would also enable them to look at joint ventures and alliances with global players, he said. The process would take six to nine months to

complete and the scheme will come into effect from January 1, 2022, Mehta said.

"For the investor community, now the visibility will be far sharper and far more focused on a specific business. Earlier when you are a conglomerate it becomes difficult to understand the business dynamics of the corporate entity," Mehta said.

The business dynamics of the individual corporate entity would be far more clearly visible to the investors. It would also create an ideal match between investor profile and their appetite for a particular business as some investors would be interested

in the agriculture sector while others' interests would be in the mining sector, Mehta said.

Mehta said the market had reacted positively to this demerger move and considered it to be a logical step and they were keen on knowing when the listings would happen.

Market had reacted positively to this demerger move and considered it to be a logical step and they were keen on knowing when the listings would happen."

SAILESH C MEHTA, CHAIRMAN & MD, DFPCL



pen. Around 54% of the company is held by non-promoter shareholders with around 20% held by institutional investors. DFPCL market cap was ₹9,986.67 crore. DFPCL's consolidated H1FY23 revenues were at ₹5,750 crore with net profit at ₹711 crore

and Ebitda margins at 21.5%. Currently, there is only one listed company, DFPCL in the group. Two new companies have been created as 100% subsidiaries. Post-

demerger, there will be a subsidiary, Deepak Mining Solutions focused on mining. Mahadhan Agritech will focus on specialty fertiliser and the industrial and pharma chemical business would remain with the listed company. The new ₹45,000 crore Ammonia plant that is coming up in Gopalpur, Odisha, which was a separate entity would now be part of the mining business.

The currently listed company, DFPCL, will hold equity in the two new entities and carry out operations in the specialty chemicals space that would include the Nitric Acid and Isopropyl Alcohol business. Fertilisers account for

around 40-45% of DFPCL revenues while the remaining 60-65% is split between the mining chemicals business and the industrial & pharma chemicals and all three businesses were growing.

Four years ago, the company had moved out the two businesses from DFPCL and moved it to downstream 100% subsidiaries. From a management perspective, the company had already separated the business into strategic business units (SBU) with different reporting structures which would ensure a smooth passage into the new entities.

The sharply focused business was expected to bring in the

right kind of innovation, R&D, technology and investments required for that specific business with the company looking at infusing new technologies and a deep understanding of end consumer needs into their businesses. Each business had a different set of customers and different market dynamics which would be best served by different corporate entities.

The restructuring was part of the strategy of shifting from being a commodity player to a specialty player and aligning the organisational structure, work culture, rewards and recognition and the board to the end consumer market in each business.

Govt bans pesticides

T.SUDHEESH | DC
CHENNAI, DEC 13

In the wake of rising cases of suicides in the state, the government has decided to impose permanent ban on 3 per cent yellow phosphorus (Ratol) and six other pesticides. Talking to media-persons here on Tuesday, health minister Ma Subramanian said an order has been issued to ban pesticides Monocrotophos, Profenophos, Acephate, Profenofos+ Cypermethrin, Chlorpyrifos+ Cypermethrin and Chlorpyrifos temporarily for agriculture purposes. Besides, the manufacturing, sale, stock, distribution or exhibition of 3 per cent yellow phosphorus has been banned permanently.

"The case of suicides in

the state is matter of concern. In 2022 alone, at least 16,883 suicide cases were recorded in the state. Now a ban is imposed for 60 days. After that, 30 more days will be extended. In this period, we will monitor the situation whether the number of cases decreases or not. We hope that number will come down as these pesticides will not be available in the shops. After studying the situation, we will recommend to the Centre to ban these pesticides permanently. Also, government will study the district-wise data on suicide cases post ban period," said the minister.

It may be recalled that the government had banned Saani powder manufacturing units in September last year.

According to the minister, the number of deaths by suicides was high than deaths due to disasters in the state that is around 11,000 to 12,000 every year.

As per the National Crime Records Bureau (NCRB), the state has ranked second in the country in the suicide cases reported in 2021. The data says at least 18,925 suicides cases were reported last year while Maharashtra topped with 22,207 cases. Tamil Nadu contributed 11.5 per cent to the total number of suicides registered across the country last year.

According to mental health experts, management of negative thoughts is key to maintaining mental health well-being. 'Listen to our mind (being mindful)

about negative thoughts and try to challenge facts and focus on things which we can control rather than worrying about things which we can't control. It will produce a positive thinking pattern and in turn improve our mood and well-being. We should constantly self-monitor our mood and try to involve ourselves in self-regulation. If you are depressed, you can increase physical activity. When you are angry or anxious, you can practice abdominal breathing or positive visual imagery to bring calmness. Engage in creative activities to enliven the mind. Stay in good mental health and contribute towards a healthier society', said Dr Venkateshwaran, a psychiatrist.

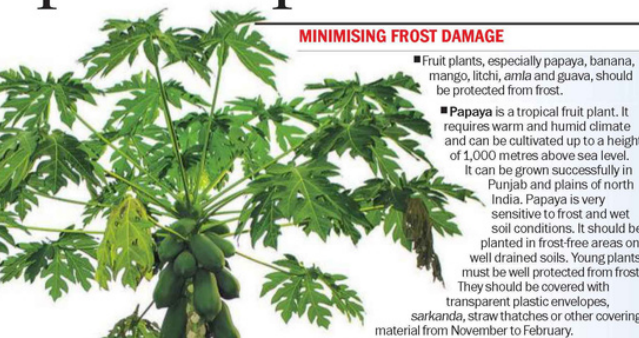
Fruit crops need protection to brave the chill

Frost is one of the biggest problems faced by fruit growers in the winter, when the temperature drops to near-zero or sub-zero levels. It results in substantial losses to the crops of fruits such as kinnow mandarin, ber, guava, papaya, mango and strawberry. Growers should implement methods and techniques which are usually suitable for most of the fruit crops. The choice of hardy species which have an intrinsic capacity to tolerate frost makes a crucial difference.

AK SANGWAN, PK ARORA
AND ANIL KUMAR

It takes years to grow a fruit tree large enough to help the horticulturalist reap economic dividends. During this period, the tree is exposed to many biotic and abiotic stresses in the form of diseases, insects and weather. Frost is of vital horticultural concern and one of the most destructive problems faced by fruit growers of Punjab in January, when the temperature drops to near-zero or sub-zero levels. It results in substantial losses to the crops of fruits such as kinnow mandarin, *kagzi* lime, ber, guava, papaya, mango and strawberry. The damage can be of different types, including destruction of branches, foliage, tender twigs, flowering, fruit drop and fruit quality. Nature has its own means to brave weather hostilities. In deciduous plants, it is done by shedding leaves during winter i.e. during the dormant condition, and the evergreen plants withhold their new growth. In the first case, the protection is complete and in the latter it is partial. So the fruit growers must gear up to protect their precious fruit plants from frost. They must plan a strategy to fight it out by following methods and techniques which are usually suitable for most of the fruit crops.

Choose hardy species
There are many hardy fruit tree species which have an intrinsic capacity to tolerate frost e.g. citrus



MINIMISING FROST DAMAGE

■ Fruit plants, especially papaya, banana, mango, litchi, amla and guava, should be protected from frost.

■ **Papaya** is a tropical fruit plant. It requires warm and humid climate and can be cultivated up to a height of 1,000 metres above sea level. It can be grown successfully in Punjab and plains of north India. Papaya is very sensitive to frost and wet soil conditions. It should be planted in frost-free areas on well drained soils. Young plants must be well protected from frost. They should be covered with transparent plastic envelopes, *sarkanda*, straw thatches or other covering material from November to February.

■ **Amla** is hardy and can be grown in variable agro-climatic and soil conditions. The mature tree can tolerate temperature up to 46°C and young plants need to be saved from frost during winter. It is a potential crop for degraded and marginal soils having soil pH 6 to 9.5. Amla, also known as *Amrit phal*, is used in indigenous medicines.

SOURCE: PAU PACKAGE OF PRACTICES FOR CULTIVATION OF FRUITS



from frost. It is desirable to maintain the orchard moisture level whenever there is a forecast of frost or during a prolonged cold spell.

Smokescreen

Create a cloud of smoke in the orchard by burning the waste material at four to five points in the night to form a homogenous cloud whenever frost is likely to occur. It helps to minimise the frost damage in two ways. Firstly, the smoke forms a screen over the plants, thus warding off the frost. Secondly, it raises the temperature of the orchard to some extent. However, its effectiveness is reduced when the wind blows.

Covering with thatches

Cover the young and newly planted fruit plants with thatches or *kullies* made of *sarkanda* or other farm waste material such as sugarcane trash, paddy straw and maize stalk to shield the tender plants from the chilly winds. Care should be taken that the southwest side of the plant remains open to allow sufficient sunlight and air needed by it for its growth.

Mulching

The insulating properties of mulches help to keep the soil cooler during the summer and warmer in the winter. Mulching in the winter is a critical tool for gardeners to protect plants from freezing conditions. The soil under the mulch doesn't freeze, and that allows the plants to absorb more water. It is a standard form of winter protection for many shallow-rooted plants.

The authors are on the faculty of the PAU's Regional Research Station, Abohar

plants at crucial stages are key factors to maintain good plant vigour. Protecting the plants from insect-pests and diseases attacks by following the recommended spray schedules for each pest species throughout the year will also help to keep the plant healthy enough to tolerate the frost better.

Windbreaks

Chilly winds during the winter are very harmful and lead to damage to the fruit plants. Any mechanical barrier, maybe in the form of trees, straw or hedges, makes an effective windbreak and protects the plants. Always plant windbreaks on the windward side of the orchard well before the latter is established; it ensures protection from

the cold wave. Single or double row of tall and small trees planted alternately around the orchard form a thick wall and reduce the impact of frosty winds on fruit plants. Eucalyptus, *jambun*, seedling mango, *arjuna* and mulberry are ideal windbreak plants. In the spaces between windbreak trees, a hedge of bougainvillea, *jati khatti*, *galgal* or *karonda* can also be used. However, avoid the hedge of citrus species around the citrus orchard.

Pruning of plants

Well-trained low-headed trees withstand the cold better than tall and improperly trained fruit plants. So, it is very important to train fruit trees as per the recommendation for the region. Training refers to the physical tech-

niques that control the size, shape and direction of plant growth. Pruning should begin as late in the winter as possible to avoid winter injury. To minimise the potential for winter injury, summer pruning should not be done after the end of July.

Moisture factor

Make sure that the soil around the tree root zone is wet. This keeps the soil warmer than the dry area and protects the roots from cold injury. It is one of the most common practices followed by the fruit growers to combat frost effectively. By irrigating the orchards during the winter, it is possible to raise the temperature by 1-2°C, thus it is one of the most economical and practical methods to protect

6 pesticides banned to curb access to means of suicide

They are banned for a period of 60 days, as per a Government Order that was issued based on a research report submitted by the Tamil Nadu Agricultural University

Ramya Kannan
CHENNAI



The Tamil Nadu government has issued a government order (G.O.) banning hazardous pesticides for a period of 60 days, in a move to reduce access to means of suicide.

The G.O. calls for the ban of Monocrotophos, Profenophos, Acephate, Profenofos+ Cypermethrin, Chlorpyrifos + Cypermethrin and Chlorpyrifos.

In addition, the Director of Agriculture has also proposed to prohibit the manufacturing, sale, stock, distribution/exhibit for the sale or use of 3% yellow phosphorus permanently for agriculture, as an insecticide.

The G.O. has relied on the research report sub-

Limiting access to means of suicide is very effective in preventing suicides, according to the WHO

DR. LAKSHMI VIJAYAKUMAR
Founder of Sneha helpline

mitted by the Tamil Nadu Agricultural University, Coimbatore and the high-level committee which was constituted to examine the possibility of banning hazardous insecticides. They had recommended prohibiting insecticides for 60 days.

As per the data provided by the Director of Agriculture, in the year 2017-18, farmer deaths in Tamil Nadu were caused mostly by toxic pesticides.

The 3% yellow phosphorous (sold as Ratol), used as a rodenticide for field rats, is the major cause of suicidal deaths across Tamil Nadu, he further added.

Welcome move

Suicide by pesticides poisoning is a major public health problem and needs innovative interventions to address it, says Dr. Lakshmi Vijayakumar, founder, Sneha - a suicide prevention helpline.

“Limiting access to means of suicide is very effective in preventing suicides, according to the WHO,” she adds.

Welcoming the move she said, “Phasing out highly toxic pesticides that are a cause for suicide has also been recommended by the recently released National

Suicide Prevention Strategy. These toxic pesticides have a high fatality rate and will definitely reduce impulsive suicides, particularly in rural areas.”

In a study conducted by Dr. Lakshmi and her team in Kattumannarkoil Taluk, in Cuddalore, in 2013, a centralised storage facility was set up for farmers to store their pesticides safely.

While it was accepted among the farmers, it also limited the availability of the most common means to commit suicides in the area, leading to a positive effect on curbing suicides.

(Assistance for overcoming suicidal thoughts is available on the State's health helpline 104, TeleMANAS 14416. and Sneha's suicide prevention helpline 044-24640050.)

INDIA AT THE UN

Promote biodiversity through positive investment, says minister at Canada summit

Let nations decide pesticide cut in agri sector: India

Montreal, Dec. 17: A numerical global target for pesticide reduction in the agriculture sector is unnecessary and must be left for countries to decide, India has said at the UN biodiversity conference here in Canada. India also supported subsidies for the agriculture sector. Currently, more than 40 per cent of India's total workforce is employed in agriculture, according to the World Bank data released till 2019. Speaking during a high-level segment of the 15th Conference of Parties

(CoP15) to the Convention on Biological Diversity (CBD), Union environment minister Bhupender Yadav said that the agriculture sector in India, like other developing countries, is the source of life, livelihoods, and culture for hundreds of millions. “Such essential support to vulnerable sections cannot be called subsidies, and targeted for elimination, Yadav said on Friday. While they are being rationalised, biodiversity must be promoted through positive investment, he said.



Bhupender Yadav

More than 40 per cent of India's total workforce is employed in agriculture. Minister Bhupender Yadav said that the agriculture sector in India, like other developing countries, is the source of life, livelihoods, and culture for hundreds of millions.

Similarly, a numerical global target for pesticide reduction is unnecessary

and must be left to countries to decide, the minister added.

The Target 7 of the Global Biodiversity Framework includes the reduction of pesticides by at least two-thirds by 2030. A report by Pesticide Action Network reveals serious problems of pesticide usage in India and points to poor regulation of hazardous agrochemicals.

The Target 7 of the Global Biodiversity Framework (GBF) includes the

● CURRENTLY, MORE than 40 per cent of India's total workforce is employed in agriculture, according to the World Bank data released till 2019. reduction of pesticides by at least two-thirds by 2030. A report by Pesticide Action Network (PAN) India released in February reveals serious problems of pesticide usage in India and points to poor regulation of hazardous agrochemicals.

The current use pattern is implicated in widespread unauthorised uses of pesticides in India, posing threat to food safety and environmental contamination, it said. Proponents of the target state that redirecting harmful subsidies towards biodiversity financing would go a long way towards bridging the funding gap of around \$700 billion a year. Currently, India alone spends about \$30 billion (about 2.2 lakh crore) subsidising agricultural inputs, including pesticides. —PTI

Drones to help farmers spray biopesticides

Sandeep Vellaram
IDUKKI

Farmers in Vattavada and Kanthalloor, the biggest cool-season vegetable cultivating villages in the State, are all set to get assistance of modern technology.

The agri engineering wing under the State agricultural wing on Wednesday completed a demonstration of biopesticide spraying using drones at Pallamvayal in Vattavada grama panchayat. According to officials, plans are afoot to expand the use of drone technology to apply fertilizers and biopesticides on cool-season vegetable fields in Vattavada,



Officials conducting a demonstration of a drone spraying biopesticide at a farm at Vattavada in Idukki.

near Munnar.

Shylaja N., Assistant Executive Engineer (Agri), told *The Hindu* that the project is being implemented through the Sub-Mission on Agricultural Mechanisation (SMAM) project under the Central government.

"The demonstrations of drone spraying have been completed on a paddy field near Alakkode in Thodupuzha, a tea garden at Kamakshi, near Kattappana, and a cool-season vegetable farm at Vattavada," said Ms. Shylaja.

"The farmers can buy the drone with a capacity of 10 litres with 50% subsidy while the Farm Producer Organisations (FDOs) can get a subsidy of up to 75%," said Ms. Shylaja.

Officials said the members of the cool-season vegetable farmers' groups had expressed their interest in using the drone facility.

In tea sector too

Agricultural Deputy Director (Credit) Ambily C. said the primary agricultural cooperatives societies could buy drones through the Agricultural Infrastructure Fund with only 1% interest. "The cool season ve-

getable farming is spread over 2,500 hectares in Vattavada alone. While individual farmers can't afford to buy drones, they may avail themselves of the scheme with the assistance of primary agricultural cooperative societies," said Ms. Ambily. Farming using drones also held immense scope in the tea sector too, the official added.

The technology, meanwhile, may not be expanded to the cardamom plantations – a major crop in the district. "Cardamom plants grow in tree shades and hence the drones cannot be operated inside the cardamom plantations," said an official.

THE BURNING ISSUE IN CAPITAL REGION

MSP & Pollution: Two Sides of Same Coin

Pradeep Puri

There is a direct correlation between why north India becomes a gas chamber every winter and the scheme of paddy and wheat procurement under the Minimum Support Price (MSP) regime. The MSP is the oxygen that sustains an environmentally hazardous and illogical cropping pattern of wheat and paddy in Punjab, Haryana and western UP. It is common knowledge that if the winter stubble burning were to stop, the air quality will improve. But the knee-jerk and sporadic efforts of state governments—such as a ban on construction, on movement of diesel vehicles, and odd-even traffic regulations—though well intentioned, do not represent a permanent solution. Efforts in Punjab to provide a cash subsidy of ₹2,500 per acre have at best met with mixed success: while the number of farm fires has fallen from 82,693 in 2020 to 49,604 in 2022 (September 15 to November 23, 2022), there's not much impact on the air quality. The stubble burning fine of ₹2,500 per acre is also not effective.

Why do farmers in Haryana and Punjab burn stubble? After paddy is harvested in mid- and late-October, the fields are left with a stubble of stalks about two feet high. Because the sowing for wheat begins in late October, farmers have a small window of two to three weeks to prepare their fields. Typically, they set fire to the stubble and then clear the residue. They are aware that this destroys the nutrient content of the soil and makes it less fertile, yet do it. The available

alternatives of renting a combine harvester or a Happy Seeder make little economic sense because the cost works out to as much as ₹6,000 to 7,000 an acre. The farmers cannot afford this as their gross annual income from wheat or paddy is less than ₹15,000 per acre. The sad truth, however, is that no other crop comes close to providing even that low level of income.

According to NSS data and other sources, the average monthly income of an agricultural household is between ₹8,000 and ₹12,000. In comparison, a security guard in Delhi earns around ₹15,000 a month.

The long-term solution lies in a complete overhaul of the agrarian economy of large parts of Punjab, Haryana and western UP, includ-

leave the fields fallow.

Taking the 2021 MSP of ₹1,940 for per quintal of paddy and ₹2,015 for wheat, and the current yields of 25 to 30 quintals of paddy and 15 to 20 quintals of wheat per acre, the direct procurement cost to FCI for paddy and wheat is around ₹55,000 and ₹35,000 per acre. This does not include the related FCI costs of ₹1,300 and ₹1,100 per quintal of pad-



FILE PHOTO

The problem of agriculture in Punjab and Haryana lies in the fact that despite impressive gains in food security, agricultural productivity has been either constant or declining. The capacity of a unit of land to sustain livelihood is diminishing—given the increase in population and fall in yields. The over-dependence on wheat and paddy in large parts of Punjab and Haryana has also resulted in ground water depletion and excessive salinity in the soil.

Fundamentally, the terms of trade between agriculture and non-agriculture have sharply deteriorated. In 1950, the ratio of urban to rural per capita GDP was 1:1. In 2011, it was 11:1. The 2021 census is unlikely to show a different trend.

ing a fundamental shift in the cropping pattern away from paddy and wheat. To achieve this, the farmers in these states must be compensated in a manner that their net worth is not only preserved but enhanced after switching to a non-wheat/paddy cropping pattern.

The answer lies in incentivising them financially to not grow these crops. Where will the money for this come from? Let us do a little cost-benefit analysis and look at what it costs the state to provide for MSP-related procurement. This will make clear that this expenditure is irrationally high and can easily be directed elsewhere, primarily to incentivise farmers to not grow paddy or wheat but grow something else—or even

ILLOGICAL PATTERN

MSP sustains the hazardous and illogical cropping pattern of wheat and paddy in Punjab, Haryana and western UP

dy and wheat for six months' storage, transport etc.

Against this, the gross per-acre income of a farmer is around ₹10,000-15,000. Hence, for the farmer to achieve even this level of modest income, the state spends almost two to three times the amount. The actual costs are much higher if fertiliser subsidy and other freebies like free electricity and water are included.

It might be worth exploring if the farmer—and society—is not better off guaranteeing a specified gross income per acre at ₹15,000 for wheat and paddy per acre. As the yield of paddy and wheat per acre in this region is at least 15 quintals an acre, a direct payment of ₹15,000 per acre to the farmers can be adequately financed from the

resultant cost savings that would accrue through a reduction of equivalent quantity of procurement of the two crops.

The MSP value of wheat procurement alone in Punjab in 2020-21 was about ₹27,000 crore. In other words, assuming in a season even if 50% of the farmers in Punjab opt for the cash subsidy on DBT basis in lieu of actually growing wheat, this would result in a MSP saving of ₹13,000 crore per annum and almost ₹10 lakh crore over a decade.

Given this magnitude, not only does the scheme pay for itself but depending on its adoption, significant savings can be generated to provide a cross subsidy for higher MSP for other crops. The scheme could, for example, entail a cash subsidy of ₹15,000 per acre on DBT basis that could be called a 'soil rejuvenation and ground water conservation allowance' in lieu of actual cultivation of paddy and wheat.

In real terms, the farmer is paid not to grow wheat and paddy but anything else—or even keep the field fallow. The broad outline of such a scheme could be worked into a new MSP framework with geographic limits for wheat and paddy that provides strong incentives in terms of higher MSPs for crops like millets, pulses, oil seeds, cotton etc. on a pan India basis. Critics of the scheme will contend that it is simplistic and difficult to implement, and will adversely affect India's food security as Punjab and Haryana are major contributors to the MSP bowl. This argument has only historical significance given the significant gains in acreage and productivity in non-traditional wheat states like MP, Rajasthan and even Jharkhand. In paddy, Punjab contributes only 10% of national production.

The write is an ex-IAS officer

How the Russian war worsened India's fertiliser consumption balance

SANJEEB MUKHERJEE
New Delhi, 9 December

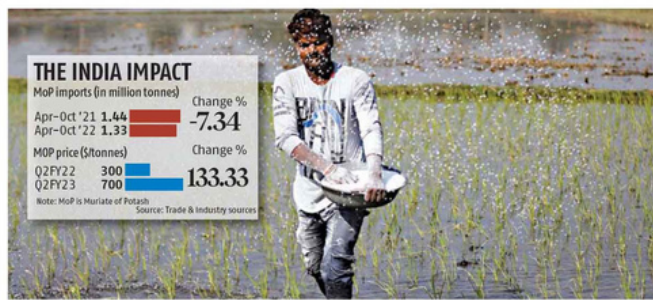
Fertiliser consumption in India, already imbalanced, became more lopsided this kharif season because of the Russia-Ukraine war, and this could have an impact on soil health in the long run.

There was a 39 per cent decline in sales of Muriate of Potash (MoP) during April-October as compared to the pre-Covid period of 2019 because farmers shunned this vital crop nutrient in favour of urea, di-ammonia phosphate and NPKS (sodium, phosphorus, potassium, and sulphur) because of high prices.

Even compared to April-October 2021, the sales of MoP for direct application dropped by almost 48 per cent.

Industry players said consequently India's distorted fertiliser consumption (NPK use ratio) had worsened in kharif 2022 to 12.8:5.1:1 as against 6.8:2.7:1 in Kharif 2021.

The ideal average NPK ratio for the



country is 4:2:1. The distortion happened mainly because of a steep reduction in sales of potash, which dropped from 1.4 million tonnes in

Kharif 2021 to 770,000 tonnes for Kharif 2022, a fall of almost 45 per cent.

"The retail price of MoP has been higher than that of DAP in recent

months, which traditionally used to be the other way round. This has severely impacted consumption of potash. Which in turn has further imbalanced

the already bad NPK use ratio," a recent industry statement said.

The fact that the government's subsidy on potash has been low as compared to nitrogen and phosphorus also meant importing companies had little option but to pass on the impact of the entire global price hike to farmers, leading to the slump in sales.

"At present, DAP is selling at around ₹27,000 per tonne while MoP is quoting at around ₹35,000 per tonne, which ideally should be the other way round," a senior industry executive said.

"One way to correct this imbalance is to bring the per kilogram subsidy on potash on a par with phosphorus, which will cool retail prices," the executive said.

The government in its last revision of non-urea fertiliser subsidies reduced the subvention for potash from ₹25.31 per kg fixed in April to ₹23.65 per kg in October. The NPK use ratio was almost ideal at

4.3:2:1 in 2009-10 but got distorted to 8.2:3:2:1 in 2012-13. Thereafter, it was corrected to 6.5:2.8:1 in 2020-21, but widened to 7:5:1:1 in 2021-22.

Trade and industry sources said the biggest reason for the sharp spike in rates of MoP, which imported almost in entirety, shot up in international markets after war broke out in Europe, leading to supply disruption. Russia-Ukraine

account for almost 40 per cent of global potash production. From \$300-350 per tonne, global potash prices shot up to \$700-900 per tonne after war started, but since then, though

supplies have resumed because India has started sourcing it from Canada and the US, there is a demand-supply mismatch," a senior researcher at a leading market analysis firm said. He said due to inadequate subsidies on potash, the contributory margin of companies selling and importing MoP was negative.

RESEARCHER SAYS THE CONTRIBUTORY MARGIN OF COMPANIES SELLING AND IMPORTING MoP IS NEGATIVE DUE TO INADEQUATE SUBSIDIES ON POTASH

Centre not extending cooperation: Agri minister

HANS NEWS SERVICE
HYDERABAD

STATE Agriculture Minister S Niranjan Reddy has described as unfortunate the Centre not extending its cooperation despite Telangana contributing to the national wealth by giving top priority to the agriculture sector.

Addressing the Smart Agri Summit-2022 organised under the aegis of the Bengal Chamber of Commerce here on Friday, he said despite the non-cooperation of the Centre the State government will continue to encourage the sector.

The minister said the summit would help in availing the existing technology to stabilise agriculture in the given environmental and weather conditions.

Addresses Smart Agri Summit-2022 organised by Bengal Chamber of Commerce

He said in Telangana not only the weather conditions but also road and air routes are also convenient for the agriculture sector. He pointed out that farmers are given all solutions from the time of cultivation of crops to harvesting to marketing.

Bengal Chamber of Commerce president Subhir Chakraborty, National Rainfed Area Authority (NRAA) and Commission of Doubling Farmers Income-Chairman Ashok Dalwai, and representatives from the government organisations and industry from the seed sector and NABARD were present.

The GM mustard debate

The govt, in advocating the use of GM mustard, has cited economic and food security arguments. Critics maintain the crop can cause lasting harm to environmental and human health



AMITABH SINHA

THE DEBATE over the use of genetically modified crops is raging again, with familiar arguments and objections being made. A few weeks ago, the government had cleared the 'environmental release' of a genetically modified (GM) variety of mustard, DMH-11, developed by the Centre for Genetic Manipulation of Crop Plants (CGMCP) at Delhi University. 'Environmental release', involving seed production and field testing, is the final step before the crop can be cultivated by farmers.

The government decision was met with expected opposition from activists who oppose any use of GM technology in agriculture. Predictably, the matter has reached the courts. On previous occasions, this has ended with the decision being put on indefinite hold.

Previous attempt

In fact, DMH-11 had reached quite close to being approved for environmental release in 2017 as well, but then had to be stopped under pressure from activists and NGOs. The decision to revisit this issue has come in the wake of steadily rising import bills on edible oils. The availability of mustard, a commonly used affordable cooking oil, has emerged, more than ever before, as a food security issue. Increased yields of mustard can reduce the dependence on other countries for a critical food item, as well as save foreign currency worth tens of billions of dollars every year.

In fact, the government is treating mustard as a special case among all the GM crops awaiting approval. It has maintained that approving the mustard variety would not mean opening the floodgates for all other transgenic



Farmers in a mustard field in Shamli District, Uttar Pradesh. Abhinav Saha

crops. In the case of mustard, there is a compelling economic and food security argument, which puts it in a separate category. There has been no movement, for example, on Bt brinjal, which, like DMH-11, has passed all the safety tests and regulatory processes, but whose release has been on hold since 2010.

Activists, however, not just dispute the ability of GM mustard to increase yield, but question biosafety data and claim that it will harm human and soil health, cause environmental damage, and threaten the existence of other species, like honeybees. These arguments are in line with the opposition to genetically modified crops in general.

Concerns around the crop

The opposition to GM crops broadly rests on the 'precautionary principle', which argues that in the absence of scientific consensus and adequate information, new innovations likely to have severe adverse impacts on human or environmental health must be treated with extreme caution.

The principle is criticised, even though it is invoked fairly regularly in a variety of circumstances. The sole reliance on this principle for decision-making is often seen as a hurdle

to scientific progress, or a justification for inaction. GM crops have been under cultivation for three decades now, in different parts of the world, and there is little evidence to suggest that the apocalyptic dangers that are often talked about have appeared anywhere.

Over 25 countries grow genetically modified crops, including developed nations like the United States and Canada, middle income countries like Brazil and South Africa, and India's neighbours like Pakistan, Myanmar and Bangladesh. Even in India, Bt cotton, the only GM crop to have been allowed in the country, has been under cultivation for the last 20 years. None of the grave apprehensions that were raised when Bt cotton was being approved have come true.

In fact, a substantial portion of imported edible oils, as well as some other crops, are of genetically modified varieties. Many Indians have, thus, already consumed genetically modified food without any harm.

It is true that a scientific consensus on the use of GM technology in agriculture is still elusive. But it is difficult to have complete consensus on any emerging area of science. After three decades of use, the weight of scientific opinion seems overwhelmingly in favour of

GM technology. In fact, while endorsing DMH-11, the National Academy of Agricultural Sciences, the main academic association of agricultural scientists, had said that most of the opposition to GM crops was based on distortions of scientific data.

"The broad conclusion is that almost all the negative reports on GM mustard, appearing on websites, newspapers, and letters to the ministers and PMO are fallacious, wilfully distort scientific data and have been made with the sole intention of scuttling the use of technology which could be of great interest and value to the country," the NAAS had said in 2017 after DMH-11 was put on hold.

Scientists also lament the fact that the uncertainties inherent in any new technology are exaggerated to either call for a complete ban on GM, or fresh round of safety tests.

"There is a constant shifting of goalposts. A certain requirement is asked to be met, and when that is done, new demands are put forward. This is an endless cycle. The fact is that GM mustard, and GM technology in general, has been put through the most robust scientific scrutiny possible. It is being used in several countries, including India where GM cotton is being cultivated for two decades now," Vibha Dhawan, director general of Delhi-based The Energy and Resources Institute, and herself an agriculture biotechnologist, said.

"We see very absolutist positions being taken on GM technology by those who oppose it. Every small potential risk is cited to argue against its use. We have to understand that nothing is risk-free. All the available scientific evidence suggests that genetically modified crops are safe for human consumption. But we hear arguments that the harmful impacts can manifest in the second, or fourth or fifth generation of consumers. There can be no answer to this," she said.

The opposition to GM crops so far has overcome the broad political agreement on the subject. Both the Congress as well as BJP at the Centre have tried to push for these crops. On the state level, there is less consensus, with many state governments expressing reservations over this technology.

GM mustard safe for food, feed use, cultivation: Govt

SANJEEB MUKHERJEE AND AGENCIES
New Delhi, 8 December

The government on Thursday said extensive studies carried out on toxicity, allergenicity, compositional analyses, field trials, and environmental safety of GM mustard lines versus their non-transgenic comparators had provided evidence that DMH-11 was safe for cultivation, food, and feed use.

It also said farming technologies like genetically modified (GM) crops was important to ensure food security and cut a

reliance on imports and it has found evidence of any decline in honey production in the country due to GM cotton that has been cultivated since the last 10 years.

In two separate statements made in Parliament, Minister of State for Environment Ashwini Kumar Choubey and Minister of State for Science and Technology Jitendra Singh said that while strengthening of plant breeding programmes, including the use of new genetic technologies such as GE is important for meeting emerging challenges in Indian

agriculture, studies conducted on DMH-11 (the hybrid GM mustard granted environmental okay) had shown 28 per cent more yield than the national check and 37 per cent more yield in zonal checks during confined field trials.

The environment ministry in October granted environmental clearance for indigenously developed GM mustard seeds, potentially paving the way for a commercial release of the country's first food crop in about two years. Cotton is the only GM crop now allowed for cultivation in India.

Pest attack, untimely rain pull down Punjab, Haryana cotton production

Neel.Kamal@timesgroup.com

CROP STATUS

State	Cotton area	Production estimate 2022	Production in 2021
Punjab	2.5L hectares	4L bales	7L bales
Haryana	6.1L hectares	11.75L bales	14.7L bales
Rajasthan	7.85L hectares	27.5L bales	25.5L bales

Bathinda: After repeated pest attacks and rain, cotton production is expected to be much less than last year's in Punjab, if estimates prepared by trading agency Indian Cotton Association Limited (ICAL) are any indication.

Slower and lower cotton arrivals in the mandis of Punjab till November-end clearly point to lower production despite no change in area under cotton sowing in the state. As against the production of 7.02 lakh bales (1 bale=170 kilogram) last year, estimates for this season have been put at about four lakh bales in Punjab. The arrival is much less at 69,525 bales till November 30 in the ongoing season, against arrival of 2,51,754 bales till No-

vember 30, 2021. In terms of weight, the arrival so far is 2.6 lakh quintals, while it was over 9 lakh quintals till November 30.

If last year the crop faced the attack of pink bollworm, this year it was whitefly, untimely rain and no canal water supply when sowing was at its peak which affected production. In the previous season, cotton production had considerably gone down, from 50 lakh quintals to 28.9 lakh quintals. This year, it is expected

fall lower. Like Punjab, neighbouring Haryana is also expected to witness a shortfall in cotton production when compared to previous year.

In Rajasthan, it is expected to be more than the previous year. In Haryana, against production of 14.7 lakh bales last year, the figure for this year is expected to be 11.75 lakh bales. In Rajasthan, the figure is expected to rise from 25.5 lakh bales last year to 27.5 lakh bales this year.

With this, cotton produc-

tion in the three states will fall from 47.2 lakh bales last year to a little over 43 lakh bales this year. Arrivals in Haryana till November 30 were 3.9 lakh bales, as against 4.4 lakh bales last year. In Rajasthan, arrivals had been recorded at 11.3 lakh bales, against 10.75 lakh bales last year till November 30. Cotton has been sown on 2.48 lakh hectares in Punjab, 6.1 lakh hectares in Haryana and 7.85 lakh hectares in Rajasthan this year. Cotton area in the three states is 16.4 lakh hectares.

Cotton is fetching a price of Rs 8,000-8,400 per quintal, much above the MSP of Rs 6,280 per quintal, for 27.5-28.5 MM long staple. Punjab cotton coordinator Rajnish Goel confirmed that arrival trends were lower than last year.

Centre approves National Mission on Natural Farming

Prabhudatta Mishra
New Delhi

Union Agriculture and Farmers' Welfare Minister Narendra Singh Tomar on Monday said the government has approved the National Mission on Natural Farming as a separate scheme with an expenditure of ₹1,584 crore. However, the details of the scheme are yet to be released.

Addressing the National Conference on Soil Health Management for Sustainable Farming in Delhi, Tomar said due to chemical farming and other reasons, the soil fertility was getting eroded.

He said climate change would be a big concern for the country and the world in the coming days. Stating that Prime Minister Narendra Modi was committed to achieving Sustainable Development

Goals (SDGs), Tomar said, "Lack of organic carbon in the soil is a serious concern for us."

CHANGED SITUATION

Pointing out that the soil's fertility had eroded due to chemical farming, Tomar said the country and the world should avoid this and fulfil their environmental responsibility.

He also said there was a time when the policies were production-oriented and agricultural yield increased due to chemical farming. But now, the situation has changed, and with climate change, keeping soil health intact was a big challenge, he said.

"If an attempt is made to exploit the earth contrary to the principles of nature, the consequences can be dangerous," he warned.

Tomar said: "To meet the



Union Agriculture and Farmers' Welfare Minister Narendra Singh Tomar

serious challenge (of lack of organic carbon) and for better soil health, we have to promote natural farming, which is beneficial for the environment."

He said the government has re-adopted the Indian Natural Farming System for Agriculture, which is an ancient technique used by farmers.

"At that time, people also

knew how to live in harmony with nature," he said. The minister informed the gathering that Andhra Pradesh, Gujarat, Himachal Pradesh, Odisha, Madhya Pradesh, Rajasthan, Uttar Pradesh and Tamil Nadu have made many innovations to promote natural farming. An additional 4.78 lakh hectares have been brought under natural farming in 17 States during the last one year, he said.

Under the Namami Gange programme, the project of natural farming is going on along the banks of the Ganges, while the Indian Council of Agricultural Research and all Krishi Vigyan Kendras, Central and State Agricultural Universities and Colleges are making all-round efforts to promote natural farming, the agriculture ministry said in a statement.

EROSION OF SOIL FERTILITY BIG CONCERN

Centre promoting natural farming to better soil health: Tomar

PNS ■ NEW DELHI

Agriculture Minister Narendra Singh Tomar on Monday expressed concern over erosion in soil fertility due to excess use of chemical fertilisers and said the government is taking measures to promote natural farming. The minister was speaking after inaugurating the National Conference on Soil Health Management for Sustainable Farming, organised by Niti Aayog. According to an official statement, Tomar said due to chemical farming and other reasons, soil fertility is getting eroded and climate change is going to be a big concern for the country as well as the world.

The minister said lack of organic carbon in the soil is a



serious concern for us.

"To meet this serious challenge and for better soil health, we have to promote natural farming, which is beneficial for the environment," he added.

To promote natural farming,

Tomar said the Centre is working with the state governments. The government has re-adopted the Indian natural farming system for agriculture. Natural farming system is an ancient technique used by farm-

ers for farming and at that time people also knew how to live in harmony with nature, he added. States like Andhra Pradesh, Gujarat, Himachal Pradesh, Odisha, Madhya Pradesh, Rajasthan, Uttar

Pradesh, Tamil Nadu etc. have made many innovations to promote natural farming. During the last year, an additional area of 4.78 lakh hectares has been brought under natural farming in 17 states. Tomar said the central government has approved the National Mission on Natural Farming as a separate scheme with an expenditure of Rs 1,584 crore. Under the Namami Gange programme, the project of natural farming is going on along the banks of the Ganges, while the Indian Council of Agricultural Research (ICAR) and all Krishi Vigyan Kendras (KVKs), Central and State Agricultural Universities and Colleges are making all-round efforts to promote natural farming.

RBKs bring in revolutionary changes in agriculture

- Farmers can get several services from getting seeds to finding marketing opportunities for the crops at one place
- Further, integrated testing labs have become useful for farmers
- In Tirupati district, so far four labs were set up while two more will be inaugurated soon

V PRADEEP KUMAR
TIRUPATI

RYTHU Bharosa Kendras (RBKs) have brought in revolutionary changes in agriculture in the state. These centres have been facilitating farmers by extending services from supplying seeds to crop sales at one place thus reducing the time and money of farmers. After witnessing the sufferings of farmers during his padayatra, Chief Minister Y S Jagan Mohan Reddy has decided to launch some schemes to give them a helping hand.



Rythu Bharosa Kendram at Tanapalli village of Tirupati rural mandal

The farmers used to suffer from lack of marketing facilities after harvesting and they could not get proper remunerative prices. They used to lose their crops due to natural calamities and were facing uncertainties about their insurance claims. RBKs were designed to show a solution to many of these problems.

Now, they have been supporting the farmers from planting seeds to selling the crops. Supply of quality seeds, fertilisers and pes-

ticides are all being done at one place. Besides, farmers have been getting suggestions and awareness on organic and natural farming. In Tirupati district, integrated testing labs were set up at Srikalahasti, Chandragiri, Venkatagiri and Gudur constituencies while they will be started soon at Satyavedu and Sullurpet constituencies.

Apart from RBKs, farmers are getting help through YSR Rythu Bharosa and PM Kissan scheme

under which each farmer family is getting Rs 13,500 per annum.

In Tirupati district, 1,70,854 farmers have got Rs 94.04 crore under the first phase of the scheme in 2022-23 while in the second phase, 1,74,680 farmers received Rs 72.41 crore.

Similarly, 5,297 eligible farmers got Rs 3.58 crore benefit under the YSR Free Crop Insurance Scheme in the district. For the benefit of farmers, each and every crop being cultivated by the farmers was being enrolled in an e-crop app under which the government has been paying a premium on behalf of farmers and making them available to get the crop insurance.

As part of YSR zero interest crop loans, 23,601 farmers were benefitted worth Rs 5.01 crore for 2020 rabi and 2021 kharif seasons. Towards input subsidy, 350 farmers got Rs 19.05 lakh benefit.

The farmers were also getting agricultural machinery which the government has been providing to encourage mechanisation in farming. District Collector K Venkataramana Reddy said that the RBKs have been playing a vital role at village level in making the lives of farmers happy.

EXPLAINED ECONOMICS

Hopeful signs on food inflation

Several factors have boosted rabi plantings; open market agri prices are high; prospects of onion, potato, milk look good. As the RBI MPC meets today, there are reasons for cautious optimism on food inflation

HARISH DAMODARAN
& PARTHA SARATHI BISWAS
NEW DELHI, PUNE, DECEMBER 4

CONSUMER PRICE inflation fell from 7.41% year-on-year in September to 6.77% in October — and food inflation fell even more, from 8.60% to 7.01%.

But that isn't the only data point the Reserve Bank of India's (RBI's) monetary policy committee (MPC) may consider at its interest-rate action meeting from December 5-7. How much to hike, if at all, would depend on how the committee perceives inflation — especially food, which has a 45.86% weight in the consumer price index — to pan out in the coming months.

There are two reasons for cautious optimism here.

The first reason relates to global food prices.

The accompanying graph shows movements in the UN Food and Agriculture Organisation's (FAO's) Food Price Index (FPI) over the last two-and-a-half years.

The index — a weighted average of the international prices of a basket of food commodities over a base period value, taken at 100 for 2014-16 — soared from a low of 91.13 points in May 2020 (when Covid lockdowns worldwide triggered a "collapse of demand") to an all-time-high of 159.7 points in March 2022 (following Russia's invasion of Ukraine, leading to disruptions and "collapse of supply").

Both the FPI and its two key component indices — cereals and vegetable oils, which had exhibited ever higher volatility — have come down from those peaks. The FPI has fallen every single month since March, to 135.7 points in November. More significant is vegetable oils. At 154.7 points last month, the index was 16.2% down from a year ago and 38.6% down from the March 2022 high.

The effects of world prices easing are being felt most clearly in edible oils. Over the last six months, the all-India average modal (most-quoted) retail prices of soyabean and palm oil have come down from Rs 180 to Rs 160 and from Rs 165 to Rs 110 per kg respectively. Not surprising, given that India imports roughly 60% of its edible oil requirements.

The second reason has to do with domestic factors.

This year's *kharif* crop, mainly sown in June-July and harvested after October, hasn't been too good. The southwest monsoon's late arrival affecting June plantings, drought-like conditions in the four Ganga basin states (Uttar Pradesh, Bihar, Jharkhand, and West Bengal) and excess September-October rainfall around harvesting time resulted in lower outputs for most crops. Cotton and soyabean were the probable exceptions: High prices and their relative hardiness over, say pulses, in-

CUMULATIVE AREA SOWN UNDER RABI CROPS (LAKH HECTARES)

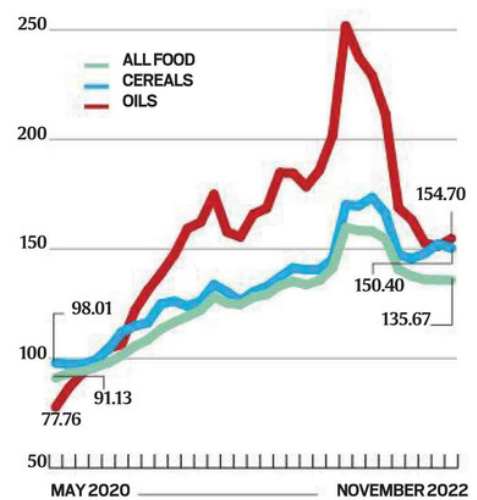
	NORMAL**	2021-22@	2022-23@
1. Wheat	304.47	200.85	211.62
2. Rice	45.65	9.53	10.62
3. Jowar	29.35	18.11	17.87
4. Maize	19.17	5.93	8.98
5. Barley	6.16	4.57	5.30
6. Pulses	150.20	108.57	112.67
(a) Chana	98.86	75.80	79.82
(b) Masoor	14.29	13.27	13.38
(c) Moong	10.47	0.67	0.69
(d) Urad	9.13	3.23	3.17
(e) Matar	7.45	7.98	7.34
7. Oilseeds	78.81	75.55	83.07
(a) Mustard	63.46	69.32	76.69
(b) Groundnut	7.22	2.73	2.67
(c) Sesamum	3.42	0.15	0.15
Total Rabi	633.80	423.52	450.61

*Includes other rabi coarse cereals, pulses and oilseeds;

**Five-year average (2016-17 to 2020-21) for whole season;

@As reported on December 2.

FAO FOOD PRICES INDEX (2014-2016=100)



duced farmers to expand acreages under both.

This is in contrast to *kharif* pulses. Production of both *arhar/tur* (pigeon-pea) and *urad* (black gram) are estimated 15-20% lower than in the 2021 *kharif* season. It explains why *arhar* is currently wholesaling at about Rs 7,000/quintal in markets such as Gulbarga (Karnataka) and Latur (Maharashtra), against last year's Rs 6,000 levels at this time.

Yet pulses overall haven't seen much inflation so far. That is primarily due to the huge stocks of *chana* (chickpea) with government agencies; they had bought some 25 lakh tonnes (lt) during the last *rabi* marketing season (March-April), on top of the 8 lt held from the previous crop.

There's still an estimated 24 lt of unsold stocks, which is putting pressure on prices: *Chana* is trading in major *mandis* like Rajkot (Gujarat), Akola (Maharashtra) and Ganjbasoda (Madhya Pradesh) at Rs 4,400-4,600 per quintal, well below the official minimum support price (MSP) of Rs 5,335.

Chana stocks apart, the market is being well-supplied by imports of *masoor* (red lentil) from Canada and Australia at landed prices of \$720-730 per tonne (Rs 59-60/kg). Since *masoor dal* can replace *arhar* to some extent — more so in hotels and canteens — it is putting a lid on the latter's prices.

There is room for cautious optimism in the rabi season.

Sowing is in progress for the *rabi* (winter-spring) crop. The extended monsoon, al-

though bad for the harvest-ready *kharif* crops, has helped recharge aquifers and fill up reservoirs. Coupled with the timely onset of winter and improved fertiliser availability (on the back of easing global prices), it has given a boost to *rabi* plantings of wheat, mustard, maize, and even *chana* and *masoor* (see table above).

Open market prices of all these crops, save *chana*, are ruling above MSPs. That, and the need to make up for *kharif* losses, has been added incentive for farmers to sow more area this time.

It isn't field crops alone. Onion prices at Maharashtra's Lasalgaon market, at Rs 10 per kg, are half of their year-ago levels. Last year's excess rain from September extending through January, destroyed both the *kharif* (June-July sown and October-November harvested) and late-*kharif* (September-October sown and January-harvested) onions.

There has been no such damage from La Niña this time, even as farmers have started planting the all-important *rabi* onion that is harvested from March onwards and is amenable to storage.

There isn't any major cause for concern with potatoes either — prices in Agra, at Rs 15/kg, are higher than last year's Rs 10 levels. Heavy October rainfall did delay plantings by 10-15 days with some area reduction, but the prospects for the tuber (harvested towards March and mainly kept in cold stores) look good for now. Most crops — seasonal vegetables included — have seemingly escaped the ravages of a third La Niña year in a row.

The weakening rainfall activity since November should also be good for milk. Waterlogged fields from incessant rains do not allow fodder to grow for animals to graze. Farmers have been suffering fodder shortages and increased feed costs, forcing dairies in turn to pay more for milk and pass it on to consumers.

That should ease somewhat with bumper crops of soyabean, groundnut, cotton, and mustard (their oil-cakes are protein ingredients in cattle and poultry feed) and also maize (a source of energy).

But it's important to beware the Ides of March.

The above optimism should be tempered by a simple fact: The present soil moisture and temperature conditions are ideal for the *rabi* crop, whose harvesting and *mandi* arrivals though, is only after March.

Last year's wheat was singed by a sudden spike in temperatures from mid-March, when the crop had just entered the grain-filling stage. March 2015 saw unseasonal rainfall, accompanied by hailstorms and gusty winds, causing widespread crop devastation across north, west and central India.

A lot can happen between now and March-April. The India Meteorological Department, on December 1, forecast "above normal maximum temperatures" during the winter season (December-February) "over most parts of northwest India, east & northeast India and many parts of central India". That isn't a happy augury either for wheat or mustard.

Godrej Agrovet looks to expand oil palm plantations

Bloomberg

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Godrej Industries Ltd, part of a 125-year-old Indian conglomerate, is looking to boost the number of oil palm plantations as the government aims to raise local output and cut the nation's heavy imports.

The group's agriculture and chemicals arm Godrej Agrovet Ltd.—India's largest oil palm processor backed by Singapore's sovereign wealth fund Temasek Holdings Pte.—will more than double the acreage of oil palm trees it manages over the next six years, chairman Nadir Godrej said in an interview at the company's headquarters in Mumbai.

Godrej, which runs businesses spanning consumer goods, financial services and real estate, is bolstering its position after Prime Minister Narendra Modi's administration announced last year that it will spend 110.4 billion rupees (\$1.4 billion) to help farmers produce more palm oil in the country, the world's biggest vegetable oil buyer. India, which imports 60% of its edible oil needs, plans to increase

the palm area by almost three-fold to 1 million hectares (2.5 million acres) by 2026.

Although the nation's target looks relatively small, compared with about 16 million hectares allocated to palm in top grower Indonesia and some 6 million in second-biggest producer Malaysia, India's government is keen to bring down cooking oil imports that surged almost 7% on an annual basis to 14 million tons in the year that ended in October. Palm oil accounted for more than half of the total volume.

India plans to increase the palm area by almost three-fold to 1 million hectares (2.5 million acres) by 2026

“The government is spending a lot of money supporting farmers in the early stages,” Godrej said. “We think that a lot of growth is possible—it's still a drop in the ocean,” he said. The company, which is supplied by 40,000 hectares of palm plantations in India, aims to add 5,000 hectares next year and then 10,000 hectares every year “for the next five years or so.”

Staple Dishes

India has been attempting to increase its domestic edible oil supplies to minimize the risk of frequent spikes in global rates.

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