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# AGRICULTURE The National Agriculture Magazine TODAY

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AGRICULTURE MARKETING & TRADE



## PROTECTING FARMERS' INTERESTS





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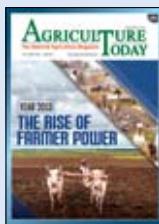
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## From the Editor's Desk

# AGRICULTURE MARKETING CRITICAL TO FARMERS' WELL BEING

**A**gricultural marketing is an important segment in today's agriculture that converts the gains realized from crop production into tangible benefits for the farmers. A robust marketing chain has the potential to secure stable income to the farmers.



In India, traditionally marketing of agricultural commodities has been promoted through a network of regulated markets. Most state governments and UT administrations have enacted legislations to provide for the regulation of agricultural produce markets. The purpose of state regulation of agricultural markets was to protect farmers from the exploitation of intermediaries and traders, and also to ensure better prices and timely payment for their produce. Over a period of time, these markets became restrictive and monopolistic markets, providing no help in direct and free marketing, organised retailing and smooth raw material supplies to agro-industries. The various inadequacies and restrictive nature of regulated markets demanded a renovation of the existing system, and therefore a model APMC act was finalized and circulated by the Center to the states almost a decade ago.

Several states have initiated direct marketing by farmers to urban consumers with the intention of increasing their share in consumer's rupee. Direct marketing has many advantages such as shortening marketing channels, eliminating middlemen and above all, bringing producer-seller in direct transaction with consumers.

The e-NAM platform—a key initiative of the National Democratic Alliance government's promise to double farm incomes by 2022 - offers the possibility of unhindered trade between farmers and traders of different states, different market areas, different languages through a common e-marketing platform. The present trading is done mostly for intra-market, but in phases, it will be rolled out to trade in inter-market, inter-state, creating a unified national market for agricultural commodities. The present trading is done mostly for intra-market, but in phases, it will be rolled out to trade in inter-market, inter-state, creating a unified national market for agricultural commodities.

The private sector has also taken active interest in agri marketing. E- Choupal, Contract farming, Farmer Producer Companies, cooperative, online marketing among others are some interventions that have shown some impressive results.

Other than domestic market, India has been successfully exploring the international markets as well. Indian agriculture's excellent production record post green revolution had elevated India's stand in the world market. India's share in global farm/ food exports and imports is around 2.07% and 1.24% respectively. Thus, India is a net exporter of agricultural products. In terms of global agricultural and food exports, India's rank is 10. Recently, Union Cabinet cleared Agriculture Export Policy 2018 to encourage farm exports. 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.

Exploring domestic and international channels in agricultural marketing can ensure better returns to farmers which is critical to the better health of agriculture sector.

*Anjana*

**Anjana Nair**



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और पानी का उपयोग  
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## KALIA – Odisha's Answer to Loan Waivers

*Odisha unveils livelihood and Cultivation assistance scheme for farmers*

Odisha has shown the way for the rest of the country. At a time when the country has started to believe that loan waivers are the sole solution for all problems associated with agriculture and farmers, Odisha has put forward a praiseworthy scheme that is based on long term solution to address declining profitability of agriculture and mounting debts of the farmers.

Christened, KALIA (Krushak Assistance for Livelihood and Income Augmentation), the scheme guarantees to provide financial, livelihood and cultivation support along with insurance support to small, marginal and the landless farmers. KALIA is expected to benefit about 92% of the farmers in the state and the government has earmarked Rs 10,180 crore for the plan in 3 years.

The scheme provides financial assistance of Rs. 25000 for cultivation per farm family over five seasons to small and marginal farmers to purchase inputs, labour and other investments. The scheme also has provisions for financial Assistance of Rs 12,500 to be provided to each landless Agricultural Household for agricultural allied activities like for small goat rearing unit, mini-layer unit, duckery units, fishery kits for fisherman, mushroom cultivation and bee-keeping, etc. Cultivators and landless agricultural labourers are also addressed in this scheme as they are entitled of a financial assistance of Rs 10,000 per family per year to enable them to take care of their sustenance. Ailing and old vulnerable cultivator and landless agricultural labourers are also covered under this. Another notable feature is the inclusion of Life insurance cover of Rs 2 lakh at a very nominal premium of Rs 330/ that will be provided to all savings bank account holder of age between 18-50 years. Odisha government will bear farmers' share of the annual premium

of Rs 165. Personal accident cover of Rs 2 lakh at a very nominal annual premium of Rs 12 for all savings bank account holder aged between 18-50 years. Out of Rs 12 towards premium, Rs 6 is the farmers' share, which will be borne by the state government. A beneficiary whose age is between 51-70 years, the entire amount of Rs 12 towards annual premium will be borne by the government. Vulnerable landless labourers, cultivators and agricultural families identified by Gram Panchayats will be provided with crop loans up to Rs 50,000 made available at 0% interest.

With this scheme, Odisha has refused to join the mad rush of loan waivers being experienced nationwide. By declining to give into this credit indiscipline, the government has given due credit to the farmers who have repaid the loans dutifully. The scheme has addressed the weaker sections of the society and not only are the farmers but also the share croppers have been addressed in this scheme. Agriculture cannot survive on hand outs. If the cultivators/ farmers are properly recognized for their work and suitably supported through incentives, they will be more keen to invest in new technologies and better inputs. Most of the times, the financial difficulties forces them to settle for inputs/ technology that are less efficient/ out dated. Schemes like this give them an opportunity to explore different frontiers.

However, the success of schemes such as this depends a lot on implementation. The scheme requires a robust administrative and financial resources to identify the beneficiaries and implement the scheme. It remains to be seen how far Assam can fare in this scheme with their current resources. The initial stages may be filled with short comings. Nevertheless, a fresh start has been created. Hopefully it will remain as a reminder for all the political leaders, that there are alternatives to loan waivers which promises to engender all round development in agriculture.

## Go GI

*Geographical Indication tags can be a precursor to better income and brand capitalization*

**A**lphonso, has yet again courted controversy. This time it is regarding the authenticity of the Alphonso variety from Karnataka. The GI tag that was earned by Alphonso grown in five districts of Maharashtra last year, categorically denies any other mangoes to be branded the same and hence the farmers who were growing this variety for years in other places are no longer considered to be growers of Alphonso.

Alphonso in India is typically grown in western India including places such as Sindhudurg, Ratnagiri and Raigad districts and in the Konkan region of Maharashtra, India. Apart from Maharashtra, Telangana and Karnataka have been cultivating Alphonso. Whereas the plantations in Ratnagiri are very old, the ones in Karnataka are relatively new and were planted in the last 10 to 15 years using high-density cultivation techniques. The Geographical Indication (GI) tag from the Geographic Indication Registry, has only been conferred to Alphonso from Ratnagiri, Sindhudurg, Palghar, Thane and Raigad districts of Maharashtra. A Geographical Indication or a GI is an indication used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. Such a name conveys an assurance of quality and distinctiveness which is essentially attributable to its origin in that defined geographical locality. The law surrounding GIs protects producers and their reputations and reassures consumers that a product of the origin stated on the label is authentic.

As mangoes from the four districts have received a GI tag, mangoes from other States with similar features, cannot be sold as Alphonso or Hapus mangoes. Such mislabelling of mangoes can attract penal action under the Geographical Indications of Goods (Registration and Protection) Act, 1999. Violation of the act attracts a jail term of six months and Rs 50,000 penalty. The pre-

season Hapus Mangoes that have started to arrive in small quantities in the market have therefore irked the Maharashtra growers and a possible law suit is in the offing. The aura of hard earned GI tag by the Maharashtra growers seems to be withering away in front of the new growers.

So far, GI tag has only been used in asserting ownership and not in commanding the market or preserving the identity of the tagged products. So far, the states have been vehemently contesting for validating their authority over some chosen products and once the GI tag is obtained, no further activities ensue to protect and enhance the markets of these products. There is no recognized growers' association taking charge of the GI. No adequate resources have been put forward to promote and grow these products in India by focusing on its uniqueness, taste and place of origin. In the case of Hapus, considerable efforts must be put into setting quality standards, better packaging; creating a visible logo and design that easily identifies the genuine Hapus, and ensures its distinctiveness; educating consumers on the superiority of this succulent variety of mangoes. The occasional spat that India gets into with the exporting countries on account of poor phytosanitary grounds is a pointer towards slack attitude towards phytosanitary issues. Alphonso has been repeatedly banned by different countries due to failed sanitary standards. The growers association can work tremendously in these directions to facilitate smooth exports, understanding the standards set by the importing countries.

Resources must be spent in organized marketing and value creation to grow the exclusivity and premiumness attached to the GI products. Global recognition and awareness, can make them a preferred brand or product. GI tag should be considered the beginning of expanding the global market for the product and not the end game.

## **Monsanto Wins the Battle**

*SC rules in favour of Monsanto in Patent Case*

**T**he once sluggish agri biotechnology sector has woken up with the recent victory of Monsanto in Supreme Court in a patent case in India regarding genetically modified (GM) cotton seeds. With the court declaring that Monsanto's BT cotton patent was valid, a jubilant atmosphere has been created among biotech firms and the farmers are expecting new improved seed varieties.

India approved Monsanto's GM cotton seed trait in 2002 and an upgraded variety in 2006, which played a pivotal role in transforming the country into the world's top producer and second-largest exporter of cotton. But newer traits have not been available since the company withdrew an application in 2016 seeking approval for the latest variety due to a royalty dispute with the government and worries over patent claims. The government had earlier stepped in and had cut the royalty fees. While the government put a ceiling on the prices of seeds – Monsanto's seed prices were cut from Rs 930 per bag to Rs 800 and, within this, its royalty was cut from Rs 170 to Rs 49.

The Supreme Court's ruling, although addresses the patent claims, the skepticism is still rife in the biotech sector. The government has been exerting some undue pressure on these seed giants. India's agriculture ministry has twice slashed royalties in the past two years, apart from cutting cotton seed prices. The prices of its seeds and, within this, the royalty are already under government control; the government had also introduced a proposal to cap royalty rates, though this was later withdrawn. The government could step in again to decide the rate of royalty, which could be really miniscule in comparison with the cost of developing a really good product.

Also till recently, every seed firm required

an annual No Objection Certificate (NOC) from Monsanto whose job was to ensure the right processes were being followed – this was critical if Monsanto was to be responsible for any problems with the seeds. The government, however, removed the annual NOC requirement; as a result, if these firms choose to not pay royalty, there is little a Monsanto can do except to file a civil suit which can take decades to resolve.

Biotechnology being an expensive affair, warrants investment. But with arbitrary intervention by the government in pricing, newer technologies will be eluded from the Indian agriculture sector, especially at a time when the country is in desperate need to battle new challenges of climate change and associated threats.

Protection of intellectual property encourages innovation which is crucial in bringing new technologies to the farmers. A favourable environment must be created to encourage investments and promote new technology in the country. The government should intervene at times of irrational pricing and demands and protect the interests of the farmers. But at the same time, the government should also be sensitive to the investing firms and should also be careful of not creating a negative image of the country.

Biotechnology is definitely going to play an important role in tomorrow's agriculture. Farmers have also started to understand the potential of biotechnology in agriculture. Their faith in this technology explains the wide adoption of the second generation BT seeds and clandestine cultivation of the herbicide tolerant seeds of cotton. At a time, when income levels of farmers are falling, the government should invest in technologies, other than tampering with credit discipline.



## Stretching India's Rubber Potential

*India hints at National Rubber Policy*

Union Minister for Commerce and Industry, Suresh Prabhu recently proclaimed the urgency of National Rubber Policy and indicated that it will soon be debated in the country. This comes as a relief to the natural rubber growers in the country who have been reeling under uncertainties with respect to prices and markets.

The policy by the commerce and industry ministry is expected to address issues that will boost productivity and will take it into its fold various factors concerning the profitability of the sector. Although details regarding the policy are not yet out officially, hopes are high as a policy of this scale has been long due. The sudden interest in the rubber policy should be read along with the recent thrust by the government on increasing agri exports and the intention of the government 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. With India forecasted to become a \$5-trillion economy in the next few years, the share of the manufacturing sector is expected to be 20 per cent of this and the rubber industry can make a significant contribution.

Natural rubber has a dominant market in the rubber industry, as it constitutes 66 per cent of the total amount of rubber the industry consumes. However, domestic rubber production has been on the decline, in recent years, due to non-remunerative prices in the market. Rubber, a perennial crop, has been left standing by the growers in the plantation as they refrain from tapping the trees. Apparently, the expenses incurred in paying the tapping charges and processing the latex into sheets have become uneconomical. Nonetheless, rubber consumption and the industry continues to grow, albeit at lower rates, with substantial imports. With prices of natural rubber in the global market

staying lower than the Indian prices, imports have been increasing. Also, the demand for natural rubber has been on the rise – consumption has crossed 1 million tonnes – over the last few years with fairly decent economic growth rate and higher economic activities.

With a value of output close to Rs. 750 billion per annum, the Indian rubber industry is a major contributor to the country's manufacturing GDP and national economy. Export of rubber products earns close to US\$ 2.5 billion a year. The longer the decline in domestic production continues, the more difficult it will be to reverse the trend because of the perennial nature of the crop. The government should introduce measures that could woo the growers back to their plantations especially when indicators point towards a resurrection in the natural rubber demand. With the global GDP growing at 3.8 per cent, it is expected that the international demand for natural rubber would pick up further and raise prices. Also, efforts of the East Asian countries (Thailand, Indonesia and Malaysia) to limit exports (initiated earlier this year) can further boost the global prices.

For the rubber growers to stay in business, the Centre has to put some restrictions on imports to ensure steady domestic prices for the commodity. From the agronomic point of view, the rubber plantations should also introduce perennial intercrops like cocoa and coffee that can be cultivated in mature rubber plantations which would be a great relief to rubber farmers during periods of low rubber price.

Rubber has immense potential in boosting agri exports. The sector has long been denied its due share in agricultural policies adopted which has over the years affected the profitability of the sector. A National Rubber Policy addressing all these issues of the natural rubber segment of the country can change the current status of the sector and bring back its lost glory.

## ITC initiative a hit with some UP farmers

As the government faces flak from farmer organisations over its failure to ensure minimum support prices (MSPs) for their crops, a section of the farming community in Uttar Pradesh is not complaining as it gets some additional income by taking a third crop in a year. These farmers, who are a part of ITC's 'Baareh Mahine Hariyali' initiative, claim to have doubled their income in past two-three years. Ashish Kumar Singh, 40, of Ghoshuan village in UP's Chandauli district, has taken up summer moong as an additional crop before paddy, which is the major kharif cereal cultivated in the region. The income enhancement initiative was started two years ago in four districts of UP — Ghazipur, Chandauli, Allahabad and Hathras — and Bihar's Munger district on a pilot basis. In UP alone, ITC has covered 2 lakh farmer households under the programme and so far about 30,000 have reported doubling of their income. Many farmers have increased their income by 30-75%. "There could be several other factors contributing to the increase. But the farmers themselves acknowledge how they have been inspired by ITC's field level demonstration. We have been trying to arrange the best pre-harvest practices like high-yielding seed varieties suitable to the local climate and modern farm machinery, which all contribute to raise their income," said S Sivakumar, group head of ITC's agri & IT business divisions.



## UTMT: Transforming the lives of organic honey farmers

As an enterprise, Under the Mango Tree (UTMT) had an unusual genesis — the name came years before the organisation did. In 1994 Vijaya Pastala was working with women's groups on behalf of DFID in Latur district of Maharashtra's Marathwada region. She often held meetings with the women under a mango tree. Along with a few lessons she learnt about giving out grants and loans to self-help groups, her time "under the mango tree" stuck in her mind. Today, Under the Mango Tree, a brand that Pastala set up in 2008, sources high-quality organic honey from farmers and farmers' cooperatives, ensuring that the farmer gets a fair price for his produce. In the process, it also offers the urban consumer a range of regional varieties and flavours in honey. A hybrid enterprise comprising both a for-profit and a not-for-profit, the brand sells 65,000 kilos of honey a year working with anywhere between 4000-5000 farmers. It is available in 22 cities in India across 700 plus stores. It also sells online, through sites like Amazon, Big Basket and so on.



## Monsanto wins at SC, govt still keeps it down

Biotech major Monsanto won a big victory in the Supreme Court with the court declaring that its BT cotton patent was valid — in the Delhi High Court, the government had argued that the government-granted patent was illegal — but it is not clear what the victory will amount to. As a result of unfriendly government policy that includes a control on its pricing, Monsanto has already withdrawn its latest generation of cottonseed technology from the government's approval process. Ironically, illegal copies of Monsanto's latest seeds are already flooding the market and one estimate is that they comprise 15-20% of cotton seeds being used today. The seeds, being sold by traders — and often without even proper labelling — retail at anywhere between Rs 1,200 and Rs 1,500 per packet as compared to the Rs 800 ceiling the government has put for Monsanto's earlier generation of seeds. In other words, while the government put a ceiling on the prices of seeds — Monsanto's seed prices were cut from Rs 930 per bag to Rs 800 and, within this, its royalty was cut from Rs 170 to Rs 49 — farmers were more than willing to pay for seeds that offered better characteristics. Monsanto challenged the December 2015 price control order, but there has not been even one hearing of the case so far.





## SLCM's agri financing arm Kissandhan raises Rs 29 crore

► Delhi-based agri-logistics group Sohan Lal Commodity Management's NBFC arm Kissandhan has raised Rs 29 crore through an issue of non-convertible debentures that was subscribed by AAV Sarl, an affiliate of Geneva-headquartered global impact investment firm Symbiotics Group, the company said. "We have been the pioneers in the field of post-harvest logistics and agri-financing in India. Getting funding from large foreign institutions like Symbiotics Group is a testament of the confidence on the sector and our organisation," said SLCM group CEO Sandeep Sabharwal. Kissandhan has so far disbursed loans worth Rs 1,751 crore to different segments, made credit available on agriculture commodities to about 3,83,380 farmers in its four years of operations and serviced over 42,225 storage receipts at 307 warehouses till end of November, Sabharwal said.



## M&M arm sets up grape pack house unit at Nashik

► Mahindra Agri Solutions (MASL), a subsidiary of Mahindra & Mahindra, part of the Mahindra Group, on Wednesday inaugurated its grape packhouse facility in Nashik. The facility was inaugurated by Pawan Goenka, managing director, Mahindra & Mahindra. The grape packhouse facility is a unique one in India and features the latest technologies that are available in post-harvest management of grapes, the company said. Mahindra has over 14 years of experience in grapes harvest and post-harvest management and is one of the leading exporters of grapes from India. This grape packhouse facility is expected to maintain the freshness of grapes, through a cold chain from its arrival into the facility till it reaches customers in overseas markets. The company said the unit can pack 90 tonne of grapes per day and has been certified by international bodies, such as BRC (British Retail Consortium), Fairtrade, SMETA (SEDEX), and the RFA (Rainforest Alliance), besides domestic certification by the Food Safety and Standards Authority of India and the Agricultural & Processed Food Products Export Development Authority. The facility is housed within 6.5 acre with a total build-up area of 75,000 sq ft. It has 12 precooling chambers and 280 MT of cold storage capacity.

## Organic vegetables and fruits hit Safal shelves

► With the market for organic products opening up, Mother Dairy Fruit & Vegetable Pvt Ltd, which runs Safal outlets across the capital, started selling organic products at 100 outlets on December 20 last year. Two weeks on, sale of the products is yet to pick up. The new products, labelled 'Safal Organic', are packaged in khaki-coloured packets, making them easily noticeable. The packaging is "bio-degradable and recyclable". Fruits and vegetables — ranging from apple, pomegranate, musambi, lemon, potato, tomato, onion, ginger, garlic — as well kitchen ingredients like pulses, rice, spices, millets, dry fruits, wheat flour, besan, sugar, salt and flattened rice flakes (poha), are available in organic form. The company said the produce is being "sourced from farmers with certified organic farms across the states of Maharashtra, Himachal Pradesh, Sikkim, Madhya Pradesh and Uttarakhand" and is "in line with all regulatory, industrial, quality and food-safety requirements", including "stringent testing for 127 pesticidal residues by accredited labs".



## Big Rally in Nagarjuna Fertilizers

► Nagarjuna Fertilizers bounced nearly 11% after the company said it had restarted urea production from unit I of Kakinada plant in Andhra Pradesh. The fertiliser maker also said it was in the process of a long-term debt resolution with its lenders. The scrip settled at Rs 9.19.

## Farm exports: Centre directs States to set up nodal agencies

► The Commerce Ministry has asked States to set up nodal agencies dedicated to the implementation of the agriculture export policy approved by the Union Cabinet recently. At the first national workshop on the policy attended by senior officials from both the Centre and States, exporters and agriculture exporters, Commerce Minister Suresh Prabhu said that such meetings would help to identify bottlenecks and get feedback and suggestions to improve and overcome difficulties in the implementation of the policy. AnMoU was signed between the Agricultural and Processed Food Products Export Development Authority (APEDA) and the National Cooperative Development Corporation to meet the objectives of the agriculture export policy at the workshop. The Minister said that it was the first time that a comprehensive agriculture export policy has been formulated, involving all related sectors such as R&D, clusters, logistics and transportation. The objective of the policy is to double agricultural exports from \$30 billion to \$60 billion by 2022 and reach \$100 billion in the next few years. It also seeks to diversify the export basket, destinations and boost high-value and value-added agricultural exports.

## Centre relaxes norms for fertiliser exports

► The Centre relaxed norms for the export of fertilisers, including urea, potassic and phosphatic. "The export policy of fertilisers have been revised and items under 'restricted' category moved to 'free' category," the Directorate General of Foreign Trade (DGFT) said in a notification. These exports, however, are subject to prior permission/no objection certificate to be obtained by the manufacturers/exporters from the Department of Fertiliser, it said. India is a net importer of phosphatic and potassic and urea. In entire 2017-18 financial year, India imported 42.17 lakh tonnes of DAP, 4.99 lakh tonnes of NPK and 47.36 lakh tonne of MOP fertilisers.



## New regulations on organic food, honey come into effect

► A number of new food regulations for categories such as organic food and honey, among others, have come into force from January 1, with the Food Safety and Standards Authority of India (FSSAI) working to accelerate the process of setting new standards. In a statement, the FSSAI said all regulations relating to organic food will come into force from Tuesday. The new regulations will, for the first time, introduce standards for certification and labelling in the organic food space. At the same time, the FSSAI aims to address issues concerning quality and purity and curb rampant adulteration of honey, standards relating to which also become effective from Tuesday. Other food regulations that have come into force with the new year include new standards for all pulses, pearl millet grains, de-germed maize flour and sago, besides microbiological standards for fruits and vegetables. "During the year, the FSSAI has accelerated the process of standards setting. As many as 27 new regulations for food standards were notified in 2018," the official statement added. The new regulations have been notified for various categories such as alcoholic beverages, food fortification besides new regulations for advertising and claims among others. While standards for alcoholic beverages will come into force from April 1, food fortification regulations will be effective July 1. "The regulations on advertising and claims, packaging and labelling requirements of blended edible vegetable oils will come into force on July 1," the statement added.

## Agri Min starts inter-State mandi through e-NAM

► The Agriculture Ministry has started inter-State mandi (Agriculture Produce Market Committee (APMC) trade through the electronic National Agriculture Market (e-NAM) to boost farmers income and their produce. The very first inter-state transaction in tomatoes has been carried out between trader of Bareilly e-NAM APMC of Uttar Pradesh and farmer of Haldwani e-NAM APMC of Uttarakhand. The inter-state transactions in potatoes, brinjal and cauliflower have been carried out between the e-NAM mandis of Uttarakhand and Uttar Pradesh. In all the cases, e-payments have been made through e-NAM portal. This will help farmers get better market access, more buyers and traders to realise better prices for their produce. Farmers can access the information on e-NAM easily through their mobile phone from anywhere. This online trading platform aims at reducing transaction costs, bridging information asymmetry and helps in expanding the market access for farmers. Earlier trade used to happen either within the APMC or between two APMCs situated within same State.



## Check pesticide use on basmati crop, state told

► The falling exports of basmati because of presence of higher than permissible limit of pesticides has prompted the Centre to step in. The Ministry of Agriculture and Farmer Welfare is asking basmati growing states, including Punjab, to take steps to reduce deposit of harmful chemicals on rice, besides initiating steps to ban specific pesticides. While the government is mulling amendments to the Insecticides Act to ban specific pesticides, the states (Punjab, Haryana, Uttar Pradesh, Jammu and Kashmir, Uttarakhand and Himachal Pradesh) have been asked to sensitise farmers against the use of three pesticides, tricyclazole, buprofezin and isoprothiolane. They have also been asked to find spraying methods so that chemicals are not deposited on the crop. These discussions were part of videoconferencing on the issue, initiated by the Ministry of Agriculture recently. The government has stepped up efforts on the matter as the new level of determination (LOD), a measure of presence of pesticides, has been fixed by the European Union for buprofezin at 0.01 parts per million (ppm) effectively from July 2019. It will impact the export of the 2018 crop. So far, it was just maintaining the maximum residue limit (MRL) for tricyclazole (0.01 ppm) that was a cause of concern for exporters.

## Doubling farmers' income: Dalwai committee empowered to oversee implementation

► The government has asked the Ashok Dalwai committee to oversee the implementation of its recommendations so that the promise of doubling farmers' income is achieved by 2022. The committee on doubling farmers' income (DFI), headed by Ashok Dalwai, the CEO of Rainfed Area Authority, will act as an 'empowered body' to coordinate with different ministries as well as among various departments within the agriculture ministry, officials said. The empowered group will "hold regular reviews with all concerned stakeholders and monitor the progress of implementation of the strategy", Dalwai told FE. The committee will set up sub-groups on different aspects for the smooth implementation of the suggested strategies, he said. Since a large number of the recommendations involved state governments as agriculture is a state subject, the committee will also visit states and discuss with them to speed up the pace of implementation, he added. The Centre had constituted the Dalwai committee in April 2016 to recommend measures required to fulfil the target after Prime Minister Narendra Modi announced to double farmers' income in six years.

## Anti-dumping Duty on China Rubber

► The government may impose anti-dumping duty for 18 months on a Chinese synthetic rubber used in automobile. Directorate General of Trade Remedies said imposition of the duty on imports of 'fluoroelastomers' from China would help minimise impact of dumped imports.

## Committee to monitor DFI implementation soon

► The government is in the process of setting up a panel to monitor the implementation of the recommendation of the Doubling Farmers' Income (DFI) committee, a senior agriculture ministry official said. "The government wasn't waiting for the final recommendations of the committee to come in. In fact, most of the new announcements relating to agriculture in the last two Union Budgets were based on our recommendations," said Ashok Dalwai, CEO of the National Rainfed Area Authority (NRAA), who also headed the DFI committee. "There will be a committee to oversee the implementations. It will have specific terms of reference. The idea is to bring sharpness and speed to the implementation. The committee will supervise, monitor and even handhold those involved in implementing the recommendations," Dalwai said. Be it the provisions announced for increasing procurement, or new bio-fuels policy, or the recently-announced agri exports policy, they were all part of the recommendations of the committee, he said.



## RBI Governor talks tough on farm loan waivers

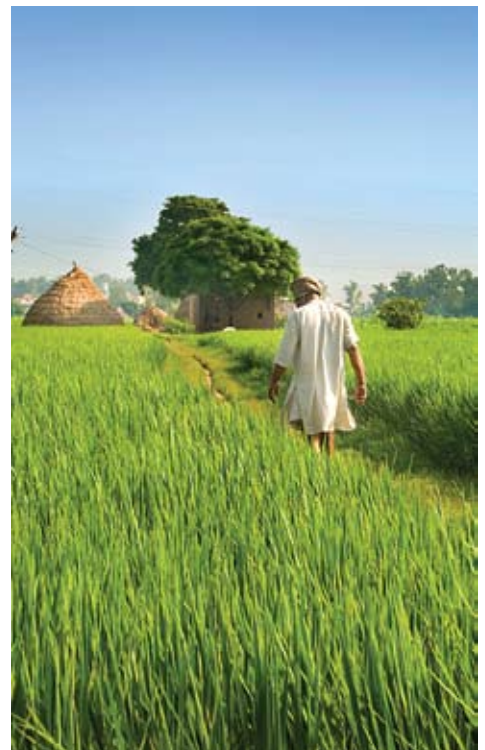
► Taking tough stance against farm loan waivers, RBI Governor Shaktikanta Das warned states against following one another on such largesse and asked them to assess their finances before announcing write-offs. “Elected governments have the constitutional mandate to take decisions with regard to their finance but every state government, before taking decisions on any kind of farm loan waivers, has to very carefully examine its fiscal space,” the Governor told mediapersons in New Delhi. His remark comes in the wake of three newly elected state governments – Madhya Pradesh, Rajasthan and Chhattisgarh announcing back-to-back loan waivers to farmers and Congress President Rahul Gandhi demanding a nation-wide farm loan write-off. Around Rs 1.5 lakh crore will be the cost to exchequer for loan waivers in three states. That comes on the back of Karnataka, Uttar Pradesh, Maharashtra, Punjab and others announcing waivers last year and in 2017. Das said states must ensure whether they have the fiscal space to meet the requirements of loan waivers and if they can release the money to the banks immediately. “Any generalised kind of write-off obviously has adverse effect on the credit culture and the future credit behaviour of the borrowers,” he said.

## Govt mulls soft loan of Rs 7,400 crore to mills for ethanol expansion

► The government is considering an additional soft loan of Rs 7,400 crore to sugar mills for creating ethanol capacity under a recently launched scheme, according to sources. The food ministry is also considering tweaking the scheme to ensure that non-molasses-based distilleries are also able to avail soft loans under the scheme launched in June for expansion and setting up of new ethanol plants. Under the scheme, the government had announced a soft loan of Rs 4,400 crore and provided an interest subvention of Rs 1,332 crore to mills over a period of five years, including a moratorium period of one year. However, the ministry has received 282 applications seeking Rs 13,400 crore soft loans. Out of this, 114 applications for a loan amount of Rs 6,000 crore has been approved, the sources said. Sources further said the ministry is planning to seek a Cabinet approval for the balance 168 applications and sanction an additional soft loan of Rs 7,400 crore. The subsidy burden would be Rs 1,600 crore for the balance loan amount, they added. A proposal is being prepared to seek approval for additional soft loan under the scheme as well as amend the rules to allow even grain-based distilleries take the benefits, the sources added. Currently, molasses-based distilleries are allowed under the scheme. The entry of standard distilleries will help diversion of more cane during surplus season.

## NABARD fixes Rs 10,234-cr credit plan for Moga

► The National Bank for Agriculture and Rural Development (NABARD) has finalised Rs 10,234.73-crore development and financial credit plan for Moga district for the next financial year, which is about 5.7 per cent more than the current fiscal year. Deputy Commissioner Sandeep Hans released this plan for 2019-2020 during a district-level meeting at the district administrative complex here. He appealed to bankers and government departments to work with coordination to achieve the credit target prepared by National Bank for Agriculture and Rural Development for the benefit of the farming community. Narendra Kumar, District Development Manager, NABARD, said, “The plan for 2019-2020 has been prepared on the basis of statistics and after adopting a participative and consultative approach involving all stakeholders in agriculture. It has been formulated keeping in view the credit requirement of this district taking account of the long-term potential, availability of infrastructure, marketing support and performance of banking sectors in disbursing credit in the last financial year.” The target for agriculture is Rs 7414.17 crore, for micro and small enterprises is Rs. 1705.87 crore, export credit is Rs 46.88 crore, education Rs 131.38 crore, housing Rs 761.25, renewable energy is Rs 21.45 crore, social infrastructure (education institution, hospitals, sanitation etc) is Rs 77.71 crore and for other priority sectors is Rs. 76.00 crore. The crop loan includes Rs 2530.26 crore as term loan for agriculture and its allied activities.





## Farmer producer organisations in Punjab to get Nabard boost

Small and marginal farmers in Punjab are plagued with issues such as continued fragmentation of land and dwindling income. Considering their plight, the National Bank for Agriculture and Rural Development (Nabard) has decided to promote farmer producer organisations (FPOs) in the state in a big way. The concept behind FPOs is farmers can form groups and register themselves under the Indian Companies Act. Since small farmers often find it difficult to access markets on their own, aggregating farmers into the FPOs will help enable them improved market access and better bargaining capacity. Under the plan, Nabard has embarked upon a plan to launch statewide awareness campaign on FPO promotion during the current year. There are around 12,500 villages in Punjab. To reach out to the farming community, it has decided to organise 3,000 programmes in a cluster of 2-3 villages each in all the districts of the state. Through this campaign, the bank will motivate farmers to organise themselves into FPOs and achieve the desired results by collaborating with each other. "Since sensitisation of farmers is important for making any programme a success, we have decided to reach out to them at the village level where they will be apprised of the benefits of the FPOs. The campaign will be launched by Punjab Governor VP Singh Badnore on December 27 at Punjab Agricultural University, Ludhiana," said JPS Bindra, Nabard's chief general manager, Punjab Regional Office. Nabard has promoted 91 FPOs in Punjab. The FPOs are engaged in activities such as input supply, seed production, vegetables, dairy activity-processing, processed food, honey production and marketing and few have started custom hiring centres for farm machinery too.



## Direct MSP transfer to bank accounts of farmers on the cards

The Centre is considering the option to transfer the minimum support price (MSP) directly into the bank accounts of farmers who are unable to sell their produce during procurement operations. The option to allow farmers to sell at MSP for the entire year instead of fixed few months after the harvest is also being considered. The Centre is also planning to provide short-term farm credit at zero interest rate on timely repayment. An amount of Rs. 150 billion will be spent for interest subvention in 2018-19. This subsidy amount might be scaled up to over Rs. 280 billion if the subvention is waived off. The Pradhan Mantri Fasal Bima Yojana (PMFBY) might also be tweaked to reduce farmers' premium burden by fully waiving it on food crops and reducing a bit on horticultural crops. All these options are at various stages of discussion and a decision is expected soon.

## Farmers lay siege to banks, protest loan recovery notices

Hundreds of farmers under the banner of BKU (Ekta-Ugrahan) began the New Year by starting a five-day dharna outside various banks in different parts of the state against loan recovery notices issued to farmers. Sukhdev Singh KokriKalan, general secretary of the union, said they had been forced to sit on the roads on the New Year's Day as they had no reason to celebrate it. He said the Congress government in the state and the BJP at the Centre had only offered lip service to the farmers on loan waiver, but did nothing. Instead, he alleged, the governments had stabbed them by issuing auction notices for their mortgaged land. "The political parties make hollow promises during the elections and then conveniently forget about us," he said. Kokri Kalan criticised Punjab Chief Minister Capt. Amarinder Singh on his claims of farm loan waiver made in an interview today. He said the ground reality was completely different and the government was not presenting the true picture before the media. He said the loan waiver had not been implemented properly and covered only a small percentage of the farming community and almost negligible number of farm labourers. He said the government should pay a compensation of Rs 10 lakh to the family of a farmer who committed suicide due to debt. He also demanded a government job for next of kin. The union leaders also stressed on the implementation of the Swaminathan Committee recommendations, besides better price for various crops and regular power supply.



## No liquidity, Punjab growers stuck with surplus crop

▶ India's withdrawal of high value banknotes in November 2016, has hit the potato growers of Punjab hard. With the potato traders facing a liquidity crunch post-demonetisation, the growers have failed to find buyers for the surplus crop. As a result, they are forced to sell produce at prices much less than the input cost. The first harvest of potato yielded just Rs 150- Rs 200 per 50 kg (Rs 3-4 per kg) to the growers in the Doaba region of the state. The cost of production per kg works out to be Rs 4.50.



## Get 50% subsidy on paddy transplanter in Punjab

▶ By offering 50 per cent subsidy on paddy transplanters, the state government is set to give boost to mechanisation in paddy transplantation in the upcoming season (June and July). The paddy transplantation is the only major agricultural operation which is done manually in the state. According to statistics compiled by the Agriculture Department, about 12 lakh labourers from outside the state come every year in June and July to transplant paddy. However, over the last few years there is steep reduction in the number of labourers coming to the state. Therefore, farmers get stressed to transplant paddy in small window of 40 days. To overcome this problem, the government has decided to introduce mechanised transplantation on a large scale this year. "Farmers are to be given 40-50 per cent subsidy for procuring the machines, which are mainly being manufactured by Japanese and Korean companies," said KS Pannu, Secretary, Agriculture. He said a walk-behind six row transplantation machine cost around Rs 3.50 lakh. This machine plants 5-6 acres of paddy daily. Similarly, fully mechanised riding type 6-8 row machine costs about Rs 10-15 lakh and can transplant paddy on about 10-12 acres daily. He said paddy transplanted by machines maintained adequate number of seedlings per unit area which resulted in better yield. Pannu said about 350 paddy transplanters were tested in Punjab in last two years and the machine had been found successful in efficient planting of the crop.

## Maha Farmers to Get Govt Money Directly in A/cs

▶ The Maharashtra government has decided to credit farmers' money directly to their bank accounts on a monthly or yearly basis. State government officials said the amount could be anything from Rs 5,000 to Rs 10,000 a year. "Officials from the agriculture and finance departments will meet this week to see how we can give the money to the farmers," a senior official said. According to another official, the government is studying different formulae — from that followed by Telangana to that by Orissa. While Telangana pays Rs 4,000 per acre to a farmer per sowing season, Orissa gives Rs 5,000 per cropping season to small and marginal farmers in the state. Sources said Maharashtra is planning something in the line of Orissa because Telangana hasn't put a cap on the number of acres held by a farmer while doling out the cash. Accordingly, in Telangana, even a 50-100-acre landholding would make the farmer eligible for the largesse. According to conversations with officials, there could be a cap on the number of acres that a farmer could get, ranging from 2.5 acres to 5 acres. "This will cover the small and marginal farmers and would benefit them; if you extend to farmers with more than 5 acres, then the scheme would be unsustainable for the state," one of them said.

## Assam Govt to set up more Farmers' Producer Companies to boost horticulture output

▶ With a view to boost the horticulture sector in Assam and increase the average yield of horticultural crops, the State government is now giving thrust on proper implementation of national schemes as well as on initiatives like setting up of more Farmers' Producer Companies (FPCs) and promoting organic cultivation. Official sources said that steps have been taken to expand the scope of Central schemes like the Horticulture Mission for North East and Himalayan States (HMNEH), the Rashtriya Krishi Vikas Yojana (RKVY) and the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), besides State projects. "The Central government has set a target to double farmers' income by 2022 and our State government has also started implementing policies to achieve that goal for the farmers of Assam. Horticulture crops are a major component towards contributing to the effort. However, the average yield of most horticultural crops in Assam is less than the national average. To rectify this, as well as to improve the quality of crops, the Horticulture Directorate has taken certain initiatives," a senior official told. He said that generation of skilled man power in agri-horticultural sector is a key necessity.

## Higher planting in M.P. lifts wheat acreage

➤ Wheat acreage in the ongoing rabi season is up marginally, as farmers, mainly in Madhya Pradesh, have planted the cereal crop over a larger area. Farmers in M.P. have planted wheat on about 59 lakh hectares as against 44.53 lakh ha in the corresponding period last year. M.P. has set a target of 65.40 lakh ha for wheat this year. However, in other major producing States such as Uttar Pradesh, Punjab and Haryana, the acreages under wheat are still trailing last year's levels. Wheat acreage in UP stood at 94.70 lakh ha (94.88 lakh ha in the corresponding period last year), while in Punjab the acreages stood at 34.97 lakh ha (35.01 lakh ha). In Haryana, the wheat area was down at 24.61 lakh ha (25.03 lakh ha). States such as Himachal Pradesh, Jammu & Kashmir and Karnataka have registered an increase in the area under wheat.



## Punjab farmers stage protests, demand full loan waiver

➤ Farmers in parts of Punjab staged protests under the banner of Bhartiya Kisan Union (Ugrahan) on Saturday demanding a complete loan waiver, as promised by the Congress government during the 2017 Assembly poll campaign. The farmers are also demanding that banks and other financial institutions, which had taken blank cheques from them before sanctioning loans, return the cheques. BKU (Ugrahan) Punjab president Joginder Singh said that the union wants all private and government loans outstanding against the farmers to be waived. "The Congress had promised complete loan waiver during 2017 Assembly election campaign but now its giving partial waiver, which is not acceptable," he said. The State Cooperation Department has accused the union of inciting farmers to stage protests and to not repay the loans taken.



## Bengal to pay entire amount of crop insurance for farmers

➤ West Bengal Chief Minister Mamata Banerjee said that her government won't allow the BJP-led Centre to tag its name with crop insurance for farmers in the State by bearing only 20% of the cost. The State would henceforth pay the entire amount, she said while addressing an administrative meeting in West Bengal's Birbhum district. Ms. Banerjee said as of now 49% of farmers in West Bengal are covered under crop insurance and the rest will be brought under its purview soon.

## Maharashtra farmers to get sops for using solar pumps



➤ To encourage farmers to use solar agriculture pumps, the Maharashtra government has decided to give two LED bulbs, a DC fan and a mobile charging socket as freebies. The State has launched the Atal Solar Krishi Pump Yojana (ASKP) for farmers with a subsidy of up to 95 per cent on solar pumpsets. The State plans to install one lakh solar pumps. The State aims to reduce losses due to non-payment of electricity bills and also promote solar energy by implementing the scheme. The Government Resolution issued on January 1 states that along with solar pump, farmers will get two LED bulbs, a direct current (DC) fan and mobile charging socket. Farmers with less than five acres will have to pay 5 per cent of the cost of a 3 HP solar pump while farmers with more than five acres will get a 5 HP solar pump and the sops. State officials said the scheme would be beneficial to farmers who reside in remote areas where the agricultural feeder is not possible. The Maharashtra State Electricity Distribution Co Ltd (Msedcl) is the implementing agency. However, farmers are not very excited about the scheme.



## Apples to be imported from Germany for the first time

▶ Indian consumers will soon be able to buy imported apples from Germany. IG International, a fruit importing firm, is importing a new origin apple called 'Jonagold' from Veos, a German company, said Tarun Arora, Director, Finance and Operations, IG International Pvt. Ltd. "Apples from Germany were not allowed to be imported in India till now. The protocols



are discussed between the countries and it takes a minimum of two years to apply and execute the same. Both the Indian and German embassies worked towards granting this," Arora informed. The company will be importing 1,000 metric tonnes from Germany initially. Jonagold is similar to 'Red Delicious', imported from the US and Italy, and the most common variety among imported apples. While the variety remains the same, Jonagold signifies a change in origin. The first arrival of the shipments will be in five weeks' time and the apples will be priced at Rs 135 per kg, similar to that of other origins. The other popular varieties of apples the company imports include Royal Gala from the US, Italy, New Zealand and Chile, as well as Granny Smith from the US and Italy.

## Coffee exports drop 7.36% to 3.5 lakh tonne

▶ Coffee exports from India declined 7.36% on a year-on-year basis to 3.50 lakh tonnes in 2018 owing to a fall in a shipment of robusta and instant coffee varieties, according to Coffee Board. In terms of value also, coffee exports dropped to Rs 5,770.48 crore in 2018 from Rs 6,091 crore in the previous year. Italy was the top export market for India in 2018, as 76,437.56 tonnes of coffee was exported to the country followed by Germany (28,582 tonnes) and Russia (21,397 tonnes). As per the Board's latest data, the country exported 3,50,280 tonnes of coffee in the 2018 calendar year, lower than 3,78,119 tonnes in the previous year.



## Illegal pepper imports hit domestic prices, demand

▶ The domestic black pepper market is seeing lower prices and subdued demand, especially in the North Indian consuming centres, which the growers attribute to a surge in illegal imports. Major pepper consuming markets such as Patna, Ranchi, Lucknow, Varanasi, Indore, Delhi etc have been flooded with Vietnamese pepper imported illegally as Sri Lankan produce through the borders of Nepal, Myanmar and Bangladesh, said Kishore Shamji, Proprietor, Kishor Spices. He alleged that some traders in these regions are indulging in illegal imports basically to evade payment of duties as well as GST. There was a drop of Rs 15/kg between December 31 to January 10 and today prices are hovering at Rs 351/kg for un-garbled and Rs 371/kg for garbled (close to \$5,700). The import price for Vietnam pepper is \$2,800, Sri Lanka" \$3,800 and Brazil: \$2,000. The emerging situation and low arrivals led to tight supply in the market, even as the 2019 season has been delayed for more than 60 days due to climate vagaries, floods, land slides, and strong winds that damaged pepper spikes and wines. As natural disasters spell doom on mature berries, the calculations of a bumper crop of 70,000-90,000 tonnes went awry, forcing a downward revision of the crop estimate. This has considerably delayed the pepper harvest, he said.

## Basmati Rice Exports Rise 11.54%

▶ India's exports of basmati rice grew by 11.54 per cent to Rs 16,963 crore during April-October this fiscal, Parliament was informed. In April-October 2017-18, the exports stood at Rs 15,208 crore, Minister of State for Commerce and Industry CR Chaudhary said.

## Global cotton prices set to soften on dip in offtake

▶ The International Cotton Advisory Committee has predicted the average global cotton price for 2018-19 will be 86 cents per pound, lower than its earlier projection of 89 cents, on a likely decline in consumption. The current Cotlook Index A is hovering around 80 cents per pound. "With a confidence interval of 95 per cent, the Secretariat of the International Cotton Advisory Committee (ICAC) has set its 2018/19 price forecast for cotton fibre at 86.45 cents per pound, down from 89 cents in December 2018," the apex cotton body said in a statement. The forecast has a price range from a low of 75.60 cents to a high of 100.21 cents, of which the midpoint price level is 86.45 cents. This forecast is based on the assumptions of marginal reduction in world cotton consumption at 26.7 million tonnes for the period as against 26.81 mt reported in the same period last year. World cotton ending stocks, however, are projected at 18.2 mt, marginally down from 18.76 mt.

## India to Brand its Cashew Better as Exports Fall

▶ As the country's cashew export heads for one of the worst falls in recent times, the industry is planning a branding exercise to promote Indian cashew. The data of Cashew Export Promotion Council of India (CEPCI) shows about 32% decline in shipments in the six months to September in 2018-19 from a year ago at 30,805 tonnes. The revenue is also down by 32% at 2,135 crore for the period despite a marginal increase in unit value. Indian cashew has lost its dominance in the US, hitherto its biggest market, to Vietnam, which has been able to increase its share by selling at lower prices. "Vietnam now accounts for 76% of the cashew imports to the US, where India was the major supplier," said RK Bhooches, chairman of CEPCI. Vietnam cuts cost by employing extensive mechanisation. "Vietnam sells 20 cents per pound less than Indian rates. But in terms of quality, the Indian nuts are superior," Bhooches explained. The cashew industry is planning to promote Indian brand of cashew at premium level to revive Indian cashew's earlier glory in the US market. "We are looking at emotional connect in marketing with tags like 'If you buy Indian cashew you will support 1 million workers'," he said.

## Cotton exports likely to decline to 53 lakh bales in FY19

▶ Lower production coupled with currency fluctuations is likely to dent cotton exports from India. The cotton export is expected to decline by 20-23%, according to industry experts and there is strong possibility that it may hover around 51-53 lakh bales during 2018-19 season that started from October. The fear of possible decline in cotton exports is not without reason. "Only 13-14 lakh bales (one bale weighing 170 kg) have been shipped so far. Going by the current trend, the exports may come down this year and it is unlikely to cross last year's figures," said an Ahmedabad-based cotton exporter. India had exported 69 lakh bales of cotton in 2017-18. In its monthly estimate for November, Cotton Association of India (CAI), the apex cotton trade body in the country, has pegged the exports at 53 lakh bales. Gujarat accounts for around 40% of the cotton exported from the country, say market experts.



## Grape exports to Europe may cross 2.5 lakh tonne this season

▶ Grape growers are aiming to increase exports this season by around 20%, despite the recent spell of cold wave conditions in Maharashtra. While exports to Europe have begun in a small way, exporters expect to ship around 2.5 lakh tonne of grapes to the European Union this season, an improvement of at least 50,000 tonne over the previous season. As per data available with Agricultural & Processed Food Products Export Development Authority (Apeda), 9,810.12 tonnes of grapes have left for Europe and as the season progresses, more containers are expected to be shipped to Europe, Jagannath Khapre, president, Grape Exporters Association, said. Till date some 5,526 tonne have been shipped to Netherlands, followed by 1,901 tonne for UK and 1,781.70 tonne for Germany, so far. India has shipped its first consignment of grapes to China and Australia, which have opened to the Indian market for the first time. Most of the 4,800 tonnes of grapes have been sent to Russia and 5,861 tonnes have been sent to countries, other than Europe. A container of 18 tonnes has been sent to China.

## Paddy farmer 'seeds' a success story

➤ At a time when many a farmer in Wayanad district is keeping his paddy field fallow owing to huge losses, T. Praseed Kumar from SulthanBathery is scripting a different story — one of hard work, perseverance and fine imagination. The 45-year-old farmer's journey to success began after he got a handful of paddy seeds from a friend in Gujarat. 'Krishna Kamod', the Basmati rice variety for which he got the seeds, is known for its taste, colour and aroma. Enticed by its violet chaff, he first cultivated it on just a cent of land. Gradually, in a period of seven years, he expanded the cultivation to one hectare and last year, Mr. Kumar harvested about 2,500 kg of the rice. And instead of selling the rice in the open market, he sold the seeds to farmers at Rs 200 a kg. He had spent Rs85,000 for the cultivation last year and got returns to the tune of Rs5 lakh. Buoyed by the success, Mr. Kumar tried his luck this season with Black Jasmine rice, a medicinal rice variety from Assam that is violet in colour.



## Scientists boost plant yield by 40%

➤ For years, researchers at the University of Illinois have been trying to find out whether it is possible to genetically modify a crop to boost its growth. In results published in Science recently, they confirmed they had been successful in making tobacco plants 40% bigger thanks to a "genetic hack" or "shortcut." The wider goal isn't to produce more tobacco but to apply the technique to wheat or soy beans, in order to meet mankind's growing appetite. Their work is part of an international project that is being financed by the Bill and Melinda Gates foundation and the British government, among others. Farmers have long used fertilizers, pesticides and other agricultural methods to achieve higher productivity, but these techniques appear to have run their course and it is thought unlikely they can extract more significant gains. The scientists say they have found a way to make the process of photosynthesis, the process by which plants use sunlight to convert carbon dioxide and water into energy, inherently more efficient. An enzyme called Rubisco is key to the process of converting atmospheric carbon into an organic compound the plant consumes, a process known as "carbon fixation." But the enzyme also acts to "fix" atmospheric oxygen, converting it into toxic compounds that the plant expends considerable energy eliminating — energy that could otherwise be spent in growing. This competing process is known as photorespiration. The Illinois team came up with the idea of implanting bits of algae DNA into the tobacco plant's cells to create a type of biological shortcut that would speed up photorespiration. When a plant uses less energy on photorespiration, it is able to take that energy and put it into plant growth and plant productivity, rather than using it to metabolise this toxic compound.

## IISR sets up post-harvest processing unit in Kerala

➤ The Indian Institute of Spices Research (IISR) has set up an advanced facility for post-harvest technology at Kozhikode, which is expected to give a significant thrust to research on processing, food safety and value addition in spices. Inaugurating the facility, Trilochan Mohapatra, Secretary, DARE and Director-General, ICAR, emphasised the need for meticulous crop planning to enhance farm business income from farming of spice crops. Product development for niche markets, better application of mechanisation and innovative crop management can enhance the returns from spice farming, he said. Later, addressing a seminar on Fair Agricultural Practices, he urged farmers to explore the potential of integrated farming with maximum diversification to meet the challenges in the sector. Climate change had emerged as a major concern for farmers where researchers can contribute more in the future, he added. The facility also envisaged to encourage entrepreneurship in the sector by extending an incubation facility to young entrepreneurs and start-ups with the support of the Institute of Technology Management, Business Planning and Development (ITMBPD) at IISR. Besides, the Institute also launched three technologies to fight pest infestation in spice cultivation.





## Precooling units help strawberry farmers reach out to far-off mkts

➤ The establishment of a pre-cooling unit by an enterprising farmer in Mahabaleshwar — the strawberry belt of Maharashtra — could mean a huge boost to the farmers in the region. Until now, despite strong demand from other states, farmers in the Mahabaleshwar-Panchgani belt of Maharashtra were unable to cater to these requirements since this is a perishable fruit and has a short shelf life of barely two days. Thanks to the new unit established by KisanBhilare, president, Mahabaleshwar Cooperative Fruits, Flowers and Vegetable Buyer Seller Association at neighbouring Wai, several farmers have begun to benefit. After initial success with a small pre-cooling unit set up at a local school in Mahabaleshwar, using funds from the Bhilar Gram Panchayat funds, Bhilare decided that this was not enough and more needed to be done. He invested in a four-tonne pre-cooling unit at Wai following demand from several corporates and traders. Because of this unit, farmers can now store their strawberries here without fear of the fruit going bad, he said. With the pre-cooling and blast freeze facilities, the shelf life of strawberry has gone upto four days. The facility is offered on a lease of ₹5 per kg for four hours and currently four tonne are being processed on a daily basis, Bhilare said. Bhilare says that demand has come from Big Bazaar, Big Basket, Reliance Fresh and traders from the Jharkhand, Kolkata, Guwahati and Delhi while Jaipur has shown interest in procuring strawberries. Strawberries are now sent by air to Delhi, Guwahati, Kolkata and Jharkhand and by road to Hyderabad, Goa and Bengaluru.



## Assam organic farmers bag best award in World Expo

➤ The young agro-entrepreneurs of Assam who already have showed their excellent performance in producing organic agro and horticultural products thereby bringing a green revolution in the rural areas, has bagged the best prize in the world Agro Food & Beverage Processing Expo -2018 organized in Mumbai Exhibition Centre, Goregaon in Mumbai recently under Paramporagata Krishi VikashYojana (PKVY) of the Ministry of Agriculture and Farmer's Welfare, Govt of India. The stall sponsored by the Directorate of Agriculture, Assam and facilitated by Regional Council RS Event tech in the category of Agri-Business Opportunity displayed organic local agro products like King Chilly (BhootJalakia), Assam Lemon, Black Rice, Magic Rice (Komal Chawul) and Joha rice among others. The State farmers also earned a handsome profit by selling their products relatively at a much higher price, farmer Saikia added. "We sold one BhootJalakia and one Assam Lemon each at a price of Rs 20," he said. The other delighted members of the farmers group besides DhruvaJyotiSaikia which has brought pride to the State are, KamaleswarBoro and Abdul Mannan (Both from Udalguri), Pankaj Hazarika (Sonitpur), Bijit Rajkhowa (Nagaon), Prahlad Baisnav Hazarika (Golaghat), Anjal Limbu (Golaghat) and Madan Basumatary (Chirang).



## Real-time price, demand forecast for select crops soon

➤ To make an accurate assessment of how prices and demands of farm commodities move, the central government is working on a proposal to develop projections like those of the US Department of Agriculture (USDA) for select farm goods from the next kharif season. The forecast will be issued after regular intervals. Officials said a technical advisory committee had been constituted for the purpose and the National Institute of Agricultural Economics and Policy Research (NAIP), under the Indian Council of Agriculture Research (ICAR), had been roped in as knowledge partner. The NAIP has entered into a memorandum of understanding (MoU) with 14 major agriculture universities of the country for developing a model using mandi arrival and other data sources, along with international market trends, to forecast price and demand trends of commodities. "The statistical model will use time-series data on mandi arrivals, their prices from secondary sources such as agmarket.nic.in and field surveys and other data points to accurately predict price and demand," the official said.



# AGRICULTURE MARKETING & TRADE

**PROTECTING FARMERS' INTERESTS**





**A**griculture production front has always been a strong point for India. We have been earnestly producing record yields of many commodities. While this is a matter of elation, the significance of abundant production lies in the profit realization by the farmers. Unfortunately, for many years now, record production has always been associated with glut and fall in prices. Many factors in consonance contribute to the described scenario. It has been largely attributed to the discrepancies in the output management. Ranging from insufficient storage infrastructure to defective supply chain, the downstream suffers from several challenges.

Agricultural marketing thus becomes the core activity that can exert tremendous influence in converting the gains realized from excess production. Notwithstanding the traditional means of marketing that primarily constitutes mandis, modern models of marketing are increasingly finding favour among the producers. Cooperative models have also given immense benefits to the farmers. International trade and

cooperation can also help in stabilizing the profit levels and managing the stock of produce.

### MARKETING WITH MANDIS

In India, the organised marketing of agricultural commodities has been promoted through a network of regulated markets. Most state governments and UT administrations have enacted legislations to provide for the regulation of agricultural produce markets. The purpose of state regulation of agricultural markets was to protect farmers from the exploitation of intermediaries and traders and also to ensure better prices and timely payment for their produce.

Agricultural Markets in most parts of India are established and regulated under the State APMC Acts. The whole geographical area in the State is divided and declared as a market area wherein the markets are managed by the Market Committees constituted by the State Governments. Once a particular area is declared a market area and falls under the jurisdiction of a Market Committee, no person or agency is





Public sector organizations also involved in agriculture marketing include Food Corporation of India (FCI); Cotton Corporation of India; Jute Corporation of India; Commodity Boards; APEDA; STC; MPEDA; Commission for Agricultural Costs and Prices; Directorate of Marketing and Inspection; Departments of Food and Civil Supplies; State Agricultural Marketing Boards; Central and State Warehousing Corporations, and Agricultural Produce Market Committees.



allowed freely to carry on wholesale marketing activities. Apart from Kerala, Jammu and Kashmir, and Manipur, all other states have enacted marketing legislations known as APMC Acts.

Over a period of time, these markets became restrictive and monopolistic markets, providing no help in direct and free marketing, organised retailing and smooth raw material supplies to agro-industries. Exporters, processors and retail chain operators cannot procure directly from the farmers as the produce is required to be channelised through regulated markets and licensed traders. There is, in the process, an enormous increase in the cost of marketing and farmers end up getting a low price for their produce. Monopolistic practices and modalities of the state-controlled markets have prevented private investment in the sector.

Though there is no licencing system for retail traders of vegetables and fruits, retail traders procure their produce only from wholesale traders after giving them all the costs in the procurement chain. When it gets into the hands of the ordinary consumers who are at the end of the value chain, the value of the produce gets magnified with the original growers not even sharing a quarter slice of the price.

The various inadequacies and restrictive nature of regulated markets demanded a renovation of the existing system, and therefore a model APMC act was finalized and circulated by the Center to the states almost a decade ago. So far, 16 states have amended their Acts. The model legislation provides for the establishment of private markets/yards, direct purchase centres, consumer/farmers' markets for direct sale and promotion of Public-Private Partnership (PPP) in the management and development of agricultural markets in India. Provision has also been made in the Act for constitution of State

Agricultural Produce Marketing Standards Bureau for the promotion of grading, standardisation and quality certification of agricultural produce. This would facilitate pledge financing, direct purchasing, forward/future trading and exports.

Certain states are independently upgrading their marketing infrastructure in a bid to help farmers. Himachal Pradesh government has been contemplating bringing amendments to the HP Agriculture and Horticulture Produce Marketing (Development and Regulation) Act of 2005 and the HP Agriculture and Horticulture Produce Marketing (General) Amendment Rules of





2006. In a move to contain food inflation, which faces the risk of a re-emergence if monsoon falters, the Delhi Government has decided to allow farmers to sell fruits and vegetables directly to consumers bypassing commission agent. The Delhi Agriculture Marketing Board delisted fruits and vegetables out of the ambit of Agricultural Produce Market Committee (APMC) Act to iron out supply side inefficiencies to tackle rising prices. This meant that farmers were free to sell their products anywhere in the city and there remained no need to sell their items at Azadpur, Keshopur and Shahdara mandis only. The middlemen bought farm produce at cheaper rates and supplied them to the market for a much higher price. By the time the produce, such as vegetables and fruits, reached the consumers, their prices shot up by four to five times the original cost.

Several states have initiated direct marketing by farmers to urban consumers with the intention to increasing their share in consumer's rupee. Direct marketing has many advantages such as shortening marketing channels, eliminating middlemen and above all bringing producer-seller in direct transaction with consumers. Some experiences of direct marketing in India have been very successful. The Punjab

Govt. experimented with a market called 'Apni Mandi'. In Apni Mandi, commodities were reported to be sold at rates 20-30% less than the retail markets rates and 30-50% more than prevailing wholesale rates. Similarly, the model adopted by Maharashtra, called 'Hadapsar' at Pune, transacted fruits and vegetables directly between producers and consumers. 'Rythu Bazar' in Andhra Pradesh, 'Uzahaver Shandies' in Tamil Nadu and 'Shetkooribazars' in Maharashtra shared similar principles.

### TAKING THE e-ROUTE

The government in 2016 announced unification of agricultural markets nationally. Prime Minister, Narendra Modi launched India's National Agriculture Market (NAM) on April 14, 2016 coinciding with Ambedkar Jayanthi. The NAM offered to be a single platform to carry out marketing activities between farmers and traders. NAM explored the possibility of unhindered trade between farmers and traders of different states, different market areas, different languages through a common e marketing platform. The middle men who formed the core of the mandis and their hefty commissions which were the norm of the mandi markets were to be eliminated and

the complete bargaining power was transferred to the farmers. They were linked up electronically via a kiosk or their phones, fixed the trade and materialized it with the click of a button.

The e-NAM platform—a key initiative of the National Democratic Alliance government's promise to double farm incomes by 2022—promised to connect 21 mandis from eight states in the first phase. With the initiative, the centre aimed to bring 585 mandis across India on to the platform. The eight states that were part of the platform in the first phase were Gujarat, Telangana, Rajasthan, Madhya Pradesh, Uttar Pradesh, Haryana, Jharkhand and Himachal Pradesh. The platform traded 25 crops, including wheat, maize, pulses, oilseeds, potatoes, onions and spices.

So far, 73.50 lakh farmers, 53,163 commission agents and over 1 lakh traders are registered on the eNAM platform from 14 states. The 14 states include Andhra Pradesh, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh and Uttarakhand. The market transactions stood at Rs. 36,200 crores by January 2018, mostly intra-market. In February 2018, some attractive features like





MIS dashboard, BHIM and other mobile payments, enhanced features on the mobile app such as gate entry and payment through mobile phones and farmers database is helping adoption even more. The present trading is done mostly for intra-market, but in phases, it will be rolled out to trade in inter-market, inter-state, creating a unified national market for agricultural commodities.

Despite the fanfare, eNAM has been confronted with many challenges and distortions. A high-powered panel of experts on integrating commodity spot and futures markets, chaired by Niti Aayog member, Ramesh Chand has found that data of trading done manually is being fed into the electronic platform after the auction is completed in many mandis (APMCs), which was in violation

of the concept of transparency and fair price discovery. The panel said details being fed manually into the e-auction platform included details about buyer, seller, seller's address, commodity name, quantity and auction rate. That apart, the panel found that many agricultural produce market committees (APMCs) do not have operational assaying labs for grading commodities prior to putting them up for online auction. Also, few mandis were pushing commodities with large arrival volumes out of e-auctions due to time constraints. The panel also found significant variation in the arrival data of AGMARKNET and eNAM. This is so because AGMARKNET data records actual transaction data, while eNAM records the data captured at the APMC gate.

The panel also said that in

order to operate the eNAM at its full potential and to pass on the intended benefits to farmers, the government should ensure that each APMC must have appropriate storage facilities to provide cost-effective warehousing to farmers so as to avert distress sales. A buyer, irrespective of his location, should participate in any market of his choice and an institution to support inter-mandi trade and movement of produce, including a dispute resolution mechanism, should be established, it added.

The electronic market invariably presents many benefits and would definitely aid in enhancing farmers' income by giving them exposure to a wider market and better price recovery. However, for this to be effective, the anomalies pointed out must be addressed efficiently.



## MARKETING via PRIVATE SECTOR PARTICIPATION

The private sector has recently forayed into the agri marketing Scene with some really interesting marketing ideas. Most of them were agri business houses, processing firms, firms associated with contract farming etc.

### E- Choupal

To address the problems of multitude of intermediaries in the agri supply chain, ITC came up with a concept of “e-choupals” in June 2000. An e-choupal typically involved setting up of a computer and Internet connectivity in an area of a few hundred square feet. E-choupals are operated by a sanchalak (operator), a literate person who is elected from among the farmers of the village who acts as an interface between the computer and the illiterate farmers, and retrieves information on their behalf. In a few north Indian states, E-choupals have contributed to coping with the challenges of fragmented farms, weak infrastructure and involvement of numerous intermediaries. There are 6,500 e-choupals in operation in 40,000 villages in 10 states, positively affecting around 4 million farmers.

They are generally located within walking distance or a 5-km radius. Instead of travelling long distances



to the nearest mandi, the farmer takes a sample of his produce to the e-Choupal. The farmer can see ITC's price for himself on the website as well as the previous day's prices at nearby mandis on the computer. If he decides to sell to the ITC hub, the Sanchalak gives him a note which includes his name, village, particulars of the quality assessment, approximate quantity and conditional price. The farmer takes the note along with his produce to the nearest ITC rural services hub called Choupal Saagar, which falls within a 30-km radius. Here, further testing is conducted by trained technicians. This initiative has enabled farmers to make better choices and offered insights on better farm practices. Also, these farmers now have better

access to other markets, besides the organized mandis mandated by governments, and quality inputs, resulting in higher yields.

### Contract Farming

Contract farming, another marketing model, arises from an agreement between processing and/or marketing firms for production support at predetermined prices. This stipulates a commitment on the part of the farmers to provide a specific commodity in terms of quality and quantity as determined by the purchaser and commitment on the part of the company to support the farmer for production through inputs and other technical support. In 1998, Pepsi Co started Informal Contract Farming in India. PepsiCo





India's potato farming programme connects with more than 12,000 farmer families across six states. PepsiCo provides farmers with superior seeds, timely agricultural inputs and supply of agricultural implements free of charge.

Traditionally contract farming was confined to production of sugarcane, tea, coffee, cotton, milk, etc. Contract farming has been gaining ground as a solution for assured supplies of uniform quality for processors and traders. Corporatisation of contract farming has potential to boost farm incomes and to increase global trade of Indian agri-produce. The farmers, especially small farmers also benefit in the process from diversification, technological up-gradation and assured market. The pace of contract farming is on the rise after the amendment to APMC Act by the state governments. Contract farming is one of the options to create a friendly environment within the private sector for agriculture development and extensions of services which deals with the system for the production and supply of agricultural and horticultural produce under forward contracts between producers/ suppliers and buyers.

#### Farmer Producer Companies

The collectivization of farmers under a single banner in a region to form an effective alliance that can address the many challenges of agriculture and enhance the income of the individual members, necessitated the formation of Farmer Producer Companies.

A provision for setting up FPCs was made in the Companies Act, 1956 in 2003 by an amendment to the Act. According to the National Bank for Agriculture and Rural Development (Nabard), a producer company is a hybrid between a private limited company and a cooperative society. Therefore, it enjoys the benefits of professional management of a private limited company as well as mutual benefits derived from a cooperative society. Producers can benefit by getting together to sell their produce through economies of scale in the use of transport and other services, and raise their bargaining power in sales transactions, while marketing expenses get distributed. This results in a better share of net returns. Such models are particularly required for small farmers to overcome their constraints of both small size and modest marketable

quantities. Aggregating producers into collectives is now universally accepted as one of the most effective means of reducing the risk in agriculture and improving the access of small and marginal producers to investments, technology and markets. Despite efforts by the government over the past 15 years or so, including major financial help, the country has just about 3,000 FPCs so far, set up by Nabard, Small Farmers' Agribusiness Consortium or individual initiatives. Some have been formed by landless women, labourers or marginal farmers. Most of these FPCs are concentrated in a few states such as Madhya Pradesh, Rajasthan, Maharashtra and Bihar.

#### Cooperatives

By and large, marketing cooperatives in India is a four-tier structure consisting of primary marketing societies, district or regional cooperatives, state marketing federations and national level marketing cooperatives. The main marketing cooperatives include National Agricultural Cooperative Marketing Federation (NAFED), Tribal Cooperative Marketing Federation (TRIFED), State



Cooperative Marketing Federations (general as well as commodity specific), district level cooperatives or unions of cooperatives, and primary agricultural cooperative marketing societies (general as well as commodity specific). In addition, the government has established some public sector organizations to promote cooperatives, such as National Cooperative Development Corporation and National Dairy Development Board. In quite a few commodities and regions, the cooperative organizations have played an important role in improving the performance of the marketing system by increasing competition. They have contributed not only in marketing and processing of farm products, but also in supply of inputs, including credit to farmers. NAFED was established in October 1958 as an apex organization of marketing cooperatives. Its primary objective is to strengthen cooperative marketing structure in the country. Dairy farming based on the Anand Pattern, with a single marketing cooperative, is India's largest self-sustaining industry and its largest rural employment provider. Successful implementation of the Anand model has made India the world's largest milk producer. MAHAGRAPHES, a co-operative partnership firm, is another glittering example in this category.

#### The Online Markets

The emergence of online marketing of

agriculture produce has opened a new vista for farmers to sell their products effectively. Many companies have established a sustained presence in this space. They have been maintaining productive contact with the farmers in procuring products from them. Modern supply chains in the agricultural sector, which is currently fragmented and hinges on middlemen, have been developed to meet the requirements of these digital retail companies. The huge gap existing between wholesale and retail prices are effectively bridged by them and in the process, farmers earn better profits as the big retailers can reach out directly to the small farmers through collectives and bring them into the system. For example, with more than 20 collection centres across the country,

Bigbasket procures about 60% of its FFVs directly from farmers and the company reportedly expects that number to go up to 80% as it adds more collection centres. Other big retailers like METRO Cash & Carry, Walmart, Mother Dairy, Reliance Fresh, Heritage and PepsiCo also have similar arrangements.

#### INTERNATIONAL AGRICULTURAL TRADE

Indian agriculture's excellent production record post green revolution had elevated India's stand in the world market. India's share in global farm/ food exports and imports is around 2.07% and 1.24% respectively. Thus, India is a net exporter of agricultural products. In terms of global agricultural and food exports, India ranks 10.



#### AGRICULTURE EXPORT POLICY

In December 2018, the Union Cabinet cleared Agriculture Export Policy 2018. 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.





The highest exported agriculture commodity from India is Basmati rice. In 2017-18, India exported about US\$ 4.2 billion worth of Basmati rice. Closely following in 2016-17 was buffalo meat which was exported to the tune of US\$ 4 billion. About US\$ 3.6 billion worth of non basmati rice was exported in the same year. Thus if one sees, rice category constitutes a whopping US\$ 7.8 billion, which is about 23.5% of the total value of agri export from the country.

India's exported 48039.4 MT of dairy products worth US\$ 185.49 million during the year 2017-18. The highest quantity of dairy products was to UAE in terms of values. In 2017-18, India exported dairy products worth Rs. 2 billion. The total quantity of the dairy products exported to UAE was 5.7 thousand tonnes. UAE, Egypt, Bhutan, Afghanistan, Nepal, Singapore, Bangladesh, USA, Oman and Qatar are the top ten destinations for India to export its dairy products.

The export scenario of the food processing sector as a whole is unfortunately not that encouraging and a lot remains to be done to boost the sector. After witnessing a marginal increase from US\$ 36 billion in 2012-13 to US\$ 38 million in 2013-14, export of processed food from India has been on a continuous dip. One of the most important barriers to increased export of processed food products from India as opined by experts is the issue with quality and food safety. Recent data reveals that Indian food products often fail to pass the desired

quality parameters set by various countries.

The country as such is a net exporter of cereals. The total export of cereals from India over the last 5 years has been hovering around a little over 13 million tonnes. The concomitant import of some of the cereals by India is currently around 1.7 million tonnes.

Sugar is an important agri based commodity in the country and India exports almost as much quantity of sugar as it imports. Value-wise, in the year 2016-17, total import of sugar was US\$ 1,019 million and it declined to US\$ 934 million in 2017-18. During April-May 2018, the total import of sugar has been 116,512 tonnes. The increasing sugar production and declining

prices in the domestic market led to the 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. 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 sugar exports lucrative. India also approved incentives such as a transport subsidy for export and a direct cane payment to farmers to encourage cash-strapped mills to export surplus sugar in the 2018/19 season.

As far as the export scenario of fish and fish products from India is concerned, India is increasingly becoming a strong player in the global fish and fish products market. The total value of export in the fisheries sector in 2016 was US\$ 5.5 billion which increased significantly by almost 31% to US\$ 7.2 billion in 2017. The export forecast this year in 2018 for the fisheries sector marks a further annual increase of 12.5% to US\$ 8.2 billion. The CAGR between 2016 and 2018 is about 14% in the export value of fish and fish products from India.

India today stands tall as an important agricultural producer. The benefits of this production will only reach farmers, if their products are marketed efficiently and they realize the income from it. For this to happen we need more organized and effectively linked market chains.



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# ‘TRADE IN AGRICULTURE - BIG SCOPE TO INCREASE OVER THE NEXT YEARS’

India and Mexico have striking similarities in geo-climatic conditions, biodiversity, physiognomy and people, cultural and family values, as well as European connections of the colonial era. The bilateral trade between the two countries has been perpetually on the rise. Agriculture trade and cooperation is a potential sector, with big scope to increase over the next years. In conversation with Agriculture Today, HE Ms. Melba Pria, Hon'ble Ambassador, Embassy of Mexico talks about the various aspects in agriculture trade and cooperation that the two countries must explore.



**What is the volume of trade in agriculture between India and Mexico? Which are the main products that are exported to India from Mexico?**

Mexico has significant comparative and competitive advantages over other nations in the agri-food sector. More than 500 agricultural products, (cereals, oilseeds, fruits and vegetables, ornamental plants, fodder and crops for industrial use), dozens of livestock, fishing and aquaculture products, and the increasingly important products of the food industry, form the supply of the sector. Mexico is the number one world exporter of avocado – supplying 45% of the international avocado market, beer, guava, mango, papaya, and, of course, tequila; we are number two in asparagus, tomato, lemon, and watermelon; and we also occupy prominent places in other products such as honey, nuts, and pumpkins. The richness of Mexican food, which has been declared Intangible Cultural Heritage by UNESCO, lies in the wide variety of its products, which not only nourish its population but also an industry that is constantly expanding. The volume of trade between Mexico and India in agriproducts (including processed legumes, seed oil, animal food and beverages) during the year 2016, was around USD 100 million. In that same year the overall trade between both our countries was almost USD 7 billion. Trade in agriculture is a small portion with big scope to increase over the next years. In terms of agricultural produce, it is dried legumes (chickpeas),



sunflower oil, beer, medicinal plants, etc. If we see these last few years, there is no clear tendency either in the volume or the products. Both the Mexican and Indian government are working to build up a regulatory framework that enables growing exchanges in the sector. There are also important exchanges and trade between our countries on support services and goods for agriculture, specially machinery and fertilizers.

### **What are the areas of cooperation between India and Mexico in agriculture other than trade?**

When it comes to agriculture, Mexico and India share a common history. For instance, Pandurang Khankhoje, an Indian agricultural scientist and political revolutionary, founder of the Ghadar Party, took refuge in Mexico from 1924 to 1949. He was a professor in the National School of Agriculture in Chapingo, near Mexico City, researching on corn, wheat, pulses and rubber, developing rust, frost and drought-resistant varieties, and pioneered the Green Revolution in Mexico. Renowned artist Diego Rivera painted murals that featured Khankhoje and his immense contribution to the agricultural sciences in a museum in Mexico City. During the 1940s, Mexico's Ministry of Agriculture created the Office of Special Studies (OSS) to research ways to raise its agricultural productivity. CIMMYT (International Maize and Wheat Improvement Center) grew out of a pilot program sponsored by the Mexican government and the Rockefeller Foundation in the 1940s and 1950s. The wheat specialist in that program, Norman Borlaug worked with Mexican researchers and farmers to develop wheat varieties that resisted devastating rust diseases and yielded much more grain than traditional varieties. This allowed the country to develop high-yielding wheat varieties and to become self-sufficient in wheat in 1956. In the 1960s, the

seeds from this knowledge were made freely available to researchers worldwide, including India, where it was imported to stave off famine. Between 1965 and 1972, India more than doubled its wheat production, making it the third largest producer in the world and sparking the "Green Revolution". Today, CIMMYT through its network of researchers worldwide is the platform for technical and scientific exchanges. Indian and

**Mexico is the number one world exporter of avocado – supplying 45% of the international avocado market, beer, guava, mango, papaya, and, of course, tequila; we are number two in asparagus, tomato, lemon, and watermelon; and we also occupy prominent places in other products such as honey, nuts, and pumpkins**

Mexican researchers travel from one country to the other each year. There are numerous ways to continue expanding the cooperation. Mexico's prowess in renewable energy, and social engineering can be reciprocated by India's advances in software, outer space, and biotechnology.

### **What are the challenges associated with trade between India and Mexico? What measures do you suggest to ease the trade between the two countries?**

High tariffs especially on agricultural exports to India, continue to be an important explanation for lacklustre trade flows in the agricultural market. Lack of ease of procedures for clearance of food products imported into India. Mexico, and Latin America, have efficient functioning logistics and cold chains, as well as a quality certification regime that can match

the stringent regulations of markets in developed countries. It would be instructive for Indian agriculture to form partnerships with agronomists and agriproducers in the region for raising productivity and building the cold chains in India.

### **What are your views on subsidies granted to farmers? How do they affect world trade?**

Subsidies by themselves are not harmful for world trade. It depends on how, and to whom they are targeted. Mexico is currently reframing the financial support in a way that will enable small and medium farmers to improve their productivity and acquire more value for their products in the national and international market. In that sense, public policy in agriculture will enable value chains and markets to function in better conditions.

### **Are there any trade agreements in agricultural products between India and Mexico?**

Currently we are working towards facilitating trade protocols. Both sanitary agencies, the National Service for Agri-Food Health, Safety and Quality (SENASICA) of Mexico, and the Food Safety and Standards Authority of India (FSSAI) are reviewing a set of products that are in the interest of both parties.

### **How do you view India as an investment destination in agriculture?**

The evolution of the Indian agribusiness market will depend increasingly on the typical consumption patterns of the country's growing middle class. The projections on increases in agri-food imports are due to factors like the expected increases in India's working-age and middle-aged population. Mexican private sector has a limited record of IED in agriculture around the world. Nevertheless, Mexico has investments in the Indian processed food sector that will be very important in the next few years.

# 'INDIA - AN EXTREMELY IMPORTANT POLITICAL AND INCREASINGLY IMPORTANT ECONOMIC PARTNER FOR SERBIA'

India and Serbia have traditionally enjoyed deep friendship as co-founders of the Non-Aligned Movement. The past couple of years had seen high level engagements between the two countries. Agriculture and cooperation has also been on the agenda in these visits. In an interview with Agriculture Today, H.E. Mr. Vladimir Marić, Hon'ble Ambassador, Embassy of the Republic of Serbia discusses the potential of trade and cooperation in the agriculture sector between the two countries.



## What is the level of agricultural trade between India and Serbia?

The total amount of exchange in agricultural and processed food products between India and Serbia in 2017 amounted to 35.3 million USD. The deficit on the Serbian side was considerable – Indian exports were at around 34 million, while Serbian were at only around 1 million USD. During the first 11 months of 2018, the total exchange stood at 21.2 million USD, of which 19.4 was Indian and 1.8 Serbian exports. Serbia was mostly exporting tobacco and frozen fruits, while Indian exports included oil cakes, tea, coffee, sesame seeds etc.

## How significant is India as a trade partner for Serbia?

Overall, India is an extremely important political and increasingly important economic partner for Serbia. Past two years have witnessed what we consider historic top level visits in both directions – visit of the Serbian Prime Minister at the time, and now President, Mr. Aleksandar Vucic to India in January 2017, and the visit of the Hon'ble Vice President of India, Mr. Venkaiah Naidu to Serbia in September 2018. Our Deputy Prime Minister and Foreign Minister, Mr. Ivica Dacic was also in India in May last year. All three of these visits had economic cooperation at the top of the agenda. So, although the volume of exchange in agricultural and processed food products is low, both sides are very keen to increase



it. Concrete steps in this regard are being taken – through exports of Serbian apples and berries to the Indian market and imports into Serbia of Indian tropical fruits (mango, pineapple, papaya).

### **Apart from trading in agricultural commodities, which are the other areas that have seen immense cooperation between the two countries?**

The past ten years or so of Serbian food industry have been highlighted by foreign investments. The United States' Pepsico, German Nord Zucker, Austrian Rauch and Gierlinger Holding, United Kingdom's Salford and Ashmore, Denmark's Carlsberg, and Belgium's AB InBev and Crop's, just to name a few, built their plants in Serbia in order to supply the growing European and other markets.

Companies from this region are also starting to recognize Serbia's comparative advantages when it comes to choosing where to base their European operations. The leading Nepalese conglomerate Chaudhary Group, through its Indian subsidiary, set up a noodles plant in the Serbian town of Ruma. Chaudhary Group has been very satisfied with the overall business environment and with the support it has been receiving from both national and local authorities in Serbia and it will as a result be increasing the scope of its Serbian operations. Besides other advantages (strategic geographic location as gateway to Europe, competitive operating costs etc.), Serbia can serve as a hub for duty-free exports to a market of more than 1 billion people that includes the European Union, Russian Federation, USA, Kazakhstan, Turkey, South East Europe, the European Free Trade Agreement member countries, and Belarus. This customs-free regime covers a wide spectrum of agricultural products (and most key

industrial products, with only a few exceptions and annual quotas for a limited number of goods).

When it comes to agricultural machinery, it is very important to mention that the Indian heavy-weight TAFE recently acquired Serbian tractor manufacturer IMT and that they will soon be reviving local production of tractors with a view to supplying the Serbian market, but also to exporting. This is very good news for Serbian farmers, but also for the wider agriculture sector, and the Serbian economy as a whole.

Both sides are also very interested in working together in the fields of agricultural sciences and technology (for example, seed production and plant variety testing). Serbian Institute for Science Application in Agriculture and Indian National Institute of Agricultural Extension Management have already tied up and will be examining possibilities for joint projects. Fruit and vine planting material (saplings) production and production of grain and vegetable seeds are two concrete areas where Serbia can offer its expertise.

Besides agriculture and related fields, substantial cooperation exists in the areas of real estate (Embassy Group investment), defense, tourism and film. Serbia has abolished visas for Indian citizens in 2017. More and more Indian movies are being filmed in Serbia, including the current blockbuster "Uri".

### **What are the impediments that Serbia has encountered in trading with India?**

Main issue has been the general unfamiliarity of Serbian companies with the Indian market. More specifically, this relates to understanding of local quality standards, food safety requirements etc. Transportation costs are also relatively high due to the distance between the two countries.

### **How does the Serbian government support producers who cater to global trade?**

The Government of the Republic of Serbia, Ministry of Agriculture, introduced a set of measures aimed at incentivizing production of agricultural and processed food products and their quality and competitiveness. Direct payments include bonuses, grants to increase output and reimbursements. Incentives to help rural development include incentives aimed at environmental protection and preservation of natural resources and incentives for diversification of income and quality of life improvements in rural areas. In addition, with the aim of attracting investments into the agriculture sector, the Serbian Agriculture Ministry developed a number of credit support schemes and subsidies, especially for investments into fruit and vegetable production, milk and meat production and food processing. All companies that have been legally registered in Serbia are entitled to these subsidies. Besides Agriculture Ministry, Ministry of Economy and Serbian Development Agency also offer subsidies and incentives for foreign investments.

### **In 2019, how will be the trade relationship between India and Serbia? Any new agreements in the offing?**

I am sure that 2019 will see a further increase in the overall trade exchange between the two countries, including in the agriculture and processed food segment. The Agreement on Cooperation in Plant Health and Plant Quarantine which was signed in September last year, during the visit of the Indian Vice President, will facilitate this process. What will be important is for the veterinary and phytosanitary services of the two countries to work closer together to allow for more agricultural products to be traded.

# EU - THE BIGGEST MARKET FOR INDIA'S AGRICULTURAL PRODUCE

**The EU is India's largest trading partner with 12.5% of India's overall trade between 2015 and 2016, ahead of China (10.8%) and the United States (9.3%). India is the EU's 9th largest trading partner with 2.4% of the EU's overall trade. The trade in agricultural products between EU and India are also constantly on the rise. However, the trade and cooperation is far from its true potential according to H.E. Tomasz Kozlowski, Ambassador of the European Union to India. In conversation with Agriculture Today, H.E. Tomasz Kozlowski elaborates on the scope and challenges of trade between India and EU.**

## **What is the trade volume of agriculture products between India and EU?**

The European Union of twenty-eight nations is the biggest market for India's agricultural produce. Indian food and agricultural products are quite popular across Europe. Trade in agriculture products between EU and India has been consistently growing but is still today far from its potential. In 2017, India exported over EUR 3.43 billion of agricultural products to the EU, against EU exports to India of only EUR 883 million. In addition, India exported to the EU aquaculture products worth nearly EUR 1 billion. As you can see from the figures, the EU is a very open market that supports Indian agricultural production. Considering that the prices on the EU market are on average higher than in other markets, it means increased margins for the Indian exporters. However, there is considerable scope for improvement in our trade relations in the field of agriculture and we would like to have a more balanced trade.

## **Which are the major agro**





### products that are traded between the EU and India?

Some of the major agricultural products exported from the EU side are wines and spirits, vegetables (fresh, chilled and dried), pet food, olive oil, whereas some of the major agro products traded from India are unroasted coffee, tea and mate, rice, tropical fruits (fresh or dried), nuts and spices, vegetable oils (other than palm and olive oil) and oilcakes. Thus, the products that India and EU offer to each other are complementary.

### What is the market command of EU products in India?

The EU is known for its high quality and safe products all over the world. The strict rules that apply to food products in the EU are first applicable to local producers in Europe who have to comply with these norms. The same norms are applicable to exporters that want to be present in the EU market. Some of the products, which have a significant market in India, are the famous variety of cheeses, meat products such as hams and sausages, olive oil, pastas, a whole range of confectionary items including chocolate and European wines and spirits. Open market access provides more options for the consumers who is a global citizen today and is looking for varied experiences. The EU believes that the consumer should be given a variety of products and is best placed to make the final choice.

### What are the challenges associated with trade in India?

Though India is a market of 1.3 billion consumers and we have excellent trade relations with India, there are few challenges that need to be tackled for reaching the full potential. High tariffs on agricultural products and restricted market access is not conducive for the benefit of the consumer. An example is olive oil, which following the hikes in duties of last year faces import duties of up to 45% depending on the type of olive

oil. This is unfortunate for consumers not only in view of the nutritional value of olive oil but also due to the fact that olive oil does not face direct competition in India. Import approvals also tend to take a long time and there are various other SPS measures in place which prevent EU exporters from accessing the Indian market. Again, the EU offers excellent fresh fruit, for which there is none or limited domestic production in India and nevertheless decisions take a long time. Finally, India enjoys EU wide market access. Once a product has entered the territory of one EU country, it can circulate freely to all twenty-eight EU countries. In the case of India, each EU country must request market access separately. In other words, this means a need for 28 permits for export of apples from the EU, while India's tea based on one permit can circulate in all twenty-eight EU countries.

### Which are the areas of cooperation between India and EU in agriculture other than trade?

To strengthen our cooperation in agriculture, we have several platforms such as EU-India Joint Working Groups on Agriculture, Marine Products and SPS, which are bilateral dialogues at technical level with the Government of India. Regular exchanges at multilateral forums such as WTO, OECD and G20 are held as well. At the WTO, meetings take place under different agriculture and SPS committees. There are also regular high-level visits by EU officials to India in different areas of cooperation. In addition, EU and its Member States actively participate in food fairs, seminars and workshops organised in India. To facilitate market access between EU and India, we have established two technical dialogues: one on plant health, which was set up in 2017 and the second one on animal health, set up in 2018; these are important forums for exchanges on a number

of technical issues. The EU has organised study tours for officials and experts from India under the aegis of these technical dialogues. In September 2018, a Memorandum of Cooperation was signed between the European Food Safety Authority (EFSA) and the Food Safety and Standards Authority of India (FSSAI). A first interactive seminar was held in India from 12 to 16 November 2018.

### How have subsidies distorted the International trade?

If a country suddenly introduces import restrictions/import bans, this leads to lower prices for producers who have traditionally exported to that country. If a country introduces an obligation on its producers to export part of their production as a condition to receive support on the internal market, it is clear that these increased quantities on the world market lead to lower prices for producers outside that country and thereby distort international trade. The Uruguay Round in WTO introduced limits for subsidies that members could give to their farmers. These limits concern in particular the types of subsidies which are seen as having the most trade distorting effect (Amber Box payments). During the Ministerial Conference in Nairobi 2015, WTO members agreed to eliminate all export subsidies for agricultural products. WTO has also granted members the possibility to grant unlimited subsidies for non-trade distorting support measures (Green Box). It is clear that price support to products by guaranteeing a certain price to a farmer affect the level of production in that country. When a country with a set of measures (price guarantee, stock buying at certain minimum price level etc.) encourage farmers to produce a specific crop/product this increases the production of this product. This will lead to either less import (because internal production is higher than without the price guarantee) or increased

export (because supply overshoots demand in the country). In both cases, this will lead to lower world market prices. Therefore, price support in any country will influence prices for all producers, not only within the country in question. It is therefore essential that all WTO members respect their limits for Amber Box support and the rules for granting support within the Agreement on Agriculture of WTO.

### How can India and EU jointly address global hunger and malnutrition?

There are platforms at multilateral fora such as FAO and G20, which meet on a regular basis, and both the EU and India are active members of these bodies. The EU and India coordinate necessary actions to address concerns such as global hunger and malnutrition. EU and India could share their experiences and lessons learned in integrating food security, nutrition and sustainable agriculture into policies to achieve zero hunger and sustainable development.

### Which are the future areas where India and EU can cooperate?

EU and India are strategic partners working in varied areas. We are also India's largest trading partner. Given our long history of collaboration and EU's expertise in some of these areas, we are keen to share this knowledge to support India in its efforts in the agriculture sector and markets, including ensuring active role of private sector in contract farming. The EU could also help India develop its extension programme. Maximum benefits should be derived from research and innovation to modernise and upgrade Indian farmers with small farm holdings. Agricultural universities and agriculture specific research institutions from both sides should engage in regular dialogues and exchanges related to latest developments in yield improvement, genetics, pest management, plant health, animal husbandry and other agriculture related activities. Geographical Indications (GIs), Good Agriculture Practices (GAP) and Traceability are some of the areas where cooperation can be enhanced. The European Union can assist India in these areas which would further support India's agriculture sector.

## EXPLORING INDO-ANGOLAN COOPERATION IN AGRICULTURE

**On the sidelines of the BRICS summit 2018, in Johannesburg, India and Angola reiterated the need to increase trade and cooperation in areas including food and agriculture. Angola holds immense potential in agriculture. India can play a pivotal role in transferring the technology and experiences in agriculture to make Angola self sufficient in food sector. In an interaction with Agriculture Today, H.E. Mr. Manuel Eduardo Bravo, Hon'ble Ambassador of the Republic of Angola to India discusses the urgency of this cooperation and the prospects of this association.**



### What are the strong points of Angola in terms of agriculture?

Well, among the myriad strong points of my country concerning agriculture, I would highlight that Angola has 35 million hectares of fertile agricultural land. Out of this, only 5 million hectares, that is 14% or so, is currently being cultivated. That shows the huge potential. Another strong point is Angola's agro-ecological diversity, not to mention the 47 hydrographical basins, with huge untapped potential.

### How significant is India as an agricultural trade partner for Angola?

My Government and the Angolan State at large attach great importance to the agricultural partnership with India, whose potential still needs to be fully unlocked. No wonder that at the meeting held on the sidelines of 2018 BRICS Summit, in South Africa, the Honourable President João Lourenço and Honourable Prime Minister Narendra Modi highlighted agriculture as one of the areas in which bilateral cooperation need to be developed further. Angola is believed to spend around 250 million USD every month on importing foodstuff. This is a



practice that we are keen to reverse, because we can and should produce our food stuff ourselves in Angola. Building on similarities in agro-climatic conditions between our two countries, Angola is keen to leverage India's experience and knowledge to support its agricultural development.

**Apart from trade, what are the other partnerships that have been forged between India and Angola in the agriculture segment?**

We believe that our cooperation in the agriculture domain shouldn't confine itself to trade. It should go beyond mere transactions. An Indo-Angolan agreement on agriculture and allied sectors is in an advanced stage of preparation and we expect it to be signed later this year. It will definitely identify sectors in which cooperation should be focused. On the other hand, in 2014, the India-Africa Partnership in Agriculture has been launched under the aegis of the International Agriculture Consultative Group, the Indian Council of Agriculture Research and the ICRISAT. Under this collaborative dispensation, for example, Indian entrepreneurs and agriculturalists could invest in agriculture, agro-industry and food processing. In doing so, a quantum leap would be registered from transactional cooperation to strategic partnership. Crops

like lentils, pulses, as well as medicinal and aromatic herbs could be produced in Angola for domestic consumption, as well as for the Indian market and elsewhere in the world, particularly the sub-regions of central and southern Africa.

**What are the opportunities for Indian agri business companies in Angola?**

The opportunities are huge in light of the National Production, Export Diversification and Diversification Programme (PRODESI). This well-conceived programme is aimed at promoting domestic agricultural production and decreasing, if not eliminating, food imports which do not make sense in Angola - a country with abundant fertile land and splendid hydrographical conditions. As a priority, we are focused on stand-out products such as rice, soybeans, corn, wheat flour, potato, rice, coffee, cotton, cocoa, vegetables, cassava, to name but a few. So, Indian agriculturists and investors are well advised and encouraged to invest in Angola which is one of the top five favourite countries to invest in Africa, according to the 2019 Africa Investment Risk Report. Land entitlements are given typically for a period of 60 years and are renewable; and there is scope for repatriation of profits and dividends as a right granted to all investors.



*Mr. João Lourenço, President of Angola with Mr. Narendra Modi*

# REPOSITIONING THE INDIAN FARMER REMANDATING INDIA'S AGRICULTURE

**T**hroughout India's evolution, from ancient history to modern days, Agriculture, as an economic activity has dominated and shaped its social & cultural habits. Even in 1951, the dawn of independent India's first five year plan, the agricultural sector contributed 53 percentage to GDP and absorbed more than 80 per cent of the population for jobs and livelihood.

Much has changed after 1951, when India began its tryst with planning, aimed at re-organising the country's economy and restructuring the job market. Notwithstanding, that India's current GDP of US\$2.5 trillion makes it the sixth largest economy of the world, full employment and respectable per capita income remain a mirage. As per the Census 2011, percentage of people living below poverty line is as high as 28, and for farmers as a class it is 22.

That farmers, suffer a high degree of poverty, besides low per capita monthly income even though they own a valuable asset in the form of land, is an irony that rightfully stares at policy makers. India, known world over for its data collection and management, is yet to see inducement to assess the farmers' income at fixed regular intervals. In the absence of such estimation surveys, trends in income growth of farmers are largely gleaned from research papers and

small sample surveys. This lacuna needs addressing in the context of the Government's commitment to double farmers' income by 2022 in real terms, vis-à-vis the status in 2015-16.

Luckily, the National Sample Survey Organisation's (NSSO's) income survey of agricultural households for the agricultural year 2012-13 (July 2012 – June 2013),



lends policy makers some succour. At 2011-12 prices, an agricultural household earned a monthly average income of Rs. 6,426, and incurred an average monthly consumption expenditure of Rs. 6,223, implying a meagre saving of Rs. 203. These findings indicate the status, that is woefully inadequate to cater to the welfare of the farm family.

The distress alarms have been ringing for many years. Unfortunately, the farmers' cry remained to be interpreted in proper context. This

probably had something to do with our pre-dated mindset, which related agriculture with a sort of moral responsibility, to feed society at any cost and any way, inadvertently diluting the individual wellbeing of farmers. Thanks to this conventional value loaded approach, the farmer is often glorified as an 'Annadaata', positioned on an unrequited pedestal, while more realistic benefits will require that his/her profession is respected as an enterprise.

Any enterprise, involves management of manpower & material and risks, with a view to generate positive net returns and gainful employment. Enterprises are not merely output oriented but focused on economic outcomes. Agriculture, on which, even today, 48 per cent of India's population depends directly and indirectly for its livelihood, needs to be treated as an enterprise, if welfare of society at large is desired.

Since independence, and particularly post 1965 with the introduction of intensive technologies during the green revolution, the farmers responded by scaling up production to ensure the nation's food security. But the question that goes begging today is, 'has higher production provided the farmers' income security?'

A farmer's income is predicated upon the net returns from his farming-enterprise, which in turn is a function of gross value, transaction price in markets and cost of production. While each of these three variables





need appropriate treatment and rationalisation to the advantage of farmers, the one that brooks no delay is market management.

Not surprisingly, in current day context, for several agri-commodities, increasing of market surplus ratios (MSRs) results in disequilibrium between demand and supply. The resultant subdued market prices at farm-gate, is a problem compounded by an ineffective market structure and inefficient supply chains, causing disproportionately lower share for the farmer-producer in the consumer's spend. Among various interventions needed to enhance market performance, one foundational adjustment is to expand the farmers' market horizon.

In a subsistence agricultural economy, surpluses are meagre, quickly absorbed in local and near markets, and the producers justly perceived as Annadaata. But with

growing surpluses, the case in India today, even with growing numbers of people and cattle, who earlier constituted natural and adequate markets, the demand is less than par vis-à-vis the supply. A way out to ameliorate the situation is to impart greater market elasticity, both functionally and territorially. The latter entails creation of a unified national agricultural market and integration with global value systems, and the former implies re-characterising the obligations from agriculture. Correspondingly, the mandate of India's Agriculture is redefined by the DFI Committee, to:

- Meet the food and nutritional security of the country in alignment with agro-ecological conditions.
- Generate gainful employment resulting in income gains and make the farmers economically secure.

- Generate raw materials that will directly feed agro-processing of food and non-food products, and support secondary agriculture.
- Enable agro-processing industry to produce primary & intermediate goods that will feed energy and manufacturing sectors.

The new definition, secures the nation as a collective and the farmers as individuals. It expands the agricultural landscape to partake in farming linked activities. It appropriately positions an agricultural system for a modern future.

May the farmer be uplifted from the isolation of a holy pedestal and be seated with prominence on the hitherto elusive podium of entrepreneurs.

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# EMERGING CHALLENGES AND OPPORTUNITIES IN HILL AGRICULTURE





**T**he hills have a vast potential for the development of agriculture which needs to be examined and investigated. Technology generation and extension shall be in continuum. Production shall be linked with consumption, market and trade. Utmost attention will have to be accorded to the development of hill agriculture. Opportunities are enormous but they should be availed by converting weaknesses into strengths to capitalize on the potential. With the current food grain production standing at about 241 m t., India needs to produce an additional 5-6 m t of food grains annually to meet the requirement of estimated population of nearly 1.4 billion in 2025 A.D. In order to achieve 10% growth in economy, agriculture sector during XI and subsequent plan periods needs to grow at a minimum rate of 4% per annum. In order to achieve this, productivity in 60% rainfed areas of the country has to be doubled with concurrent steps to increase area horizontally, if possible. Regions like North-East, North-West hills have uncommon opportunities to increase agricultural production by 3-4 folds through input maximization. Therefore, these hill regions have to play a vital role to contribute its share to national food basket to ensure food security of the country. Agriculture and farming in hills have many in-built constraints and problems which of course can be tackled and overcome



with short and long-term solutions over a period of time. All over the country, there is wide distribution of hilly and mountainous areas with larger area located in the Himalayan region which is classified in the three major categories comprising:-

- Western Himalayas
- Central Himalayas
- North-east Himalayas

The major hill regions of the country are located in states of Jammu and Kashmir, Himachal Pradesh, Uttarakhand (North Western Hill region), North Eastern Hill region and Nilgiri Hills in Tamil Nadu.

## AGRICULTURAL TRENDS IN HILLS

High mountains and small hills, snow peaks and tops, rivers and rivulets, glaciers, valleys and lakes, large

forest areas and terraced fields and bughyals are the integral features of hills of India. In Himachal Pradesh, the total land area is 55.67 lakh ha, out of which net area sown is 5.60 lakh ha. (10%), while 10.83 lakh ha (19.45%) is under forest cover. Only 1.07 lakh ha. (19.10%) is under irrigation. Almost similar is the condition in other hill states of the country. Shifting cultivation is a common practice in Eastern Himalaya, while terraced farming is predominant in the Western Himalaya. The livestock rearing activity provides subsidiary occupation to a large population living there.

## PREDOMINANT PRODUCTION SYSTEMS OF HILLY AREAS

- Cereal based production system (rice, maize, millets)



- Horticulture or agri-horti based production system
- Vegetables, floriculture or mushrooms based production system
- Livestock based production system
- Agri-horti-silvi-pastoral based production system

## Cereal based production system

Rice, wheat, maize, barley, pulses and oilseeds are the major crops. Total Food Grains Production of H.P. in 2010-11 was 1579 thousand tonnes.

## The agri-horti production system

The agri-horti production system of western Himalayas has a wealth of horticultural crops. Apple, pear, peaches, plum, apricot, cherry, walnut and almonds are the major temperate fruits. Citrus, litchi, mango, guava, pomegranate etc. are common among subtropical fruits. Apple dominates among the fruits. Tea and hops are important commercial crops in the high lands of the western Himalaya. HP is known as the apple bowl of India. Total production of apple was 2.80 lakh tonnes (2009-10). Total Horticulture Production of state was 628.07 thousand tonnes in 2008-09.

## Vegetable-floriculture / mushroom based production system

Major vegetable grown are Cole crops (cabbage, cauliflower, knolkhol), cucurbits, carrot, capsicum, tomato, etc. The vegetable production has increased substantially after the development of facilities for off-season vegetable production under poly-house conditions. There is also great scope for exotic vegetables like broccoli, celery, asparagus, lettuce and brussels sprout. Total Vegetable Production of state in 2010-11 was 1269 thousand tonnes. Floriculture has also been catching up in the hilly region with production of variety of flower by exploiting diverse agro-climate conditions and great market demand. Mushroom cultivation is also becoming popular.

## Livestock based production system

Livestock rearing in hills provide good livelihood support to the farmers. Total number of livestock population in H.P - 52,11,087

## Agri-horti-silvi-pastoral production system

The agri-horti-silvi-pastoral production system is mostly dependent on forestry sector generated inputs in the form of grasses, grazing fields,

leaf fodder and wood for fuel, timber, packing and stacking purposes. Permanent pastures and other grazing lands in H.P- 13,40,222 ha.

## Challenges in hill agriculture

- Low use of technical inputs and technology
- Environmental challenges
  - o Lack of management system in common property resource
  - o Challenges in conservation of water resources
  - o Lack of land use according to capability
  - o Rainfed nature of agriculture
  - o Climatic effect

## Climate Assessment in Himachal Pradesh

Studies by the Himachal Pradesh Agricultural University give some indications of higher than average impacts of climate change in the Himachal Pradesh uplands than on the lowlands. From the studies covering over 30 years of records, average air temperatures were found to be 0.7 to 2.4°C higher than that in the 1980s, as against the global average of 0.5°C. The Himachal Pradesh trend indicates an increase of 0.06°C per year. The average snowfall in the state decreased from 272.4 cm in the year 1976-80 to 77.20 cm in the year 2001-04. An analysis of rainfall data over the period 1976 to 2006 show increasing trends of rainfall in Lahaul-Spiti, Chamba and Kangra but decreasing trends in Solan and Kinnaur. Other districts showed no significant trends. Due to irregular rainfall pattern, crops are showing shorter periods of flowering and maturity.

- Technological challenges
- Socio-economic constraints and problems
  - o Marketing of fruits and vegetables
  - o Fragmentation of holdings
  - o Challenges of appropriate extension method
- Weeds and wild animals problem





## Threat from weeds in crops

In recent years, crop growing has faced a serious threat from weeds. These include Lantana, Ageratum, Congress grass. These are also overpowering traditional grasses and vegetation in the lower regions of the state. Due to this, not only fodder problem is arising but these weeds are also source of the diseases such as allergies and respiratory problems. These are even harmful for wild animal habitations.

## Monkey and Wild boar problem

The monkeys are destroying many crops of the area and some of the farmers even preferred not to sow their fields because they get no returns. Similarly with the ban on hunting, the population of wild boars has increased manifolds. They are coming towards their field and destroying the crops. Their control is difficult, at present.

## OPPORTUNITIES IN HILL

### Unexploited Organic Farm Produce

Himachal hills hold a vast potential in organic farming in the years to come. Still there is a vast area where fertilizers are not easily available or where farmers prefer to use FYM only on account of the cost factor. In hills where cultivation is done on terraces below large forests, the leaf humus is carried by the rainwater to the fields and this natural process occurs uninterruptedly enriching the land with humus. The growing demand for organic fruits, vegetables and medicines opens up new avenues of production and marketing for farmers in these himalayan hills. Permanent Pasture & Grazing Land, Natural Collection, Organic Meat, Milk and Wool are the other areas where organic market can be exploited. In HP, Govt. is giving subsidy for certification of organic farm. There are 24000 registered organic farms in state and it export 521 metric tonne (2004-05) of organic produce.

### Awareness on Cash Crop Growing:

Important cash crops in the Himachal hills are potato, tomato, capsicum, green pea, cabbage, cauliflower, ginger, red chillies, hops, tea, onion, garlic, taro, radish. In certain areas flower cultivation, especially for supply as cut flowers, is picking up fast. The growing of off season vegetables in certain areas is an attractive option. The cultivation of medicinal and aromatic plants is also receiving the attention of some farmers.

### Niche area farming

- Off Season Vegetable cultivation (Kullu and Kangra Belt)
- Peas cultivation
- Rajmash cultivation
- Potato cultivation
- Ginger cultivation
- Floriculture

### Strategy for increasing food grain production, long run sustainable agriculture and ever green revolution

- Sustainable agriculture and sustainable development
- Integrated intensive holistic farming system (IIHFS)
- Improved irrigation system, soil and water conservation and watershed development for rainfed agriculture
- Organic farming system
- Integrated nutrient management system
- Integrated pest management system
- Seed prosperity
- Hi- tech agriculture
- Broad based agricultural extension system
- Soil testing
- Farmers trainings & education
- Farm women empowerment
- Farmers organization or cooperative systems NGO's and private agencies
- Higher investment and credit system for agriculture
- Producer or farmer oriented marketing system
- Strengthening of market yards
- Strong intensive kharif and rabi

campaigns

- Effective training and large scale demonstrations in farmers' fields
- Crop doctors concept

### Priority and Thrust Areas

- Diversification of crops
- Development of rainfed areas
- Rainwater harvesting
- Increase in crop productivity per unit area time
- Adoption of precision farming practices
- Organic farming shall be the thrust area
- Post harvest management and efficient marketing system
- Farm mechanization
- Strong extension network
- Extension reforms through public-private partnership
- Agro processing and value addition
- Increase in productivity and quality
- Application of Biotechnology in the field of Agriculture
- Soil testing and Soil Health Cards

There exists large opportunities to increase agricultural production and farm income in the hilly areas especially in Organic agriculture, Horticulture & Dairy development. Looking at the opportunities, it can be visualized that the production and income of the hill farmers can be increased two-three times through proper development of hill agriculture. There is an urgent need to exploit the hidden potential of hill agriculture by adopting improved intensive cropping system and/or holistic farming system and by implementing strategies for increasing food grain production on long-run sustainable basis, under hi-tech sustainable agriculture development.

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# ENABLING OUR FARMERS THROUGH SUSTAINABLE MODULES



**S**mall steps can lead to big changes. And Kanhaiya Yadav will endorse this. Forty-five-year old Kanhaiya, is a small farmer with less than two acres of land in Sakaldiha in Chandauli district in UP. But unlike many other farmers in this indistinct village, he is an under grad, was a state-level athlete and is obviously driven. So when you walk through his village and spot several banners with his photograph alongside the title "Lead Farmer", it could easily make you doubt whether you heard right about him being a "small farmer." And when you do meet him, his dress and demeanor - which is one of amazing confidence capped with an easy smile - might only just compound this confusion!

But two-years ago, the narrative

was very different. Like many others in his village, his livelihood depended on a small piece of agricultural land which he had inherited from his father. He had little qualms of following his father's footsteps, but admits now, what he had not factored in was the sinking levels of the ground water and the weather patterns getting increasingly unpredictable, making this traditional occupation no longer simple. Try as he might he could not coax the land to yield more. The father-of-four was soon in a tight spot and found it difficult to even meet their basic needs.

## BACKGROUND

Historically in the 1960s and 1970s, the Green Revolution led to dramatic gains in agricultural production and raised farmers' incomes. As a result,

rural poverty fell from 64 percent in 1967, to 56 percent in 1973 and later to 50 percent in 1979-80. Production gains from Green Revolution technologies continued through the mid-1980s and then it started to drop.

In the early 90's, India instituted a series of sweeping macroeconomic reforms. Although these initial reforms were not directed towards agriculture, it helped stimulate a rise in agricultural growth through increased private investment in this sector. But by the late 1990s, falling world prices of most agricultural products impacted our agricultural growth and it dipped to average about two percent between 1997-98 and 2003-04.

But apart from the global plunge, often we miss another important



fact. The seemingly abundant net sown area of 141.2 million hectares or total cropped area of 189.7 million hectares (1999-2000) is actually divided into small and scattered holdings which are often economically unviable because of the limitations of our marginal farmers, both in terms of resources and information.

The reality is a large section of our farmers are marginal farmers and have small and fragmented land-holdings. In some states like Bengal, Bihar, Uttar Pradesh and Kerala, the average size of land holding has dwindled to as low as 0.5 hectare against the average size 2.28 hectares of holdings in 1970-71 and later to 1.82 hectares in the early eighties and further to 1.50 hectares in the mid-nineties. It is evident that with each decade, the size of the holdings, continue to decrease because of the division and sub-division of the land holdings.

Large holdings, above 10 hectares, accounted for only 1.6 per cent of total holdings but cover 17.4 per cent; thereby highlighting the wide gap between small farmers, medium farmers and big farmers, and it is obvious that these big farmers enjoy more clout and influence and are able to reap the benefits from existing agriculture extension services more easily.

But with 100 million small and marginal farmers contributing to 86% of Indian agriculture we sure cannot afford to ignore our small farmers. In India, where they occupy most of the farmland, they are the mainstay for most of the food produced, and are an important part of the socio-economic and ecological landscape. Unfortunately they continue to be ignored or sidelined when it comes to the rapid developments in technology and information. As a result, most of them are left struggling to grapple with complex situations like indiscriminate use of chemical fertilizers or the changing marketing didactics.



## ENABLING OUR SMALL FARMERS

So what changed the story for Kanhaiya? According to him, "It was MITRA project that rescued me. The hand-holding and step-by-step guidance helped me to not just comprehend the techniques but it also instilled confidence." And this undoubtedly was the game changer. For according to Kanhaiya, "I was reluctant to do something based just on hearsay that could wipe away all my investment or yield. As a small farmer with the responsibility of feeding seven mouths (his ailing father lives with him), I could not afford to take a chance."

MITRA focuses on empowering small and marginal farmers by nudging them to adopt latest technologies and best farming practices. The program bridges the lack of last-mile delivery of agriculture extension services at the grass roots. Since its implementation in June 2016 in 14 clusters covering more than 360 villages in 7 states, more than 550 lead farmers have been identified who are practicing the new agriculture practices and helping fellow farmers to implement them.

But apart from Kanhaiya's testimony, objectively, the paradigm

change supported by MITRA involved training by scientists, monitored experimental learnings on "demo plots" and farmer-to-farmer exchanges where farmers gained through interactive processes. And this is not something new. The "lead farmer" or the Community Resource model has been adapted in several countries, including Africa, China and India, with different rates of success. It underlines the bottom-up approach which most practitioners advocate to encourage participants to make their own decisions.

MITRA's research further highlighted that the most reliable and sustainable solutions are best provided by local "experts" who are familiar with both the community and the topography. So in effect, while it was easy to help the farmers to connect to the right people and resource; the acid test was to instill confidence and ensure the transfer of this knowledge on the field.

## INCLUSIVE PARTNERSHIPS

It is evident that despite Kanhaiya proactively seeking out information, he was hesitant to adapt this knowledge. "Our entire livelihood depends on this farm and we cannot



afford to experiment. If we fail we are doomed" And Kanhaiya is not alone in voicing this. Most of the 93 "lead farmers" shared this sentiment.

To empower marginal farmers, MITRA forged a community platform that would be sustainable and also integrate preparedness, prevention and response to help small farmers to cope with their challenges. The MITRA blue-print includes leveraging public, private and digital extension systems for elementary issues from soil testing, access to better seeds, inclusion of innovative irrigation practices as well as links to markets and access to financial services. More importantly, it is people like Kanhaiya Yadav, who drive it and disseminate it to other farmers. (Yadav, like all MITRA's lead farmers was nominated by his own community.)

### TECHNICAL SUPPORT

At a local KVK center in Chandauli, Kanhaiya along with 24 other farmers from the district, focused on learning how to improve paddy and wheat crops. The MITRA team was always close at hand to guide and monitor how they adapted this knowledge in their farming and transferred it other farmers.

Says Kanhaiya, "these trainings provided me complete step-by-step knowledge on a how to cultivate a particular crop. As a result, I was able to reduce the use of chemical fertilizers & pesticides which in the long run helped me to reduce my input costs. The methods that I now practice are systematic and based on research inputs provided by the scientists who tested the soil and assessed

the PH values – which I may not understand but I can see it works."

To underline the importance of these changes, Kanhaiya showcases his small "demo plot" - a half-acre land, which he uses as a "lab" to learn and teach other farmers. He loves to explain how he started with soil testing and seed sorting followed by seed treatment and land preparation for line sowing. It is obvious that he has learnt a lot from his training for he takes on questions with confidence on drip irrigation, nutrient management, weeder application or pest management.

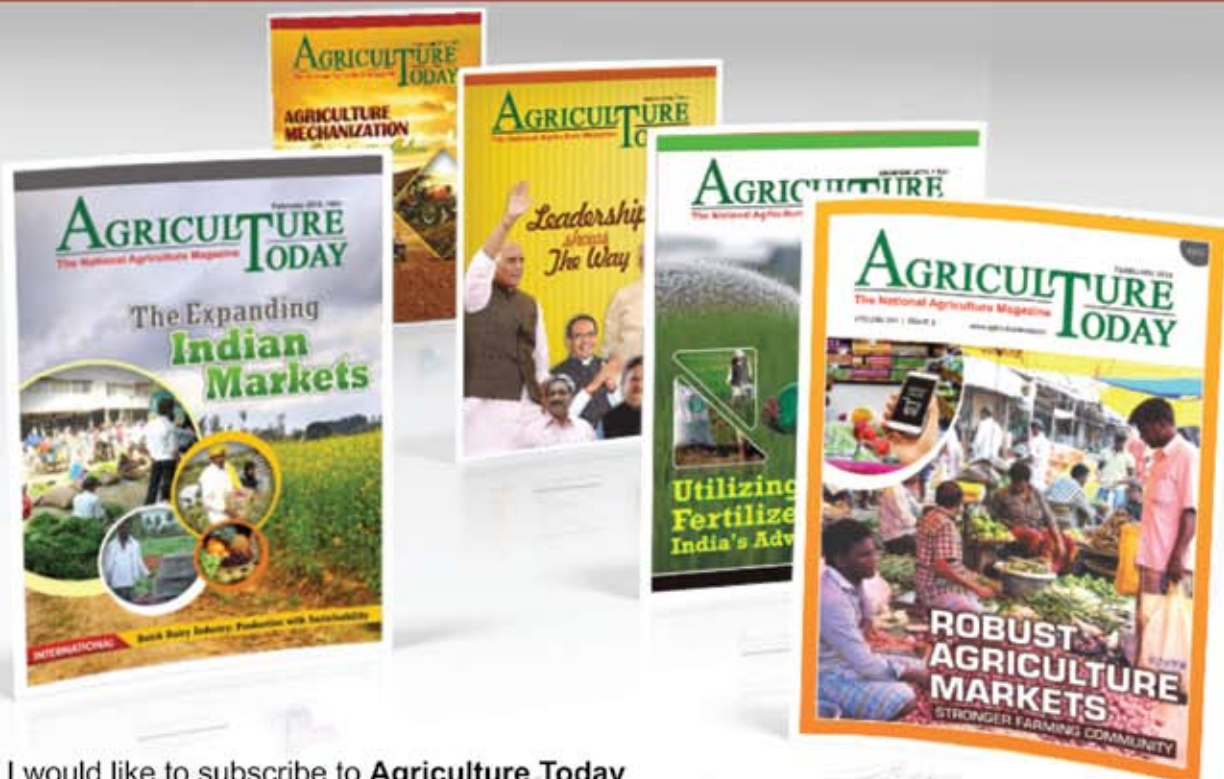
Yadav clarifies "these changes might sound inconsequential but these are crucial for small farmers like me. Till now, like many of my fellow farmers, I never took this seriously but today my annual savings is between Rs 35,000 to 40,000 and I am able to think of buying cattle so that I inch closer to my dream project, which is to start my own dairy."

Today, the MITRA project works with marginal farmers in 542 villages across seven states and has shown promising results. 90% of the Lead Farmers are active for the past 12 months. While income has increased by 14% per ha and input costs reduced by 15-20%. With 60-70% of targeted farmers adopting advanced agricultural practices and 40% of them availing government schemes, productivity per ha has increased by 21%.

*Reena Mathai Luke is a journalist and now writes on issues related development especially health, human rights and gender*



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**AGRICULTURE  
TODAY**

# PMFBY SCHEME

## IMPLEMENTATION IS KEY

**A**griculture's importance is not only confined to produce food and fiber from the land and water but to provide inputs to other sectors of the economy. In fact, there is no city, stock market, banks, university, church or army without agriculture (As per the Economic Survey, 2017-18). Insurance is essential for agriculture; if it were not, 125 countries in the world would not have established an agriculture insurance mechanism. In 2016-17, Pradhan Mantri Fasal Bima Yojana (PMFBY) was introduced to cover crop losses caused by natural calamities across India. No doubt, this scheme over its predecessor was improved on several grounds.

As per the scheme, farmers pay a premium of 5%, 2% and 1.5% for



commercial, Kharif and Rabi crops respectively, and the rest of the premium is paid by the government to

the crop insurers, and further equally shared between the state and central government.

### Comparing provisions of Modified National Agricultural Insurance Scheme (MNAIS) with Pradhan Mantri Fasal Bima Yojana (PMFBY)

Feature	MNAIS (2010)	PMFBY (2016)
Premium rate	High up to 15 percent, premium subsidy for all crops	As low as 1.5 to 5 percent, premium subsidy for all crops
Sum insured	Sanctioned credit limit/value of TY/ 150% value of AY whichever is lower	Equal to the scale of finance
Post-harvest loss coverage	Coastal areas—for cyclonic rain	All India—for cyclonic + unseasonal rain
Use of technology (claims settlement)	Intended	Mandatory
Crop insurance app & portal	No	Yes
Insurers	Government & private both	Government & private both
Toll-free number for grievances redressal	No	Yes, at the insurer office
Awareness	No	Yes (target to double coverage to 50 percent)

Despite the popularity of the scheme, it has been criticized by farmers and other stakeholders for the same. The table points out, that farmers lose interest in this scheme, in terms of number of farmers, area coverage, sum insured, and number of farmers against paid claims in 2017-18 as compared to 2016-17. Next, it was observed that no extensive efforts were made to cover non-loanee farmers, namely, tenants and crop sharers, who are burdened with land lease rents.

Ashish Kumar Bhutani, who is the chief executive officer of the PMFBY, at the Chamber of Commerce and Industry event on crop insurance said that central government is trying to bring non-loanee farmers, too within the PMFBY scheme. There is a separate committee of

Source: Chandra Bhushan and Vineet Kumar, 2017, Pradhan Mantri Fasal Bima Yojana: An Assessment, Centre for Science and Environment, New Delhi.



**Details of coverage under PMFBY**

Years	No. of Farmers Insured		Area Insured	Sum Insured	Gross Premium		Claim Paid	No. of farmers against paid Claims
	Loanees	Non-Loanee	Total	Hectare	In Lakh	In Lakh	In Lakh	-
2016-17	43564620	13685683	57250303	56296615	20286585	2220511	1548110	28944496
2017-18	35281971	13476415	48758386	49043540	19794199	2514054	1240890	10226639

Source: Government of India, The Ministry of Agriculture and Farmer's Welfare, Department of Agriculture, Cooperation and Farmers Welfare.

the government looking into the land leasing policy. The coverage of these farmers will increase if the respective state governments legalize sharecropping and make provisions for tenant farmers less burdensome.

The scheme is also criticized on the grounds of delayed/denied of claims. Radha Mohan Singh, Agriculture Minister told to Business Line that as per proposal, whoever is causing the delay in settling the claims will be asked to pay the affected farmers the claim amount, together with a 12 percent interest for the delayed period. The insurers have to establish a functional office in each tehsil and at least one agent should be deployed at the block level in allocated districts. Payment of final claims to farmers will be made electronically within three weeks from receipt of crop yield data by the insurer. Further, it is observed that most states expressed uneasiness to pay the upfront premium subsidy. There should be timely disbursement of premium subsidy from the central and respective state governments to insurers to ensure that claims are settled on time in the event of a calamity.

The other criticism of the scheme is that many banks debit the premium from the farmer's accounts without prior approval, often for wrong crops. As a result, later farmers face denial of claims by crop insurers. Farmers' consent must be taken before deducting the crop insurance premium. In this context, a professor from JNU quoted expression of

**Detail of Crop Insurers**

Sl. No	Public Insurers	Private Insurers
1	Agriculture Insurance Company of India Ltd.	Bajaj-Allianz GIC Ltd.
2	United India Insurance Co. Ltd.	ICICI-Lombard GIC Ltd.
3	New India Assurance Co. Ltd.	HDFO-ERGO GIC Ltd.
4	Oriental Insurance Company Ltd.	Reliance GIC Ltd.
5	National Insurance Co. Ltd.	Cholamandalam-MS GIC Ltd.
6		SBI GIC Ltd.
7		Tata AIG GIC Ltd.
8		IFFCO-Tokio GIC Ltd.
9		Universal Sompo GIC Ltd.
10		Future Generali GIC Ltd.
11		Shriram GIC Ltd.
12		Bharti Axa GIC Ltd.
13		Royal Sundaram GIC Ltd.

Source: The Government of India, Ministry of Agriculture And Farmers Welfare, Department of Agriculture, Cooperation and Farmer's Welfare, Lok Sabha Unstarred Question no.3435, answered on the 7th of August 2018.

opinion by farmers on crop insurance that real crop risks are out of the scope of coverage. He also added farmers point of view that mostly banks are getting benefit out of the claims instead of the farmers. Ideally, farmers, not banks, should have the first right over the insurance claim amount. Further, this scheme was questioned by opposition parties in Lok Sabha regarding the profits made by the insurers.

Besides, farmers are unaware of the modalities of crop insurance and are guided by the banks for the same. They must be given a proper insurance policy document, with details such as the name of insurer, sum insured, premium paid, insurance terms and conditions, insured crop details, notified insured area and conditions for post-harvest

losses, localized calamity and claim settlement procedures. Thus, the onus of success of the scheme is on both banks and insurers as well.

It is the time for banks to step out in this direction. Regarding Insurers, government awards contract to the bidder based on the lowest quotes price in PMFBY scheme. In this process, some insurers are quoting unviable prices. It is suspicious for insurers to pay the claim as per Lohiya, who is CEO & MD IFFCO Tokio General Insurance. All these issues should be considered in order to make the scheme's implementation more fruitful.

**Renu Bala,**  
**Institute of Insurance and Risk**  
**Management,**  
**Hyderabad**

# AGRICULTURAL HIGHER EDUCATION, INDO-US COOPERATION STRENGTHENING FOR FIGHTING GLOBAL POVERTY AND HUNGER



India and the United States' bilateral relations have developed into a "global strategic partnership", based on shared democratic values and increasing convergence of interests on bilateral, regional and global issues. The emphasis placed by the Govt. in India on development and good governance has created opportunity to reinvigorate bilateral ties and enhance cooperation with the motto - 'Forward Together We Go and Progress for All', adopted during the first two summits of Indian Prime Minister Modi and President Obama in September 2014 and January 2015 respectively. The summit level

joint statement issued in June 2016 called the India-U.S. relationship an "Enduring Global Partners in the 21st Century". Regular exchange of high-level political visits has provided sustained momentum to bilateral cooperation. Recently, In November 2017, in Manila the Indian Prime Minister Narendra Modi had a wide range of talks with US president Donald Trump and both agreed for raising the ties beyond bilateral domain and work jointly for the future of Asia, reflecting their growing convergence on strategic issues. Following the successive efforts of past and present administrations, the quantum of relationship has

doubled and both the fastest growing economies see their future in the aligned interests and values.

Today, the India-U.S. cooperation is broad-based and multi-sectoral, covering trade and investment, defence and security, education, cultural exchange, agriculture, science and technology, cyber security, high-technology, civil nuclear energy, space technology and applications, clean energy, and health. Cooperation in education sector has been made an integral part of the strategic partnership between the two countries. India's first Prime Minister, Jawaharlal Nehru, and U.S. Ambassador Loy Henderson in



1950 signed the Indo-U.S. bi-national agreement on educational exchange, which established the United States Educational Foundation in India (USEFI) to administer the Fulbright Program. Today it is known as United States-India Education Foundation (USIEF). USIEF engages institutions of higher education in the U.S. and in India to help foster and enhance linkages between them.

The multi-sectoral cooperation between India and United states though has agriculture and agriculture education at its agenda, cooperative output in this sector is still at its fancy. The world's population, at 7 billion people today, is expected to reach 9 billion by 2050 and may exceed 10 billion by the end of the century. The vast majority of this growth will occur in developing countries, especially in South Asia and sub-Saharan Africa, regions already too familiar with chronic hunger. Much of the expansion will also occur in urban areas, where most people buy food, not grow it. Keeping into consideration the global trends of food consumption, meeting the food needs of billions will not be easy. We (India and US) must at once work together to enable farmers around the world to produce higher yields—and get those crops to market efficiently—while also tending to a fragile environment and conserving the valuable resources of land and water. The issue of water scarcity and climate variability also needs concerted cooperative efforts. The challenge of climate change is expected to have a disproportionate impact, precisely on those regions where demand growth is expected to be greatest and the capacity to adapt the weakest. Climate change is predicted to affect precipitation rates and patterns, resulting in both more droughts and increased catastrophic flooding in various parts of the world. The next crucial issue before both the countries is to bring reduction in their post-harvest waste for meeting the challenge of

feeding 9 billion people. Although there are few reliable estimates of the magnitude of food lost between harvest and consumption, experts believe the volumes are huge: 15 percent to 50 percent worldwide. In the high-income countries like USA, most losses are at retail and post-consumer waste stages. Whereas, in the developing countries like India the most proportion of postharvest losses occurs before retail. Thus, both the countries have a lot to learn and share for mitigating their postharvest losses. Therefore, agriculture and allied sectors require the participation

took the first step. Their research on an obscure range of dwarf varieties has resulted in many fold increase in food production throughout Asia and Africa in the recent past. Funded by the Rockefeller foundation and other U.S. organizations, this partnership got translated into the 'Green Revolution' —a movement for which India adopted a series of highly successful agriculture policies, including double-cropping, increased irrigation, and greater land use for agriculture. High-yield seeds like Lerma Rojo, Sonora 64, Siete Cerros, and Super X became household



of not only our governments, but our businesses, farmers, NGOs, scientists and economists in the future to come. Agriculture cooperation has played an increasingly important role in our relationship. In India, over 60% of the population's economic activity is agriculture-based. And just last year bilateral trade in agriculture, fish and forestry products between our two countries reached \$3.4 billion. But trade is only one component of this relationship. U.S.-India agricultural research has already been initiated for strengthening our bilateral partnership to help address the twin challenges of hunger and under nutrition. And it is not for the first time, over 47 years ago, an American scientist, Norman Borlaug and an Indian scientist, M.S. Swaminathan,

names. The Green Revolution was so successful that it transformed India from a country of hunger and starvation to a food exporting nation whose agricultural output quadrupled from the 1960s to the 1990s.

Green Revolution used more inputs for greater yields. But now those same inputs yield relatively less. We are required to focus on the ways we can harness modern technology to improve crop yields and other productivity metrics for farmers. By sharing our expertise, we can once again develop new tools and resources that will benefit the poorest segment of the society. Therefore the partnership for progress between Indian and American scientists/teachers and agricultural experts is seen as a frontier area. Each side has



something special to contribute to the process. We will accomplish far more together than we would separately. Today, wide spread hunger and under nutrition is once again drawing the world's attention. One out of every six people is at risk of not having enough to eat. And hungry families, which tend to spend more than half of their income on food, remain extremely vulnerable to food price increases. That's why we need further strong bilateral cooperation between India and United States in the agriculture education sector. Our new collaborative efforts will help discover solutions for the new agricultural challenges we face.

The substantive interaction between Indian and US governments has no doubt provided ample opportunities for exchange of ideas in engineering especially the biomedical engineering but the sector of agricultural engineering is still under privileged. In India most of the agricultural and almost all of the horticultural operations are still manual works and are labour dependent. Even in the US there are farms where people still dream of taking hard, manual work out of agriculture. These farms grow crops that mostly have to be tended and picked by hand, such as apples,

oranges and strawberries. It is becoming increasingly difficult to find people to do this at wages, farmers say they can afford. Despite worries about food shortages in the coming years, many farmers are more worried about labour shortages. Just as the motorized harvesters transformed the economics of agriculture farms, a new wave of mechanization is required in horticulture. As picking of apples is different from that of strawberry, there are number of orchard management issues which require high level of technological intervention. Today, agriculture and horticulture needs to find new ways for improving its efficiency. The United States have done a lot on precision farming which has shown promise for transformation of production system. It is therefore high time to move forward for developing new range of agricultural equipment based on small smart machines that can do the right thing, in right place, at right time in the right way. The approach of treating crop and soil selectively according to their needs by small autonomous machines is the next step required in development of high precision farming. Automatic sensing and control for each task is though feasible, the developments in this direction are very slow

hence require enhanced interest of the technological experts of both the countries for developing cost effective agriculture and horticulture. Automation and robotics no doubt has the potential to take precision farming to new heights but this can only be possible with right coding of the machines and that right coding requires high precision information on plant functions and responses to variable growing conditions. Therefore, for the elimination of poverty and hunger from the globe, the integration of plant sciences with the STEM disciplines is the area where the United States and India should strengthen their cooperation for raising quality of education in agriculture and allied sectors to evolve to a stage where every farmer will become competent for producing more while leaving smaller environmental footprints.

Therefore, for eliminating hunger and poverty from the globe, strengthening of efforts is needed for raising technologically empowered work force in the agriculture sector. India has a strength of large young population with bigger proportion of science graduates but, its weakness on technological fronts and global outreach shuns its potential. Contrarily, the United States has demonstrated its agricultural productivity strength with the help of its technological capabilities but, it lacks the necessary threshold of human work force which can be empowered technologically for sharp agricultural acumen. Therefore, the confluence of large scale literate workforce of India and the new technologies spawning capacity of the United States will enable the duo to uproot the problem of poverty and hunger from the globe, for ever.

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# UPLIFTING FARMERS' INCOME TO TRANSFORM AGRICULTURE SECTOR

**A**griculture is a key determinant of India's economic progress. The nation's food, nutritional, livelihood and economic security extensively depends upon the agriculture sector, and this is not likely to change soon. Agriculture, with its allied sectors like fisheries and forestry, plays a vital role in India's economy and is one of the largest contributors to the GDP. Amidst many challenges, this sector now contributes 18% to country's GDP. It is also the largest livelihood provider in India, with over 58% of rural households depending on it for livelihood and sustenance.

In the past, the strategy for development of the agriculture sector has focused primarily on raising agricultural output and improving food security. This not only made India food self-sufficient at aggregate level but also a net food exporting country. But this policy did not explicitly recognise the need to raise farmers' income and did not mention any direct measure to promote the welfare of farmers. But Prime Minister Narendra Modi's vision of doubling farmers' income by 2022 aims to address this crucial issue. The government has also implemented numerous programs and initiatives, from availability of quality seeds to marketing of the produce.

The Union Budget 2018 rightly focused on reviving farm economy. It addressed most of the pre- and post-harvest issues to provide relief and bargaining power to the farmer, improve farm incomes and regenerate rural demand. By increasing agriculture credit to Rs 11 lakh crores, it increased the volume and penetration of institutional credit.

By allocating Rs 2,000 crores as a corpus to create an agriculture market development fund, it helped upgrade rural 'haats' or 'Gramin Agricultural Markets', which are being linked to eNAM (National Agriculture Market).

This year the government announced the Model Contract Farming Act, 2018 which sought to protect farmers' interests by fixing pre-production season agreement between farmers and marketing firms. New MSP rates on the rabi crops that promised at least 50 % return over cost of production on notified crops was another big step towards doubling farmers' income. Close on its heels came the new crop procurement policy, changes in crop insurance schemes, irrigation reforms and liberalization of agriculture exports through a new farm export policy. The government has planned to increase agriculture exports from US\$ 30+ billion to US\$ 60+ billion by 2022 and reach US\$ 100 billion. All these are positive policy decisions to enhance agriculture.

One of the primary reasons for slow agriculture growth has been lack of advanced agriculture technology. But off late, Indian farmers have gradually started adopting modern farming practices, to overcome the challenge of producing more from limited resources. Farmers today are adopting farm mechanization at a faster rate as compared to the past. Despite challenges such as water shortage, reduction of arable land, lack of infrastructure etc., the kharif production estimate for this year is more than last year's and the country is expecting a bumper crop in the upcoming season.

These are positive developments. The agriculture sector needs

a persistent focus on right implementation of policies and use of modern technologies. Nearly 86% of farmers in the country belong to the small and marginal category. We need to convert them into New Age farmers who are tech-savvy and can use available resources optimally to reduce production costs and increase production. They must be encouraged with logistical supports to connect with agriculture markets, thus getting right price of their produce. At the same time, they need to be financially literate. In its first-ever survey on financial literacy in 2015, the National Centre for Financial Education discovered that farmers are not aware of basic financial products: less than 1.67% farmers are aware of crop insurance products. The corresponding numbers for cattle/livestock insurance and agricultural futures are 0.66% and 0.38%, respectively. This shows why small farmers often fall prey to local financiers. Such information along with technical supports must reach them even in remotest locations.

The country is gradually progressing towards the goal of doubling farmers' income. India is the largest producer of spices and spice products and is also the second largest fruit producer in the world. It is ranked second in farm outputs. India is also second largest producer of wheat and rice which are the world's major food staples. It has the potential of becoming the food basket of the world. If the right initiatives are followed through with good implementation, the resultant agriculture scenario will bring prosperity to farmers.

**By Amit BK Khare, (PR, Corp. Comm. And B&A), Dhanuka Agritech Ltd**



# BIOCHAR - A PROMISING SOIL AMENDMENT

**T**he world is witnessing a tremendous progression of global urbanization. Our natural resources, especially land and soil, are experiencing its ravaging effects on a daily basis. The physical, chemical and biological properties and the structure of soils are negatively impacted leaving behind highly polluted, unfertile and unproductive soils. Global food security and life sustenance are unimaginable without quality soil. In this instance, the use of biochar as a soil amendment is worth discussion.

Biochar, in simple terms, is charcoal produced from the biomass,

undergoing the process of pyrolysis. It is also known as "pyrochar", and is a carbon rich, solid byproduct by heating biomass under high temperatures (300-1000 degree Celsius), with low (preferably zero) oxygen concentration.

Biochar is an accepted environmental management tool particularly as a vehicle for biological stimulation and augmentation of the soil. The increasing concentration of green housegases like carbon dioxide, methane and nitrous oxide due to human activities and natural phenomena is leading to drastic climate change all over the world. The cycling of the above

gases is markedly linked with soil. One of the persuasive findings is that biochar can help fight global warming. Biochar being a carbon-rich but carbon negative material can sequester carbon in stable forms for a longer period. Additionally, it can reduce the emissions of two potent greenhouse gases, nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>), from the agricultural lands.

On returning to the soil, biochar is found to increase the soil quality apart from sequestration of carbon. Several studies have found that the treatment of soil with biochar increased its fertility and stimulated plant growth. Those plants consumed



more carbon dioxide in a positive feedback effect. The increased soil microbial population, in turn facilitated the long-term storage of carbon.

Biochar can be added directly or indirectly to the soil. Some research studies highlight the decreased fertilizer requirement with the biochar application. Irrigation demand was seen as reduced due to the increased moisture holding capacity of the soil. Biochar improved the relative proportion of soil macro-aggregates and mean weight diameter thus enhancing the field capacity. The larger surface area, pore structures and their aggregate stability improved soil moisture retention capacity.

Researches demonstrate that biochar can pick up most nutrients from more concentrated manures enhancing the fertilizer availability in the soil. A study found that soil properties such as organic matter, phosphorus, sulphur and zinc percentage were significantly increased in the soil treated with both the mineral enriched and rice husk enriched biochar. Also less incidence of diseases, especially fungal diseases, were reported in the biochar treated soil. Another study to assess the effect of biochar on the carbon dynamics of wetland rice soils and on the growth and grain yield of rice plants, observed that maximum soil carbon storage was seen with biochar compared to

**Biochar is an accepted environmental management tool particularly as a vehicle for biological stimulation and augmentation of the soil. The increasing concentration of green housegases like carbon dioxide, methane and nitrous oxide due to human activities and natural phenomena is leading to drastic climate change all over the world**

organic amendments like composts and chemical fertilizers. Major soil carbon sequestration parameters like soil organic carbon (SOC), particulate organic carbon (POC) and microbial biomass carbon (MBC) were found to be greater with biochar along with significant aggregate formation. Thus it is evident that biochar can influence wetland rice soil carbon dynamics.

The cation exchange capacity of soil was found to be increased due to the greater negative surface charge, greater charge density than other organic matter and the capacity to adsorb cations to a greater extent. Due to the greater nutrient adsorption, leaching of the nutrients is lesser. As a result, nutrient use efficiency is improved leading to

better crop yields. The greater soil fertility and nutrient availability, and the lesser leaching loss resulted by the biochar application can thus reduce the potential pollution by fertilizer runoff.

The most favorable factor for biochar use is that it can be produced from biowaste. Plenty of farm residues which have the potential to upgrade our soil quality are carelessly expended. Additionally, the dramatic impacts of biochar application were observed in problematic and poor soils, whereas similar results may not be seen in highly productive agricultural systems. It is also noted that the biochar application in rich soils didn't present any negative impact on soil quality, crop yield or nutrition. On the other hand, certain risks are also associated with biochar application since the longstanding effects of biochar on the soil properties have not been explored. Also, a standard procedure for its preparation hasn't been formulated.

Improved soil health management is the primary focus of good agricultural practices (GAP). In that view, biochar has an enormous potential to facilitate green agriculture. It's potential for addressing global food security and reducing green house gas emissions are yet to be utilized to develop sustainable agricultural systems.

**Dr. Mridula N**



**“We must increase the resilience of our agriculture and make it a much more rewarding profession for our farmers”**

**SHRI M VENKAIAH NAIDU**  
Vice President of India



**“The income support model or any policy is only helpful when it is supported by loan waiver. If the Central government is not waiving the existing loan and just coming up with a policy that promises to give a certain amount for a certain period, it will be a waste of money. The money given to farmers under the income support model will go to the bank again as the installment for loan repayment or for their medical treatment”**

**DR ASHOK DHAWALE**  
President, All India Kisan Sabha

**“Elected governments have the constitutional mandate to take decisions with regard to their finance but every state government, before taking decisions on any kind of farm loan waivers, has to very carefully examine its fiscal space”**



**SHAKTIKANTA DAS**  
RBI Governor



**“Sugar mills are unable to release cane amount in time and in full. This has put tremendous amount of unrest and depression with the cane growing small and marginal farmers throughout the country. This financial desperation is leading them to commit suicide. Therefore, this imbroglio needs to be resolved on very urgent basis to avoid mass-scale revolt of sugarcane farmers”**

**SHARAD PAWAR**  
Former Agriculture Minister



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