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# AGRICULTURE TODAY

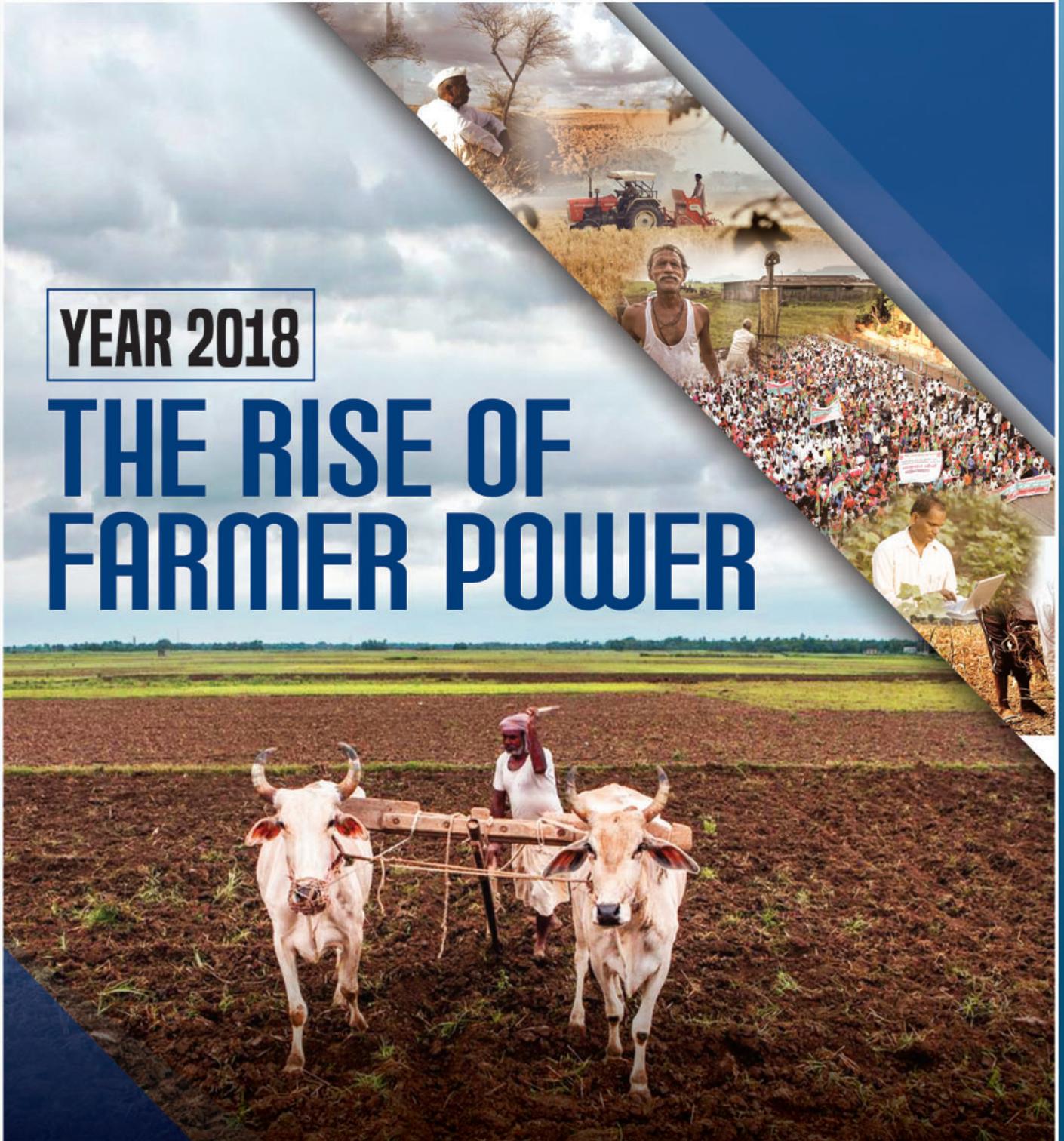
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YEAR 2018

## THE RISE OF FARMER POWER



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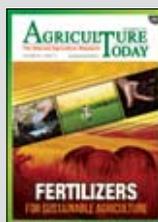
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## From the Editor's Desk

# 2019 ARRIVES WITH HOPE

**T**he year 2018 emerged as a decisive year as far as Indian agriculture was concerned. Our production charts in its typical fashion soared and so did the fantasies regarding farmers' income. Unfortunately, the year turned out to be depressing for the farmers due to falling prices of agriculture commodities and natural calamities.

Union Budget 2018 was predominantly an agriculture budget with a slew of measures engendering farmers' welfare and agriculture development. This year too, the Government increased the volume of institutional credit for agriculture sector from Rs.10 lakh crore in 2017-18 to Rs. 11 lakh crore for the year 2018-19. MSPs were hiked and gave the impression momentarily that it was in line with MS Swaminathan's formula.

The 'fall armyworm', cited by global agencies as an international food-security threat, was spotted in Karnataka's maize pockets for the first time, prompting a nationwide alert. The pest has spread to Tamil Nadu and entered Telangana. Feared as a threat to food security of millions, FAO, has warned that 300 million Africans could face hunger because of it.

The year 2018 was periodically punctuated by massive outbursts in the form of strikes and marches reverberating the unhappiness of the farmers and their general displeasure of the state of affairs. Mumbai march, Gaon Bandh and the most recent Kisan Mukti March cried out the fact that farmers' income were deeply compromised. Ours which was mostly a production oriented system had rarely observed agriculture as an income generator of a large section of the population. The advances that India today boasts of may have made the country an agriculture super power but it did little to help the living conditions of the farmers.

On the poicy front, India witnessed many debuts. Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM AASHA), the Umbrella Scheme comprising of Price Support Scheme (PSS), Price Deficiency Payment Scheme (PDPS) and Pilot of Private Procurement & Stockist Scheme was a highlight of the year. The Agriculture Export Policy, 2018, aimed at doubling the agricultural exports and integrating Indian farmers and agricultural products with the global value chains also made the attempt to brighten the agriculture segment.

Last year, many parts of India were devastated by cyclones, floods and landslides. Many lost their lives, land, house, property, belongings and most importantly their source of livelihood. Agriculture suffered the worst. States of Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Nagaland and Arunachal Pradesh suffered the most which again brought to the fore the need of the robust implementation of crop insurance schemes.

The year 2018 would not go down the history as a cheerful year for Indian agriculture. However, many lessons were learnt this year. Farmers emerged as a strong force to reckon with. The year to come will therefore be crucial with respect to the farmers as they would dictate some major policy and developmental changes.

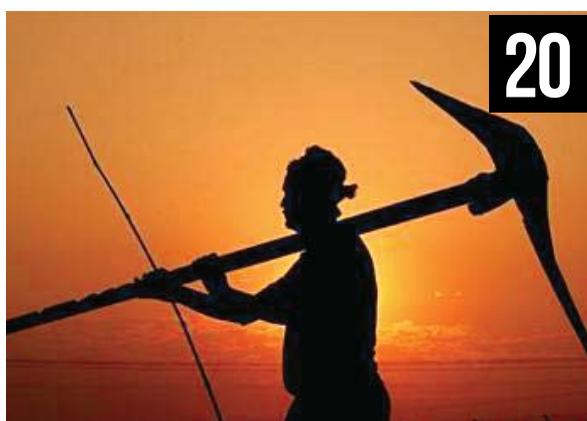


*Anjana*

**Anjana Nair**

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## Selling 'Brand India'

*Agro Export Policy aims to double India's agriculture exports*

**D**oubling of Farmers' income has become the core agenda of the government recently and all policy measures somehow carries this responsibility, catering to it directly or indirectly. Falling commodity prices and piling production numbers have now forced the government to take a more lenient view of agriculture exports and opening the gates for a brand new policy initiative, "Agriculture Export Policy 2018".

Self explanatory, the policy intends to encourage farm exports through suitable policy instruments integrating Indian farmers and agricultural products with the global value chains. Through this policy, the government intends to double agricultural exports from present ~US\$ 30+ Billion to ~US\$ 60+ Billion by 2022 and reach US\$ 100 Billion in the next few years thereafter, with a stable trade policy regime. The policy also intends to diversify our export basket, destinations and boost high value and value added agricultural exports including focus on perishables. Promoting novel, indigenous, organic, ethnic, traditional and non-traditional Agri products exports is also in the agenda. The policy will also provide an institutional mechanism for pursuing market access, tackling barriers and deal with sanitary and phyto-sanitary issues to double India's share in world agri exports, thereby enabling farmers to get benefit of export opportunities in overseas market.

The policy should be seen in the aftermath of heaping agriculture production and falling domestic prices. The farmers' unrest that has constantly received the undivided attention of the nation has also pointed towards the need for wider and broader market. Agriculture exports thus becomes an important and underexplored avenue for India's agriculture commodities.

However, it should be noted that it is easier said than done. Once the export regulations are eased, it becomes the primary responsibility of the

government to find a balance between the export market and domestic market. The export markets are undoubtedly lucrative and hence the chances of traders preferring the global markets over the domestic emerges as a natural possibility. Exports should not be favoured at the expense of the domestic market. A regulatory mechanism must be developed that takes adequate note of this probability.

Indian agri commodities have constantly faced bans on phytosanitary grounds. If India needs to rise to the standards of a regular agriculture exporter, then we should have a stringent and robust certification process. Not only is this essential at the inspection level, but also at the field level. The awareness of the existence of such quality parameters need to be propagated among farmers, and through regular certification and grooming an 'export club of farmers' must be raised. Similarly, tracking agro products is also important at this point.

Beyond the logistics, cold chains and policy measures, India needs to sense the global market. The global market demands need to assessed, and it should be appropriately translated to the Indian fields. This could be at the product level or processing level. The agriculture products must be presented according to the demands and this requires not only market intelligence but also improvisation and innovation. Indian agro trade bodies placed strategically across the borders can play an important role in lobbying for the 'Brand India' and securing markets for the Indian products.

Promoting agriculture exports is an important aspect to widening the market reach for the farmers. But this entails mammoth task. at ground level. There requires a degree of conditioning for the farmers towards the prospect of selling in the global market. Good Agriculture Practices, judicious use of chemical fertilizers and pesticides, reduced use of plastics in packaging, sustainable agriculture and climate sensitive agriculture can become good selling points in the global market. India should harness these areas than conventional agriculture to meet export demands.

## Acclimatizing with Climate Change

*Indian agriculture should actively pursue Climate smart agriculture*

The recently concluded COP24 climate talks in the Polish city of Katowice, was a moderate success with nations finally reaching consensus on a more detailed framework for the 2015 Paris Agreement, which aims to limit a rise in average world temperatures to “well below” 2 degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial levels.

The Climate change assessment reports successively produced this year have stubbornly pointed towards a progressively warming world. Increasing greenhouse gas emissions have been successful in warming the globe with indications that we are looking at warmer days ahead. While revoking the effects are unattainable at this point, we should be looking for ways to survive in this warmer world. Most importantly, the agriculture sector which is the source of livelihood of more than sixty percent of Indian population will have to brace for tough times ahead.

The Sixth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) released in October establishes that the world has become 1°C warmer because of human activities, causing greater frequency of extremes and obstruction to the normal functioning of ecosystems. Climate-induced risks are projected to be higher for global warming of 1.5°C than at present, but lower than at 2°C (a catastrophic situation). The ninth annual U.N. Environment Programme (UNEP) report maintains that Global greenhouse gas emissions in 2030 could be between 13 billion and 15 billion tonnes more than the level needed to keep global warming within 2 degrees Celsius this century.

The U.N. commissioned report by the IPCC in October warned that keeping the Earth’s temperature rise to 1.5 degrees C would need “unprecedented changes” in every aspect of society. The increasing temperatures of earth hence warrants a plan for agriculture systems. India with a large section of farmers dependent on rainfed agriculture, this becomes acutely relevant. Monsoon changes are quite perceptible today

and so are the intense summers. Events such as these could become quite common, and hence our agriculture must be geared up to face them in a long term.

With floods and salinity intrusion a near possibility, it is time agriculture scientists explore the traditional varieties for suitable traits and engage in transferring them to the cultivated varieties. Studies should be carried out in areas where farmers practise special types of farming to adapt to local conditions and traditional wisdom can be imbibed from such farming situations. Research in these areas must be therefore encouraged by the government.

Crop insurance is another important instrument that has not been fully utilized to its potential. Many of the farmers are unaware of crop insurance schemes. The government should therefore strive to spread awareness regarding the existence of the insurance schemes and the extension machinery should be effectively deployed in this matter. The recent floods and cyclones in Kerala, Tamil Nadu, Andhra Pradesh, Nagaland and Arunachal Pradesh, has once again reiterated this point. The effects of associated crop loss on farmers’ income could have been mitigated to some extent if there was effective utilization of the crop insurance schemes.

Drafting a contingency plan holds immense significance. It is also incumbent upon the weather forecasting division to broadcast data regarding the climate fluctuations in a useful format well in advance. The contingency plan should incorporate the suitable varieties and package of practices for the same. The yield potential of these varieties may not be commensurate with that of the improved varieties which are bred purposefully for better yield attributes. So in this scenario, a revised MSP or other price support mechanisms must be roped in to compensate for the yield differences and to protect the farmers from income fluctuations.

Climate smart agriculture should be an important slogan. If the government wants to double farmers’ incomes protecting them from the shocks created by climate aberrations also becomes important.

## Waiving Development

*Farm loan waivers have increasingly become the staple of elections*

Loan waivers have been a much used political instrument in 2018. Hours after taking charge of the respective governments, the congress party waived off loans of the farmers in the respective states. With the pre poll promise of loan waivers working for the Congress, they will be a much used political instrument in 2019 as well. However, their implications on the larger agriculture sector will be not bear a favourable result for the sector in long run.

The increasing propensity of the states to waive off loans due to pre poll promises are becoming a worrying trend. In the aftermath of recently concluded elections, Assam, Chhattisgarh, Madhya Pradesh and Rajasthan have waived off farm loans. Since the start of 2017-18, ten states have announced farm loan waivers amounting to nearly Rs 1.7 lakh crore with even the possibility of a nation wide waiver in 2019. According to Reserve Bank of India data, NPAs rose over 23 per cent from Rs 48,800 crore in 2016 to Rs 60,200 crore in 2017. Bad loans in the agriculture sector have jumped 142.74 per cent from Rs 24,800 crore in fiscal 2012, indicating distress in the segment in the last five years. The data further shows that the maximum default took place in 2017, while significant four years- 2012 to 2017 only showed defaults of Rs 24,000 crore. Farming sector's bad loan constitutes 8.3 per cent of the total banking sector NPAs of Rs 728,500 crore as of March 2017. A fall out of loan waivers, bad loans are becoming a matter of worry for the banking sector.

Loan waivers – either completely or categorically - are temporary solutions to a larger problem. The debt cycle that farmers fall in due to investing and following farming as their vocation has many underlying reasons which either work together or in isolation. Interestingly, each time the farmers end up in huge losses, the reasons have remained more or less the same. Apart from rooting for loan

waivers, no one seems to identify these reasons and work to give a permanent solution. Farmers are too naïve to see through this and hence are satisfied with these one time solutions. These transient measures are at the expense of all the developmental activities that could have happened in agriculture – that could have increased the income derived from farming.

Farm income growth has been subdued in recent years due to poor rains, floods and falling market prices. Besides this, agriculture in India also suffers from inherent issues like fragmented land holding, depleting water table levels, deteriorating soil quality, rising input costs, low productivity, monsoon vagaries, poor penetration of technology, minimal mechanization, increasing labour cost, supply chain inefficiencies and poorly developed infrastructure.

Farm loan waivers typically does not absolve the problems of farmers. Only a small share of farmers are even benefitted by this gesture. Only 15% of the marginal farmers (with less than one hectare of landholding) have access to formal credit, so a loan waiver helps them little. In fact, previous waivers have led to banks reducing credit outlay for small farmers during the next loan cycle, thereby diminishing their chances of getting formal loans, which in turn pitch them closer to the informal sources of credit. The cost difference for loan rates between the formal and informal sector varies at the least between 30% and 45%, annually. Moreover loan waivers can erode credit discipline and year after year, this is expected out of governments as is happening right now.

What Indian agriculture needs is not huge debt write offs, instead avenues to increase the income prospects of the farmers. Strengthening of agriculture infrastructure is what the governments can do. Instead of waiving off loans, use that amount of money in building better technologies and popularizing them among farmers.

## Farmer Power

*The year 2018 saw farmers emerge as a collective force*

**A**griculture will emerge as an important topic in the upcoming election in 2019. It will be a major subject of debate for the political parties to train their gun on each other. Farmers' distress is all pervasive and the effects are more prominent than ever. They have been quite vociferous of their demands and the era of meekly enduring the hardships have gone. The year 2018 saw several protests by farmers in a well coordinated manner across the nation.

The assembly elections that concluded in the five states recently have showcased the general sentiment of the people, especially the farmers. The wide spread discontent owing to the declining income standards of the agriculture sector has cast an ominous shadow on the ruling government. Despite their slogan of doubling farmers' income, MSP increments and procurement policies, the ruling party in the center could only garner dissatisfaction from the farming electorate. The results from the agriculture centric states such as Madhya Pradesh, Chhattisgarh and Rajasthan that toppled the incumbent government evidently points to this fact. In the three states, the incumbent BJP managed to win just 35% of the 436 assembly seats in rural areas, while the Congress won 55% of the seats.

It is hard to miss that the central government has been very ambitious with its project involving agriculture. With a clarion call to double farmers' income by 2022, the government had opened the flood gates of a host of programmes for the agriculture sector. From eNAM, Pradhan Mantri Fasal Bima Yojana, hike in MSPs to PM AASHA, the government made a very prudent and sincere effort to integrate prosperity in to the rural sector through agriculture. Unfortunately, success of most of these projects remained elusive. Most of these projects were detached from the downstream. The resolve of these projects were somewhat diluted as they trickled down to the grass root level with respect to

implementation.

While the government representatives aver that they had progressively hiked MSPs, it is also true that the market prices that are prevailing are below the announced MSPs. Farm gate prices of most commodities, be it oilseeds, pulses or milk, have been 5-10 per cent lower than the minimum support prices. In 2018-19, report show that against the target of procuring 3.3 million tonnes of pulses and oilseeds under the much-talked about PM-ASHAA scheme, just around 0.4 million tonnes have been purchased.

Infrastructure capacity for the agriculture segment is grossly inadequate. No matter how economically and technically feasible projects are, unless and until there are enough infrastructure facilities and logistics connect, these projects are doomed to fail. Declaring MSPs will only achieve the intended effect if there is a robust procurement mechanism and the maximum numbers of farmers are benefitted. Mere declaration of MSPs cannot be considered as an effective route to drive up the agricultural incomes.

Loan waivers have been a recurrent demand of the farmers. Although not a wise move ethically, political parties are increasingly warming up to this idea. Loans worth crores of rupees have already been waived by different states as a reward to the farmers for letting them accede power. Now loan waivers have become a persistent fixture in any party manifesto. This will invariably destroy the credit culture of the country and halt any tangible developments from happening in agriculture.

The farmers today have emerged as a collective force capable of swinging the fate of any established government. The political parties are finally hearing out the farmers and are wary of their wrath. It will be interesting to watch the political parties vying to get farmers' interest. Loan waivers would definitely be a prominent poll promise that will be reiterated by the parties. Beyond loan waiver, other poll promises will also emerge to lure the farmers.



## Agritech firm Ninjacart raises Rs 2.5 bn from Accel US, Syngenta

► Ninjacart, a business-to-business marketing and supply chain platform for agricultural produce, has raised Rs 2.5 billion (approx \$35 million) in a fresh funding round led by Accel US and Syngenta Ventures. This is by far the largest single investment round in the agri-tech space in India. The Bengaluru-based startup will utilise the capital to expand into new geographies and setup infrastructure, apart from expanding its team. In a statement, Ninjacart said it aims to expand its service in over 10 cities and open over 200 distribution centres across the country, without giving a specific timeline. "Our focus will be on expanding to new markets and continue to innovate on behalf of our farmers and customers - and this will come from continued investments in talent, technology and supply chain infrastructure," said ThirukumaranNagarajan, co-founder and CEO of Ninjacart. Including the latest infusion, Ninjacart has so far raised Rs 3.1 billion making it one of the most well-funded startups in the country's agri-tech space. Recently, Cropin, a full-stack software-as-a-service company for farmers and agriculture related jobs, raised \$8 million (approx Rs 575 million) from Chiratae Ventures (formerly IDG Ventures India) and the Bill & Melinda Gates Foundation Strategic Investment Fund.



## ITC arm, U.K. institute tie up to bring new potato varieties

► ITC Limited has announced that Technico Agri Sciences Limited (TASL), a wholly owned subsidiary, has inked an agreement with James Hutton Institute (JHI), a Scotland-based research and innovation organisation, to source 16 new varieties and 600 new potato clones for trial and testing in India. Under the initial five-year agreement, these varieties would go through a process of R&D and evaluation to identify varieties suitable for Indian States. They are expected to improve yields by up to 20 %. Technico has been engaging with farmers and processors in many States to help improve farm yield in potatoes significantly, said SachidMadan, chief executive, TASL. It had also facilitated exports and processing. Dr. Jonathan Snape, head of James Hutton Limited, JHI's commercial subsidiary, stated that since potato farming provides livelihood to a significant section of India's agricultural community, the tie-up may effectively help farm communities.

## Israel's Netafim launches digital irrigation solution for farmers

► Israeli company Netafim Irrigation has introduced 'NetBeat', a technology solution that will help farmers grow more food with less resources by combining real-time data from the field with Dynamic Crop Models to personalise irrigation programmes. RandhirChouhan, Managing Director, Netafim India, said the solution will help both big and small farmers in organising irrigation digitally by combining irrigation and fertigation control, monitoring and management together with smart DSS crop models, interface to weather forecast and remote cloud access to the field from anywhere, anytime. Claiming NetBeat as the "first irrigation system with a brain", IzharGilad, Head (Commercial and Business Development), Netafim, said it will provide real-time recommendations to farmers based on data pertaining to plant, soil and weather conditions obtained from the field and external sources. "The data is analysed in the cloud, according to proprietary Dynamic Crop Models and research in the field of agronomy and hydraulics. Farmers can monitor, analyse, get decision support and automate their irrigation operation by smart phone from anywhere," said Gilad, adding "the solution is expected to bring about a paradigm shift in drip irrigation technology."

## ITC's Technico in pact with Scottish institute for new potato varieties

► Technico Agri Sciences, an agri-biotech company owned by diversified Indian conglomerate ITC, has tied up with Scotland-based James Hutton Institute to bring in 16 varieties and 600 clones of potato to India. These differentiated varieties, expected to improve yields by 15 to 20 per cent, will undergo trials and evaluation to identify varieties suitable for cultivation in different States the company said. The varieties are expected to benefit farmers in UP, MP, Gujarat, Punjab, West Bengal and Bihar, the potato processing industry and boost exports of the tuber. The agreement is for five years, it said.

## Crystal Crop Protection Limited acquires Syngenta's three selected insecticide and fungicide brands in India

▶ Crystal Crop Protection Limited ("Crystal" or "the Company"), one of the research and development based crop protection manufacturing and marketing companies in India, has acquired Proclaim, Tilt & Blue Copper brands in India from Syngenta. Syngenta India's Managing Director, Rafael Del Rio stated that "The Competition Commission of India (CCI) directed the divestment of these brands to Crystal while approving the global acquisition of Syngenta by ChemChina. We are confident that Crystal will continue to steward the products for the benefit of the farming communities." Syngenta is an established name among Indian farmers for its high quality crop protection products known for improving yield and quality output. This acquisition from Syngenta will enhance Crystal's penetration in the Pulses, Cotton, Rice, Wheat, Vegetable and Grapes markets in India. Commenting on the acquisition, Ankur Aggarwal, Managing Director of the Company, "This acquisition is in line with our vision and philosophy of ensuring growth for all stakeholders. Inclusion of high equity brands in our portfolio will strengthen us to provide best in class crop protection solution to farmers and thus increase their farm productivity." This is the Company's fourth acquisition in the calendar year 2018, the first was acquisition of the manufacturing facility at MIDC, from Cytec India Specialty Chemicals & Materials Private Limited, the second was Indian gram sorghum, pearl millet and foddorsorghum seeds business from Syngenta India Limited, Devgen N.V., Belgium and Devgen Seeds and Crop Technology Private Limited, and third was four brands namely Furadan, Splendour, Affinity Force and Metcil from FMC India Limited. Agro-Chemicals products company, Crystal has made number of acquisitions in the past few years. Crystal Crop Protection Limited also acquired Hyderabad based company Rohini-Seeds Private Limited and Rohini Bioseeds and Agritech Private Limited in 2011, which has brought its presence in the seeds market.

## NBHC Announces Major Re-brand of its Pest Management Division as 'Pestinct Pro Solutions'

▶ National Bulk Handling Corporation (NBHC), India's leading provider of integrated commodity and collateral management services of agri-commodities, announces a major re-brand of its Pest Management Division as 'Pestinct Pro Solutions', formerly known as Commguard. As one of the key service providers in pest management industry, the original platform has enabled the company to become a leading pest control operator amongst the top 3 in India. The new brand "Pestinct" represents bold ambition, positive change and the unrelenting drive to improve. It represents NBHC's continued commitment to building successful business relationships and the delivery of professional services in an ever changing technological environment. As part of a tech-oriented company, Pestinct Pro Solutions has accomplished productivity through digital prowess (by use of customised Enterprise Resource Planning (ERP) Software) and has also developed its own Mobile App for quick and easy access by its customers. The company aims at protecting businesses by providing effective relief from pests and remains committed to implementing safe and effective ways of making the work environment pest free. The environment – friendly eco-system approach is strictly followed to control pest hazards and ensure consistent compliance to food safety and pest management standards.

## IBM seeds tech to help farmers weather challenges

▶ It is one of the most limiting factors in the agriculture industry – the unpredictable nature of weather. Frequent droughts, patchy unseasonal rain and vagaries of nature pose big challenges for farmers. But technology is coming to the rescue. IBM Research-India is combining multiple, global satellite-based information sources to generate agronomic-specific insight to help farmers. It is developing prediction models using data and artificial intelligence to help farmers improve crop yield and productivity. Commenting on what sparked the company's work in agriculture, SriramRaghavan, Vice-President, IBM Research - India & Singapore, says though agriculture is a trillion-dollar industry, it faces significant headwinds like climate change, population growth and food security. Add in other uncertainties like regional weather events, rapid shifts in market demand, and swinging crop prices, and a clearer picture emerges as to why agricultural players are looking to technology to protect and improve crop yields. "We have a suite of services and combine multiple sources of satellite data and geospatial temporal data. Using public data from various satellites, from the US, NASA, as well as European states, we can get fine-grained information using AI," Raghavan says. The data so generated can even help predict soil moisture. "Just as health of the crop is important, so is access to water. We combine information from multiple satellites to present a highly accurate picture," says Raghavan, also the CTO of IBM India.

## Cabinet approves policy to double agri export by 2022

► The Cabinet approved agriculture export policy with an aim to double farm export by 2022 — from the present \$30 billion to \$60 billion by 2022 — and reach \$100 billion in the next few years thereafter with a stable trade policy regime. The move on a stable trade policy regime will minimise the practice of export curbs, assuring farm exporters of no interference from the government unless it is urgently needed to keep domestic prices under check. Export of organic products will, however, have no restrictions. Briefing on the decision, commerce minister Suresh Prabhu said the export policy would seek to remove all kinds of export restrictions on organic products. He added that the move was aimed at boosting exports of agriculture commodities such as tea, coffee and rice and increase the country's share in global agri trade. The cabinet also approved the proposal for establishment of monitoring framework at the Centre to oversee implementation of agriculture export policy. The monitoring framework will have representations from various central ministries and agencies, and concerned state governments. The export policy will promote cluster approach where identified districts would be developed as 'cluster' to promote export through setting up entire value chain for particular area-specific farm produce. According to an estimate, implementation of the policy will have financial implication of over Rs 1,400 crore.

## Uttar Pradesh Govt Eases E-procurement Norms for Small Farmers



► The Uttar Pradesh government has eased e-procurement norms of paddy from small and marginal farmers, allowing them to sell up to 100 quintals of the commodity without verification of crop and land details. This is being done to boost procurement. Earlier, procurement of up to 25 quintals from small farmers and 50 quintals from marginal farmers was allowed without verification. "Verification of a large number of farmers had shown that many have grown crops other than paddy," said an official, who did not wish to be identified.

## Maharashtra to bring back Ordinance reforming agri-market

► The Maharashtra government intends to bring back the Ordinance amending the Agricultural Produce Marketing (Development and Regulation) Act, 1963 soon, a highly-placed source in the State marketing department told BusinessLine. It is understood that a committee has been formed to listen to the concerns of different stakeholders and to tweak the Ordinance and present it before the State Legislative Assembly in the summer session. The State government had withdrawn the Ordinance from the Upper House, following protests by APMC markets. The Ordinance sought to remove all farm produce (including livestock) from the purview of the Agriculture Produce Market Committee. It also proposed to grant 'Markets of National Importance (MNI)' status to the large mandis in Maharashtra to facilitate exports and easy inter-State trade. Currently, only the Azadpur fruit and vegetables mandi in Delhi has MNI status. The APMC markets, which resumed after the State government withdrew the Ordinance, are furious again.

## Govt makes jute packaging mandatory for all food grains

► The government approved a proposal making jute packaging mandatory for all food grains. The decision was taken at a meeting of the Cabinet Committee on Economic Affairs (CCEA) chaired by Prime Minister Narendra Modi here. "The CCEA approved that 100 per cent of the food grains and 20 per cent of the sugar shall be mandatorily packed in diversified jute bags," an official statement said. The move, which expanded the scope of Jute Packaging Material (JPM) Act, 1987, retained an earlier decision that 20 per cent of the sugar shall be mandatorily packed in diversified jute bags. Earlier, it was compulsory to pack 90 per cent of the food grains and 20 per cent of the sugar in jute bags. "Initially, 10 per cent of the indents of jute bags for packing food grains would be placed through reverse auction on the GeM (Government e-Marketplace) portal. This will gradually usher in a regime of price discovery," it said. The decision will give a fillip to the development of the jute sector, increasing the quality and productivity of raw jute, diversification of jute sector and also boosting and sustaining demand for jute product, it added. The move is significant as nearly 3.7 lakh workers and several lakh farm families are dependent for their livelihood on the jute sector. The jute industry is predominantly dependent on the government sector, which purchases jute bags worth more than Rs 6,500 crore every year for packing food grains. This is done in order to sustain the core demand for the jute sector and to support the livelihood of the workers and farmers dependent on the sector. The move will benefit farmers and workers in West Bengal, Bihar, Odisha, Assam, Andhra Pradesh, Meghalaya and Tripura.

## Centre eases insurance claim rules for farmers

► The Union government has introduced several norms tightening the Pradhan Mantri Fasal Bima Yojana (PMFBY), its flagship farm insurance scheme. One of the new rules taking effect on November 30, says that claims of farmers not cleared by insurance firms within two months of harvest will be “automatically approved”. As with any insurance policy, claims need to be approved by insurance firms for policyholders to get compensation. The new rule means insurance firms will not be able to verify claims or carry out further checks to ascertain the validity of claims of farmers if they don’t do it within two months. “Beyond the two-month deadline, all claims will be auto approved by the PMFBY portal (website),” an official said, requesting anonymity. With this new “auto approval” guideline, the government hopes to deal with what a major reason of farmer angst concerning the scheme: delayed payments. If farmers don’t get insurance payouts for one season in time, it affects their ability to invest in crops for the next season. A centralized website governing the farm-insurance programme has been updated with an in-built feature to make this “auto approval feature” operational. Among key changes to the politically important scheme, participating insurance companies will now have to spend 0.5% of the gross premium collected on raising “awareness about the scheme among farmers”. State governments will have to devote 2% of their annual budget to a slew of measures tied to the farm insurance programme. These include administrative expenses to speed up processing of claims. This 2% share will also go towards meeting expenses for yield and loss assessment, crucial for timely payouts. The 2% share from the budget will also be used for purchase of smart phones through which yield losses need to be estimated via an android app developed for the purpose. Other expenses include setting up of state technical support teams.

## Blanket Plant Quarantine Norms may Hit Red Chilli Exports

► Red chilli exports from India will be hit if the plant quarantine certification requirement is extended to all consignments after December 31, said traders. At present, the certification is required only for chilli exports to Mexico, which detected the presence of beetle in some of the consignments from India over a year ago. But according to Spices Board, the proposal to extend it to all the buying countries has been kept pending till December 31. Chilli is the largest exported spice from India, having clocked earnings of Rs 4,256 crore last year. “It will be a big problem if the certification is made mandatory for chilli export to all the countries. The government should limit it to Mexico alone,” said Shailesh Shah, director of Jobs International. If the proposal is implemented, exporters will have to produce a certificate that the chilli is from warehouses registered with the Directorate of Plant Protection Quarantine and Storage for each consignment. “It can cause much delay and it is quite unnecessary as chilli consignments are accompanied by Spice Board certificate confirming that they do not contain aflatoxin or other chemicals like Sudan Red,” said Prakash Namboodiri, chairman of All India Spices Exporters Forum. Vietnam is currently the largest buyer of Indian chillies, followed by Thailand, USA, Sri Lanka and Malaysia. Mexico is not a major buyer. “Mexico used to buy chillies from China but shifted to India when Chinese chillies became costly,” said Namboodiri. Of late, China has emerged as a significant purchaser of Indian chilli, particularly the high heat variety. Chinese chilli production is mostly confined to low heat ones. Export to China has gone up more than four times to over 9,000 tonnes in the past couple of years.

## Govt extends duty sops for non-basmati rice export

► The government has extended duty benefits to non-basmati rice exporters under a scheme to boost the shipment of the agri commodity. The duty benefit is provided under the commerce ministry’s merchandise exports from India Scheme (MEIS). “Non-basmati rice items have been made eligible for MEIS benefits at the rate of 5 per cent for exports made with effect from November 26 and up to March 25, 2019,” the directorate general of foreign trade (DGFT) has said in a public notice. DGFT, under the commerce ministry deals with export and import related policies. Under MEIS, government provides duty credit scrip or certificate depending on product and country. Those scrips can be transferred or used for payment of a number of duties including the basic customs duty. India is one of the largest exporters of non-basmati rice and in 2017-18, the country exported 8.63 million tonnes of the rice, which was more than double the quantity of basmati rice exports of 4.05 million tonnes. Non-basmati rice exports during April-February 2018 stood at \$3.26 billion as against \$2.53 billion in 2016-17. Rice is the country’s main kharif crop.

As per the first advance estimates of foodgrains production for kharif (summer-sown) season for 2018-19 crop year, rice output is estimated at record 99.24 million tonnes as against 97.5 million tonnes of production in last year’s kharif season. The sowing operation of kharif crops begins with onset of monsoon and harvesting starts from mid-September. Paddy, maize and soyabean are major kharif crops.



## NPAs in agri sector up

► Blame it on rainfall deficit or poor price yielded on farmers' harvest, farmers are unable to repay their loans. This is clearly reflected by the data released in the quarterly report of State Level Bankers Committee (SLBC), according to which bad loans in the agriculture sector have gone up by Rs 1,258 crore, rising from Rs 4,161 crore in the second quarter of FY 2017-18 to Rs 5,419 crore in the corresponding quarter of FY 2018-19. During the same period, agriculture advances grew from Rs 78,276 crore in the second quarter of FY 2017-18 to Rs 82,608 crore in the corresponding quarter of the current financial year. With this, the ratio of NPA to outstanding also rose from 5.32% to 6.56%. Citing reasons, Rohit Patel, convener, SLBC, Gujarat, said, "This year, there was a significant rainfall deficit due to which many of the farmers could not repay their crop loans. This is despite the interest subsidy given to them by the state as well as central governments." Against advances worth Rs 47,318 crore, the gross NPA for crop loans in Gujarat stood at Rs 2,158 crore. Similarly, against advances worth Rs 35,290 crore, gross NPA for agriculture term loans stood at Rs 3,261 crore. "Many a time farmers do not get the proper prices for their harvest due to which their incomes go down. As a result, they fail to repay loans," Patel added. Sources also said that the rise in NPA could also be due to the upcoming elections, wherein farmers would expect a farm loan waiver. Bad loans in the agriculture sector have gone up on a quarterly basis as well, by Rs 1,149 crore, rising from Rs 4,270 crore in the first quarter of FY 2018-19.



## Over 1 lakh farmers get Rs1,771-crore debt relief

► Chief Minister Capt Amarinder Singh announced extension of the loan waiver scheme to farmers with landholdings of 2.5 to 5 acres. He said his government had written to the Centre about tackling the potato glut and ensuring export of sugar to Asian countries. Capt Amarinder gave debt relief certificates against commercial bank loans to the tune of Rs 1,771 crore to 1,09,730 eligible marginal farmers of four districts. The amount was being transferred directly to the commercial bank accounts of marginal farmers and the process would be completed by Saturday, the Chief Minister said at a state-level function. He symbolically handed over debt relief certificates to 25 farmers from Patiala, Ludhiana, Sangrur and Fatehgarh Sahib. "Farmers with landholdings of 2.5 to 5 acres will get debt waiver for both cooperative and commercial banks and my government will waive the loans of the landless labourers in the subsequent phases of the implementation of the waiver scheme," he said. The Chief Minister announced that 2.15 lakh small farmers who had taken loan from cooperative banks would be covered in the third phase, while 50,752 small farmers who had taken loan from commercial banks would be covered in the fourth phase. Underlining the need to export sugar and potatoes to Central Asian countries, the Chief Minister said he had written to Prime Minister Narendra Modi to include these items in the export list, which was cleared recently. Capt Amarinder expressed concern about the problem of spurious seeds, agri-chemicals and other inputs that reach the farmers and said he would not allow this to happen. "The outstanding debt had increased more than fourfold, to Rs 2,08,000 crore, by the time SAD-BJP government's term ended and the Congress government has been working hard to ensure financial benefits to the farmers to transform the farming sector," MLA Hardyal Singh Kamboj said. Former Union minister Preet Kaur lauded the Punjab government for taking its prestigious debt relief programme to the next level.

## Tamil Nadu to record high crop insurance as Agri dept meets paddy target



▶ The number of farmers covered under the crop insurance scheme - Prime Minister's Fasal Bima Yojana (PMFBY), is all set to touch the highest in Tamil Nadu during 2018-19 with the State Agriculture department already exceeding the target fixed for Paddy II (Samba) season. It is expected that at least around four lakh farmers are likely to insure their crops during Rabi season. In all, 72 per cent of the Samba paddy crop has been insured during the current season and the target has exceeded Gross Cropped Area as well. According to official sources during 2016-17, i.e, the first year of implementation of PMFBY and being a drought year, as many as 15,76,139 farmers enrolled for crop insurance. This year, till date, already, 13,82,620 farmers have enrolled for the same. Of this, during Paddy II season alone, 11,56,117 farmers insured their crops this year. Of them, 2,61,705 are loanee farmers while 8,94,412 are non-loanee farmers. The coverage is higher than 2017-18, when 10,00,981 farmers insured their crops during Paddy II season. Of them, 2,28,209 were loanee and 7,72,772 non-loanee. This year, the target fixed for insurance coverage during Paddy II season was 50 per cent of Gross Cropped Area. The State Agriculture department exceeded this target too, this year.

## Banks face bitter harvest from farm-loan waivers

▶ The increasing demand for farm-loan waivers and farmers holding off loan repayment in anticipation of write-offs are giving banks sleepless nights. "The expectation of agricultural loan waivers next year when elections to the Lok Sabha and some key States are slated to be held is so high that farmers in many States have gone slow on their repayments, leading to a ballooning of the bad loan portfolio," said a senior official of a leading public sector bank. While overall data for banks are not available yet, individual cases of election-bound States with loan write-off prospects show an increase in agri-NPAs. In Telangana, which went to polls on December 7, NPAs went up by Rs 18,194.49 crore in the quarter ended June 2018. Similarly, non-performing assets in agricultural loans had increased by Rs 4,795 crore in the quarter. While NPAs in agri term-loans crossed 12 per cent, bad loans in total agriculture advances stood at 7.70 per cent. NPAs in total outstanding agricultural advances touched 23-30 per cent across States. Bankers are expecting a major announcement in the coming Union Budget on waiver of certain categories of farm loans and are gearing to face it.

## J&K Bank creates Rs 11 cr relief fund for snow-hit apple farmers

▶ The J&K Bank today announced creation of a 'Distressed Apple Growers Relief Fund' for extending help to the snow-affected apple growers of the State. Rs 11 crore have been pooled in the fund which includes three days salary donated by the staff of the bank and Rs 5 crore from the bank's CSR fund. Untimely snowfall on November 3 and November 4, 2018 left a trail of destruction and devastation, turning vast expanses of orchards into scenes of mayhem, with trees bruised, bent and broken. Huge quantity of fruit got damaged in the heavy snowfall. It's worth mentioning that the Government declared it as State Specific Special Natural Calamity. J&K Bank Chairman & CEO, Parvez Ahmed, while sharing the details of the fund said, "We were deeply pained and anguished after seeing the colossal damage that the recent untimely snowfall has caused to apple trees. As a humble gesture, J&K Bank employees and management have unanimously decided to contribute their three day's salary for rehabilitation of the affected growers. The Board of Directors of the Bank too, in a magnanimous gesture approved a contribution of Rs 5 crore from the Bank's CSR funds for relief and rehabilitation of the distressed farmers."

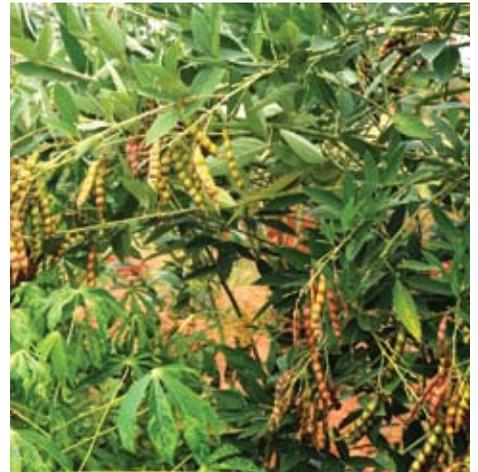


## New food processing policy to raise farmers' income

▶ The Tamil Nadu government unveiled an ambitious Food Processing Policy, 2018 which aims at increasing the income of farmers and value addition of farm products while reducing the wastage of food products besides creating employment opportunities. Significantly, the policy offers major incentives like interest subsidy, increased interest subsidy for women or SC/ST entrepreneurs, tax reimbursement, exemption of stamp duty and market fee exemption to food processing industries in the State. The policy was unveiled by Chief Minister Edappadi K Palaniswami at a function at the Secretariat in the presence of Agriculture Minister R Doraikannu and senior officials. "The policy is expected to create a lot of scope for private entrepreneurs to invest in food processing sector and pave way in augmenting quality production in agriculture, horticulture, animal husbandry, dairy and fisheries sector since remunerative price to farming community is made possible besides huge employment opportunities in this sector," Agriculture officials told. The officials also said the policy envisages to encourage and facilitate the setting up of more and more food processing industries and agro-entrepreneurs. The policy identifies seven thrust areas for the sector. One of the key objectives is to increase the percentage of processed food, especially fruits and vegetables to 10 per cent. At present, the processing of agricultural commodities stands at below two per cent in TN as in most parts of the country.

## Rains hit tur crop in Karnataka

▶ Heavy unseasonal rains in Kalaburgi, north eastern Karnataka, which is a key producing region for tur (red gram), has hit the standing pulses crop, inflicting losses to growers, who were already reeling under the impact of a weak monsoon. "Tur is currently being harvested in the region. The heavy rains have spoilt the harvest and also the standing crop. The government should immediately take up the assessment of crop losses and compensate the farmers," said Basavarajlingin, President, Karnataka Red Gram Growers Association. The tur crop-loss is expected to hit supply, and is likely to result in an uptrend in prices of the pulses crop, as the demand is expected to pick up ahead of Pongal. The new crop arrivals have begun, with rates in the range of Rs 4,800-5,100 per quintal, still lower than the MSP of Rs 5,675, said Santosh Langar, a dal miller in Kalaburgi. Arrivals are expected to gain pace by the end of December. Prices of the old crop are traded around Rs 4,500-4,600 per quintal.



## Lasalgaon APMC-led delegation in Maharashtra seeks MSP for onion

▶ A delegation from Maharashtra, led by the Agriculture Produce Market Committee (APMC), at Nashik's Lasalgaon — the largest wholesale market for onions in the country — has sought a minimum support price (MSP) for onion and implementation of the BhavantarBhugtan scheme for farmers. The delegation met Union agriculture minister Radha Mohan Singh, Union commerce minister Suresh Prabhu, Union transport minister NitinGadkari and Nationalist Congress Party leader Sharad Pawar in Delhi seeking support for onion farmers. According to Jaydutt Holkar, the onion farmer is in distress with summer onions selling at barely Rs 300 per quintal because it is nearing the end of its shelf life and is rotting after being stored for nearly six months. The farmers have stocks of nearly 2.5-3 lakh tonne of the summer crop and therefore arrivals are the tune of 15,000 tonne on a daily basis. The new kharif onion is also being harvested and arrivals are beginning to pick up causing a glut in the market, he said.

## Punjab govt. to pay sugarcane farmers

▶ Amid protests by the sugarcane farmers in parts of the State, the Punjab government decided to pay Rs 25 per quintal directly to the sugarcane farmers and directed the private sugar mills to immediately start crushing operations. The government also announced an immediate release of Rs 65 crore towards the interest on loans taken by private sugar mill owners to clear pending dues of farmers. Several farmers, demanding an immediate start of crushing of sugarcane and payments of outstanding dues, had been staging protests against the ruling Congress government in the Doaba and Majha regions of the State. The sugarcane crushing season has been delayed by over a fortnight. Chief Minister Amarinder Singh held a meeting here with owners of the private sugar mills in which the decisions were taken, said an official statement.



## Bumper crop in North & South cause onion glut in Maharashtra

➤ Maharashtra's Lasalgaon-, one of the largest onion growing regions in Maharashtra is facing a peculiar demand-supply problem from the North and the South. Bumper Onion production in Madhya Pradesh has impacted the supply in the North whereas good production in Karnataka has impacted Lasalgaon's supply to markets down South. This had led to an onion price crash in Lasalgaon as well as the entire Maharashtra. According to the minister for state (Marketing and Federations), Sadhabhau Khot, this year Karnataka and Madhya Pradesh received a bumper onion crop. "So the traders from South and North rather than picking onion from Maharashtra, started buying it from Karnataka and MP instead. The proximity reduces their transport cost resulting into cheaper rates of onion to consumers and more profit for local traders. Therefore, we have announced the fret subsidy for the cooperative federations of the farmers in Maharashtra. Our recent measures will bring in positive change and slowly but surely the market will improve," said Khot.

## Jharkhand to set up one small cold store in every block

➤ Jharkhand government has decided to set up one small cold store of 30-tonne capacity each, in every block, which can potentially help farmers save costs by preventing rotting of fresh vegetables. However, the success of the plan depends on uninterrupted power supply. "We will cover all the blocks, but priority will be given where mainly vegetables are grown," chief minister Raghubar Das informed. Since the government cannot manage it, the day-to-day maintenance task to run the store will be given to the local primary agriculture cooperative society (PACS), he added. The state has already set up 46 such cold stores after the Rs 32.76 crore scheme was approved in July this year. "Our target is to build 100 stores this year (2018-19) and the remaining in the next phase," said Das. This will help the small farmers who will be able to keep their unsold vegetables near their village, the chief minister said. Jharkhand has 262 blocks and the state needs to spend about Rs 70 crore to build these cold stores, officials said. Asked about uninterrupted power supply required to run these cold stores, Das said that the state plans to make 24X7 power available in the rural areas by August 2019. "We will start separate feeder for agriculture next year that will help to provide power. Our target is to make 24X7 power available in the rural areas by August 2019," he said at the Global Agriculture and Food Summit, organised by the state with FICCI, in Ranchi. He added the state government has been working on providing electricity to each village.

## Rabi crop acreage down across States

➤ Rabi acreages so far still trail last year's levels, even though the pace of planting has been progressing steadily, reducing the gap. According to the Agriculture Ministry, the total acreages, so far, stood at 476.12 lakh hectares, down 5.2 per cent from last year. In the first week of December, the gap in acreages stood at over eight per cent. The acreages under key winter crops, such as wheat and rapeseed-mustard, are marginally higher than the corresponding last year's levels, while sowing of gram, a key pulses crop for the season has been lower by around 13 per cent. Poor soil moisture levels, due to below normal south west monsoon and lower water levels in key reservoirs, are seen having an impact on the progress of rabi crop sowing. The Central Water Commission said the water level in 91 key reservoirs across the country stood at 92.387 billion cubic metres, about 57 per cent of the storage capacity at full reservoir levels. Wheat has been planted in more than two thirds of the normal area, with major producing states such as Uttar Pradesh, Punjab and Madhya Pradesh reporting an increase in acreages over corresponding last year. UP has seen an increase of four lakh ha, standing at 76.70 lakh ha over last year, while in MP the acreages are up by eight lakh ha to 44.57 lakh ha. However, states such as Bihar, Gujarat and Maharashtra, which are facing water stress, have reported a decline in wheat acreages. Total area under rapeseed-mustard has registered an increase of around four per cent mainly on account of increase in sowing in the key producing states of Rajasthan, Madhya Pradesh, Uttar Pradesh and West Bengal. In Haryana, the mustard acreages have witnessed a marginal decline over last year's levels. The acreages under gram has been lower than last year's levels in the major producing States of Madhya Pradesh, Maharashtra, Rajasthan and Karnataka. However, in Uttar Pradesh and Chhattisgarh, the gram acreages have registered a marginal increase.



## India Looks to Double Black Tea Export to China in 2019

▶ Indian tea traders are aiming to double export of black tea to China where consumption of the variety is becoming popular among the youth. Tea drinking in China — a top producer of the beverage — has been a part of the culture for centuries, but it has mostly been green tea. But with the younger population fast developing a taste for black tea, the demand for this particular variety is on the rise in the country. Indian tea traders are hoping to tap this new market better. The Indian Tea Association (ITA) had an interaction with a 14-member team from China Tea Marketing Association (CTMA) on several aspects of improving tea trade between the two nations. The talks could culminate in nearly doubling of export of Indian tea to China to 15 million kg in 2019, Vivek Goenka, chairman of ITA, informed. China imports about 30 million kg of black tea every year. Sri Lanka, India, Taiwan and Kenya are the major exporters of tea to the country with shipments last year touching 10 million kg, 8.7 million kg, 3.7 million kg and 1.3 million kg, respectively.



## China soybean imports plunge on tariff war

▶ China crushes soybeans to churn out animal feed ingredient soymeal for its massive livestock herds. China imported 5.38 million tonnes of soybeans in November, down 38 per cent from a year ago and the lowest monthly number in two years, after buyers avoided US soybeans amid a tariff war with the country. The world's top soybean buyer usually gets most of its oilseed imports from the US in the final months of the year when the US harvest comes to market. But purchases have plunged since Beijing hit the product with a 25 per cent tariff on July 6. November imports, which were the lowest since the 5.2 million tonnes imported in October 2016, were also down 22.2 per cent from the 6.92 million tonnes imported in October. China crushes soybeans to churn out animal feed ingredient soymeal for its massive livestock herds. It had managed to keep its imports steady with last year by buying up extra supplies from top exporter Brazil and other suppliers. But after including November, imports for the first 11 months of the year have slipped 4.3 per cent on the same period in 2017 to 82.3 million tonnes, according to the data released by China's General Administration of Customs.

## Online residue report to make grapes export easier, curb farmers' exploitation

▶ Now, grape growers across the country can get their residue reports online. This move by Agriculture and Processed Food Products Export Development (Apeda) is expected to help grape farmers and prevent their exploitation at the hands of the exporters of the fruit. Residue report gives details of plots and chemicals in a crop. Apeda has created a separate link on its website where the farmer has to enter the registration number of the garden to login into a page and the residue report of his orchard will be immediately available. Apeda has made this facility available for farmers from the season of 2018-19,



ending the long wait of growers. For the past few years, farmers who wished to export grapes were not getting their reports on time which made exports difficult and therefore this has been a long-pending demand, industry people said. They have been following up with the National Research Centre for Grapes, the agriculture commissioner and horticulture commissioner in Maharashtra. According to Jagannath Khapre, president, All India Grape Exporters Association, this move will help bring in transparency and curb exploitation of farmers at the hands of exporters. "The farmer is the biggest stakeholder and he needs to get the residue report first. In the past few seasons, several farmers were not getting any details and were exploited by exporters who would tell them that

the extent of chemicals in their consignment was high and offered low prices. The farmer was not in a position to demand and question. This move will now help him," he said. Khapre said several farmers were still waiting and had not registered themselves on GrapeNet this season for this reason. Their registration on GrapeNet is mandatory if the farmer wishes to export his grapes. Last season, 38,000 vineyards have been registered under GrapeNet. Feasibility reports were being prepared for other nations so that grapes from India do not face any residue-related issues.

## Sri Lanka emerges the largest sugar importer from India; UAE distant second

► Sri Lanka has emerged as the largest sugar importer by contributing nearly half of India's total sweetener exports during the current season beginning October 2018. Data compiled by the apex industry body All India Sugar Trade Association (AISTA) shows India's total sugar exports to Sri Lanka at 84,536.90 tonnes. With 16,801 tonnes and 15,340 tonnes, United Arab Emirates and Somalia have become the second and third largest importer of Indian sugar, respectively. Total exports between October 1 and December 5, 2018 stands at 179,849 tonnes. "Apart from this, a quantity of 155,830 tonnes is in pipeline (waiting to load) to move in December 2018/early January 2019, out of which 113,360 tonnes are raw sugar to be dispatched to port-based sugar refineries for shipment. During this period, India exported sugar to 20 countries, of which Sri Lanka has emerged as the largest buyer," said PrafulVithalani, Chairman, AISTA.



## Non-basmati rice exports get 5% MEIS benefit for 4 months

► The government has allowed 5% MEIS benefit on export of non-basmati rice during the next four months after shipments of the commodity declined 13% during first half of the current fiscal. The move may help exporters boost shipments. Non-basmati rice has been made eligible for MEIS benefits at the rate of 5% for exports made between November 26 and March 25, 2019, the Directorate General Foreign Trade said in a notification. The Merchandise Exports from India Scheme (MEIS) was started in 2015 under which exporters get 2-5% (of FOB value) of their exports as duty credit scrip. The value on the scrip can be adjusted against payment of the import duty and the GST. "This has come at an opportune time. Hopefully, the decline in export of non-basmati rice may be recovered in the next four months," said BV Krishna Rao, president of Kakinada-based Rice Exporters Association. However, the decline in shipments to Bangladesh may not see an immediate jump due to the MEIS, he said. India exported 37.23 lakh tonne of non-basmati rice (worth Rs 10,426 crore) during April-September this year, compared with 42.87 lakh tonne in the corresponding period last year, according to the official data. Total non-basmati exports in 2017-18 were 86.5 lakh tonne valued at Rs 22,968 crore, of which 20.28 lakh tonne was shipped to Bangladesh. The non-basmati rice export to the neighbouring country stood at only 3.40 lakh tonne in the first half of FY19.

## US-China trade war helps raise soya price

► In what has been a depressing farm season, soyabean stands out as the only commodity — apart from rice — for which farmers are getting relatively better prices among 13 summer-sown commodities for which the Modi government had promised higher returns. India's three million soya growers could thank US President Donald Trump, who has set off a global trade war, and the government's rejigged import tariffs for better soyabean prices, rather than procurement. To be sure, soyabean prices are still ruling below federally fixed minimum support prices (MSP), but only marginally. The gap between MSP and actual market prices received by farmers in the case of soyabean has been far narrower than what it has been for other commodities. Low farm-end prices are a key reason why retail food inflation shrunk 0.86% in October, its steepest fall in 13 months, official data show. In July, the Modi government had raised MSPs for 13 summer crops, setting them each at a minimum of 1.5 times the cost of production. MSPs are meant to be benchmark rates, but two months into the summer harvests, most commodities are selling well below these thresholds. The MSP for soyabean was raised to ~3,399 a quintal from ~2,266 earlier, a 50% jump. Between November 1 and 12, the average prices for soyabean ranged between ~3,065 and ~3,238, data accessed by HT from the agriculture ministry's Agmarknet portal shows. This is about ~161 to ~334 short of MSP. In contrast, the gap between actual prices and MSP has been bigger in other items, such as moong, urad (pulses) and ragi (coarse cereals) and maize. For instance, on November 2, in Maharashtra's Latur, urad sold for ~4,950 against a promised MSP of ~5,600, a gap of ~650. Soyabean rates have benefited from higher import tariffs, rather than procurement, or the government's buying of farm produce at MSP rates, experts say. The other major reason is the brewing trade war between US and China.

## Rice plants may help clean wastewater from farms

➤ Rice plants can be used to clean water draining from farms -- which contain pesticides -- before it gets into rivers, lakes, and streams, scientists suggest. Researchers wanted to stop pesticides from getting into water outside the farm in a way that was easy and cost-efficient for farmers. "We wanted something that was common, that could be applied in a lot of different places, but something that's non-invasive," said Matt Moore, a scientist at the US Department of Agriculture. Researchers planted four fields, two with and two without rice. They then flooded those fields with a mix of three kinds of pesticides plus water that together is a lot like runoff during a storm. They did this for two years in a row. They found that the levels of all three pesticides were lower in fields where they'd planted rice. How much it dropped ranged from 85 per cent to 97 per cent, depending on which pesticide they measured. Rice can do this through phytoremediation -- using plants and their roots to clean up water. In real life, this pesticide-cleaning ability of rice could be used in a few ways. Farmers could plant rice in drainage ditches already on their farms, which would "let rice clean off water that runs off into your field before it runs into a river, lake, or stream," Moore said. Additional research is required to find whether the chemicals end up in the edible part of the rice plant -- the rice grain -- itself. If it doesn't, the rice could be that natural water cleaner while also being a food source. "It's potentially huge for developing countries to be able to use this as a crop and water cleaning technology," he said.



## Raising crops in arsenic contaminated soil

➤ An Indian scientist in the U.K. is working on a way to grow crops in arsenic-contaminated soil, a study which is likely to have wide ranging impact for farmers in northeastern India. Dr. Mohan T.C., from Dr. Alex Jones Laboratory at the School of Life Sciences at the University of Warwick, conducted a pilot study in transgenic Barley and is now looking at doing it in rice plants following funding from the Medical and Life Sciences Research Fund, U.K. The university made the announcement on Wednesday, to mark World Soil Day on December 5. "To stop the cancer-causing arsenic entry into the food chain, it is essential to develop safe crops, through restricting the translocation of arsenic to edible part," he said. "In our current project, we are trying to manipulate cytokinin hormone in rice plants through genetic engineering and we expect to increase the roots detoxification capacity of the transgenic rice," he said. Presence of arsenic in soil is a worldwide problem.

## Plant will convert used cooking oil into bio-diesel

➤ A Delhi-based firm is setting up a plant which will convert used cooking oil (UCO) into bio-diesel, which will help the country save foreign exchange and reduce pollution as it is eco-friendly. The plant, coming up at Bawal in Haryana, with the capacity of producing 100-tonne of bio-diesel per day, will be operational from January. BioD Energy India will use UCO, a waste, along with animal fat and crude palm oil, which contain free fatty acids, to make bio-diesel. This will be the biggest plant in North India which uses the latest technology to produce bio-diesel, which is a zero polluting fuel. Bio-diesel is used extensively by transport operators, rural pump sets and diesel generators as it is cheaper than diesel and also eco-friendly. The company, which uses Chinese technology to produce bio-diesel, is setting up another plant of similar capacity in Dubai for exporting bio-diesel from there to Europe, where the fuel is in high demand. FSSAI has authorised the company to collect UCO from Delhi-NCR, Haryana and Punjab. Earlier, there was a price ceiling on the sale of bio-diesel. Also, there was restriction on selling bio-diesel to state-run oil manufacturing companies. However, the Narendra Modi government abolished the ceiling and made the market free, thereby allowing the companies to sell the product directly to consumers.



## Assam Tea Sector Gets Its First Lady Garden Manager

History was brewed in the tea industry with a woman taking over as manager of a tea estate in Assam. Manju Baruah, who joined Apeejay group as a trainee welfare officer in 2000, has become the garden manager of Apeejay tea's Hilika tea estate in Tinsukia district. Managers in tea estate are a male domain. The revered 'BadaSaheb' tag in the tea estate has been tweaked to 'Bada Madam' for Manju. "Chairman of Apeejay Tea, Karan Paul, called me to convey the news. I was so astonished that I congratulated him on my promotion, instead of thanking him. I remember he laughed heartily at my slip of tongue, told me it was my achievement and charted the course of what he expects out of me," Manju shared. "The way he spoke about my work while informing me of my promotion, I felt validated that I had worked honestly and sincerely and I didn't know that something was waiting for me and someone was watching my hard work." "If motive and ethics are right and you are doing full justice to your job, it doesn't matter what gender is at the top of the garden management structure. Personally too, I always believe that there is nothing that a woman can't do what a man can do. Along with challenges there are advantages and opportunities also while dealing with both men and women workers. Tea industry is dominated by men and men do have some advantages, but I have never asked for any excuse as a lady at any point," she said.



## Sugarcane Institute develops drought-proof varieties

The Coimbatore-based Sugarcane Breeding Institute (ICAR-SBI), a constituent laboratory of the Indian Council of Agricultural Research, is currently evaluating several drought-resistant sugarcane varieties in six different locations in Maharashtra, said its director Bakshi Ram. "The first year trial would be completed in a month and we expect the data to be available for evaluation in 2-3 months," Ram told reporters on the sidelines of Indian Sugar Mills Association annual general meeting here. The trials are being conducted in collaboration with Vasantdata Sugarcane Institute, at ManjariBudruk in Pune district. There are as many as 18 varieties, he said adding that these clones do not require irrigation between 60 days and 150 days of planting, effectively, farmers do not need to water them for three months. They can save at least six rounds of irrigation, said Ram, famed for breeding the sugarcane variety Co-0238, known for its high yield and sugar content. Sugarcane is a water-guzzling crop and any reduction in its water consumption is always welcomed by farmers. The Co-0238 variety accounts for more than 50 per cent sugarcane grown in North India. According to him, last year 11 mills in North India reported a sucrose recovery rate of more than 13 per cent from Co-0238, one of the highest for Indian commercial varieties. For peninsular sugarcane region, where traditionally yields are low as compared to North India, ICAR-SBI has developed a new variety. "We have tried the Co-11015 variety in Tamil Nadu. We have tested it for a year. This year, it will be entering the trials," Ram said. It has a potential to give 10 per cent sugar recovery in eight months, going up to 13 per cent in 12 months, he said.

## Scientists clone hybrid rice seeds in breakthrough that could cut costs for farmers

In a breakthrough for farmers across the world, especially those from developing countries, scientists have discovered a way to clone hybrid seeds of rice. Scientists in the US and France have successfully tweaked a hybrid variety of Rice Japonica' (Asian variety) so that some of the plants produce cloned seeds. Hybrid seeds created by crossing two varieties have superior qualities including high yield, pest resistance and climate tolerance and have been used by farmers for decades. However, a major challenge with such crops so far has been that unlike other crops, their seeds do not produce plants with same qualities. So, farmers have had no option but to buy expensive hybrid seeds every year. "These seeds are not only expensive, but have to be purchased every year, which puts a lot of burden on poor farmers," said Jagmohan Singh, farmer union leader from Patiala, Punjab. Now, scientists in the US and France have successfully tweaked a hybrid variety of Rice Japonica (Asian variety) so that some of the plants produce cloned seeds, according to research published in the latest edition of journal Nature. This, experts said, would enable farmers to re-plant seeds from their own hybrid plants and derive the benefits of high yields year after year, instead of having to purchase expensive new seeds every year. Japonica and Indica are the two major varieties of rice grown around the world. While Japonica is grown in countries with cooler climates, Indica is usually cultivated in countries with hot temperatures such as India.

# YEAR 2018

## THE RISE OF FARMER POWER

**The year 2018 was an important year for the agriculture sector for many reasons. It exactly pointed out, where we were the weakest. It avidly pointed to the flaws of the country's production system and how unprepared we were to respond to market dynamics. Although doubling farmers' income remained fresh in discussions and dialogues, no palpable change was brought to the lives of the farmers. They have for most part of the year, constantly reminded the power centers their displeasure with regard to the non-remunerative nature of farming. Although MSP increments and export policies were introduced, their effects haven't so far resonated in the mainstream. The results of the recently concluded elections in the states of Rajasthan, MP and Chhattisgarh rode heavily on the sentiments of the farmers. Farmers, thus have emerged as a strong collective force in 2018 and hence will play a significant role in shaping the country's next government.**



### AGRICULTURE PRODUCTION CHART

India, in the past years, has witnessed commendable progress in food grain production. The passing year was also not any different. India's foodgrain production during the rain-fed kharif season is estimated at a record 141.6 million tonnes in 2018-19. The first advance estimate of crop production issued by the agriculture ministry placed the output of foodgrains at 11.9 million tonnes higher than the average production of 129.7 million tonnes between 2012-17. However, foodgrain production in 2018-19—which includes rice, pulses and coarse grains—is just 0.6% more than the previous record of 140.7 million tonnes in kharif 2017-18. The 2018-19 kharif season will thus mark the third consecutive year of record food production since 2016-17.

According to the latest estimates, sugarcane production is estimated at 383.9 million tonnes in 2018-19, about 2% more than last year. Production of rice, the main kharif crop, is likely to increase 1.8% to 99.2 million tonnes in 2018-19. Farmers, however, are likely to harvest a

marginally lower volume of pulses—9.2 million tonnes in kharif 2018-19, compared to 9.34 million tonnes last year.

Among non-foodgrains, production of kharif oilseeds are estimated to rise 5.7% to 22.2 million tonnes in 2018-19, from 21 million tonnes last year. Production of cotton is likely to fall by 7% from 35 million bales in (one bale equals 170kg) last kharif to 32.5 million bales this year, the estimates showed.

In terms of horticulture production too, India has registered impressive records. Horticulture production was pegged at 306.82 million tonnes (mt), up 2.05 per cent up from the previous year's 300.64 mt, according to the third advance estimates of horticultural production. The production of fruits is expected to cross 97 mt, thanks to an impressive increase in the output of many fruits, particularly mangoes, which registered 9 per cent growth.

Production of vegetables, on the other hand, is projected to be close to 180 mt, marginally up from 2016-17. A slight slide is expected in the yield of major vegetables such as potatoes,



“The global agri-food system is facing major global changes: rapid urbanization and rising middle income populations; changing diets; climate change; anti-global sentiments; and advances in technology in and out of agriculture, among other large-scale trends. Urbanization will continue to increase market demand for agricultural products, especially in Asia and Africa, where most of the urban population rise is expected to occur. To be able to respond to the rising demand and emerging trends, the farm mechanization sector and the global agri-food system as a whole will need to harness innovations for human and planetary health. In particular, innovations in multiple-win, yield-enhancing technologies – such as crop sensing and improved, climate-resilient varieties – will play a crucial role in meeting food demand in an environmentally sustainable manner. Equally important will be complementary technologies, including information communication technologies (ICTs) and big data, which can facilitate information dissemination and knowledge sharing for innovative farm mechanization. Further, effective policies and institutional governance will be key to supporting the agri-food system. Continued comprehensive, high-quality research is critical in this regard for a healthy and sustainable food future”.



**SHENGEN FAN**  
Director General (IFPRI)

onions and tomatoes. The total area under horticulture crops was also up by 3.26 per cent at 25.66 million hectares (mha) from 24.85 mha in 2016-17.

At 48.5 mt, potato production is projected to be slightly lower than 48.61 mt in 2016-17, whereas a slump is expected in the output of onions, which is down 1.8 per cent at 22 mt. The highest decrease in production among major vegetable crops, however, was witnessed in tomato, with output projected to drop by 6.6 per cent to 19.4 mt. Brinjal production is expected to be marginally up at 12.83 mt from 12.51 mt in 2016-17.

Among fruits, citrus fruits output is expected to rise strongly to 9.6 per cent at 12.51 mt (11.42 mt). The production of mangoes is projected to grow 9 per cent to 21.25 mt. As is the case with banana production, which is expected to go up to 31 mt from 30.5 mt in 2016-17.

An impressive 10 per cent increase in dried chilli production to 2.3 mt from 2.09 mt in 2016-17 may help push up the total spices output to 8.37 mt from 8.12 in the year before. On the other hand, a slight dip is anticipated in the plantation crop output to 17.87 mt from the previous year's 17.97 mt, the estimates showed. This is mainly on account of a drop in coconut

production, which is slated to fall to 16.23 mt from 16.49 mt.

India's coffee production is likely to drop by 20 per cent in the new marketing year starting October 2018 to around 2,53,000 tonnes because of severe floods in parts of Karnataka and Kerala. The country is estimated to have harvested 3,16,000 tonnes of coffee in the 2017-18 marketing year (October-September). The industry is estimating coffee production in 2018-19 is likely to fall by at least one-fifth due to floods. Karnataka and Kerala account for 90 per cent of the country's coffee production. As per the government's assessment, coffee crop has been damaged in 2.26 lakh hectares due to heavy

rains, and losses are estimated to have been to the tune of Rs 654 crore. The heavy rains lashed during August 8-20 had triggered flash floods and landslides in multiple locations in coffee-growing districts of Kodagu and Hassan, as well as in Kerala. In the current 2017-18 marketing year, Karnataka is estimated to have harvested 2,22,300 tonnes of coffee and Kerala 65,735 tonnes.

Rubber also suffered a backlash owing to the floods in Kerala. From the expected 700,000 tonnes of rubber production during the 2018-19 financial year, the production is likely to come down to 600,000 tonnes in the current fiscal due to the floods. Spices have also borne



the brunt of Kerala floods. The state suffered a production loss of more than 25,000 tonnes of spices, valued at Rs. 1,254 crore in the devastating floods that wiped out 58,379 hectares of agricultural land, according to a study carried out by the Indian Institute of Spices Research (IISR). The State cultivates 1,62,660 hectares of spices with an annual production of 1,40,000 tonnes.

Milk production on the other end has witnessed an uptrend. Milk production was reported at 165.4 million tonnes during 2016-17 and is estimated to be 176.35 million tonnes during 2017-18. The trend is expected to continue as the projected milk production by 2021-22 is 254.5 million tonnes as per the vision 2022 document.

Total agricultural exports from India grew at a CAGR of 16.45 per cent over FY10-18 to reach US\$ 38.21 billion in FY18. In April-May 2018 agriculture exports were US\$ 6.43 billion. India is the largest producer, consumer and exporter of spices and spice products. Spice exports from India reached US\$ 3.1 billion in 2017-18. Tea exports from India reached a 36 year high of 240.68 million kgs in CY 2017 while coffee exports reached record 395,000 tonnes in 2017-18.

### BUDGET PERKS

This year's budget held a special import as it was widely expected to accommodate measures to woo farmers, an important electorate, before the Assembly polls. As expected, the budget played along the expected tune.

Union Budget 2018 was predominantly an agriculture budget with a slew of measures engendering farmers' welfare and agriculture development. This year too, the Government increased the volume of institutional credit for agriculture sector from Rs.10 lakh crore in 2017-18 to Rs. 11 lakh crore for the year 2018-19.

A significant announcement,



however, came with regard to the MSP of Kharif crops. The budget proposed to keep MSP for the all unannounced crops of kharif at least at one and half times of their production cost. Although initially, the MSP hike was thought to be in consonance with MS Swaminathan formula, later it was revealed that the new MSP was based on the A2 + FL costs, and not the more ambitious C2 costs formula favoured by MS Swaminathan.

With regard to the e NAM, FM informed that 470 APMCs have been connected to e-NAM network and rest will be connected by March, 2018. The existing 22,000 rural haats would be upgraded and developed into Gramin Agricultural Markets (GrAMs). In these GrAMs, physical infrastructure will be strengthened using MGNREGA and other Government Schemes and they would be electronically linked to e-NAM and exempted from regulations of APMCs. An Agri-Market Infrastructure Fund with a corpus of Rs. 2000 crore would be set up for developing and upgrading agricultural marketing infrastructure in the 22000 Grameen Agricultural Markets (GrAMs) and 585 APMCs.

Cluster based development of agri-commodities and regions in partnership with the Ministries of Food Processing, Commerce and other allied Ministries was

recommended to be promoted in the budget. Similarly, organic farming by Farmer Producer Organizations (FPOs) and Village Producers' Organizations (VPOs) in large clusters, preferably of 1000 hectares each, was also emphasized. Women Self Help Groups (SHGs) will also be encouraged to take up organic agriculture in clusters under National Rural Livelihood Programme. A sum of Rs. 200 crore was allocated for organized cultivation and associated industry.

For the food processing sector, the budget doubled the allocation from Rs. 715 crore in 2017-18 to Rs.1400 crore in 2018-19. "Operation Greens" on the lines of "Operation Flood" was also introduced through this budget. "Operation Greens" would promote Farmer Producers Organizations (FPOs), agri-logistics, processing facilities and professional management and a sum of Rs. 500 crore was allocated for the same.

Proposals to liberalize export of agri-commodities and state-of-the-art testing facilities in all the forty two Mega Food Parks was also given thrust in the budget. A Restructured National Bamboo Mission with an outlay of Rs. 1290 crore to promote bamboo sector in a holistic manner was also proposed. Scope of the Long Term Irrigation Fund (LTIF) in NABARD was also expanded



### FALL ARMYWORM ATTACK

The 'fall armyworm', cited by global agencies as an international food-security threat, was spotted in Karnataka's maize pockets for the first time, prompting a nationwide alert. The pest has spread to Tamil Nadu and has entered Telangana. Feared as a threat to food security of millions, FAO, has warned in June that 300 million Africans could face hunger because of it. The pest was first detected two years ago in Africa and has since spread to more than 30 countries, devastating corn potentially worth \$5 billion. What makes the pest dangerous is the rates at which the pest multiplies and its capacity to fly over long distances (100 km per night) and ravage crops all year round given the region's favourable tropical and sub-tropical climate, which means there are always crops and weeds around that Fall Armyworm can feed on. Fall Armyworm can eat maize and some 80 other crops, including rice, vegetables.



to cover specified command area development projects.

A Fisheries and Aquaculture Infrastructure Development Fund (FAIDF) for fisheries sector and an Animal Husbandry Infrastructure Development Fund (AHIDF) for financing infrastructure requirement of animal husbandry sector with a total Corpus of Rs.10,000 crore was also proposed in the budget.

A suitable mechanism to enable access of lessee cultivators to credit without compromising the rights of the land owners was also put in place. It was also decided to extend a favourable taxation treatment to Farmer Producers Organisations (FPOs) for helping farmers aggregate their needs of inputs, farm services, processing and sale operations. Addressing the air pollution in the Delhi-NCR region, a special Scheme was also implemented to support the efforts of the governments of Haryana, Punjab, Uttar Pradesh and the NCT of Delhi to address air pollution and to subsidize machinery required for in-situ management of crop residue.

Ground water irrigation scheme under Prime Minister Krishi Sinchai Yojna - Har Khet ko Pani would be taken up in 96 deprived irrigation districts where less than 30% of the



land holdings gets assured irrigation presently for which Rs. 2600 crore was allocated.

Union Budget 2018 also focused on providing maximum livelihood opportunities in the rural areas by spending more on livelihood, agriculture and allied activities and construction of rural infrastructure. In the year 2018-19, for creation of livelihood and infrastructure in rural areas, total amount to be spent by the Ministries was earmarked at Rs. 14.34 lakh crore, including extra-budgetary and non-budgetary resources of Rs.11.98 lakh crore. Apart from employment

due to farming activities and self employment, this expenditure is expected to create employment of 321 crore person days, 3.17 lakh kilometers of rural roads, 51 lakh new rural houses, 1.88 crore toilets, and provide 1.75 crore new household electric connections besides boosting agricultural growth.

### YEAR OF FARMERS' DISTRESS

The year 2018 would carry the unusual burden of being known as the year of farmers' unrest. The year was periodically punctuated by massive outbursts in the form of

## CONVERTING CALAMITY INTO AN OPPORTUNITY

2018 is ending with several unfortunate unfavourable climatic events. Kerala experienced unprecedented floods; Odisha was affected by a severe cyclone; Tamil Nadu experienced highly damaging cyclone Gaja. It is clear that if we continue to ignore the consequences of human induced climate change, there will be increasing hardships, particularly to the economically and ecologically underprivileged sections of our society. The important factors which we will have to look into are first temperature changes, second floods and heavy rains, third rise in sea level requiring alternate accommodation to millions of coastal families who become climate refugees, and finally economic chaos arising from harm to agriculture. Therefore, proactive climate impact management strategy is an idea whose time has come.

### Mangroves and mitigation of cyclone impact

There are several reports in the media about the bioshield function of mangrove forests along coastal areas. Mangroves have helped to save both lives and livelihoods, particularly of fishing and coastal communities. The beneficial impact of mangroves has been observed by local community on several occasions including the recent Gaja cyclone in Tamil Nadu. Earlier, the damage caused by Tsunami as well as the super cyclone in Odisha were also considerably less in mangrove rich areas. It is in recognition of the critical role of mangroves in the conservation of coastal ecosystems that the famous temple at Chidambaram chose a mangrove plant (*Excoecaria agallocha*) as a Temple Tree.

When MSSRF was started in 1989-90, the mangrove ecosystem at Pichavaram was taken up for priority attention. Both in the Philippines, where I lived for a few years and in India, the general appreciation of the role mangroves play in both ecological and livelihood security has been little. Mangrove areas were being converted into aquaculture farms and tourists centres. This is why we started a genetic garden of mangroves at Pichavaram near Chidambaram with support from Department of Biotechnology. Considerable amount of work has been done to promote public understanding of the need for protecting the mangrove forests and extending

them to all coastal areas. A Charter for Mangroves was prepared and with the help of the Government of Japan and IITO, an International Society for Mangrove Ecosystems (ISME) was formed in 1990. It is only when natural calamities of the kind induced by cyclones occur that there is more awareness of the need to protect and propagate them. I hope the calamity caused by Gaja can be converted into an opportunity for saving coastal wetlands and more particularly mangroves.



Dr. MS Swaminathan

### Climate change and sustainable development

The latest report of IPCC has warned about the consequences of allowing mean temperature to rise above 1.5 °C. In 1990, I had pointed out that even a 1 °C rise in mean temperature could cause a reduction of about 400 kilograms of grains per hectare in wheat in North India. The reason is the reduction in duration caused by higher mean temperature. In contrast, an increase in mean temperature will confer benefits to the farmers of northern latitudes because this will lead to an increase in the length of the duration of the crop. South Asia and sub Saharan Africa will be the area's most adversely affected. Therefore we have to take proactive steps to prepare ourselves to manage temperature rise. An immediate step should be breeding of crop varieties characterised by higher per day productivity rather than per crop productivity as being done now. Climate smart nutri-cereals (millets) will have to be promoted. Climate management is both a science and an art. We will have to marry traditional wisdom with modern science if we are to insulate our crops from the adverse impact of higher mean temperature. There should also be increased effort in developing cropping systems which are climate smart and nutrition rich. Climate risk management centers will have to be established in every panchayat. If these steps are not taken, food and nutrition security will be impacted adversely.

I am glad this year's Special Issue of Agriculture Today is highlighting the role of climate risk management in ensuring sustainable food and nutrition security.



strikes and marches reverberating the unhappiness of the farmers and their general displeasure of the state of affairs.

The streets of Mumbai bled on March 4, 2018. A sea of farmers dressed in red scaled a 180 km stretch in the blazing sun over six days on their bare foot from Nashik and brought the country's financial capital to a standstill. The farmer contingent, including tribal cultivators, led by the Left-affiliated All India Kisan Sabha (AIKS), had a handful of demands - A complete waiver of farm loans, remunerative prices for crops, pensions for agricultural labour, recommendations by M.S. Swaminathan Commission on minimum support price and the Forest Right Act, besides relief from economic losses sustained due to implementation of demonetisation in late 2016. The Chief Minister responding to the situation accepted most of their major demands such as expanding the list of those eligible for the farm-loan waiver announced in 2017, increased pensions to agricultural workers from Rs.500 to Rs.1,000 per month and transfer of land titles under the Forest Rights Act.

On the anniversary of the Manadsaur killing on June 6, India saw another major farmer uprising,

'Gaon Bandh' encompassing 22 states. The villages were shut down and the country saw cultivators deserting markets in urban areas and truckloads of vegetables and milk being emptied on the streets. The demands that were laid down by the farmers included waiving the entire loans of farmers, pension to farmers older than 55 years and Minimum Support Price (MSP) on 65 litres of milk, fruits and vegetables. All of these demands had income stability as the common denominator. Another dimension to this protest was the impact they had on the urban centers. The agitation affected not only the availability of these perishables but also a steep increase in their prices. The agitation caused vegetable prices to spike by 10-15 per cent in a handful of cities in North India, Maharashtra and Madhya Pradesh - jumping 20-30 per cent in certain pockets in Jaipur and Indore - with supplies to the National Capital Region profoundly hit.

Despite the consumer woes, farmers have also incurred heavy losses especially the dairy farmers. This has spurred unrest among farmers and clashes have been reported at many places between farmers and traders. E-commerce portals such as Big Basket and Grofers, the new face of agriculture marketing also came under stress. Restaurants and casual dining also faced the pinch with the hike in prices being transferred to the customers.

Farmers from different parts of the country again united and stormed Delhi in November. Led by opposition leaders and activists, nearly one lakh farmers reached Delhi under All India Kisan Sangharsh Coordination Committee, an alliance of various farmer bodies. The Kisan Mukti March Farmers demanded remunerative prices for their produce and freedom from debt. Protesting farmers demanded a special session of Parliament on agrarian crisis to pass two Bills: one pertaining to one-

**The Union Cabinet chaired by Prime Minister Shri Narendra Modi approved the Agriculture Export Policy, 2018, aimed at doubling the agricultural exports and integrating Indian farmers and agricultural products with the global value chains. The Agriculture Export Policy envisions to harness export potential of Indian agriculture, through suitable policy instruments, to make India global power in agriculture and raise farmers' income.**

time full loan waiver, the other for a long-term institutional measures to ensure farmers are not pushed into debt again. They also demanded implementation of Swaminathan Commission recommendations that say the minimum support price should be fixed at 50% above the comprehensive cost of production.

The recent farmer agitations are signs of a deeper malaise existing in Indian agriculture. Ours which was mostly a production oriented system had rarely observed the agriculture as an income generator of a large section of the population. The advances that India today boasts of may have made the country an agriculture super power but it did little to help the living conditions of the farmers.

### AASHA – PM'S NEW HOPE

Procurement of food grains and ensuring minimum support prices to the farmers have always remained an issue of considerable contests and difference in opinions. The new PM AASHA (Pradhan Mantri Annadata Aay Sanrakshan Abhiyan), the Umbrella Scheme comprising of Price Support Scheme (PSS), Price Deficiency Payment Scheme (PDPS) and Pilot of Private Procurement & Stockist Scheme (PPPS) was a highlight of the year 2018. Under the scheme, the preexistent Price Support Scheme (PSS) has been expanded to include the physical procurement of pulses, oilseeds and Copra where in the Central Nodal Agencies and State governments would take the lead. In addition to NAFED, Food Cooperation of India (FCI) will take up PSS operations in states /districts. The procurement expenditure and losses due to procurement will be borne by Central Government as per norms. Under Price Deficiency Payment Scheme, inspired by the Bhavantar Bhugtan Yojana of Madhya Pradesh, which pays the difference between the MSP and the market price, all oilseeds for which MSP is notified are expected to be covered. The

**The Indian government proposed 5 million mt of mandated sugar exports for the 2018-19 (October-September) season. To aid the exports, the government announced a Rupee 139/mt (\$1.9/mt) of sugarcane production subsidy along with a three tier transportation subsidy. The government's decision to give export subsidy to clear out the domestic stock taking advantage of the firming international prices after the recent cut in global production estimates to 187 million tonnes (mt) for the year 2018-19 against 203 mt logged in the previous year, offers some amount of relief to the sector. Sugar mills have subsequently signed deals to export raw sugar for the first time in three years as a rally in New York prices to seven-month high along with government subsidies made exports lucrative. The better prices prevailing globally, export subsidy and the weakening rupee has made export lucrative this year.**

direct payment of the difference will be made to pre-registered farmers selling his produce in the notified market yard through a transparent auction process. This scheme does not involve any physical procurement of crops as farmers are paid the difference between the MSP price and Sale/modal price on disposal in notified market.

Another notable feature of this scheme is the involvement of private sector in procurement operation. In the case of oilseeds, states have the option to roll out Private Procurement Stockist Scheme (PPSS) on pilot basis in selected district/APMC(s) of district involving the participation of private stockiest. The pilot district/selected APMC(s) of district will cover one or more crop of oilseeds for which MSP is notified. Since this is akin to PSS, in that it involves physical procurement of the notified commodity, it is expected to substitute PSS/PDPS in the pilot districts.

PM AASHA is an extension to the recent increment of MSP and hence tries to derive the maximum advantages of MSP through different means. These measures are all in line with the larger purpose of compensating the farmers and ensuring a steady income. However, there should also be concomitant investments in building logistics and infrastructure and increasing

awareness.

### FLOODS GALORE

Last year, many parts of India were devastated by cyclones, floods and landslides. Many lost their lives, land, house, property, belongings and most importantly their source of livelihood.

Kerala suffered the worst monsoon flooding in a century with about a million people getting displaced and more than 400 people losing their lives. Over 280,442 farmers in the state were hit and their losses are estimated at Rs 1,000 crore. Crop losses in over 45,988.50 hectares, across the state, have been pegged at Rs 10.7 billion rupees. Nearly one lakh cows, four lakhs hens, one lakh pigs and one lakh sheep were washed away. In 14 districts, over 114,000 acres of farms and orchards have been completely destroyed. Rice plantations suffered the most. Approximately 45,000 acres of rice harvest has been gutted, over 23,000 acres of sago harvest, 1,500 acres of paddy plantations, 17,700 acres of coconut trees, 1,300 coconut plantations and 10,000 acres of vegetable harvest have been washed away. Around 75,000 pepper vines, 27,000 rubber trees, 15,000 nutmeg plants, 12,000 cocoa trees, 9,000 arecanut trees, 3,000 coconut trees and 1,455

coffee plants have been damaged due to the floods. Pepper production in 2019 calendar year is expected to hover around 45-50,000 tonnes as the floods in Kerala and Karnataka have impacted the crop, posting an overall damage of 40 per cent. The production in 2017 was 64,000 tonnes.

Cyclone Gaja, which made landfall near Vedaranyam in Nagapattinam in Tamil Nadu in the wee hours of November 16 claimed 45 lives across the state. The cyclone, which went on to affect many other districts, including Tiruvarur, Thanjavur, Pudukkottai, Dindigul and Trichy destroyed property. Extensive damage to agricultural lands were also reported. Gaja has impacted the entire Cauvery Delta region severely damaging agricultural crops such as coconut, banana and sugarcane, besides standing crops like paddy. The damage has been extensive in the Pudukkottai districts - Alangudi, Aranthangi, Peravurani and Pattukottai coconut belt. Tamil Nadu, which has the third largest area under coconut after Kerala and



Karnataka, is the second largest producer of the nuts due to higher yields. At least 100,000 ha of paddy crops is estimated to have been damaged in Thanjavur alone.

Cyclone Titli was another major event in India affecting the states of Andhra Pradesh, Odisha and West Bengal. An estimated number of 60 lakh people have been reported to be affected by the calamity in Odisha. At least 202 villages in Andhra Pradesh have been affected by the cyclone and rise in water level of major rivers in the state which caused floods. As per a preliminary assessment, the loss suffered in different sectors, including infrastructure and agriculture, is estimated to be worth around Rs 2,200 crore. The cyclone

and subsequent flood have damaged crop in 2.6 lakh hectare of land and destroyed 56,930 houses, and killed 34,951 domestic animals. More than 22,000 acres of vegetable crops, 3,380 acres of paddy crop, 194 acres of banana plantation, 330 acres of cotton crops have been destroyed by the cyclone across three mandals of Srikakulam. Nagaland and Arunachal Pradesh also survived one of the worst floods affecting the states' population and their property.

Floods thus formed a very important part of 2018 adding misery to the farmers woes. As the climate changes, India must prepare itself to more such events.

The year 2018 was not particularly an impressive years for the farmers. They bore the brunt of weather extremities, natural calamities, policy changes and market fluctuations. Their income levels did not improve. However, their resolve to fight against the oddities have strengthened. They will emerge as a prominent collective in future discourses in polity and policy decisions.

"Doubling real income of farmers by 2022-23 over the base year 2015-16, requires an annual growth of 10.41% in the real income of farmers. Strong measures are required to harness all possible sources of growth in farmers' income within as well as outside the agriculture sector. The major source of growth operating within the agriculture sector includes, among others, improvement in productivity and resource use efficiency or saving in cost of production. Agriculture faces many challenges like small and scattered land holdings with 85% farmers possessing less than 2 hectares of land, water scarcity and dependency on rain, scarcity of labour with growing rural to urban migration by farmers and high equipment cost and poor after-sale services. Financing of farm equipment is one of the biggest impediments to the increasing mechanisation levels in India. Agriculture Mechanisation is an essential input in modern agriculture to increase the productivity and for making judicious use of inputs like seeds, fertilisers, chemical & pesticides and natural resources like water & soil nutrients etc. National Cooperative Development Corporation (NCDC) is supplementing the efforts of the Government of India in doubling farmers' income. An ISO 9001:2015 compliant organisation, NCDC has extended financial assistance over Rs.63700 crore in the last 4½ years which amounts to more than 58% of its cumulative disbursements since in its inception in 1963. To mitigate the hardship faced by farmers, NCDC has embarked upon supporting establishment of 'Farm Mechanisation Hubs'(FMH) by cooperative societies with the objective of developing the cooperative societies as effective Farmers' Services Centers which caters to a wide range of essential agriculture inputs and also to meet the non-credit needs of farmers".



**SH. SUNDEEP KUMAR  
NAYAK, IAS**  
Managing Director  
National Cooperative  
Development Corporation

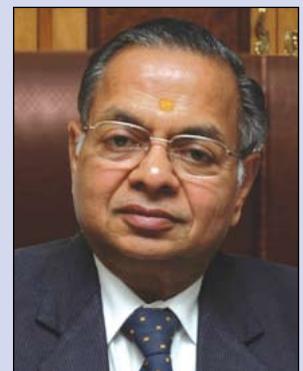
With an estimated milk production of about 176 million tonnes in 2017-18, India continues to be the largest milk producer in the world – accounting for little over one-fifth of world milk production. Dairying can be an effective tool for poverty alleviation in the hinterlands, as animal assets are more equitably distributed than farm lands. It also provides a steady alternate source of income especially during stressful times such as crop failures, flood or drought. “Animal farming” contributes about 12% of the household income and income in the rural areas can further be enhanced by providing access to organised market to millions of farmers. It has been experienced that simply providing market access even in low milk potential areas induces milk production and surplus. In order to further increase the cooperative reach and make dairying more economically viable activity, NDDB is implementing National Dairy Plan Phase I (NDP-I) - a scientifically planned multi-state initiative that is being executed through End Implementing Agencies (EIAs) with the twin objectives of i) increasing productivity of milch animals to help increase milk production to meet the rapidly growing demand for milk and ii) providing rural milk producers with greater access to the organised milk processing sector. On the dairy infrastructure front, there is a challenge to revitalise decades old processing infrastructure to improve the efficiency inter-alia better return to milk producers. In spite of robust domestic growth in supply, weak international market continues to pose many challenges to the dairy sector. Despite many adversities the dairy sector is facing currently, the dairy cooperatives continue to provide higher procurement price of milk. Considering that milk production in recent years has been growing at a faster rate, the need of the hour is to expand marketing of milk and milk products. Indian dairy market is expected to grow by 15% annually during the next couple of years. The value added products like cheese, flavoured milk, flavoured yoghurt, UHT milk etc. are likely to grow above 25%. Therefore, further investments for manufacturing of value added products must be undertaken to tap this potential.

As we know, dairy has played and would continue to play a significant role in securing the food and nutritional security of millions of our countrymen. Government policies providing an enabling environment along with government funded programmes and schemes would continue to help bolster the dairy sector to reach new heights in the coming years.



**SH. DILIP RATH**  
Chairman, NDDB

“Agriculture and allied sectors are the backbone of the Indian economy since they account for 18% of the GDP. This year, agriculture received a huge fillip when the government announced several pro-farmer policies. In 2018, the government is targeting a record food grain production of 285.2 million tonnes. In this backdrop, the agro-chemical industry also improved its performance this year, growing at 6 to 8%. The 2018 Budget gave a major boost, with the govt increasing agriculture credit to Rs 11 lakh crores. Other factors included the contract farming law, followed by higher MSP rates and a new procurement policy. However, uneven distribution of the monsoon limited growth pace as expected during the first half of the year. Nevertheless, India’s per hectare agrochemical consumption is set to rise significantly in the coming years. Obvious factors such as increasing population, decreasing per capita availability of arable land and focus on increasing agricultural yield will fuel demand for agrochemicals. India is the fourth largest producer of agrochemicals globally, but consumption is amongst the lowest with only 600 grams per hectare (much below US, Japan and China). Seven states, including Andhra Pradesh (AP), Maharashtra, Punjab, Madhya Pradesh and Chhattisgarh (counted as one), Gujarat, Tamil Nadu and Haryana account for usage of 70 per cent crop protection chemicals. Andhra Pradesh is the leading consumer of agrochemicals with a share of 24 per cent. We expect the agrochemical market will grow at 8 to 10 % in next year. With more effective and innovative policy announcements by the government, Dhanuka will also be able to achieve better growth going forward with our new products and technology”.



**SH. RG AGARWAL**  
Chairman  
Dhanuka Agritech

# 'A few key reforms should be pursued in the coming year'

Mr Ajay S Shriram, Chairman & Sr Managing Director, DCM Shriram Ltd.



**A**griculture is a complex subject, and therefore any solution to address the challenges facing the sector, need to recognize this. One size fits all, will not work. The requirement of the sugar farmer in central UP is very different than that of a tomato grower in south Andhra, the jute farmer in Bengal faces issues that are not relevant for the grape farmer of Nasik and the poultry farmer of Coimbatore has little in common with the apple grower of Kashmir. Yet all these activities come under the umbrella of Agriculture.

Most countries support agriculture to ensure food security, and India is no exception. The focus so far has been to increase production and keep consumer prices at reasonable level. The main policy instruments to support farmers in India include subsidised fertilisers, power, agri-credit and crop insurance on the input side, and minimum support prices for major crops on the output front. However, in attempting this balancing act, farmer income has not received the attention it warrants. It is this aspect that is leading to farm distress. Some of the subsidies have in fact had unintended ecological cost on account of over use of urea and water. The spate of farm loan-waivers does give temporary relief, but agriculture is unlikely to be revitalized by such measures. In fact, banks may become hesitant to lend to farmers and thereby restrict further loans.

Therefore farming needs to be viewed not just a production activity, but as a viable business. Freedom to price, choice of customer and an efficient supply chain is the cornerstone of any profitable business, and agriculture is no exception. Such a framework has often eluded the Indian farmer because of various restrictions.

A few key reforms should be pursued in the coming year. The Government has announced MSPs that are at least

50 per cent above the cost. This is especially true for those cultivating cotton, maize, groundnut, soyabean, jowar, bajra, mustard etc. Given the limited reach of the government's procurement mechanism, benefits are likely to be restricted to a limited number of farmers in select states. On the other hand an efficient and sustainable solution for better prices lies in "getting the market right". In a globalised market and with government wanting to double agri exports, increasing, MSPs can make Indian Agriculture uncompetitive. High sugarcane prices are an example of such policies. Essential Commodities Act is a big deterrent to companies undertaking export commitments because of the fear of stock limits. This Act has served its purpose in an era of shortages, and should be now be repealed or changed substantially. Productivity and competitiveness is the key, as artificially raising prices will be counter to market forces. Food processing industry has played an important role in raising productivity and creating direct links with the farmers. Sugar, Dairy, Tomato processing, Menthol, Seed production, Poultry are examples where industry intervention has made Indian agriculture globally competitive. This can be extended to other agriculture commodities, particularly fruits and vegetables. FDI in organised retail needs to be encouraged to shrink the chain between the farmer and the consumer. It will give a fillip to food processing and provide farmers with a higher percentage of retail price. Introduction of AMPC Model Act has been on the cards for a long time. So far, only Maharashtra has amended the law to completely decontrol fresh produce. Other states need to follow this example. This will reduce middlemen, cut transit costs, minimize losses and bridge the gap between farmer realization and consumer price. Most importantly, it will encourage food

processors to engage directly

with farmers to improve quality and productivity, with assured prices. Investments need to be prioritized towards agricultural research, development of roads and farmer education. Interestingly, at the global level, the private sector is leading in Agri-R&D. If India needs to access that technology, it needs to develop a proper IPR regime, which is in the interest of farmers as well as investors. The current regulatory framework is not favourable to research. AgTech is the next emerging frontier where AI, digital sensing, drones and satellite imaging can take productivity to the next level. Some start ups are already doing exciting works in this space and will play an important role in the future.

The PM's Fasal Bima Yojana, Krishi Sinchayee Yojana and the National Agriculture Market are excellent initiatives, but all of them require better implementation at the ground level so that these schemes can deliver the intended benefits.

Various States Governments have tried to support farmers with subsidies, procuring at high MSPs, and direct transfer benefits. So far, it seems the DBT (Direct Benefit Transfer) scheme as formulated and implemented Telangana has worked best, as it is well-targeted with minimum leakages. Equally important, it does not saddle the government with the logistic nightmare of procurement nor does it artificially raise prices for exports. Further, it also supports farmers who do not have marketable surplus.

The above suggestions are just a few policy interventions that can be rolled out. However, as mentioned earlier, the farmer will certainly need tailor made solutions for each State and each crop. The State Governments must play a very important role in this endeavour.

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# GLOBAL POULTRY PRODUCTION INDIA IN PERSPECTIVE

## BASIC STRUCTURE OF POULTRY SECTOR

Poultry sector in India is valued over Rs. 80,000 crore (2015-16) broadly divided into two sub-sectors – one with a highly organized commercial sector with about 80% of the total market share and the other being unorganized with about 20% of the total market share. The unorganized sector also referred to as backyard poultry plays a key role in supplementary income generation and family nutrition to the poorest of the poor. It is estimated that with a poultry population of 729 million, small and medium farmers are mostly engaged in contract farming system

under larger integrators and there are around 30 million farmers engaged in backyard poultry as per NSSO 66th Round Survey. The needs of organized and unorganized sectors are very different. Discussions with various stakeholders reveal that poultry sector- especially commercial poultry sector- is flourishing in certain pockets, where amenable environment exists, alongwith backward and forward linkages, while the unorganized sector is very dispersed and micro-fragmented.

Organised sub-sector needs conducive environment to grow for which policy support & intervention is required mainly for

disease surveillance, Drug residue and drug/ vaccine quality control, standardization & quality control of poultry feed, eggs & meat, Application of HACCP (Hazard Analysis and Critical Control Point) and Good Manufacturing Practices for compliance to WTO & CODEX norms and gradation, value addition, brand promotion & export boosting (about Rs. 532 crore in 2016-17)etc.

The above issues are broadly dealt with by a number of Ministries/ agencies like Export Inspection Council of India, Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Food Processing

Industries, Food Safety and Standards Authority of India (FSSAI), Bureau of Indian Standards (BIS) etc. Besides, National Institute of Animal Health under Animal Husbandry Department is dealing with quality control of vaccines and the 'The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009' is the key regulation to control important livestock and poultry diseases in the country. Compartmentalization for disease control as per OIE Standards is an important issue being dealt with by DADF to facilitate smooth trade.

Unorganised sub-sector generates additional income and improvement of nutritional status among the poorest of the poor. However until now there has been little support to this sector. Now however through one of the components 'Rural Backyard Poultry Development' under Centrally Sponsored Scheme 'Poultry Development', assistance is provided to cover beneficiaries from BPL families. But this continues to be very little as compared to the demand.

A part of the unorganized sector is the Transitional Small & Marginal sub-sector: Due to Government initiatives for entrepreneurship development, small/ marginal units are now coming up. However, these can sustain only if they operate in a clustered manner.

### GLOBAL PRODUCTION AND INDIAN PERSPECTIVE

Global Poultry Meat Production is around 107 MMT; Trade/Exports are around 11 MMT i.e. around 10% of total production. India, though ranks 5th in chicken meat production, is having only 3.3% share of the production and exports are negligible at only about 5.5 thousand tonnes.

Global Egg production is around 1387 billion eggs / 74 MMT; Trade around 10% i.e., 7 MMT. India, again even if it stands at 3rd position in egg production, only has about 6.3% share in the global production. Exports are again very negligible with

about less than a billion eggs.

Major items exported from India are table eggs, egg powder, hatching eggs, SPF eggs, live birds, and poultry meat. The current export value of Poultry Products is to the tune of around Rs. 552 crore in 2017-18. However, India is way behind in exports at 32nd place as per APEDA data from 2013 to 2014. India's share in World trade is around 0.23 percent.

The egg production in the country has increased from around 83 billion nos. in 2015-16 to around 88 billion in 2016-17 registering a growth of about 6%. The per capita availability of egg has increased from 61 in 2013-14 to 69 in 2016-17.

The poultry meat production in the country has increased to nearly 3.46 million tonnes during the year 2016-17 from 3.26 million tonnes during the year 2015-16 again at around 6% growth rate.

### GROWTH DRIVERS AND EMERGING TRENDS/ CHALLENGES

- In India, poultry sector growth may be attributed to many factors like rising incomes and a rapidly expanding middle class, together with the emergence of vertically integrated poultry producers that have reduced consumer prices by lowering production and

marketing costs.

- Integrated production, market transition from live birds to chilled and frozen products, and policies that ensure supplies of competitively priced corn and soyabean are keys to future poultry industry growth in India. Further, disease surveillance, monitoring and control will also decide the fate of this sector.
- Concurrently, India's unorganised and backyard poultry sector is also one of the potent tools for subsidiary income generation for many landless/ marginal farmers and also provides nutritional security to the rural poor.
- These achievements and growth rates are still being sustained despite the ingress of avian influenza which was a severe setback for the industry, showing the resilience of the subsector, perseverance of the private sector and timely intervention by the Government.
- To assess the future trends we have to review the past planning and present scenario to extrapolate the future. The externalities and variables are often unprecedented and sudden.
- As per Chatterjee and Rajkumar, 2015, in layers, the population was 10 crore and 26 crore in





1990 and 2015 respectively. Similarly, during the period the eggs/ hen have increased from 260 to 330; the feed automation and separate brooding have increased from 10 to 80%; feed prices have increased as well from Rs. 12 to Rs. 22 per kg; egg cleaning not considered important in 1990s has gained significance in 2015.

- Similarly, in broilers, during the period 1990 and 2015 parent stocks housed have increased from 0.7 crore to 3.4 crore and placements per month have increased 5 times; FCR improved from 2.2 to 1.6; 42 days body weight increased from 1.5 to 2.5, slaughter age reduced by 10 days to 38 and integration increased from negligible to 60 percent.

- Newer Challenges posed: Along-with challenges posed by emerging and re-emerging diseases, there are issues of animal welfare, consumer and NGO driven demands, AMR issues, environmental impact etc. which need to be addressed.

#### WAY FORWARD

- Going for regionalization and recognizing more compartments as per OIE guidelines for exports
- Recent evaluation of Performance of Veterinary Services would further help us in improving sanitary aspects
- The exercise with industry on Agri-Export Policy is going on and it is believed that it will help improve our trade position substantially.
- India should look forward to

increasing scope for exports through value added products like whole egg powder, brined and pickled eggs, egg roll, egg cutlet, egg crepe and waffles, albumen flakes/ rings, yolk powder, cured and smoked chicken, chicken patties, nuggets, kababs, meat spreads, marinated breast fillet, hot-dogs, frankfurters etc.

- Encourage brand development for certain indigenous poultry like Kadaknath or other birds with some specific attributes. Low cholesterol and Omega-3 rich designer eggs are already in vogue in private sector.
- Intensify education and awareness about nutritive value of eggs and poultry through various platforms like World Egg Day etc.
- Intensify skill development in the poultry sector and reduce the gap.
- Develop Marketing Intelligence domestically and internationally in collaboration with ICAR and other Department/ agencies.

**Prof.(Dr.)P.K.Shukla, Registrar, Dean Post Graduate Studies& Professor, Poultry Sciences, DUVASU, Mathura and Dr.Sujit Nayak, Assistant Commissioner (AH), Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India, Krishi Bhavan, New Delhi,**

# Zinc in Fertilizers

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*Zinc fertilizer increases the yield and quality of crops, resulting in increased income for farmers.*

Zinc has emerged as the most widespread micronutrient deficiency in soils and crops worldwide, resulting in severe yield losses and deterioration in nutritional quality. About 40% of Indian soils are deficient in zinc, leading to decreased crop productivity and nutritional value.



### GET INVOLVED

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# Celebrating Farmers

Popularly known as Kisan Diwas, the National Farmers' Day is a national occasion observed on 23rd December every year. National Farmer's Day is celebrated in the honour of the former Prime Minister of India, Chaudhary Charan Singh who introduced several programmes during this tenure for the benefit of the farmers. On the occasion of Kisan Diwas 2018, many prominent voices of the Indian agriculture sector pay tribute to the farmers who played a pivotal role in ensuring India's food sufficiency, at the same time exhorting the government to mend the gaps in the pesticide registration and use in the country.

## Transforming Indian Agriculture

Shri R.G. Agarwal, Group Chairman, Dhanuka Agritech Ltd.

First I would like to congratulate to our farmers, because of them we are having nutritional food security, and just because of their hard work, we are the second largest country after china in Agricultural GDP. I offer my gratitude to our farmers and their families.

Let's recall the time of 1960s when India faced ship to mouth situation to meet its food demand and was importing wheat from US under PL-480. The country overcame this difficult situation by developing high-yielding varieties of wheat and rice, which were highly responsive



to chemical fertilizers, pesticides and water, which made India a 'Food Self Sufficient' Nation. But still, there were some gaps left in the production system against national nutritional security because as per 2018 Global Hunger Index, India was ranked 103rd out of 119 qualifying countries which is a disturbing figure for a population of 133 crores.

Another important concern is low productivity of crops in comparison to developed countries; and wide yield gaps amongst States and within district. Therefore, Hon'ble Prime Minister, Shri Narendra Modi has called for productivity increase of food grains while doubling the farmer's income by 2022. This needs multi-faceted approach including improvement in productivity, resource use efficiency, lowering cost of production, diversification

towards high value crops, preventing crop losses due to pests and above all expanding reach of improved technology to farmers.

Losses due to pests are estimated at around 20-30 % depending upon the varying climate. It is estimated that this brings a loss of around Rs 4 lakh crores per annum to exchequer. Therefore, Government should come up with a policy framework for safe use of plant protection chemicals to save avoidable losses and should also launch intensive campaigns to demystify the myths associated with the use of pesticides. We need to educate and train the farmers through Good Agricultural Practices to adopt safe and judicious use of pesticides.

Agri Input sector plays a major role in doubling farmers' income which include good quality and treated seeds, fertilizers which should

be used as per the soil test report, judicious use of agrochemicals and market opportunities. Another input which is essential for agriculture is water. 54% India is facing water stressed condition and in India around 80% of fresh water has use in agriculture. Now it's time to move towards Drip and Sprinkler irrigation system in farms. We have to save every single drop of water for our future survival.

I call upon all the stakeholders to work towards a higher synergy for raising the farmer's income of our nation. Government of India may appoint an Agriculture Attaché in its Embassies to create a favorable climate for export of ethical Indian agriculture commodities. I am sure with such holistic approach, we can again bring back the era when India was called "Sone ki Chidya" of world".

## Plant protection chemicals are essential

**Dr. CD Mayee, Former Chairman, ASRB**

Plant protection chemicals have proved to be an indispensable tools in successful cultivation of crops. However, good agricultural practices and judicious use of pesticide for pest management are paramount to safety of humans and environment. In India's food security, agrochemicals play a major role where arable land is shrinking, water level is depleting and climate change is a major issue.

First, in today's scenario many new diseases and pests are infesting different crops which are causing huge losses to farmers. Earlier control of pests and diseases have been achieved with the right and judicious use of pesticides resulting in minimizing the losses and contributed vastly in increasing the production. Recently "pink Boll Worm", "Whitefly", "Fall Armyworm" have emerged as major pests which are causing enormous losses in farmers' field. The outcry against agrochemicals or pesticides may hamper the food security objective. The accident in Yavatmal last year was very much discussed. My empathy are always with those families who have suffered due to this incident but this is not the case of pesticide use or I would like to say pesticide are not directly responsible for this. This is the case of cocktail of many pesticides and minimal use of safety gadgets. I appeal to the farming community that during the pesticide use always follow the safety norms and precautions.

I would request farmers to purchase the Seeds, fertilizers, pesticides and other things for their farming use, from authorized dealers with bill. By bill you may contribute to development of the nation and also save yourself from the conundrum of spurious pesticide business. I also would like to focus on malafide activity of some Bio pesticide companies. In past, I have drawn the samples of 20 Bio-Pesticide products and tested in NABL approved laboratories. I found that 19 samples were laced with chemical pesticides and 7 of them were cocktail of many chemical pesticides. Farmers should be aware about the conundrum of these Bio pesticide product.

At last, I wish you all a happy and productive Kisan Divash.



## Breaking MYTH of Agrochemicals

Dr. Debabrata Kanungo, Agriculture Scientist

The Pesticide Registration System in India is quite comprehensive and robust in comparison to global standard practice. In India, before allowing registration to a pesticide, it is ensured that the generated toxicological data is evaluated as per prescribed guidelines and satisfied as per the safety norms of human, animals and environment. Even then, most of the times pesticides used in India are declared as the cause of many diseases including cancer and birth defects, without reviewing tested and certified statutory regulation. To ensure the safety of human beings from pesticides, all toxicological / safety parameters which inter alia includes are evaluated on three important parameters i.e. carcinogenic property, effect on reproduction system and Maximum Residue Limits (MRL) of pesticide in various food crops. While prescribing statutory limit of MRL, it is verified that any consumption is not exposed to pesticide residue from food to water body. Exceeding the Acceptable Daily Intake (ADI) that is usually expressed on body mass basis (mg/kg bw/day), ADI is further divided by 100 to obtain the No Observable Adverse Effect Level (NOAEL). A lower dose to LOAEL is identified which is the highest dose where the animal does not show any adverse effect. This NOAEL is divided by 100 to derive ADI. Further the NOAEL tested is always not the real NOAEL as this is the highest data point/ dose tested below the LOAEL. The real NOAEL is mostly higher than the identified NOAEL and remains between the identified LOAEL and NOAEL. Thus enough precautions in prescribing the MRL are taken which has enough safety margins for human beings. While regulating the fixation of MRL, if FSSAI observes that the dietary exposure to pesticides from all sources exceeds ADI, then the CIB & RC is requested not to register any further use of that pesticide in any additional crop or remove some of the crop use. Lastly, MRL is not a safety standard, but only a legal trade standard.

## India: moving towards green to evergreen revolution

R B Singh, Ex-President NAAS

On the occasion of National farmer day my best wishes to our food provider. India, through the Green Revolution process ushered in the 1960s, followed by the White, Yellow and Blue Revolutions, had witnessed unprecedented 5 to 7 times gains in food production during the past 50 years or so, transforming the nation from the state of ship-to-mouth to the state of Right to Food based on home-grown food. As a result, India today is the second largest agricultural economy in the World.

Protecting agriculture from onslaught of pests and diseases is an age old practice.

As we know, Late Potato Blight caused by *Phytophthora infestans* devastated the entire Irish potato crop, the main source of food and cash, in 1845, causing the infamous Irish Potato Famine : The Great Hunger, which killed over one million people and caused mass exodus. Hundred years later, in 1943, in India, the devastating Great Bengal Famine caused by *Helminthosporium oryzae*, epidemic wiped off the main food crop rice, causing millions of human deaths. These epidemics more than underpin the urgency of establishing science-led reliable plant health management systems to eliminate such devastations.

In India, estimated annual crop produce losses due to pests are as high as 20 to 25 percent, estimated at US\$ 45 million. Further, spurious and counterfeit pesticides and illegal imports are not uncommon. The Department of Agriculture, Cooperation, and Farmers Welfare of the Ministry, is in process of bringing out and updated pesticide Management Bill.

Towards strengthening domestic pesticide industry and safe use of pesticides, the issues needing immediate attention are to regulate and encourage the use of effective and environmentally safe pesticides, harmonize testing procedures, assure point-of-sale quality and farmers protection mechanisms in case of spurious products.



## Reforms in Insecticide Act/Pesticide Management Bill (PMB)

Dr. A K Dikshit, Agriculture Scientist

Inaugurating Kissan Channel on 26 May 2015, the Hon'ble Prime Minister Shri Narendra Modi said that our average food grains productivity is only 2 t/ha, and we must strive to enhance it to 3 t/ha to match global level, to ensure food security for the country's rising population. With all the laudable achievements, India's per hectare production is far less to several developed and developing countries. Now our challenge is to increase the yield. Right and judicious use of agrochemicals, use of hybrid seed, and use of fertilizer according to soil test can definitely increase the yield. But spurious products are the main hindrance in this.

According to TATA Strategic Industry analysis Report, there is a significant share of non-genuine pesticides which include counterfeit, spurious, adulterated or sub-standard products. According to the industry estimates, the non-genuine/duplicate/fake/spurious pesticides could account for a large percentage of the total pesticides sold in India in FY14. These products are inferior formulations which are unable to either kill the pests or kill them efficiently. Apart from crop loss and damage to soil fertility, use of non-genuine products lead to loss of revenue to farmers, agrochemical companies and government. Indirectly these spurious and counterfeit pesticides are breaking the trust of farmers on pesticides industry.

New PMB 2018 is under consideration but in this act also there are some shortcomings of the earlier Insecticide Act 1968 which need to be addressed. As per the Act, manufacturing licenses are given after fulfilling requirement of Insecticide Act and Rules but by overlooking this, licenses are issued to any company without having proper facilities and infrastructure.

As per CIB & RC website, more than 4500 companies have been issued registration certificate, but only 314 companies have provided the production, sale, import, export data after persuasion by Ministry of

Agriculture, it means a large number of companies are allowed to run their business without any check and it seems no action is being taken against them.

Inspector who draws the sample when he has doubt about the quality but instead of following this procedure each state has given the quota to inspector and inspector draws more samples from good companies as compared to smaller and local companies without really monitoring the quality. Until & unless government takes corrective & strong actions, make licensing officers /inspectors and analysts more accountable, till then the system is not going to improve. Also, the government should ensure to have their own NABL accredited



Labs in the country so that authentic monitoring & analysis of samples is done. It is a matter of pride that our country exports more than 2.5 billion dollars pesticides to developed countries like USA, Japan, Europe but regarding quality no complaint has come and surprisingly the samples of companies whose labs are NABL accredited are failed by Indian Labs (non accredited) which is a matter of great concern. None of the labs are properly equipped and do not have proper standards, modern instruments and knowledgeable manpower. The genuine companies suffer a lot and fly by operators are enjoying even if samples are drawn then they are somehow passed which is a serious issue and needs to be rectified.

Government has to take strong remedial measures to curb this menace, while passing the new Pesticide Management Bill, only then problem will be solved and the vision of Hon'ble Prime Minister of doubling farmers' income by 2022 can be achieved.

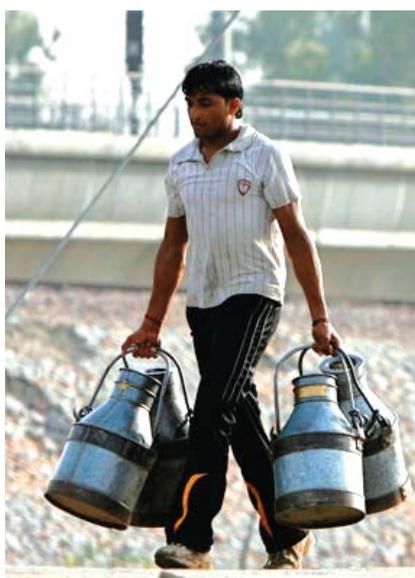




# SCOPE OF CLEAN MILK IN INDIA

**M**ilk in India is considered to be the purest form of food and one of nature's most valuable gifts to mankind. With today's lifestyle, there is an increase in the demand of pure milk which makes the market competitive. Over the last three decades, India has emerged as one of the largest milk producers, accounting for 18.5 percent of global milk production.

As per an Edelweiss report in 2017, it was stated that with an increase in the preference of a healthy lifestyle and consumerism, the Dairy industry in India is expecting an



annual growth of 15 percent by 2020. With such high demand and competition, there are thick chances of the industry being disturbed with health crisis due to aspects like chemical contaminants in the milk.

In India, there are large farms on which most of the procurement is dependent, while in the developed countries, they work in an ecosystem of large corporate dairy farms. In India, 80 percent of milk industry remains unorganized, while the other 20 percent of the daily milk produced is pasteurized and channeled through the organized segment. The milk supply comes from millions of small producers based in rural areas

who have an average of one or two animals comprising cows and/or buffaloes.

Another important aspect of this industry is the collection of the milk. The milk is collected by the vendors from local producers while selling it in rural as well as urban areas. With all this travel and translation, it brings to the notice that the supply chain is inefficient where the large amount of milk produced does not meet the basic hygiene standards which further makes it unfit for consumption due to the number of intermediaries involved as it gives way to adulteration. Infact, 80 percent of the milk which is unpasteurized and un-chilled can pose a serious health hazard and cause milk borne diseases like Typhoid. In 2012 Food Safety and Standards Authority of India conducted a survey in 33 states and concluded that of 1,791 milk samples, 68.4 percent of milk was examined and found contaminated. In urban areas, 70 per cent of the samples were found to be contaminated, in rural areas it stood at 31 per cent. Hence, clean milk production is the need of the hour from a public health and economic point of view.

### Practices for clean milk production and supply

In this industry, the health of the animal is imperative for producing fresh and nutritious milk. One should appoint well-qualified and expert veterinarian to keep a regular check on the animal's health. From vaccination to de-worming, a regular schedule helps keep up with the quality standards.

In today's era of increased awareness and demands of consumer, the key focus should be on quality and keeping it intact at every level. Right from the scratch of setting a farm to processing, packaging and supplying the milk, every level should be considered vital. The farmers or the milking person should have a regular health check-up. Good hygiene practices can further help in preventing the contamination while milking. Milking machines which are technologically advanced and much more hygienic than using hands, should be considered for the process. Milking machines efficiently remove the milk without damaging the teats of the cow and include the following benefits – time efficiency, clean milk as no dust or external particles can

get mixed, risk of sore hand/arms is done away with and the milk can be cooled off faster which ensures that the taste of the milk remains fresh. Apart from following good farm management practices, sanitary precautions to prevent and control the diseases should be adopted. The animals should be properly bathed and examined periodically for udder and other infections. Sustainable practices such as open farming, not administering any external hormones to the cows, feeding the cows freshly cut green fodder and hygienic milking procedures should be adopted as a necessity.

The udder should be kept clean and washed gently to avoid damages to the teats. The best practice for washing is to use 3 buckets, one with plain water, second with disinfecting solution and the third with a mild detergent solution. Three different cloths should be used for the purpose of the entire process of cleaning and wiping after the milking.

Processing and packaging is equally important to ensure the milk is delivered fresh. Processing includes keeping the milk at an ideal temperature, pasteurization and homogenization and then again ensuring the milk travels at an ideal temperature of 4 degrees Celsius. Also, if the milk is delivered within 24 hours of milking, the milk doesn't require any preservatives. There are various packaging solutions but "Gable Top" is considered to be the most effective and eco-friendly solution. It can be shredded in any paper mill and segregated as paper waste from households which further helps to reduce pollution and contributes in preserving the environment.

Hence, these practices can eventually increase the scope of clean milk in India, especially in the age of consumerism and preference for healthy milk.

**By Rahul Uppal, CEO  
woohoodoodh**





# OTA MARKET

## Japan's Largest Fruit, Vegetable and Flower Market

In Tokyo there are 11 central wholesale markets, each selling one or more kinds of produce including fruits, vegetables, seafood, meat, and flowers.

Ota Market, located in the Tokyo Bay area, is the largest of its kind in Japan. Logistically, it is situated in an extremely convenient place. To its north is Tokyo Kamotsu

Terminal Station, a departure and arrival station for containers; to its south is Haneda Airport; and running through it is the Bayshore Route. Ota Market is the only central wholesale market in Tokyo that deals with the three product ranges of fruits and vegetables, seafood and flowers.

The market first opened its doors in 1989. It covers a site spreading

out about 400,000 square meters and trades roughly 3600 tonnes of fresh fruits per day. The market is open from 5:00 am to 3:00 pm every day. Today, the facility moves an incredible amount of items through its warehouses daily, and its on-site flower market is one of the largest in Japan.

One of Ota Market's most



appealing attractions is the early morning auction, which visitors are welcome to watch. “The word market in English conjures up images of several small stalls where sellers from all around an area come to sell their fresh fruits and vegetables, meat and fresh fish, and other goods. But the word market in Japanese has a somewhat different meaning. It is a place where professionals in different fields come to purchase these items sold directly by their producers. This system is called ‘nakaoroshi’ in Japanese, and is a general distribution means by which these fresh foods reach the hands of the consumers via production auctions bid on by professional representatives of department stores and supermarkets. In other words, a Japanese market is actually a professional workplace.

The general public cannot participate in the biddings, but there are some markets like this that are open to viewings by the public”, said Ms. Hanatsu Takahashi, Senior Director, Ota Market.

Bidding is the main event of the market. A professional who judges the quality of the fruit by sight and ascertains their quality works alongside a wholesaler before bidding on the auctions. Prior to the start of the auction, the fruits that will be traded that day are laid out at the venue so that the pros can select which ones they’d like to bid on in advance. They strictly check the overall appearance and sugar content of the fruit, and select only those that meet the strict standards of the company that they represent. “The bidding starts at seven o’clock in the morning at the Ota Market Produce Building. Working in pairs, the bidder calls out in a loud voice, while the fruit professional remains silent and shows the amount of their bid with hand gestures. Bidding is done for each type of fruit. Bidding takes place for several luxury fruits, such as crown melons, mangoes, strawberry etc. The most perfect of the crown melons can sell for about

20,000 yen a piece, while mangoes goes for about 10,000 yen, which you can sometimes see if you visit the produce area of department stores. Strawberries in spring, watermelons in summer, persimmons in autumn, and oranges in winter; the fruits offered for bidding at the market change seasonally”, mentioned Ms. Takahashi.

The flower market building is across the street from the produce market building. Here you will find rows upon rows of cut flowers and potted plants. In market there are massive refrigerators where all the fruits are stored. There are 6 rooms in all, with a total capacity of about 3000 tonnes. In the market tours, visitors can see the luxury fruits up close. Watching the bidding itself is a rare opportunity to learn more about the distribution of fruits in Japan.

### Green Tea: A Century Old Japanese Drink for Better Health

Green tea is the daily elixir of Japanese, enjoyed for its sweet, earthy flavor and innumerable health benefits. Green tea is synonymous with Japanese tea. It is the most consumed beverage in Japan,



valued for its health and restorative properties. Drinking green tea is a custom that has been interwoven into Japanese culture, with almost every meal in Japan accompanied by a fresh brewed pot of green tea. It is the way of life and an embodiment of Japanese hospitality.

Green tea differs from black tea and other types of tea, in how the tea leaf is cultivated and processed. Green tea retains its fresh colour and delicate flavor because it is processed quickly to prevent oxidation, the tea leaves are steamed and dried almost immediately after being harvested.

There are various types of green

tea, depending on the cultivation methods, growing conditions, as well as the steaming and drying process. Each type of green tea has its own characteristics and flavor. Sencha is the most common green tea consumed in Japan. It is produced by picking only the youngest tea leaves, which are then steamed,

rolled, and dried. With a good balance of acidity and sweetness, sencha makes a great everyday tea. It is the most widespread kind of Japanese green tea, accounting for nearly 70 percent of the tea produced in Japan.

Whereas, Matcha green tea is recognized for its vivid green color, matcha is processed with high quality tea leaves grown in the shade a few weeks before harvesting in order to strengthen the flavor and caffeine level. It is then processed into a very fine powder, which is traditionally used for Japanese tea ceremonies. With a unique earthy flavor and

unmistakable color, matcha has now become a sought-after ingredient in inventive modern cuisines and as a trendy flavoring in all sorts of wagashi (Japanese sweets) and western style pastries and chocolates. Matcha is special since it is ground into a powder and completely dissolved in water when brewed, one can drink the whole constituents of the tea leaves and ingest all of the healthful nutrients without throwing away the leaves. Besides, by drinking Matcha one can also ingest oil soluble constituents (Vitamin A, Vitamin E, Beta-carotene, etc.), which are not extracted into water when brewed.

Gyokuro (or Jade Dew) is often viewed as the best quality green tea. Like the tea leaves used for matcha, gyokuro also uses shade-grown tea leaves, giving the tea a much more concentrated flavor. One can clearly distinguish the tea with its deep, dark green leaves and its unparalleled aroma. The other types of famous green teas are Hojicha and Genmaicha which are equally good.

Numerous research studies have found links between consuming



green tea and lowering the risk of high blood pressure, inflammation, heart disease, and cancer. Green tea contains antioxidants that improve overall health. The ideal temperature for making green tea should be 70-82°C. The steeping time for green tea varies depending on the type and quality of the green tea you use. Japanese believes that good water yields good rice and the same goes for a good pot of tea. The quality of your water will determine how your green tea tastes.

### Japanese Sake: A brew unlike any other

Sake is Japanese alcoholic drink made from fermented rice. The drink enjoys widespread popularity and is served at all types of restaurants and drinking establishments. As interest in Japanese cuisine has grown internationally, sake has started to become a trendy and recognizable drink around the world.

The foundations of good sake are quality rice, clean water, koji mold and yeast. They are combined and fermented in precise processes that have been refined over the centuries. Typically filtered, the resulting clear to slightly yellowish rice wines have an alcohol content of around 15 percent. It is often referred to as a wine but is brewed quite differently.

The taste, aroma and quality of sake are dependent on the fermentation process. The amount of rice that is milled is one of the crucial factors that determine the type of sake that is produced. The more the milled sake rice, the more delicate and clear the flavor of the drink. Sake may be served at room temperature, warm, hot or chilled. This often depends on the season, the quality of the alcohol and the drinker's preference.

### Gekkeikan Okura Sake Museum

Gekkeikan Okura Sake Museum is famous for the brewing of Japanese Sake. The museum on sake-making is run by the Gekkeikan Sake Company,



Ltd., one of Japan's preeminent sake companies. Opened in 1982, it is housed in an old sake brewery that was built in 1909, and presents the history of sake in Japan and sake production in Fushimi. In addition to its permanent exhibitions of some 400 sake production items, displayed to show each stage of the process, it also displays period materials dating back to Gekkeikan's founding, including different types of vessels. After visiting the galleries, visitors are welcome to taste various types of sake produced by the company.

There are currently about 2000 sake breweries across Japan producing more than 10,000 products, especially in the famous sake producing regions such as Niigata, Kobe and Kyoto. Sake production is seasonal with most of the production taking place in winter. In recent decades, premium sake has been gaining popularity. Premium sake differentiates itself in the quality of the ingredients and the efforts put into the production process. According to Mr. Shigeichiro Nishioka of Gekkeikan Okura Sake Museum, the degree of polishing the rice makes difference in the quality of sake production. Rice grains are polished before used in the sake production because the grains' outer

layers create undesirable flavors in the end product. "Generally speaking, the more polished the rice is, the better gets the taste and the higher gets the price tag of the resulting sake. For premium sake, at least 30 percent of the grain has usually been polished away, while the rice for the high-end sake needs to be polished even more. Ginjo and Daiginjo tend to be the most flavorful types of premium sake and are very rich in character. In Ginjo, at least 40 percent of the grain has been polished away, and in Daiginjo at least 50 percent of the grain has been polished away", said Mr. Nishioka.

With the modernization of sake brewing, machines and systems may be updated, but sake is still created through the work of microorganisms like koji mold and yeast fermenting starch. "Even today's sake brewing technicians need to have, in addition to the latest knowledge and technical skills, the observational skills and tenacity to grow microorganisms. In addition, operating a sake brewery requires adjusting the temperature, humidity, wind amount, and many other factors to ensure that the microorganisms do their work properly", said Mr. Mitsuru Sakamoto, Manager, Production Technology Section, Gekkeikan Sake Company.

# REVISITING PUNJAB AND HARYANA AGRICULTURE

The well-known Green Revolution (GR) technologies helped India to turn its North-western Indo-Gangetic Plains including Punjab and Haryana, into national grain bowl -- making the country not only self-sufficient but also exporter of food grains. However, over time, the GR technologies also contributed to serious ecological imbalances in the two states of Punjab and Haryana leading to decline in factor productivity; soil degradation; overexploitation of groundwater; and widespread water logging and salinity in canal irrigated areas.

In particular, the ecological situation in Punjab and Haryana got exacerbated by farmers' excessive application of chemical fertilizers (especially urea), herbicides (Round Up) and a range of pesticides leading to serious pollution of soils, air and water with nitrates and other harmful chemicals. The organic matter in local soils has declined to a meagre 0.2 to 0.4 percent requiring heavy doses of chemical fertilizers to sustain crop productivity – with adverse impacts on environment.

A range of incentives in terms of supply of low or no cost electricity (which in turn contributed to excessive use of ground water) and heavily subsidized seeds, chemical fertilizers and other inputs including farm machinery, coupled with government procurement of much of the grain produced at remunerative MSPs led Punjab and Haryana farmers to give up traditional and ecologically friendly cropping system of Maize-Wheat to ecologically harmful cropping system of Rice-Wheat.

This switch to Rice-Wheat cropping system in Punjab and

Haryana for increased production of rice and wheat was actively supported by public policy to ensure that adequate supply of food grains to the country's growing population, not realizing though that this could be the root cause of the prevailing ecological malady in the two states.

In adopting rice-wheat technology, farmers in Punjab and Haryana, besides overexploiting soils and water resources, could not organize ecologically friendly disposal of millions of tonnes of rice straw that was generated annually and in the process, began burning this huge biomass causing unacceptable levels of air pollution, suffocating millions of people in the two states and the nation's capital, Delhi. This seems to be the failure of public policy in that it did not support adequately, the development of infrastructure that was necessary to process large quantities of rice straw into ecologically friendly, productive uses.

## ALTERNATIVES TO RICE STRAW BURNING

Rice straw that is currently burnt can be potentially used to increase soil

fertility, as cattle feed (with some treatment), and for making industrial products such as pulp for paper, fiberboards, biodegradable utility products for households, canteens and hospitals, energy generation, and conversion to edible products such as sugar syrup and yeast production.

Clearly, more research is needed on technical, financial and economic feasibility of these options, with reference to the straw of local rice varieties, and to develop suitable technologies that can be used by farmers, farmer organizations and private sector entrepreneurs. For example, the potential for mega biogas plants at village or community levels (such as those used in Mexico) to convert appropriately treated rice straw into bio-gas and manures needs to be explored for use in India.

That said, the most desirable option for Punjab and Haryana will be to gradually do away with rice-wheat cropping system and reduce the quantity of rice straw that is generated and burnt annually, involving avoidable use of scarce water resources and expensive chemical fertilizers which have environmental footprint.





### ONGOING EFFORTS TO COPE WITH THE CRISIS

The Punjab and Haryana state governments have since initiated modest efforts to gradually move away from green revolution technologies, especially the rice-wheat cropping system, and promote crop diversification with emphasis on horticulture and livestock to an extent.

However, this effort needs to be accelerated multifold by deploying a well-articulated strategy using a “project approach” that will systematically reverse the prevailing ecological imbalances and restructure and revitalize agriculture using principles of Conservation Agriculture (CA) to increase factor productivity; improve soil quality; promote balanced use of land, water and fertilizers; reduce pollution; and increase farmer incomes.

Much research has already been done by national and international institutions like ICAR and its institutes and KVKs, Punjab and Haryana Agricultural Universities, TAAS, CYMMIT/BISA, IRRI and RWC on CA technologies for large scale adoption, which need to be mainstreamed on a priority basis. This will involve massive extension

effort by the two state governments to encourage farmers adopt CA technologies. These technologies include: Laser land levelling, No-till farming, Direct seeding of rice; Use of Turbo seeders that eliminates residue burning; use of relay planting and so on.

Yes, there still are some constraints to widespread adoption of Conservation Agriculture, such as non-availability of suitable farm machinery including planters, seeders and harvesters especially for use by small and marginal farmers. However, ways must be found to resolve these constraints by providing necessary incentives to private sector machinery manufacturers to develop such machines.

It may take some time before small scale machines for CA-based farming become available to farmers. Meanwhile, currently available high capacity machines could be deployed for Custom Service, to enable small and marginal farmers undertake CA-based technologies without necessarily buying these expensive machines. The vicious circle of farmers’ nonadopting CA technologies because of non-availability of smaller machines or custom service must be broken.

### RECENT GOI INITIATIVES

Some of the recently launched GOI initiatives including issue of Soil Health Cards to farmers along with recommendations for improved soil management, introduction of Neem Urea, and Paramparagat Krishi Vikas Yojana may encourage farmers to diversify and reduce area under rice, but this will not happen aggressively if the ongoing, regressive, incentive framework for polluting green revolution technologies continues. This involves major changes in existing subsidy schemes such that available funds are redirected from supporting polluting GR technologies to CA technologies.

### PROJECT APPROACH TO ADDRESS CRISIS

It is in this context that urgent attention must be laid to implement a CA-based strategy that includes a “project approach” to address the agricultural and environmental crisis faced by the states of Punjab and Haryana. Such a “project approach” should be implemented on an area basis, covering one or more villages going up to Tehsil and eventually covering the two states in their entirety.

These projects will be designed to





bring about a paradigm shift in Punjab and Haryana's cropping systems using diverse CA technologies that have the potential for sustainable, climate smart, development. Typically, a series of area-based projects will include following components: (a) Community Awareness & Capacity Building; (b) Implementation of CA-based, climate-smart, technology packages on individual or groups of farms; (c) Policy, Program and Institutional Reforms; (d) Organization & Management that will implement the project efficiently and (e) Monitoring & Evaluation to ensure that intended project objectives and results are indeed accomplished.

The paradigm shift in terms of restructuring and rehabilitation of Punjab and Haryana agriculture on a sustainable, climate-smart basis, cannot be accomplished without building awareness and capacity of local communities to adopt CA-based technologies. This should be done through village level meetings, focus groups and forums established in conjunction with local gram-panchayats and community representatives, besides using other media such as TV shows and messaging using cell phones.

On the investment side, the

proposed project approach could finance a range of location-specific investments using participatory resource mapping concepts and technical plans accepted by local agricultural communities. This involves identifying and addressing major constraints to production and productivity improvement using CA technologies, while ensuring natural resource conservation and continuing use of climate change adaptation and mitigation measures.

Constraints to productive agriculture are diverse including soil erosion, low soil fertility and organic matter content; faulty or inefficient land tillage practices; uncertain, erratic and unevenly distributed rainfall; lack of access to supplementary ground or surface water; lack of water use planning; use of inefficient or traditional crop varieties and cultivation; imbalanced fertilizer application; use of inefficient machines; the lack of proper harvesting techniques and inefficient storage practices.

The implementation of the proposed "project approach" to restructuring and rehabilitation of agriculture in Punjab and Haryana will need deep commitment of, and coordination and convergence among

various GOI and state government agencies; participation of both national and international financial institutions; and last but not the least, of farmers and farmer organizations.

Among the national agencies, NABARD with its affiliate banking system will need to play an important role in area-based project preparation, funding, and implementation, while international agencies such as the World Bank/IDA, ADB and Shanghai-based New Development Bank (BRICS) and some bilateral donors such as Canada, Australia and Japan will need to be invited to provide much needed longer-term finance at concessional rates.

The proposed project approach will focus on addressing policy, program and institutional aspects of mainstreaming Conservation Agriculture (CA) in following key areas: Farming systems; Soil and nutrient management including zero/minimum tillage and land leveling; Balanced use of fertilizers and crop protection (including use of bio-fertilizers and bio-pesticides); Water/moisture management; Farm mechanization, especially introduction of machines needed for ZT/MT and laser land leveling; Value addition, credit, marketing, and institutional policies, products and service delivery to farmers; District level planning and budgeting; and Research & Extension.

Additionally, the proposed "project approach" to be successful, will require policy reforms in areas of MSP setting and administration; procurement, storage and distribution of grains and other agricultural commodities; and development of market infrastructure that is owned and managed, on a fee basis, by farmers to prevent or reduce farmer exploitation by traders and commission agents as we see in APMC-managed markets.

**Ramesh Deshpande**  
**India Agriculture Group & IAG**  
**International**



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**रहिमन पानी राखिये, बिन पानी सब सून । पानी गये न ऊबरे, मोती, मानुष, धून ॥**

वर्ष पहले से हमारे पूर्वज  
पानी के महत्व का वर्णन कर गए हैं ।

पुराने समय में पानी का स्रोत  
नदी, कुएं, झरने इत्यादी हुआ करते थे  
और पानी का उपयोग  
आवश्यकता अनुसार होता था ।

आज आधुनिकता के दौर में  
हम जमीन से ज़रूरत से ज्यादा पानी निकाल रहे हैं,  
जो उपयोग कम और बर्बाद ज्यादा होता है ।  
जिससे भू-जल दिन प्रतिदिन कम हो रहा है  
और कुछ सालों बाद शायद पूरा ही खत्म हो जाये!

अब सवाल उठता है  
कि हम हमारी जाने वाली  
पीढ़ी के लिए कितना पानी छोड़ना चाहेंगे ?

इस परिस्थिती को भांपते हुए  
धनुका ने 2005 में नारा दिया था,

"खेत का पानी खेत में – गांव का पानी गांव में"  
बचाव पानी की हर बूंद ।

आप भी पानी बचा सकते हैं...  
अपने घर में, स्कूल में, फ़ैक्ट्री में, संस्थान में, गाँव में....  
अधिक जानकारी के लिए कृपया सम्पर्क करें  
[savewater@dhanuka.com](mailto:savewater@dhanuka.com)



**खेत का पानी खेत में**



**बचाव पानी की हर बूंद**

**गाँव का पानी गाँव में**



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# ELECTRONIC NATIONAL AGRICULTURE MARKET – AN ANALYSIS

**eNAM has been a very significant initiative of the government. Thirty months past its launch, Indian council of Food and Agriculture examines the reach and challenges faced in the implementation of eNAM.**

In April 2016, the Central Government introduced Electronic National Agriculture Market (eNAM) initiative to facilitate electronic trading involving about 400 APMC markets in the beginning. Electronic markets like eNAM are virtual markets with existence of physical markets at the backend, an electronic interface involving website / app, internet, server, payment gateways and ultimately the transactions done on the virtual market culminating in the receiving of the physical commodities purchased by the buyer through the help of smooth logistics. It is therefore an interplay of several stakeholders and the success depends on the requirement of all the stakeholders acting in unison and the interest of all the stakeholders are taken care of. The advantages of a platform like eNAM are manifold- it reduces multiple handling of commodities at various levels, reduce multiple fees, ensures fair price to farmers, reduce unethical practices of physical bidding like collusion and cartel formation among traders and commission agents and other benefits like increase in robustness of agri marketing process, increase in transparency, automation and efficiency etc.



## **eNAM Journey So Far Breakup of APMC Total Mandis vs. Mandis Trading Online**

Following is the detailed breakup of number of APMC mandis existing in different States (States which are already participating in eNAM) and the number of Mandis out of the designated APMC mandis which are taking part in eNAM:

State	No. of APMC	Mandis doing Online Trade	State	No. of APMC	Mandis doing Online Trade
ANDHRA PRADESH	22	19	ODISHA	10	1
CHANDIGARH	1	1	PUDUCHERRY	2	1
CHHATTISGARH	14	8	PUNJAB	19	19
GUJARAT	79	45	RAJASTHAN	25	24
HARYANA	54	51	TAMIL NADU	23	10
HIMACHAL PRADESH	19	14	TELANGANA	47	32
JHARKHAND	19	3	UTTAR PRADESH	100	86
MADHYA PRADESH	58	46	UTTARA-KHAND	16	15
MAHARASHTRA	60	50	WEST BENGAL	17	11

To summarize, as per latest data available till 31st October, 2018, following is the status of eNAM in India in terms of quantitative and qualitative aspects:

eNAM Initiative Dashboard	
Launched on	14th April, 2016
Number of Mandis (in absolute numbers)	585
Number of Mandis (as percentage of total mandis in the Country)	About 10%
Number of States	16
Number of Uts	2
Total Number of Traders	1,19,789
Total Number of Commission Agents (CAs)	66,999
Total Number of Service Providers	79
Total Number of Farmers Producer Organizations (FPOs)	385
Total Number of Farmers	1,27,57,129
States & UTs not yet onboard due to regulatory mechanisms not still in place for electronic trade	Delhi, Meghalaya, Assam, Nagaland, Tripura)
States & UTs not yet onboard due to APMC act still not being implemented	Bihar, Kerala, Manipur, Andaman and Nicobar, Diu, Daman, Dadar& Nagar Haveli
States having reforms in place but yet to be on board eNAM	Karnataka, Arunachal Pradesh, Sikkim, Mizoram, Goa

### eNAM Achievements So Far

Indicators of eNAM Initiative as a Sign of Gradual Progress	
1. Number of Assayed Lots	
2016-17	1 Lakh
2017-18	13 Lakhs
2018-19 (till August)	Nearly 10 lakhs
Projected number of assayed lots during 2018-19	20 to 25 lakhs
Percentage of Mandis under eNAM equipped with basic assaying machineries	85%
2. Value of Online Transactions	
2016-17	Rs. 3.38 crores
2017-18	Rs.70.62 crores
2018-19 (till July)	Rs.68.17 crores



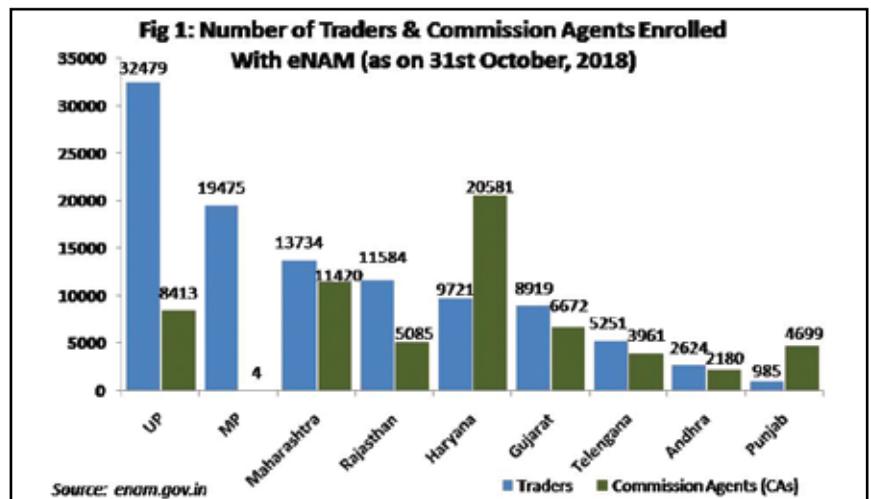
### Dissecting eNAM in Terms of Numbers

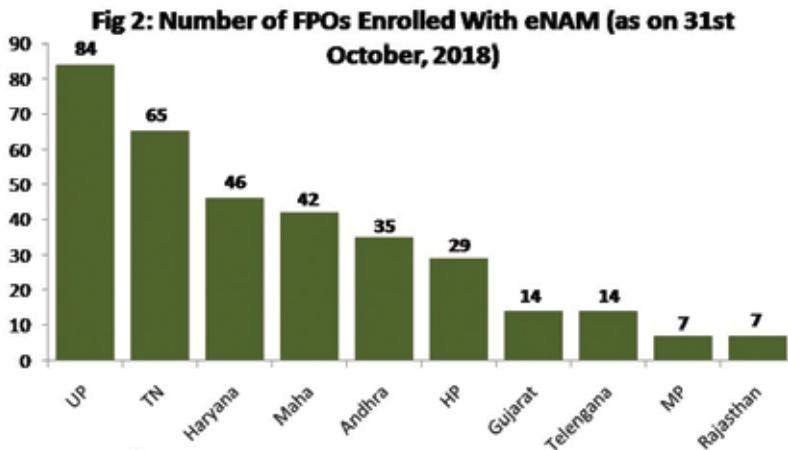
#### Number of Traders and Commission Agents

Fig 1 shows the top 9 States in terms of number of Traders out of the 18 States and UTs currently participating in eNAM. Uttar Pradesh is the State with the highest number of traders with over 32 thousand traders. Number of Commission Agents is highest in Rajasthan (20581), though it ranks fifth in terms of number of traders (9721) and a contrasting scenario is observed for Madhya Pradesh where so far just 4 Commission Agents have enrolled themselves with eNAM, though the State ranks second in terms of number of traders (19475). These are interesting trends and pattern emerging out of the analysis of data of traders and commission agents studied together. Since the success of eNAM depends a lot on the active participation of traders and commission agents, the lesser number of commission agents in Madhya Pradesh needs a careful study.

#### Number of FPOs

As per the data provided by eNAM, the leading State in terms of number of FPOs registered with eNAM is Uttar Pradesh as in Fig 2 which shows the distribution of eNAM linked FPOs in the top 10 States. These states in terms of maximum number of eNAM





Source: enam.gov.in

linked FPOs together constitute almost 90% of the total FPOs registered across all the 18 States and UTs currently participating in eNAM. FPOs could give the eNAM initiative a dependable and institutional touch and in the process, could back paddle benefits derived from the initiative to thousands of farmers who are members of these FPOs.

Further, the data regarding FPOs as provided in eNAM website should take care of unintentional ‘double counting’ as a detailed study of the number of FPOs in another data provided in the same website reveals a single FPO being registered with multiple eNAM linked mandis. This will lead to erroneous data which in turn will adversely affect policy refinement and analysis based on available data.

### Number of Farmers

Farmers, who are the most important link of the entire initiative and for whom this entire system has actually been designed are still in less numbers even after 30 months of the initiation of the programme. Although some of the States like Uttar Pradesh (30 lakh farmers), Haryana (24 lakh farmers), Madhya Pradesh (20 lakh farmers) and Telangana (14 lakh farmers) have made some degree of progress in terms of being able to motivate sizeable number of farmers, some of the other major States with high potential is still lagging behind. A large State like West Bengal has just 8464 farmers so far under eNAM.

### Major Challenges Online Payment

This is the biggest hurdle faced so far in the journey of eNAM. Convincing two

of the most important stakeholders of the initiative, namely the farmers and the traders to adopt online payment has been the major road block to the success of the initiative.

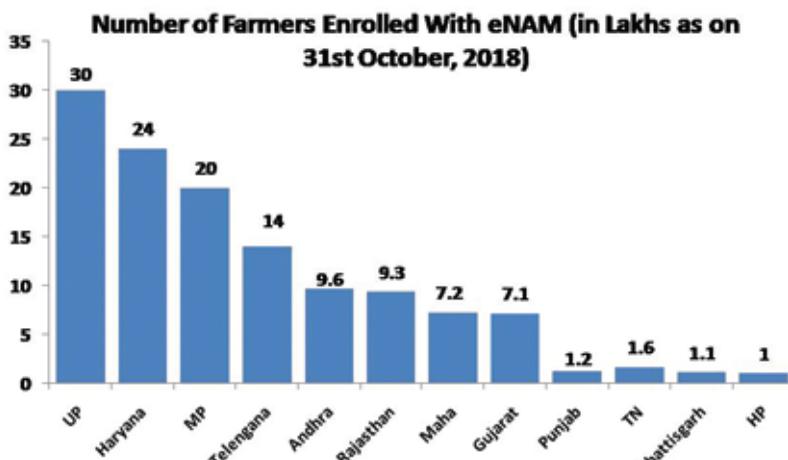
The reason for not adopting online payment, which is an inseparable necessity for the success of an initiative like eNAM lies more in the mindset of the farmers and the traders than anything else significant. Farmers fear that online payment of their transaction to their respective bank accounts will make them vulnerable to banks forcefully trying to settle their existing crop loans. Traders, on the other hand, avoid online transaction for the fear of tax men according to their own admissions. Traders still have a notion of avoiding payment in “white”.

### Assaying Labs

Though 85% of the eNAM registered mandis are equipped with basic assaying machines, quality assaying labs are still not present in many mandis. Experts feel that the system should now graduate from being equipped with “basic assaying machines” to more sophisticated ones and try to include the kind of machines enumerated in the Guidelines for Assaying Labs in Mandis as provided by the rules and guidelines under eNAM. The Guideline related Manual from eNAM talks about equipments like Near Infra-Red (NIR)spectroscopy Analyser (approx cost Rs. 14 Lakhs), Digital Moisture meters of various types (Costing about Rs. 16.5 lakhs or Rs. 1.5 lakhs or Rs. 1 lakh depending on grades and types), Multipurpose Lab Accessories (of various rates ranging from Rs. 4000 to Rs. 60,000), manual or electronic foreign matter assessing machines (costing upto Rs.1.5 lakhs), colourimeter (about Rs. 1 lakh) etc.

### Technical Glitches

There also exists another systemic challenge in the form of technical glitches. Internet connectivity is



still an issue. There are complaints of server remaining down on many occasions leading to problems in transactions.

### Other challenges

The initiative is still having teething problems in the form of overall lack of interest among the two important stakeholders, namely the farmers and the traders, insufficient manpower to spearhead the initiative and transform it into a kind of movement, inadequate logistics support, resistance from traders and commission agents in supporting the implementation process and other basic challenges.

### Way Forward - Policy Recommendations

eNAM is an important initiative of the current Government under the Leadership of Sri Narendra Modi and considering the emergence of disruptive technologies all around, this kind of virtual markets are going to be the norm and a natural phenomena in the near future. While every sector and every business activity is getting more and more technology based, agriculture markets and agri marketing as a whole cannot remain outside the loop of technology. It is also true, as discussed in the preceding sections of this policy note, that the scale of an initiative like eNAM across the country is massive in nature and involves a very complex web and interplay of various Stakeholders. As a result, such an initiative will have its own teething problems and will take some time before the system gets stabilized and all stakeholders in maximum numbers are on board. However, considering the fact that 30 months are already over since the programme was launched, a time has come when some objective and quantifiable analysis needs to be done and very focussed steps are to be undertaken to further improve the system.

A detailed study is needed to dissect the current activities related to the current activities of eNAM



pooling in a large number of data sets, information, views of stakeholders etc. ICFA after a preliminary analysis of the currently available data and trend analysis presents the following specific and simple fine tuning of the current system in order to make the execution more robust and effective:

- **Allay fear and anxiety of the stakeholders:** The major roadblock for a novel initiative like eNAM is that stakeholders like farmers, traders, commission agents are currently under a lot of fear and anxiety related to online payment. Without switching to electronic payment system, eNAM cannot achieve its desired success and the implementation will progress at a very slow pace. Having said this, it is also true that switching over to electronic payment system by stakeholders like farmers, traders and commission agents need a high level of change management in terms of overcoming fears, rumours, cultural barriers or simply saying, the need to change an existing system which is going on for decades. Government should undertake massive campaigns to educate these stakeholders and

remove the current anxiety and fear from their mind. Government can consider forming a brigade of “eNAM Mitra” constituting trained advocates of eNAM from within the community of the farmers, traders and the commission agents. Apart from this, the existing supply chain in the physical mandis should be dissuaded from opposing the implementation of eNAM. Existing traders, many of whom are also in reality the middle men in the agri supply chain, form a strong link and they cannot be ignored. Involving them as “eNAM Mitra” is crucial as one cannot ignore the fact that many of these traders have known these farmers for a long time and the farmers in many cases depend on them for advice, credit and help during distress.

- **Involve Under Graduates and Post Graduates in agriculture in large number for training and assistance at mandis:** A considerable number of students are studying in under graduate or post graduate courses in various State Agricultural Universities (SAUs) across all the States. eNAM at this stage needs

manpower for proper training and awareness building activities among farmers, traders and commission agents. But this awareness building also needs technical knowledge since agriculture as a sector is technical and people with education outside the sector will find it difficult to understand the nuances. On the other hand, the students studying agriculture sciences in various SAUs look for practical exposure to the agribusiness operations to get a realistic feel of the sector. Combining these two needs, Government can consider encouraging SAUs to depute agri graduates and post graduates studying with them to do internships at the mandis. These students can be quickly given an orientation and in turn they can spend time in the mandis to train and educate the stakeholders in areas like online transactions, handling of mobiles and computers for performing basic IT operations, removing fear of online transactions and other related activities. This can be a part of existing RAWE programme or other internship needs for the students. Students pursuing Management courses in Agribusiness can also be roped in for such internships.

- **Encouraging different Government Departments to purchase through eNAM:** While it is necessary to talk about the need for increasing number of farmers, traders and commission agents to participate in a movement like eNAM, Government should not also forget the fact that the buyers also need to lend a hand of support to make the movement successful. One important buyer group is Government's own departments and bodies which house inhouse canteens or need to purchase agri commodities for various reasons. Canteen Stores Department under the Ministry of Defence can be an important buyer of agri commodities through eNAM. This department purchases considerable amount of agri commodities and as a result, they can be encouraged to purchase



more quantities through eNAM. Similarly, the operators of canteens in various Government Institutions like the Parliament, Supreme Court, respective State Assembly canteens and similar potential buyers linked to Government system can be encouraged to purchase more and more quantities through eNAM platform. This can be pushed forward so much so that even the foreign embassies and various international bodies, wherever scope exists, can be requested and encouraged to purchase through eNAM for fulfilling their needs to buy agri commodities.

- **Village level awareness building through panchayats:** Panchayats can be roped in to create awareness for larger and fearless participation in eNAM by farmers. Help desks can be opened, which can also double as digital literacy micro centres related to imparting training to farmers in online operations and basic computer and mobile literacy for computing and online transactions through eNAM app. Panchayats doing exemplary work in this regard can be recognized and awarded by the Government.

- **Organized analytics and knowledge management support:** It is evident that a massive intervention like eNAM will generate a lot of data, information, trends and patterns from the day to day execution related activities on the ground. For the next couple of years till the time the intervention stabilizes and starts

showing sustainable and expected results, it is important to have an analytics team of professional analysts with knowledge in the agriculture and agribusiness sector. At this stage, the system cannot afford data duplication, incomplete data capture and data loss due to inefficient and unprofessional data collection and data management system. Else, it runs the risk of not being able to take "informed decisions" and will be vulnerable to identification of reasons, lapses which are otherwise not critical and based on mere opinion or observation of some individuals.

- **Promotion of eNAM similar to Swachh Bharat Abhiyan:** The scale and magnanimity of an initiative like eNAM can easily be compared to Swachh Bharat Abhiyan (SBA). SBA has been promoted and awareness about the need of clean and hygienic surrounding was hammered so well into the psyche and minds of common man that a substantially improved result has been achieved over the last few years. From the point of view of potential contribution to the economy of our country, initiative like eNAM has the potential to add substantially to the economic development of the country through additional contribution to countries, GDP and most importantly, can substantially help in advancing the farmers towards doubling their income, which is one of the cherished and flagship objective of the current Government. From this point of view, a massive promotional campaign similar to SBA along with gearing the eNAM system to accept increased flow of traffic can actually result in lower opportunity cost in terms of the ultimate accrued benefits. However, before unleashing such a massive mission mode campaign aimed at allaying the fears of the stakeholders and generating awareness among farmers to avail eNAM platform, there has to be a very seamless convergence between various line departments and institutions.

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“We will not let the Prime Minister rest until he waives loans. Congress manifesto for 2019 would promise farm loan waiver. We will do it guaranteed 100 per cent if the Narendra Modi government doesn't do it by then”

**RAHUL GANDHI**  
Congress Leader

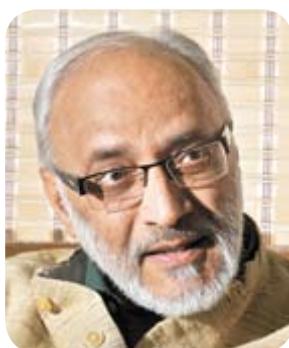


“Moving to sustainable agriculture, which uses pesticides, fertilisers and water in a calibrated ecofriendly manner is our goal. Traditional practices, the best of science and technology, understanding nutritional needs, preservation of biodiversity and an understanding of food security for our population are all important. Solutions to problems in agriculture come from science that addresses all these components together in a context-dependent manner.”

**K VIJAY RAGHAVAN**  
Principal Scientific Adviser to the government

“While there can't be two opinions about the farmers' plight in our country, increasing minimum support price (MSP) cannot be the solution. We may have to bring in science and our understanding to solve their problem”

**ASHOK GULATI**  
Agricultural Economist

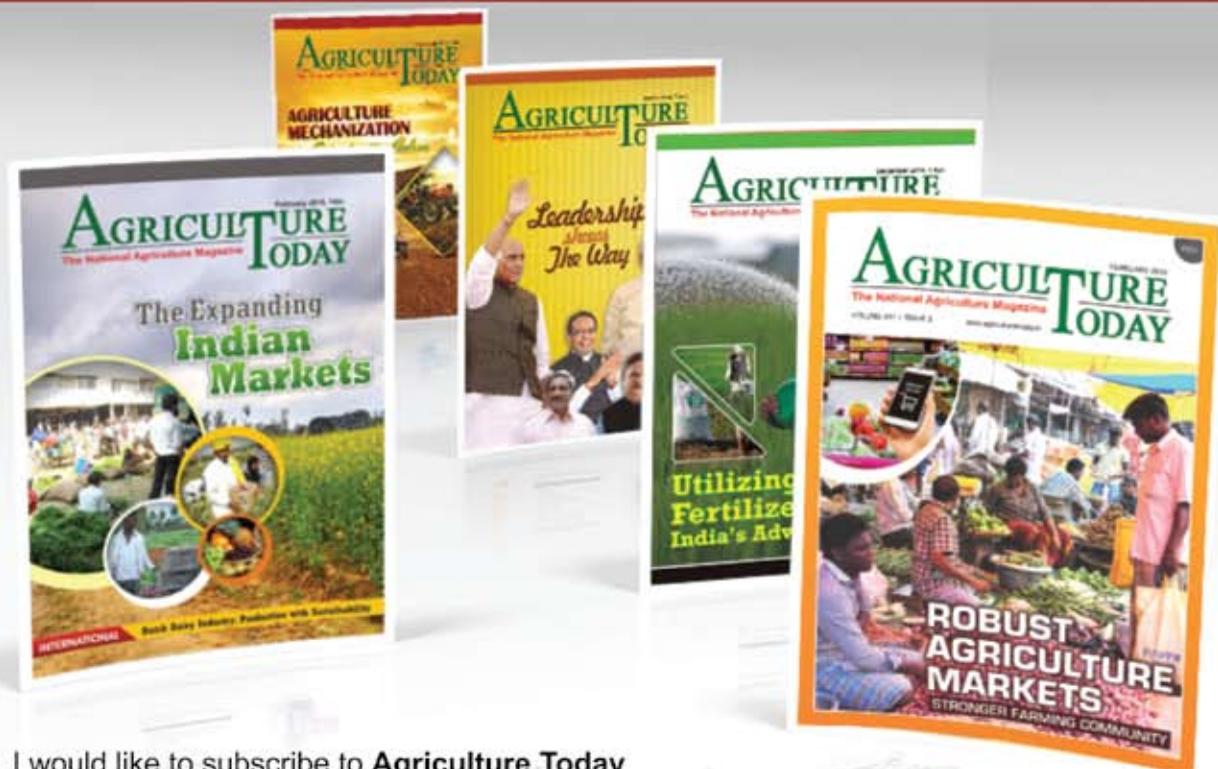


“The biggest problem with loan waiver is that it will benefit only a small fraction of farmers...I am not at all in favour of loan waiver”



**RAMESH CHAND**  
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