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2017

Lessons Learned

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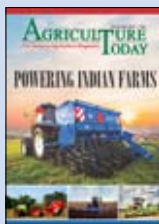
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**From the Editor's Desk****NEW YEAR NEW EXPECTATIONS**

**T**he year 2017 emerged as a distressing year for farmers. Although a fair monsoon ensured enough production, the advantages of it never reached farmers.

A very good rainfall during 2016 had resulted in record food grain production for 2017. However, over production was ensued by glut that further deteriorated the income prospects of the farmers. Farmer protests, which took violent forms, in different states in the year 2017 is a pointer to the state of farmers in India. Plagued perennially by lack of infrastructure, poor knowledge of market demands, price fluctuation, and dependence on monsoon among many other factors, have consistently debilitated the economic prospects of the farmers, let alone doubling the farmers' income.

The year 2017 also saw loans waived almost rampantly across the nation, amidst the displeasure of bankers and economists. The cumulative debt relief announced by Uttar Pradesh (UP), Punjab and Maharashtra amounted to around Rs. 77,000 Crores or 0.5% of India's 2016-17 GDP. The saga of loan waivers is expected to continue into 2018, considering the forthcoming assembly elections in certain states.

Yavatmal tragedy, another incident that shook the core of farmers, also points to the sad state of affairs when it comes to pesticide safety. Pesticide over use and misuse has become very common in India. Reports of pesticide residues over the prescribed limits are quite frequent. But a fatality of this scale is unprecedented in recent times. It brings to the fore a very pertinent question as to how safety is perceived among the farming community.

India's ambiguity with respect to GM crops continued in year 2017 as well. GM mustard despite, Genetic Engineering Appraisal Committee's approval is still entangled in legal web. Meanwhile, illegal cultivation of Herbicide Tolerant cotton hybrids were also reported.

2017 saw another revolutionary reform as the country moved to the new Goods and Services Tax (GST) regime. The new tax structure which eliminates the multitude of taxes, is expected to bring relief to those farmers or traders who move their goods between states and who most of the time find themselves stuck in endless queues to get across state borders. The waiting not only affects the quality of the produce but also discourage farmers from carrying out business. The GST aims to remove the hidden, cumulative costs of doing business in India and has the additional benefit of reducing food wastage.

Enthusied by the success of Direct Benefit Transfer (DBT) of fertilizers implemented in pilots districts, where fertilizer subsidies were transferred to manufacturers on the basis of actual sales, the pan India roll out of the scheme is expected to pave the way for implementation of the direct benefit transfer (DBT) system in this sector with a potential to save up to Rs 7,000 crore by plugging leakages.

The year 2017 was a year of farmers' distress. Amidst the rhetoric of doubling farmers' income, agriculture has been consistently proving to be a non remunerative vocation and this is a serious concern that needs to be addressed soon. New Year would be a great time to begin. We hope the New Year would bring prosperity and happiness for the agriculture segment of the country. We wish our readers a happy and prosperous 2018.



*Anjana*

**Anjana Nair**



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## Expectations galore Pre Budget Consultations

*Pre-Budget Consultations with stakeholders yield many productive proposals*

**T**he New Year brings expectations and hope. Preparations are afoot to receive the New Year. Pre Budget Consultations at ministry level have been initiated and many suggestions are being voiced for the development of agriculture sector.

The aim of doubling farmers' income by 2022 being so imminent, unquestionably, the proposals for the same seem to gather more support. India, who has been for decade following a 'Food Policy', needs to change this stance and espouse 'Farmers' Policy' in Budget 2018-19. The year 2017 had witnessed a number of farmers' protests, the root cause of which has been falling prices and poor price realization. So instead of following closely a production based approach, the country needs to follow up on farmers' welfare. The Consortium of Indian Farmers Association (CIFA) has therefore demanded an income security act for farmers as well as tenant and farm labourers. The budget therefore is expected to carry schemes that will ensure a steady income support for farmers.

Poor price realization of agricultural commodities usually stems from the fact that they are traded below the MSP – a phenomenon that has become so common these days. Production beyond demand has most often led to glut, forcing the commodities to trade below the MSPs. Unless and until, the government take measures for buffer stocking of those commodities whose prices are trading below their minimum support prices, the income security for farmers will never be guaranteed. Many of the suggestions received by the government has identified giving more thrust to warehouses, cold storages at the local level and giving boost to agro processing facilities in order to optimally manage the increased production of agriculture produce, especially of perishable items. An Integrated Transport System was also recommended so that farmers can send/take their produce to far off market places, where they can get better prices of their produce and in turn, help in containing their prices.

Given the current dilemma of price rise associated with the certain vegetables, it was also suggested that there is need to start 'Operation Veggies' and focus to be given to TOP – tomato, onion and potato – as there is maximum volatility in their prices. The

government should also embark on a preparedness mode. Most often the authorities wait for a distress to occur and then fall into action. This can do only very little to improve the conditions. So it was suggested that a small group of 5-6 agri experts be formed who can monitor the agriculture production data of different crops and global market conditions do advance planning.

There is also need to give more focus on dairy, fruit and vegetable items which has potential to grow 3-4 times more and thereby help in achieving the goal of doubling of the farmers' income by 2022.

Another set of representations demanded increasing credit growth for the sector and effective implementation of crop insurance and irrigation projects. Removal of the Essential Commodities Act and bringing all farm inputs and equipment under the zero tax net under the goods and services tax (GST) were also a significant suggestion that made into the pre budget consultations.

Encouraging investments in research and technology should be another area the new budget can focus on. Separate focus should be laid on climate smart technologies that will help navigate farmers through the troubled climate and still incur minimal losses. The usual challenge of 'One size Fits all Principle' should no longer be applied to a highly diverse sector like agriculture. The states should be given flexibility to mould the central schemes according to their need and demand.

Extent of Mechanization in agriculture needs to be further improved and budget can allocate an appreciable amount towards the same. Horticulture and organic agriculture are also areas that holds the potential to increase income among farmers and hence have to be duly emphasized in the budget.

The year 2017 has in many ways served us reminders for many unsettling and perennial problems in agriculture. The foremost would be to create a stability of prices of agricultural commodities in the market. It would be a great relief for both consumers and farmers, if a check is brought about in assuring prices stability. The Budget 2018-19 can make a real difference to the market volatility.

## Marketing Organic

*Connecting e commerce to Organic farmers can help in its marketing*

**O**rganic agriculture has always successfully borne the label of being safe and healthy. And something which is healthy has always carried the weight of being pricey as well – organic products are no different to this concept. Since demand defeats supply, the organic products sold are rarer, and hence pricier.

India, who hosts the largest area under agriculture in the world and a treasure of traditional knowledge, holds immense potential in expanding organic cultivation. Despite the presence of large area under agriculture and the number of working hands, the possibility of supplying organic produce on par with the demand has never materialized. The Indian agriculture still adheres loyally to conventional farming, as they are considered safe and most importantly has many government supported schemes.

Realizing the lacuna of schemes, recent years have seen active government participation in promoting organic agriculture. The agriculture ministry is discussing a proposal to help organic farmers' organisations tie up with ecommerce companies with state government help. A reliable marketing channel for supplying certified organic farm produce is absent in India. E commerce has emerged as a biggest success story in India, and introducing the same to boost organic agriculture is a wise thought. Firms like Amazon, BigBasket and Grofers, if roped in, can help in maintaining a steady supply of these food items and can help in boosting farmers' income. The agriculture ministry has plans to discuss the same with companies and e-commerce food retail chains, and based on their requirement link them with states, where organic farming is being practised, and FPOs which group organic farmers.

Securing marketing channels can be a shot in the arm for organic cultivation. Currently only 2.25 million hectares is under organic farming, compared with the government's target of covering 14 million hectares by 2025. Despite the opportunities that exist in organic cultivation, neither the suppliers nor the cultivators exhibit any enthusiasm in expanding

the area under cultivation. There is no dedicated suppliers or market for these kind of products. Area of demand and production are spatially disconnected. The demand for organic products mostly emanates from urban consumers, whereas production is most often restricted to certain pockets of rural areas. If the farmers can connect with the consumers directly, they can easily gauge the quantum of demand existing for their products. Problems of supply inconsistency and high prices which are the challenges faced in the procurement of organic produce in the country can to an extent be addressed by this. Assured demand will help them improve efficiency and offer better prices, making the merchandise more affordable. With better affordability, there will be higher demand.

The area under organic cultivation is increasing in India. Three years ago only 0.7 million hectares were under organic farming which has now quadrupled. Sikkim has been officially declared as an organic state. Meghalaya will soon be following suit. The agriculture department expects 50,000-hectare area to come under organic farming in the northeast region in the coming years. Considering the increasing trend, it is better to create a marketing channel that can direct the flow of organic products from centers of production to centers of consumption. With focus on marketing and brand building by the government, sale of organic produce will receive a push.

Conventional farming has been the best bet for the Indian farmers since green revolution era. With assured and established ways of tackling pest and disease problems in the field, the risks associated were considerably lesser and manageable. Organic farming, on the other hand, resorts to non chemical ways of managing pest and diseases, with substantially higher risk of suffering at the hands of pest and diseases. However, with time, the technologies associated with tackling infestations through organic means have improved and the knowledge of their existence must be propagated among farmers. Combined with better marketing linkages and know how of the technologies, Indian farmers can certainly ride the wave of organic agriculture.



## Toiling the Soil

*Indian Soils are in deep trouble*

**N**arendra Modi in his recent Mann Ki Baat programme, exhorted the farmers to cut the usage of urea by half to improve soil health and increase production. The appeal came from the concern of Prime Minister on the destructive impact of excessive use of chemical inputs that has led to “damaging the health of Mother Earth”.

Indian soils have entered into a damaging phase. Loss of the top soil which is the fertile soil and which carries many nutrients required for healthy plant growth, is a serious concern. About one millimetre of topsoil is being lost each year, resulting in a total loss of 5,334 million tonnes of fertile soil being eroded annually. Going by the different indicators that represent soil vitality, there is nothing to cheer about. Soil Carbon, a definitive indicator of soil health, is alarmingly low in Indian soils. The content of soil organic matter is 0.3% in the country; ideally, it should be 1-1.5%. Extensive mining of soil fertility, soil degradation and indiscriminate use of fertilizers have all contributed equally in depriving the soil of this important resource. Micronutrient deficiencies, another indicator of poor soil health has been surfacing in different parts of the country.

A high level of Soil Carbon is essential for chemical fertility, physical integrity and moisture retention. The overall stagnation experienced in India agricultural production can be directly linked to the loss of soil carbon. However, the loss is never compensated and it is accentuated by the application of chemical fertilizers over and above the recommended dose. Our approach towards soil fertilization needs to immediately and effectively change. The perspective of farmers that the soil needs continuous supply of chemical fertilizers to yield better has to be altered. The fact that poorly and overly fertilized soils produce food that is poor in quality needs to be properly reinforced among the farmers.

Instead, the farms should be practicing crop rotation, crop diversification, incorporation of compost, intercropping with soil enriching crops and mulching. Soil moisture retention is another key

contributor to better organic matter content in the soil. Changing climate and increasing temperatures are drying up soil of moisture and organic matter.

To properly work with the soil, the farmers need to understand their soil and the nutrients it carries. Blanket application of fertilizers, in line with package of practices, is never the right way to address soil fertility. To understand the soils better, the Government at the Center introduced the ‘Soil Health Cards’. The Soil Health Cards are intended to provide information on acidic levels, micronutrients and organic content of the soils. This is supposed to provide a scientific basis for improving soil fertility. An ambitious number of soil health cards have already been distributed among the farmers. The numbers, however, is not representative of the impact they have on the soil management regime. It is yet to be ascertained how these soil health cards have changed the way the farmers are treating their soil. Nevertheless, it is a noble initiative and the movement in right direction.

Soil is a finite resource which is lost every year. It takes thousands of years to make one metre deep soil. So, in effect, it is non renewable. For a country like India which hosts 17 per cent of the world population, it is an alarming situation. If the country has to continue producing food of enough quantity and quality, this problem must be immediately attended to. Our soil health management needs to go beyond tokenism and introduce some concrete efforts on the ground with solid indicators. We do not need number of soil health cards, but we need to see the level of soil carbon that has been replenished due to introduction of soil health cards. We need to be shown the effects these policies have on the grass root level.

Every December the World Soil Day is observed, and each year the world is sensitized about the impact our farming ways has on the soils. Strangely, we continue to do so and the ‘alarming’ situation has never ceased to exist. It is time to take control of the situation.

## The Dying Water Table

*The MI Census report points to surge in ground water irrigation projects*

**G**round water has remained an important source of irrigation in India. Decades of intensive agriculture has destroyed the ground water resources. Records of depleting groundwater levels in agriculturally dominant states like Punjab and Haryana confirms this stark reality. The latest 5th MI (Minor Irrigation) Census Report of the Union Ministry of Water Resources, River Development and Ganga Rejuvenation has reiterated this fact.

According to the report, groundwater still accounts for the lion's share of 94.5 per cent of all the minor irrigation schemes in the country. Interestingly, despite the depleting ground water levels, the country has witnessed a surge in ground water projects and a concomitant decline in surface water schemes. The Census report has noted that while the irrigation potential created and utilised from ground water schemes has gone up since the 4th MI Census conducted in 2006-07, the potential created from surface water has declined in the interim period. Between the 4th Census and the latest Census with 2013-14 as the reference year, the irrigation potential created from Minor Irrigation (MI) structures has seen an increase of 6.5 per cent. Irrigation potential created has increased to 89.52 million hectares in 5th Census from 84.03 million hectares in 4th Census.

Groundwater structures including dug wells, shallow tube wells, and deep tube wells continue to be popular among the farmers, especially small and marginal farmers. Another disturbing factor in the report is that majority irrigation schemes (96.7 per cent) and ground water minor irrigation schemes (98.7 per cent) continue to remain under private ownership which includes individual farmers (land owners) or group of farmers and, therefore have maximum outreach for irrigation. The MI structures are mostly financed from farmers' own savings or from borrowings from money lenders.

India is the world's largest user of groundwater. India accounts for 25 percent of the world's extracted groundwater, more than the next two countries, China and the United States, combined.

Unfortunately the rate of natural replenishment have reduced, threatening the sustainability of aquifers in the Indo-Gangetic Basin, which constitute one of Asia's most densely populated and agriculturally productive regions. The Indus Basin, which accounts for a significant share of India's population and food production, was declared in a 2015 NASA study to be the second most overstressed aquifer in the world.

Despite these alarming statistics, there has been no respite in using the groundwater resources. It is high time a legislation be implemented in all its seriousness to arrest the unmindful extraction of groundwater. At the same time, alternatives which are more sustainable and sensible needs to take center stage. Micro irrigation, which works on the principle of 'more crop per drop' is a safe bet. Research organizations, government institutions, offices, colleges and schools can take the lead in popularizing the idea and to reaffirm the notion that less water can yield more crop. To cement the idea further, the government can ban the use of under water resources for irrigation in its premises. The step can be symbolic, but it will reiterate the concept. These premises can also serve as demonstration units of the efficacy of MI. There is an urgent need for strengthening the network of MI structures for irrigation as it will also help in boosting farmers' income. With respect to the existing structures dependent on underground water, the users must be encouraged to recharge underground water. Water harvesting, rain pits and water recycling are ways by which it can be replenished. Awareness campaign can also give a boost in the fight against arresting depleting ground water levels.

Agriculture relies heavily on water resources to produce the desired results. On one hand, we are compelled to derive the maximum from agriculture and at the other hand, we are concerned about over exploitation of limited resources. At this point, we have to develop plans that can maximize the output with minimum input. Micro Irrigation holds the answer to this riddle.



## SLCM Group awarded with CII SCALE Awards 2017

➤ Sohan Lal Commodity Management (SLCM), India's leading agri services solutions provider having operations across India & Myanmar, has been conferred with CII Supply Chain and Logistics Excellence (SCALE) Award 2017 in the Agri-warehousing category. SLCM made it to the CII Institute of Logistics shortlist for this award for driving excellence in the field of agri-supply chain and agri-warehousing in India and demonstrating their success in devising innovative technologies in agri industry. Mr. Ankur Jaipuria, CBO and Ms. Varnika Kukreja, Head- Corporate Communication at SLCM received the award from (L to R) Mr. Bala Aghoramurthy, Deputy Managing Director- GATI, Mr. V Rajanna, Chairman- CII Telangana & Vice President & Global Head- Technology Business Unit- Tata Consultancy Services, Mr.



Rajiv Kumar Gupta, IAS 1985, Principal Secretary- Labor & Employment- Gujarat Government & Managing Director- Gujarat Narmada Valley Fertilizers & Chemicals, Mr. Binoy Kumar, Special Secretary (Logistics) & Director General World Expo 2020- Ministry of Commerce & Industry, Government of India, Mr. R. Dinesh, Chairman- CII National Logistics Advisory Council & Managing Director- TVS Logistics Services Ltd. & Mr. Sandipan

Chakravorty, Chairman- CII National Committee on Logistics & Chairman- TM International Logistics Ltd. at the fourth edition of Supply Chain and Logistics Excellence Awards (SCALE Awards) held on 24th November 2017 at Hotel Novotel, Hyderabad. The CII SCALE Awards was instituted to encourage, acknowledge and recognize organizations that follow and succeed with best supply chain practices. These awards are considered to be one of the most coveted awards for excellence in the Supply Chain and Logistics industry and are presented to the top 3 companies in both Logistics Industry and User Industry category. Winners of the award have to undergo a tough 5 stage evaluation process and scrutiny by a jury consisting of experts in technology, business and innovation space.

## Sonalika Tractors aims to expand in Europe and 5 global markets, eyes 20% growth

➤ Sonalika ITL, India's second largest tractor brand exporter, has recorded a 17 % growth in international market in November 2017. The company exported 1215 units of tractors, compared to 1042 units last year in the same month. The company is expecting 15 to 20 percent annual growth next year as well. Sonalika, the youngest tractor brand with a strong belief in Make in India has built World's largest integrated tractor manufacturing unit offering customized tractors to suit diverse farming needs. The company has a tie-up with Yanmar and has expanded its footprint to another 10 new countries in the year 2017. With this, Sonalika has expanded to 90 countries across the Globe. By 2018, the company plans to enter 5 new markets. The export range will be equipped with engines complying with future emission standards.



## Goodricke banks on acquired brands for pan-India presence

➤ Goodricke Group Ltd. is planning to double its market share in the packaged tea segment, riding piggyback on its acquisition of the packet tea brands of Godfrey Philips Ltd. "Right now, we have a large share of the market in Madhya Pradesh and a significant presence in West Bengal, Punjab and Haryana. We will leverage the acquired brands to strengthen our reach in Bihar, U.P., Jammu & Kashmir and in Maharashtra,"



said A.N. Singh, MD and CEO, Goodricke. Goodricke has acquired the packet tea brands owned by Godfrey Philips a company engaged in cigarettes, tobacco, tea and other retail products. GPL, which was incorporated in 1988, had recently sold its packet tea business to Goodricke in a 20-crore deal. Godfrey Philips had decided to exit the packet tea business which contributed only 3% to its revenue. In the quarter ended September 30, 2017 the company made a loss in its tea and other retail products business.

## Emami Agrotech uses inland waterways to move edible oils to the North-East

Direct selling major Amway is planning to scale up organic farming to source ingredients for its foods supplements brand Nutrilite for both global and Indian operations, according to a senior company official. It is currently in discussion with some state governments to increase organic farming to enhance sourcing of different products, including basil, turmeric, marigold, bosiwellia, pomegranate and ginger. The company, which has four company-owned farms spread over a total of 6,000 acres in Brazil, Mexico and the US, currently sources ingredients in India from nine third-party owned farms certified under its Nutricert programme. “We have nine different farms in India, which supply many of our ingredients not only for India but also for global manufacturing,” Amway Regional President- Europe, India & Africa Samir Behl said. He further said, “It is fair to say we would like to scale up sourcing of organic ingredients from India for our products.” When asked about the plans to increase organic farming in India, he said: “We are also in discussion with a number of state governments on organic farming, which is at the heart of Nutrilite.” The foods supplement brand Nutrilite is manufactured in the US, China and India. Amway sources many of the ingredients from India also for this brand, he added. Queried about the sort of arrangement with the state governments that the company was looking at, he said it would depend upon “their interest” on how Amway can “assist in organic farming”. “Whether that means more of Nutricerts or buy farms on our own depending on laws of landholdings. We would like to do things which are within what the law permits,” Behl added. Nutricert is Amway’s agricultural certification programme ensuring that its partner farms meet the same quality standards as its own farms, from seeds to supplements. He said Amway’s goal is to “provide products in line with our global process and enhance the health profile of the local citizens”.



## Orbela Foods to produce fruit bars using IIHR tech

The Indian Institute of Horticulture Research (IIHR), Bengaluru, has licensed its osmotic dehydration technology to the Sangli-based Orbela Agro Foods Pvt Ltd for production of dehydrated guava, kokum, amla and papaya bar. IIHR’s technology helps convert fruits and vegetables into value-added products such as dehydrated fruit slices or candies while retaining the flavour, colour and taste. Orbela, engaged in processing of fruits and vegetables, had started production of osmotically dehydrated mango slices, pineapple cubes and mango bars earlier this year using IIHR technologies. The company is now expanding its product portfolio with the new technologies for kokum, amla and dehydrated guava. “The ICAR-IIHR technologies strictly prohibit the use of any artificial colour, flavour or essence in any of the dehydrated products or fruit bars. Such products have a shelf life of six months or more and



have characteristic taste, flavour and aroma, similar to that of the fresh fruits and are available almost round the year,” said HS Oberoi, Head, Division of Post Harvest Technology and Agricultural

Engineering, ICAR-IIHR, in a press release. Sanjay Vajrinar, MD, Orbela, said that IIHR apart from providing new technologies is also helping connecting start-ups like Orbela to farmers as well as the market. Orbela in touch with the farmers and farmer producer organisations from Ratnagiri, Ahmednagar, Sangli and Pune districts of Maharashtra and Mysuru, Bagalkot, Shivamogga and Sirsi in Karnataka for sourcing the raw material.

## Harrisons brews a ‘new brand’ plan to export speciality teas

To leverage the growing export potential of speciality teas, Harrisons Malayalam Ltd (HML), a major tea producer in South India, is going in for a big branding exercise. “We have firmed up plans to build an umbrella brand — Harrisons Heritage — with a logo for speciality teas such as single estate tea, white tea, hybrid and frost tea for our overseas and domestic buyers,” said N Dharmaraj, Whole Time Director and Chief Executive, SBU (A), HML. The company has registered with Amazon.in for marketing, and the products, with the new tag, will hit the online and physical markets by the middle of next year. Dharmaraj said the excess supply over demand will always put price pressure on mass-market teas. It is, therefore, important for South Indian producers to differentiate their products into speciality teas, the demand for which is growing at about six per cent — twice that of general-purpose teas. South India’s tea production is in the range of 220 million kg and exports are at around 85 million kg. Hence, it is important for South India to export about 45 per cent to create a better supply-demand equation internally, he said. Today, the mass market is a challenge, and there is a need to come out with niche products. The South Indian tea industry has been hit by low prices of teas and high cost of production. Increasing exports is critical to shore up the price line of South Indian teas. This has to be carried out through a combination of quality improvement initiatives, he said.



## Centre sets floor price on pepper import at Rs 500/kg

➤ Minimum import price for pepper has been fixed at CIF value of Rs 500 per kg to protect the interests of pepper growers, sources at the ministry of commerce and industry said. The union government approved the proposal of the state-run spices board as cheaper imports of pepper is seen putting pressure on the domestic market. Pepper prices have gone down by nearly 35 % in one year and have resulted in a lot of hardship for pepper growers. In recent times, decline in the domestic pepper price due to cheaper import of pepper has been a major concern among pepper growers. India is the largest consumer of pepper in the world and the second largest producer after Vietnam. Sources said that fixing of minimum import price will help improving the domestic price particularly when the harvesting season of pepper is fast approaching. Since most of the pepper-producing countries are in the ASEAN region, there have also been apprehensions of pepper from these countries, being routed through Sri Lanka taking advantage of lower duty under SAFTA and ISLFTA, for availing concessional import duty. Farmers' associations have demanded taking of stringent measures including fixing of minimum import price (MIP) for pepper to prevent cheaper imports of pepper into the country from other origins.



## Govt 'agrees' to give fertiliser dealership to farmers' groups

➤ In a major move aimed at doubling the income of farmers by 2022, the government has agreed 'in principle' to give license of selling fertiliser to farmer producer organizations (FPOs). The move, according to government officials, would help in reducing the input cost as farmers associated with FPOs would get fertilisers at lesser price. "As per the business module, dealers get commission on the sale of every bag of fertiliser and when FPOs would start getting the fertiliser directly from manufactures; it would be very cost-effective for its members — the farmers," a senior official said, adding that every FPO has at 800-1,000 members, who are either small or marginal farmer. "The government is aggressively working in the direction to reduce input cost and eliminate involvement of middlemen in trading of agricultural produce. The motive is to provide direct access to the market to farmers so that they could get more price of their produce," the official said.

## Water-intensive crops possible now, but with a rider

➤ The government is considering a plan under which farmers will not be allowed to grow water-intensive crops like paddy and sugarcane, if they want access to water from new irrigation projects coming up in the country. This is part of a strategy to allow farmers to shift from traditional crops like rice and wheat towards high-value horticulture crops, sources said. "The objective is to save water as well as help farmers earn more," an official said, adding the government is focusing on judicious use of water. Since India is very strong in production of rice and wheat, farmers need to grow alternative crops for which advisories will be issued to them according to the soil conditions and climatic zone, the sources said. The productivity is two-and-a-half times more in irrigated land than dry areas and hence there is need to do crop planning as the government has a target to bring in 3.17 lakh hectares additional area under irrigation in the first phase within December 31. The priority I list of the water resources ministry has 18 irrigation projects in Andhra Pradesh, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Punjab and



Telangana. Out of these, four projects have already been completed while more than 98 per cent work has been done in eight other schemes. In the remaining projects, work has been finished by more than 94 per cent. The government's target is to complete 33 projects in the priority II list, helping farmers to get assured water in 14.08 lakh hectares of land.

## FSSAI certification for organic food on the anvil

➤ Food safety regulator FSSAI may make its certification mandatory for organic food. The move is aimed at keeping an eye on the quality of organic food with so many products thronging the market offering attractive packages and luring consumers. The certification will be compulsory from July 1, sources said. Last month, the Food Safety and Standards Authority of India (FSSAI) had released a unified regulation on 'Organic Foods' during the Organic World Congress in India. As a symbol of authenticity and trust, a common logo for 'Organic Foods' was also unveiled before representatives from 110 countries. Sikkim was last year declared as the India's first fully organic state. India's total area under organic certification has reached 5.71 million hectares and the country tops globally in terms of number of organic producers. Exports from India are pegged around 1.35 million tonnes of certified organic food per year. There are several brands such as Organic Tattva, Devbhumi, Navdanya, Organic India, Sattvic and Nature N Me selling their products in India. The Food Safety and Standards (Organic Foods) Regulations 2017 covers under its ambit two existing systems of organic certification -- National Programme for Organic Production (NPOP) and Participatory Guarantee System for India (PGS-India). The regulation also provides for recognition of other certification systems in the future. But with the focus of the government shifting to organic cultivation in a big way, there is deliberation as how best to unify these two systems.



## Govt to sell onions via e-commerce portals to weed out middlemen

➤ In an attempt to make available 'costly' onions at affordable prices, the government has decided to sell the bulbous plant through e-commerce portals. The Consumer Affairs Ministry has tasked Nafed to procure onions directly from farmers of Nasik and sell it through online portals to eliminate middlemen from taking undue advantage of the crisis. Notably, the onions which are being sold at above Rs 50 per kg would be available at Rs 34/kg at the portal. According to the sources, the decision in this regard was taken during a recently held meeting under the chairmanship of Consumer Affairs Secretary Avinash Srivastava.



## Centre mulls distributing millets at ration shops

➤ The Centre is planning to distribute millets via ration shops and such schemes as the mid-day meal, Agriculture Secretary SK Pattanayak said. It is also thinking of branding millets as "nutri- cereals" and promoting them across the country, he said. Millets are highly nutritious compared to other cereals, he said, adding that ragi has high calcium content. Therefore, the government is thinking of promoting them as 'nutri-cereals', he said. Stating that low yields and storage issues have to be addressed, Pattanayak said, "The yield of millets are low. We need to have high-yield varieties in order to scale up production." The Indian Council of Agricultural Research is working on this and hopes to release some varieties soon, he said, adding that there is a need to pursue R&D work seriously in millets. Storing millets for long is an issue. There is a need to increase the shelf life of millets, he said. Pattanayak further said that mechanical harvesters may be needed for millets. He also suggested that States should promote the setting up of farmer producers organisations for better production and marketing of millets, ensuring higher income to farmers.





## Karnataka Agriculture Minister Krishna Byra Gowda pitches for millets as an alternate food

➤ In a bid to strengthen the 'Millet Movement' across the country, Karnataka Agriculture Minister Krishna ByraGowda elucidated the benefits of millets and encouraged the masses to opt for the same as an alternate food. Karnataka is taking its Millet Revolution lock, stock, and barrel to the rest of the country, with the state Minister for Agriculture Krishna Byre Gowda unveiling the new website and logo of the 'Organics & Millets 2018- International Trade Fair', scheduled to be held at Palace Grounds, Bengaluru, from January 19 to 21. Recently, Karnataka Agriculture Minister Mr Krishna ByraGowda pitched an idea to the United Nations, via the UNFAO through an official visit to Rome, for declaring the year 2018 as 'International Year of Millets'. The suggestion, if agreed, will raise awareness about millets among consumers, policy makers, industry and R&D sector. Earlier, Karnataka Department of Agriculture organised roadshows across the country as a precursor to the 'Organics & Millets 2018- International Trade Fair' which aims to take the 'Organic and Millet' message to the rest of the world. Hailed as a miracle crop, the ancient forgotten grain Millets, largely wiped out from our farms and diets, is making a comeback, thanks to the efforts of Karnataka government. The three roadshows in Chennai, Hyderabad and Cochin on October 5th, October 24th and October 27th garnered considerable local and national attention, setting off an intense debate around the country on sustainable farming.



## CCI e-pays Rs 556 crore to Telangana's cotton farmers

➤ The online payment mechanism for cotton farmers introduced by the Telangana government this season has caught on. The Cotton Corporation of India (CCI) has so far made payments of Rs 556 crore via this route for the produce it purchased from farmers in the State. The State's Agriculture Marketing Department has introduced a software at the collection centres and asked farmers to register their names and provide bank account and identification details. "We have introduced the software this year. We have witnessed purchases worth Rs 556 crore by the CCI," a statement from the Department said. As many as 44 marketyards in the State were brought under the e-NAM (National Agriculture Market) umbrella, which would help farmers find better price for their produce, it said. The State government is expecting a total turnover of Rs 30,000 crore through transactions between traders and commission agents this year.



## UP plans to introduce contract farming

➤ In order to fulfil Centre's objective to double farmers' income by 2022, the Uttar Pradesh government is all set to adopt contract farming as part of its multi-pronged strategy to enhance their income in the state after many failed attempts by previous regimes. Speaking at a conference on doubling farmers income, state agricultural production commissioner Raj Pratap Singh said that the state government is also planning to amend the APMC Act in order to give farmers alternative choices so as to boost investment in the sector. In contract farming, private agro-processing and exporting companies enter into an agreement with farmers to purchase a specified quantity of an agri commodity on mutually agreed terms. This type of integration between growers and agro-processing units will not only help farmers in getting a better price for their produce but also reduce post-harvest losses to a large extent. "Contract farming is already being carried out privately, but state legitimacy is needed to help farmers in a bigger way," he said, adding that increasing agricultural production is not the answer to the ills of the farm sector.

## First Organic Kiwi Winery of the Country in Arunachal Pradesh

➤ India imports 4,000 tonnes of kiwi fruit from New Zealand, Italy and Chile annually, but farmers in frontier state of Arunachal Pradesh, who have been growing kiwis for decades, are struggling to find buyers and forced to sell their produce at 30 per cent lower than the price commanded by the multinationals. However, some local entrepreneurs have come together to launch the first organic kiwi wine of the country in an attempt to keep kiwi farming profitable and prevent farmers from running into losses due to rotting of produce. The idea behind launching a winery is to bridge the consumer-producer gap and thereby encourage the farmers to continue the framing of kiwis. Arunachal Pradesh industry minister TamiyoTaga, who recently launched the winery, said, "This winery is a blessing in disguise for the farmers. Now migrating to horticulture at the foothills of the Valley will augment the economy of farmers. The marketing and storage woes will be addressed by the winery." The first organic kiwi winery in the world is in Switzerland. Technologies was imported from Denmark for the winery and China provided its best bottles, in which the wine was packed.

## Meghalaya to promote organic farming

➤ In view of the rising demand for organic products across the globe, Meghalaya has decided to promote organic farming among the farmers. Addressing farmers and stakeholders on the occasion of World Soil Day, Commissioner and Secretary, Agriculture Department, PS Kumar said that the State Government has been putting a concerted effort to encourage organic farming. Stating that Meghalaya has been identified as a “competitive State” in the agro sector by a study conducted by Harvard, Kumar said that Meghalaya is trying to catch up with Sikkim which currently has 70,000 hectares of land under organic farming and is the largest producers of organic produce in the country. The State would soon open its first organic farm produce market in the capital very soon. One of the villages in the State capital has turned fully organic and the produce from the village would be sold in the market after being certified by the Government. Underlining some of the interventions to reach the goal of a total organic farming in the state, Kumar said that the state has developed organic compost with the help of experts from outside, which would reduce the burden on the farmers to buy expensive organic fertilizers for their crops. He said that the compost is made out of manure and other agricultural produce and requires a period of just 18 days to be ready for the use in the fields. Farmers are being trained to produce the compost throughout the state and this, he said, would eventually help farmers to produce organic crops economically. The state is also in the process of setting up an agri-response call centre for the farmers. The call centre would help the farmers put forward their complaints and grievances and other farm-related matters. Moreover, efforts are also being taken to take care of the marketing aspect and doing away with middle men. Meanwhile, the farmers were presented soil health cards by the officials during the occasion.



## Telangana asks farmers to terminate cotton crop

➤ With pink bollworm turning virulent and posing a serious threat to the interests of farmers, the Telangana government has asked the farmers to terminate the crop before December. It has ordered an intense awareness campaign to educate the farmers to uproot the plants out after third picking. If the crop is terminated by December, it will break the lifecycle of the bollworm population, lessening the risk of the incidence in the next kharif. The kharif season is coming to end as a good number of farmers have completed their second picking. The third picking doesn't yield much produce but some farmers keep the crop, expecting one or two quintals. Telangana has registered a massive increase in cotton acreage this kharif. The acreage crossed the 46-lakh acre mark, about 15 lakh acres more than the normal acreage. Untimely rains and outbreak of pink bollworm have wreaked a havoc, causing extensive damage to small and medium farmers. But the government's report suggest that the spread of pink bollworms is virulent and has breached the Economic Threshold Level (ETL), which could result in extensive damage.

## Mahaagri board to develop 207 acres into export development zones

➤ The Maharashtra State Agriculture Marketing Board (MSAMB) has decided to develop around 207 acres of land parcels in its possession at Jawaharlal Nehru Port Trust (JNPT), Thane and Nashik into export development zones. A decision to this effect was taken at a meeting headed by Maharashtra cooperation minister Subhash Deshmukh. MSAMB has some 15 acres of land at JNPT in Mumbai, 92 acres in Thane and 100 acres in Nashik. The minister said the land will be developed into export zones taking into account export requirements of the state in the coming 25-30 years. Sunil Pawar, MD, MSAMB said that an attempt would be made to provide infrastructure after taking all stakeholders into confidence. PP Waghmare, assistant GM (APEDA) said that with the opening of Iran's Chabhar port, the distance between India and Russia has been reduced to 25 days instead of 40 days earlier. This would help the country gain a foothold into a big market like Russia, he added. At present containers are left lying at the airport for weeks because of the huge rush and backlog at JNPT.



## Manarcadu society of Kerala unveils organic dried-fruits brand

➤ Targeting the burgeoning domestic market, Manarcadu Social Service Society (MASS) — a first-of-its-kind farmers' cooperative in Kerala — has introduced a new brand of dried-fruits. Branded as 'Only Organic', the five varieties of dry-fruits comprise jack fruit, mango, green mango, papaya and gooseberry. Marketed as sugar-free products, all these varieties were launched at the recently-concluded Organic World Congress in Greater Noida.

## 9 lakh farmers get loan waiver reimbursement of Rs 5,141 crore

➤ The banks, after due verification, have so far deposited Rs 5,141 crore of the loan waiver in bank accounts of 9.43 lakh farmers under the Chhatrapati Shivaji Maharaj Shetkari Sanman Yojana (CSMSSY). The government has handed over the Green List of 17.68 lakh farmers and transferred Rs 10,332 crore to the banks and the disbursement of this loan amount shall pick up speed in coming days. Minister for Revenue Chandrakant Patil, while commenting on the 'dharna' agitation of senior Bharatiya Janata Party (BJP) leader Yashwant Sinha in Akola, remarked had Sinha watched his televised interaction with the media, the former Union finance minister would realise that the government has already begun implementation of the loan waiver scheme. He added that Sinha would realise that there was no need for him to continue



with his agitation. Patil said, "In next 10 days the government expects to clear the list of 40 to 48 lakh farmers. The speed of clearing the Green List and disbursement of the loan waiver amounts will pick up speed after due verification is done." He added, "In respect of loan waiver of those

farmers who were regular in repayment of loan amounts and incentive scheme for them, the government will soon take a decision in regards to these 40 lakh farmers. Overall about 80 to 82 lakh farmers are expected to get the benefit of the loan waiver scheme."

### Maha waives loans of 41 lakh farmers

➤ The Maharashtra Government claims to have waived the loans of 41 lakh farmers and disbursed nearly Rs 20,000 crore over the past few days after doing away with the need to link farmers' Aadhaar cards to their bank accounts. Data released by the government suggests farm loans to the tune of Rs 14,864 crore had been waived and another Rs 4,673 crore were forfeited under a one-time settlement scheme for farmers. The waiver comes days after the government lifted the requirement to link of Aadhaar cards to bank accounts. Several banks, both public and co-operative sector, had linked multiple farm loan accounts, in some cases more than a hundred, to a single Aadhaar card number since the number had not been collected from farmers at the time of disbursement of loans. In many cases, bank employees had entered random numbers in the column meant for Aadhaar numbers. Chief Minister Devendra Fadnis had earlier said the linkage of Aadhaar cards with bank accounts was essential for disbursement of farm loans in order to remove the names of bogus beneficiaries. Under the Chhatrapati Shivaji Maharaj Shetkari Sanman Yojana, farmers will have loans up to Rs 1.5 lakh waived. The beneficiaries are being given a certificate to the effect by the lending banks. This will enable the farmers to apply for fresh loans, an official from the state co-operative department said.

### Insurance firms see rich pickings in crop cover

➤ Crop insurance has emerged as the third-largest line of business for the insurance industry, after motor and health, contributing 16 per cent of its total general insurance premium of Rs 1,28,000 crore in FY17. The Centre's flagship crop insurance scheme, the Pradhan Mantri Fasal Bima Yojana (PMFBY), has played a significant role in this shift. Indeed, the share of crop insurance may increase further, and very rapidly, as the Centre has increased the insurable crop coverage from 30 per cent to 40 per cent this year and is scheduled to increase it to 50 per cent in the next Budget. The increase in coverage limit has a proportional impact on premium. "From Rs 21,000 crore in FY17, crop insurance premium is expected to increase to Rs 25,000-26,000 crore this year," K Sanath Kumar, CMD of State-owned National Insurance Company said. However, while an increase in crop coverage and a subsequent rise in premium is music to the industry's ears, assessing and settling claims is a highly complex and risky exercise.



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## India, Israel to open centre for floriculture in Tamil Nadu

India and Israel are coming together to set up a centre for excellence in floriculture at Thally in Krishnagiri district of Tamil Nadu. The centre, the first agro-technology development centre to be set up with Israel's assistance in the State, would be officially inaugurated recently. Gil Haskel, head of Israel's agency for international development cooperation Mashav; Union Minister of State Gajendra Singh Shekhawat and Tamil Nadu Agriculture Minister R Doraikannu are expected to attend the function. The centre at Thally and a similar centre planned for vegetables to be established in Dindigul form the part of a three-year Indo-Israel agricultural partnership signed between Mashav and mission for integrated development of horticulture of the Agriculture Ministry. The Dindigul centre, specialising in vegetables such as capsicum, cucumber and tomatoes, is expected to be launched in January 2018. These centres would not only develop agricultural practices suitable for selected geographical regions, but would also transfer the best practices to farmers in and around. "By the end of the project, we plan to have 30 such Indo-Israel centres of excellence in agriculture in India. Currently, we have 20 such centres in nine States," Haskel said. More such centres of excellence are planned in Karnataka and Andhra Pradesh in near future, said Dan Alluf, an Israeli Embassy official. Centres in Karnataka would come up in Dharwar, Kolar and Bagalkot and would focus on vegetables, mangoes and pomegranate, respectively. The centre in Andhra Pradesh would come up in Kuppam and would work on both floriculture and vegetable research.



## India's pomegranate exports run into Europe's Residue Monitoring Plan

With the pomegranate season in full swing, around 20,000 tonne of the fruit has been exported from the country so far. However, a hurdle has emerged. Europe, where the season has just begun, has changed the Residue Monitoring Plan (RMP) for pomegranate imports. The Residue Monitoring Plan (RMP) for grapes in Europe is normally 75 mg per kg but

China, Indonesia and Russia, have decided to issue stricter Residue Monitoring Plan (RMP) norms to the country. India has been attempting to make inroads into new export markets such as China, Russia, Indonesia and Saudi Arabia. However, these countries have now decided to come up with norms for Indian grapes which may affect the export prospects of India this season. This may well occur in the case of pomegranates as well, Chandane said. "We have written to Agricultural and Processed Food Products Export Development Authority (APEDA) to intervene and seek concessions from the European Union (EU) for bringing down the limits in line with grapes at 75 mg per kg. However, APEDA officials have maintained that this could take time and positive results could be seen next season onwards," he said. Another 10,000-15,000 tonne is expected to be exported to Europe, he added.



## Coffee exports rise 8% till November

☛ Coffee exports from India, Asia's third-largest producer and exporter, rose by 8.08% to 3.61 lakh tonnes in January-November 2017 compared to 3.34 lakh tonnes in the same period of last year, according to the Coffee Board. Italy, Germany and Russia were the major export destinations for Indian coffee during the period. India ships both robusta and Arabica varieties, besides instant coffee. Robusta coffee exports rose by 10.80% to 2,11,442 tonnes in January-November 2017 from 1,90,828 tonnes in the year-ago period. Export of Arabica coffee however declined by 10.81% to 44,084 tonnes from 49,431 tonnes. The outbound shipment of instant coffee increased sharply by 86% to 47,734 tonnes in January-November this year from 22,966 tonnes in the same period last year. Of the total exports, India exported 73,705 tonnes to Italy, 38,671 tonnes to Germany and 26,319 tonnes to Russia during the period under review.



## Israel to launch new phase of agriculture cooperation

☛ Israel will launch the 2018-2020 phase of its agricultural cooperation with India this week, ahead of its Prime Minister Benjamin Netanyahu's New Delhi visit on January 14. The MASHAV, an Israel Government agency for international development cooperation, will launch the new phase of Indo-Israeli Agricultural Project (IIAP) during the visit of its chief Gil Haskel to India. "The IIAP is MASHAV's biggest

project outside of Israel, and it holds a significant portion of our bilateral relations. The success story of our agricultural cooperation is second to none, and it is only the beginning," Daniel Carmon, Israel's ambassador to India, said. He will also award two \$10,000 grants to MASHAV Alumni to continue their projects in women empowerment and farmer empowerment in India, a spokesperson of the Embassy of Israel India said.

## Russia, China join EU in issuing stricter norms for grape imports from India

☛ Like Europe, other countries that import grapes from India, including China, Indonesia and Russia, have decided to issue stricter residue monitoring plan (RMP) norms to the country. India has been attempting to make inroads into new export markets such as China, Russia, Indonesia and Saudi Arabia. However, these countries have now decided to come up with norms for Indian grapes which may affect the export prospects of India this season. The issue was discussed in a recent meet held at the National Research Centre for Grapes (NRCG) in Pune that was attended by senior officials of APEDA, MSAMB and



grape exporters, among others. NRCG director SD Sawant said that some of the norms are stricter than those set by the European Union. A couple of years ago, the EU had agreed to retain the residue levels of chlormequat chloride (CCL), a plant growth regulator, at 0.05 parts per million (ppm), for a period of two years. In August the same year, the EU had proposed to change the pesticide residue levels in grapes to 0.01 ppm, causing unrest among Indian exporters. The relaxation by the EU remains valid for the coming season as well. According to All India Grape Exporters Association (AIGEA) president Gagandada Khapre, when the issue was discussed at the meet, grape exporters showed willingness to comply with the new norms and requested the government to get the tests conducted through Grapenet. But the government officials of APEDA said that the exporters would have to do it at their own risk, Khapre said.



## Asia's first Biogas-based power plant to use Paddy Straw as Sole Feed

► Punjab based Sampurn Agri Ventures breaks new ground by introducing an innovation for sustainable agriculture and livelihood through paddy straw management in India. With emphasis on national food security and soil health, this wholly indigenous technology will double the farmer's income, rejuvenate rural economy and save foreign exchange by reducing import of fossil fuels. Asia's first biogas-



based power plant in Fazilka, Punjab approved and recommended by IIT-Delhi and PAU (Punjab Agriculture University), operates on paddy straw for large-scale biogas production. The system is based on 100% use of paddy straw and generates nearly 4,000 cubic metres per day of biogas from 10 tonnes of straw. This in turn generates 1MW power. So, along with the effective management of paddy straw the facility also produces bio-fertiliser and sustainable energy. Sanjeev Nagpal, Managing Director, Sampurn Agri Ventures Pvt. Ltd. says, "Paddy straw is an asset not a liability and we need to prevent its burning. There is an immediate need to manage paddy straw in a way that not only prevents burning but creates an environment that sustains our agriculture. Paddy straw if used for production of biogas will produce manure instead of ash and help enrich soil. This will further reduce cost of cultivation, reduced requirement of chemical fertilizers, pesticides and fungicides".

## TNAU releases MGR 100

► MGR 100, yet another medium duration, high-yielding fine variety of rice, released by the Tamil Nadu Agricultural University (TNAU) to mark the centenary of the late chief minister and AIADMK founder, M G Ramachandran a couple of days ago, is already under cultivation and will be ready for consumption in five or six months. The new variety of rice was released by Chief Minister Edappadi K Palaniswami at Thanjavur during the MGR centenary celebrations. "Since this paddy variety is meant for the second season (samba and thaladi), we have already distributed five tons of 'truthfully labelled seeds' to the farmers. So, this will be harvested in five months and starting from April, we will distribute the officially certified seeds to the farmers. So, MGR 100 rice will be ready for consumption by that time," K Ganesamurthy, director-in-charge, Centre for Plant Breeding and Genetics, TNAU, said. The MGR 100 variety (CO-52) is a derivative of cross BPT 5204/ CO(R) 50 and it matures in 130-135 days. It is a good replacement for BPT 5204 due to its high grain yield, superior grain quality and pest and disease resistance. This variety with its outstanding performance and quality was approved by State variety release committee in 2017.

## CropIn Technology & IACG sign MoU to support Sustainable Agriculture and Improve Food Security

► CropIn Technology and the International Agriculture Consulting Group (IACG) have signed a Memorandum of Understanding (MoU) with the aim to strengthen sustainable agriculture, ensure food safety and improve food security. The collaboration intends to strengthen the agriculture value chain by facilitating adoption of agri-technology for climate resilience and agri-produce traceability. A key focus would be identifying potential areas and equipping them with technology to boost farm productivity while also cutting down on ecological costs. Mr. Krishna Kumar, CEO, CropIn Technology says "In meeting the goals of food security and sustainability, smart agtech solutions would prove instrumental by optimizing agricultural practices, minimizing waste, developing climate resilience, and providing timely agricultural advisory. We are pleased to enter into this MoU as it paves the way for a great partnership, combining CropIn's technological expertise with IACG's exceptional consulting services." Speaking on the occasion Dr. Dinesh Chauhan, CEO, IACG said "There is immense potential to add value in the entire value chain with the help of technology enabled services, and IACG is looking forward to combine its capabilities in terms of expertise in agriculture and agribusiness along with CropIn technology to develop more efficient processes. In order to improve farm productivity and farmers income there is a need to bring in technology interventions in agriculture and agribusiness sector. MOU with CropIn Technology will pave way in achieving the overall objective of IACG which is 'to provide competent consulting services to support agriculture and agribusiness sector by delivering sustainable solutions to projects in agriculture, agribusiness and allied sectors development worldwide and to bring great value to clients by forging partnerships in agriculture transformation". Dr. Chauhan also informed that in next five years agriculture and agribusiness sector is going to witness a lot of disruption in this space and will change the way agriculture has been done.



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# 2017

## New Lessons Learned



The year 2017 survived on expectations and hopes, albeit, with much realization. The monsoon was fair in its arrival, although the southern states reeled under the conditions of drought. Okhi, the cyclone which ravaged the southern states also managed to inflict loss of life and crops. On the production front, the country witnessed reasonable production numbers. However, falling prices and glut destroyed the income prospects of the farmers. The year 2017 saw outbursts and protests among the farming community. The protests especially in Madhya Pradesh witnessed violence and loss of lives of farmers. The Yavatmal tragedy too consumed many farmers' lives. The year turned out to be difficult one for the farmers. However, several new schemes and programmes debuted this year. The most notable one being the GST, the effects of which are yet to emerge.



### Agriculture Production Balance Sheet

The year 2017 carried the scars of drought and patchy monsoon from previous years. Therefore the expectations from 2017 for a normal and bountiful rainfall and an ensuing successful agricultural production was rife. However, the rainfall in India's annual monsoon season was below average and less than forecast. Monsoon rains were 95 percent of the long-term average compared with the IMD's forecast of 98 percent, marking the fourth consecutive year in which the national weather office has overestimated likely rainfall. The monsoon, which delivers about 70 percent of India's annual rainfall, is critical for the farming sector that accounts for about 15 percent of India's economy and employs more than half of its 1.3 billion people.

A very good rainfall during monsoon 2016, however, had resulted in record foodgrain production in the current year. As per Third Advance Estimates for 2016-17, total foodgrain production in the country was estimated at 273.38 million tonnes which is higher by 8.34 million tonnes (3.15%) than the previous record production of 265.04 million tonnes achieved



during 2013-14.

Total production of Rice is estimated at record 109.15 million tonnes which is also a new record which is higher by 2.50 million tonnes (2.34%) than previous record production of 106.65 million tonnes achieved during 2013-14. It is also higher by 3.73 million tonnes (3.54%) than the five years' average rice production of 105.42 million tonnes. Production of rice has increased significantly by 4.74 million tonnes (4.54%) than the production of 104.41 million tonnes during 2015-16.

Production of Wheat, estimated at 97.44 million tonnes is also a record and is higher by 1.66% than the previous record production of 95.85 million tonnes achieved during

**Rice is estimated at record 109.15 million tonnes which is also a new record which is higher by 2.50 million tonnes (2.34%) than previous record production of 106.65 million tonnes achieved during 2013-14**





**Total production of pulses during 2016-17 is estimated at 22.40 million tonnes which is higher by 3.15 million tonnes (16.37%) than the previous record production of 19.25 million tonnes achieved during 2013-14**

2013-14. Coarse Cereals also registered at a new record level of 44.39 million tonnes which is higher than the average production by 3.04 million tonnes (7.36%). As a result of significant increase in the area, coverage and productivity of all major Pulses, total production of pulses during 2016-17 is estimated at 22.40 million tonnes which is higher by 3.15 million tonnes (16.37%) than the previous record production of 19.25 million tonnes achieved during 2013-14. Production of Pulses during 2016-17 is also higher by 4.77 million tonnes (27.03%) than their Five years' average production. Current

year's production is higher by 6.05 million tonnes (37.03%) than the previous year's production of 16.35 million tonnes.

With an increase of 7.27 million tonnes (28.80%) over the previous year, total Oilseeds production in the country is estimated at 32.52 million tonnes. The production of Oilseeds during 2016-17 is also higher by 3.27 million tonnes (11.17%) than the five year's average Oilseeds production.

Production of Sugarcane is estimated at 306.03 million tonnes which is lower by 42.42 million tonnes (-12.17%) than the last year's production of 348.45 million tonnes.

Despite lower area coverage during 2016-17, higher productivity of Cotton has resulted into higher production of 32.58 million bales (of 170 kg each), i.e. an increase of 8.57%, as compared to 30.01 million bales during 2015-16.

### Trading the Produce

India did register a good production on account of the bountiful monsoon the country received in 2016. However, India's agricultural exports declined to \$33.87 billion in 2016-17 from \$43.23 billion in 2013-14. The primary reasons for decline in export of agricultural commodities are low commodity prices that prevailed in the international market. However, import of agricultural commodities (including plantation and marine products) in 2016-17 rose to \$25.09 billion from \$15.03 billion in 2013-14. Our staples under the import category – oilseeds and pulses – showed a different trend this year.

India's vegetable oil imports have been reported to decline in 2017 by 19 per cent to 1.02 million tonnes for the month of January 2017, as against 1.24 tonnes in the corresponding month last year. The





overall import of vegetable oils during first three months of current oil year 2016-17, November 2016 to January 2017 stood at 3,410,008 tonnes as compared to 4,016,391 tonnes, down by 15 per cent on year-on-year basis according to the data compiled by the Solvent Extractors' Association of India (SEA).

The reason behind this development is good kharif oilseeds crop.

Despite the glorious production front, India's trade deficit, however has been narrowing. From a 150 per cent surplus of export over import, India's trade balance in agricultural and allied products has slipped in four years to near-equality. Data compiled by the Directorate General of Commercial Intelligence and Statistics under the Ministry of Commerce and Industry shows that India's exports of agri and allied products has declined by 25 per cent to \$24.7 billion for financial year 2016-17, as against nearly \$33 billion in 2013-14. In contrast, import of agri and allied products jumped in the same period to \$23.2 billion, from \$13.5 billion. Several domestic factors have attributed towards this plunging export import difference.

Since 2014, there was a drop in

the agricultural production owing to drought. The government responded to the situation by imposing restrictions on the export of rice, wheat and maize. The consumption however, was steady. Pulses and edible oil which were already deficient in terms of domestic production, was met for domestic consumption by imports. A strengthening dollar eased their import costs. The result was a narrowing of the trade surplus in agriculture and allied products.

A report prepared by a not-for-profit organization, Center for Environment and Agriculture (Centegro) emphasises the need to raise India's share in global agri exports to increase farmers' income automatically. The report was prepared in association with experts from Tata Strategic Management Group. The report stresses the need to quadruple India's agri and allied exports by 2022, if the farmers' income has to be doubled. Incidentally, there is enough space for India to attract a fair share of global market space. The World Trade Organisation (WTO) estimates global export in agricultural products at over \$1,500 billion annually, of which India's share stands at less

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than \$35 billion. By participating in the international market, India can efficiently handle excess production, thereby preventing fall in domestic prices.

The tapering trade deficit is a worrying trend and shows the unhealthy trend that India is espousing for short term gains. Experts aver that to double farmers' income by 2022, our strategy should be to increase consumption in the domestic and foreign markets. The domestic consumption, however, is robust considering the increasing population and improving living standards. Our focus should be to develop foreign markets and increase our share in the international market. Once a wider market is established, farmers are motivated to increase their production by resorting to better inputs and technology. The government should encourage exports and hence devise policies that would enable them to do so.

### **Union Budget**

The Union Budget 2017-18, unlike its predecessors, was presented on first of February 2017. This year Shri Jaitley in his budget speech reiterated

the government's commitment to double farmers' income in five years and have diverted a record level of Rs. 10 lakh crores to agriculture sector. Farmers will also benefit from 60 days' interest waiver announced on 31 Dec 2016. The budget also revealed the government intention to computerise and integrate all 63,000 functional Primary Agriculture Credit Societies (PACS) with the Core Banking System of District Central Cooperative Banks in 3 years at an estimated cost of Rs. 1,900 crores. Coverage under Pradhan Mantri Fasal Bima Yojana scheme will be increased from 30% of cropped area in 2016-17 to 40% in 2017-18 and 50% in 2018-19 for which a budget provision of Rs.9000 crore has been made.

Soil Health received major attention in this year's budget. The decision to start new mini labs in Krishi Vigyan Kendras (KVKs) and ensure 100% coverage of all 648 KVKs in the country for soil sample testing is a step in this direction. In addition, 1000 mini labs will be set up by qualified local entrepreneurs and Government that will provide credit linked subsidy to these entrepreneurs. Subsidy for the P&K (phosphatic and potassic) fertilizer segment has been marginally hiked by 6 per cent which will to an

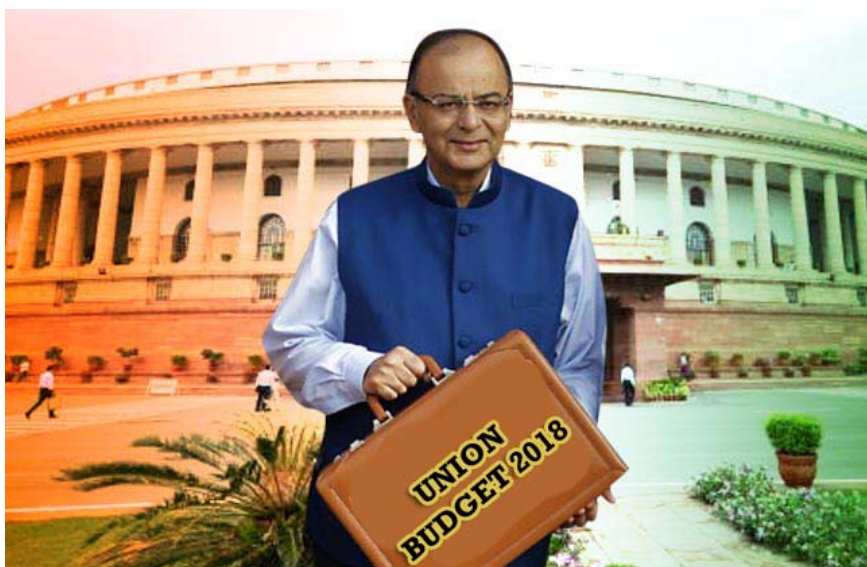
extent encourage their usage.

Irrigation was another area which received a major budget allocation. The Long Term Irrigation Fund already set up in NABARD was augmented by 100% to take the total corpus of this Fund to Rs. 40,000 crores. A dedicated Micro Irrigation Fund in NABARD to achieve 'per drop more crop' with an initial corpus of Rs.5,000 crores has been recommended.

In a bid to ensure the much needed marketing reforms, considerable impetus has been laid on agricultural marketing in this budget. The National Agricultural Market (e-NAM) which was launched last year has an expansion target from 250 markets to 585 APMCs. Rs. 75 lakhs has been earmarked for every e-NAM for establishment of cleaning, grading and packaging facilities with the intention of value addition of farmers' produce. The objective of doubling farmers' income will only be realized if farmers get appropriate price for their produce. This intention is very well reflected in the government's attempt to materialize market reforms. Shri Jaitley in his budget speech has been explicit in undertaking market reforms and even urged the states to denotify perishables from APMC giving the farmers the opportunity to sell their produce and get better prices. The budget has also proposed to integrate farmers who grow fruits and vegetables with agro processing units for better price realisation and reduction of post-harvest losses. A model law on contract farming is therefore being mulled to be circulated among the States for adoption.

Realising the potential of dairying in generating additional income to farmers, the finance minister has been generous in allocation to this sector. To enhance the availability of milk processing facility and other infrastructure, a 'Dairy Processing and Infrastructure Development Fund' would be set up in NABARD with a corpus of Rs. 8,000 crores over 3 years.

The budget thus gave emphasis on



soil health, irrigation, processing and marketing by openly emphasizing their significance and apportioning impressive allocations. However, the budget for agriculture remained calm with

**Global market for micronutrient fertilizers is expected to reach a market value of \$6291.3 million by 2022 from an estimated \$3922.2 million in 2016 with an annual compound growth rate of 8.2% during 2017-2022**





respect to introduction of new schemes or innovative ideas. It fully focused on the existing schemes. Many areas such as organic cultivation, biotechnology, pulse & oilseeds cultivation did not receive any mention or support. This was a huge let down considering the momentum they were gaining from the last years. Another key area that missed the attention of the FM was Climate smart agriculture.

Budget, post demonetization, was lukewarm for agriculture. The focus and emphasis was much centered on digitalization of monetary transactions. The resolve to double farmers' income largely remained in the finance ministers' repeated assertions in the budget speech and not reflected in the budgetary announcements.

### 2017- The year of loan waivers and Farmer Distress

Loan waivers have become a permanent fixture in our country. While the phenomenon has stayed with each government, 2017 witnessed a spurt in this altruistic gesture. So far, three major states—Uttar Pradesh (UP), Punjab and Maharashtra—have announced large-scale farm debt waivers. The debt waiver packages of UP and Punjab were aimed to fulfil poll promises made by the Bharatiya Janata Party (BJP) and the Congress party, respectively, in these two states. The cumulative debt relief announced by the

three states amounts to around Rs77,000 crore or 0.5% of India's 2016-17 GDP.

UP's debt waiver of Rs 36,400 crore is equivalent to one-fourth of the total estimated farm debt in the state. Punjab's debt waiver worth Rs 10000 crore is equivalent to less than one-seventh of the total estimated farm debt in the state. Maharashtra's farm debt waiver appears slightly more generous as it appears to cover almost one-third of the state's farm loans.

If poll-bound states—including Gujarat, Karnataka, Rajasthan and Madhya Pradesh—too announce farm debt waivers and extend it to one-third of farm loans in their respective states, then the aggregate amount of farm debt waivers before the 2019 elections would balloon to Rs 2 trillion, or 1.3% of India's GDP.

The year 2017 also was a year which showcased the wide spread unrest among farmers, and most of the loan waivers that were announced were done to appease the warring factions of farmers. The problem erupted in to a magnanimous proportion in 2017, when five farmers were shot dead at a protest in Mandsaur, Madhya Pradesh. The state as well as Maharashtra, had witnessed protests by the farmers who dumped vegetables and milk on the roads demanding debt waivers and better prices for produce. Farmers blocked highways in both states preventing delivery trucks from reaching city markets. Many of the

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states witnessed these protests.

A bountiful rain in 2016 that followed two consecutive drought years raised the expectations of a bountiful harvest, which materialized leading to glut. As a result, the prices plummeted which did not help farmers to emerge from the debts accrued in the previous season owing to poor monsoon forcing farmers to take to streets demanding support from the government. Loan waivers by neighbouring states made matters worse and demands for similar actions erupted among farmers. Besides the current issue, farmers are plagued perennially by lack of infrastructure, poor knowledge of market demands, price fluctuation, and dependence on monsoon among many other factors.

Farmers are staring at huge losses in earnings from this kharif season. The All India Kisan Sangharsh Coordination Committee (AIKSCC), a coalition of over 180 farmer unions, has put the numbers at Rs. 36,000 Crores, the amount lost due to poor price realization at the mandis. With major crop prices plunging below minimum support prices (MSPs), farmers losses stand at an estimated Rs35,968 crore in earnings for the kharif season. In the two weeks to 7 November, 2017, farmers, have incurred a loss of Rs. 6,283 Crore, having sold crops at lower than their support price as was quoted by the farmers' coalition. The analysis was done for seven major kharif (summer) crops—paddy, maize, bajra, soybean, groundnut, cotton and urd—by taking into account market arrivals and a weighted average of modal prices in major growing states.

The farmers are enduring a particularly lean period for the past seasons. The consecutive droughts were followed by three successive seasons of low crop prices. The estimates, according to the farmers'



organizations are conservative as the actual prices at which farmers are selling their produce are often lower than official wholesale prices. Even the MSPs fixed by the government seems to be unfair as they are lower than the cost of production as calculated by the Commission for Agricultural Costs and Prices. These include crops like jowar where the support price is 19% lower than the cost of production and pulses like moong for which the MSP is 2% lower than the production cost.

Agriculture has progressively become non remunerative and this year that assertion came quite boldly. The mounting cost of production and lowering commodity prices have affected the profitability of agriculture. The current wave of the economic turbulence in the country has deteriorated the farmers' position in the society. Farmers' suicides, protests and the reluctance of the younger generation to choose agriculture as a profession have all stemmed from the non-profitability of this vocation. It is high time the government lend the much needed support to the farmers and help them tide over this uncertainty.

### Yama of Yavatmal

2017 also witnessed another tragedy that struck the Yavatmal cotton farming community. Yavatmal, the cotton city of Maharashtra, fell victim to an avoidable tragedy. Around 36 farmers lost their lives when they came into contact with pesticides, while applying them on the cotton fields. Around 1800 farmers have been affected by the inhalation of pesticides so far. The cause of death has yet to be ascertained with finiteness by the authorities, but pesticide poisoning has been alleged as the main suspect.

The problems began as early as July, when farmers started developing discomforts that eventually led to fatalities of this magnitude. Experts have pinned the reasons behind the fatalities to the unscientific way of using pesticides. This year the application of pesticides extended for a longer time. Some blame it on the height of the crop and heavier foliage which incited the attention of the pest necessitating application of pesticides. Some believe that the current variety under cultivation was no more immune to boll worms, and the resultant pests were subjected to

a dangerous improvised cocktail mix of pesticides. Some even suggested the unfavourable environmental conditions like humidity that hastened the entry of the poison into the applicators body. The blame has also been put on the new type of sprayer, whose smaller droplet sizes caused rapid absorption of the chemicals in to the body.

Whatever be the reason, the situation calls for an assessment at the grass root level. Pesticide over use and misuse had become very common in India. Reports of pesticide residues over the prescribed limits are quite frequent. But a fatality of this scale is unprecedented in recent times. It brings to the fore a very pertinent question as to how safety is perceived among the farming community.

### The GM Gig

India's central biotech regulator, Genetic Engineering Appraisal Committee (GEAC), in May, 2017 cleared the genetically modified (GM) Mustard for commercial cultivation and recommended its approval to the environment ministry. There lies a very slim chance for this technology to be replicated in farmers' fields, as political compulsions may not side with this technology. It would most probably enjoy the same status as that of Bt Brinjal which got shelved under immense public and political pressure despite having bright prospects.

But the case of GM mustard is quite different from that of GM Brinjal, which was developed by Mahyco and vehemently opposed due to the involvement of corporate interests. GM mustard (DMH-11) however, was developed by a team of scientists at Delhi University led by former vice-chancellor, Deepak Pental under a government-funded project. Pental had filed the application for commercial release of the GM Mustard in December



**The GM mustard developed is scientifically a break through. Mustard is a self pollinated crop and hence attempts to hybridize them to evolve superior breeds economically has been a real challenge for the scientists**



2015. The GEAC had subsequently set up a sub-committee to examine the safety aspect of the use of transgenic variety of the mustard. The sub-committee had last year given its safety clearance while noting that the GM Mustard is safe for human consumption and environment.

The GM mustard developed is scientifically a break through. Mustard is a self pollinated crop and hence attempts to hybridize them to evolve superior breeds economically has been a real challenge for the scientists. The genetically modified mustard uses genes from soil bacterium to render the parents male sterile and hence amenable to hybridization. According to Deepak Pental, the GM technology used in mustard has been used extensively for hybrid seed production in rapeseed which is widely cultivated around the world. The oil from rapeseed internationally branded as Canola, imported by India from Canada is made from the GM rapeseed. So technically, the Genetically Modified Foods have already entered India. The GM mustard in question unfurls a host of opportunities apart from the purported yield increment. For instance, the said variety can double up as a parental line for

conventional plant breeder to create his own creations.

While India is still inconclusive regarding its policy on GM technology, illegal trade of GM seeds was reported in 2017. This parallel market has drawn a huge crowd of customers. This illegitimate market is worth about Rs 472 crore according to Delhi-based South Asia Biotechnology Centre (SABC).

Backed by top scientists of India, SABC has reported that about 35 lakh packets of illegal HT cotton hybrids were sold this kharif season across the major cotton growing belts such as Telangana, Maharashtra, Gujarat, Andhra Pradesh, Odisha, Karnataka and Madhya Pradesh. Shockingly, around 8.5 lakh hectares or 7% of the total cotton growing area in the country, is under the illegal cultivation of Herbicide Tolerant (HT) variety. The HT cotton samples collected were tested positive for the presence of glyphosate tolerant gene. This amply suggests the extensive illegal and spurious sale of HT cotton which has not been technically and officially approved in India so far. The only Genetic Modification that India ascribes are hybrids/varieties that contain 'cry1Ac' and 'cry2Ab' genes, isolated from the soil bacterium *Bacillus thuringiensis* (Bt) and coding for proteins toxic to bollworm insect pests.

The existence of clandestine cultivation of HT cotton was reported as early as 2008. But the report has not received its due share of attention either from the government authorities or any other organizations. The trade continued and today it has reached a sizeable portion.

### The GST Gamble

July 1, 2017 – India saw another revolutionary reform as the country moved to the new Goods and Services Tax (GST) regime. Unifying

the country under a uniform tax code is slated to bring massive changes for consumers and producers.

The new tax structure eliminates the multitude of taxes, the rates of which changes considerably between states. Taxes under different headings -value added tax, infrastructure tax, rural development tax among many others would be abolished to make way for GST. This ensures a level playing field for farmers across the nation boding well for the successful implementation of National Agriculture Market. e-NAM (National Agricultural Market), a pan-India electronic trading portal launched by Ministry of Agriculture & Farmers' Welfare, Govt of India is intended to facilitate farmers, traders, buyers, exporters and processors with a common platform for trading commodities. The fragmentation of markets according to the existing marketing structure, hinders free flow of agri commodities from one market area to another and multiple handling of agri-produce and multiple levels of mandi charges ends up escalating the prices for the consumers without commensurate benefit for the farmers. NAM was designed to address these challenges by creating a unified market through online trading platform. The pre GST differential tax structure, however, was a major hindrance to the success of this idea. Thus

GST becomes pertinent for the successful implementation of NAM. Most of the indirect taxes levied on agricultural products, would be subsumed under GST. This will create a transparent, hassle free supply chain which would lead to free movement of agri-commodities across India.

GST rates for fertilizers were also brought down as the GST council reduced GST rate on fertilisers to 5 percent from 12 percent and on exclusive parts of tractors to 18 percent from 28 percent. Under the new rates, the average weighted maximum retail price (MRP) will decrease to Rs. 5909 a tonne (or Rs. 295.47 per 50kg bag) as compared to the existing all-India weighted average of Rs 5923 a tonne (or Rs. 296.18 per 50 kg bag). After GST, there will be a uniform MRP of Rs.295.47 per 50 kg bag across the country except couple of states where additional value added tax (VAT) is charged on natural gas. Similarly, MRP of P&K Fertilisers, for which the prices are not administered, are also expected to come down on an average basis as the incidence of tax will be lower than the existing tax on an average. The GST regime, apart from integrating the entire fertilizer market into a single market, will also deter inter-state smuggling of fertilizers due to differing levels





of taxes and consequently MRPs in different adjoining States.

However, bio-fertilisers, bio-pesticides and organic manures has been kept under the 18 per cent slab. A higher GST on bio-fertilisers and organic manures will promote the use of chemical fertilisers curtailing the prospects of organic farming. To promote organic farming and less chemical intensive agriculture, GST on biofertilisers, biopesticides/ biological control agents (BCA) and branded organic manure/ vermicompost/ farmyard manure (FYM) need to be reduced especially since these are suitable alternatives to improve soil health which has considerably degraded due to the over use of chemical fertilizers and erosion of organic matter content in the soil.

GST would also bring a sigh of relief to those farmers or traders who move their goods between states and who most of the time find themselves stuck in endless queues to get across state borders. The waiting not only affects the quality of the produce, but also discourage farmers from carrying out business. The GST aims to remove the hidden, cumulative costs of doing business in India and has the additional benefit of reducing food wastage.

### Indexing Agricultural Assets

Asset creation, although a significant factor deciding the development of agriculture, has not always yielded the desired result. Part of this discrepancy has been the result of a marked departure of reality from the records. To harmonise this incongruity and to ensure accountability, the government has decided to geo-tag all the agricultural assets in the country.

An MoU has been signed between Ministry of Agriculture and National Remote Sensing Agency (NRSA), ISRO for geo-tagging every piece of agriculture land created

under Rashtriya Krishi Vikas Yojna (RKVA) in the country. An exercise that guarantees better land and crop management, will tag geographical identification parameters like latitude and longitude to various media such as a photo or video which eventually will help users to find a wide variety of location-specific information from a device. It provides users the location of the content of a given picture.

National Remote Sensing Agency (NRSA)'s software platform, Bhuvan, allows users to explore a 2D/3D representation of the surface of the Earth. It also acts as a platform for hosting government

**The GM mustard developed is scientifically a break through. Mustard is a self pollinated crop and hence attempts to hybridize them to evolve superior breeds economically has been a real challenge for the scientists**

data. Bhuvan Application Services that are diversified and relevant for many ministries have already been released. The assets created under RKVY could be monitored by geotagging them using BHUVAN, a geoplatform of National Remote Sensing Centre (NRSC) of ISRO, Hyderabad. In future, the location of the infrastructure created and distances from each other could also be utilised for arriving at distribution of assets and optimum number of that particular asset required in a district or state. The process involves development of a mobile app for mapping the assets through photographs and geo-tagging before hosting on to DAC –RKVY platform that would be specially created for RKVY monitoring. Since 'Bhuvan' is an open-source mapping platform, these assets will probably be visible

for public viewing as well. Geo-tagged assets will not only ease identification and monitoring; it can also be implemented to perform additional developmental works on existing assets like creating watershed and drought-proofing irrigation facilities through terrain mapping.

Geotagging holds immense potential in scientific planning of infrastructure projects. Several assets have been created in the states under various schemes of the Ministry of Agriculture. Under RKVY also, states have been utilizing substantial amount of funds for creation of infrastructure/ assets in agriculture and allied sectors such as soil testing labs, pesticide testing labs, bio fertiliser setting units, custom hiring centres, vaccine production units, veterinary diagnosis labs, dispensaries, milk collection centres, fish production units, godowns, cold storage, shade nets, pandals for vegetable cultivation etc. Monitoring of such wide spread activities is of paramount importance to states and Government of India to understand flow of funds, inventorising the assets, bringing in transparency, planning of assets for future, and finally informing the farmers about the facilities available.

The technology would provide crop-wise details as evidence in case of crop damage and enable officials to verify claims. In terms of land management, satellite imagery would be used to cross check with the details on the ground. Ultimately, there would be data base of all lands under the Ministry.

Geotagging has already been successful with some departments in the government ministry. Ministry of Rural Development has very well utilized this method for monitoring of assets for MGNREGA and Department of Land Resources for monitoring of watershed activities

in the states. Postal department has also geotagged the post offices using NRSC Bhuvan Platform.

More than 1.5 lakh assets have been created/ developed under RKVY in agriculture, horticulture, livestock, fisheries and dairy sectors. It is high time a system is put in place to monitor them, index them and eventually understand them. This progressive step has immense potential in agriculture not only in creating transparency in the existing schemes but also for formulating development schemes in the agriculture sector.

### DBT in fertilizers Debuts

Enthused by the success of Direct Benefit Transfer (DBT) of fertilizers implemented in pilots districts, where fertilizer subsidies were transferred to manufacturers on the basis of actual sales, the pan India roll out of the scheme is expected to pave the way for implementation of the direct benefit transfer (DBT) system in this sector with a potential to save up to Rs 7,000 crore by plugging leakages.

A variant of the actual DBT scheme, subsidies for fertilizers are not transferred to the actual end users – the farmers. Instead, the difference between the actual value

and the subsidized price of fertilizer is deposited in the companies' bank account after actual details of sales through the Point of Sale (PoS) is furnished. Implementation of DBT in the strict sense is difficult to be materialized in the fertilizer segment, atleast not in the near future as the beneficiaries and their entitlement is not clearly defined. Multiple subsidized products, urea and 21 grades of Phosphatic & Potassic fertilizers have different subsidy rates. The subsidy rate in respect of urea varies from company to company due to different production processes, energy efficiencies of plants, vintage etc. As the amount of subsidy in some fertilizers, particularly urea is more than double the MRP, it will be a huge financial burden on the farmers to pay the MRP and subsidy upfront and receive the subsidy amount subsequently.

Apart from this, DBT scheme for fertilizers also differ with other subsidy schemes in terms of the quantity delivered to the end users. Unlike other subsidy schemes as in the case of LPG or food grains, where subsidy is capped for certain quantity per household or individual, the government has chosen to adopt the "no denial" policy in the case of fertiliser sale. Anyone who presents

his Aadhaar number will get the fertilizer at subsidized rate.

To ascertain the actual quantity of fertilizers required, the retailers have the added responsibility of recording the quantity sold to farmers whose authentication is done through Aadhaar cards, voter IDs or Kisan credit cards. This requires the mammoth task of installing PoS machines across the entire registered fertilizer retail stores in India which runs to around 2 lakhs in numbers. So along comes with it the inherent difficulties associated with the working of PoS - network failures in PoS operations and biometric authentication glitches. Besides this, the perennial issue of delay in payment of subsidies to the manufacturers after the companies have incurred all cost upfront will affect the program to roll out smoothly.

The scheme apart from plugging the leakage of subsidies and diversion of fertilizers to non-agricultural uses, can also assess the fertilizer quantity that is actually sold across the country. Beyond this, the quantity can be linked to the soil health card scheme to ascertain the actual need of fertilizer. However, the soil health card scheme has by far achieved only 40% of its target. Once it attains completion, the country's actual fertilizer need can be assessed and the fertilizers can be delivered accordingly. Apart from saving subsidies, the DBT scheme in the future can regulate the fertilizer sale per farming unit in an attempt to contain the malaise of overuse and hence bring in a balance of nutrients in the soil. Against an ideal combination of 4:2:1, NPK national average of 7:3:1 has resulted in drastic reduction in crop yields over the years. To ensure nation's food security, it is imperative to scale down this ratio and bring in a more economical and efficient fertilizer usage.



## India Labels its Organic Products

India will finally have a uniform code for products sold as organic. In 2017, Food Safety and Standards Authority of India (FSSAI) unveiled a unified regulation on organic foods to ensure that these food items are actually organic. At the Organic World Congress held in Greater Noida recently, FSSAI revealed a common logo for organic foods as a symbol of authenticity and trust. Agriculture Minister Radha Mohan Singh launched the Food Safety and Standards (Organic Foods) Regulations 2017, along with the 'Jaivik Bharat' logo and 'Indian Organic Integrity Database Portal' at the event. The portal, developed by FSSAI along with APEDA and PGS- India, would help consumers verify the authenticity of organic foods. FSSAI is mandated to regulate organic food in the country under the provisions of Section 22 of the Food Safety and Standards Act, 2006.

This is a significant development for India as this brings to a closure the debate over the authenticity of organic foods that are sold under that label in India. Organic food market is a booming market in India as consumers become more wary over the ill effects of conventional agricultural products that are raised with chemical fertilizers and pesticides. However, most of the products currently sold in India under the label of organic never carries any stamp of authenticity and hence viewed with suspicion and mistrust. With a certification procedure and norms in picture it will be a sigh of relief for customers.

So the new regulations would require any food to be sold as 'organic' in India to be certified under either of the two prevailing systems - National Programme for Organic Production (NPOP) regulated by the Union Ministry of Commerce &



Industry and Participatory Guarantee System for India (PGS-India) of the Union Ministry of Agriculture and Farmers Welfare. These regulations also carries provisions for recognition of other certification systems in the future. Earlier only food products meant for export have to be certified and the agency was that of NPOP system. The PGS-India system, on the other hand dealt with domestic market only and it was voluntary. Small producers or producer organisations making direct sale to end consumers are however, exempt from mandatory certification. Import of organic food into India would be possible under the new regulations without being re-certified in India if the organic standards of the exporting country have been recognised as equivalent to NPOP.

The products certified by the new set of regulations will also henceforth carry a logo for organic food from India called 'Jaivik Bharat' which would integrate the logos of both—the NPOP system and PGS-India. With an intent to build consumer trust in organic

food and also to accelerate growth of trade in organic food including export, the FSSAI has also launched a portal called 'Jaivik Bharat' to help consumers verify the authenticity of organic foods and also to share their grievances.

These steps are a welcome move as it gives the consumers' confidence to buy labelled organic products. Most importantly streamlining of products and a uniformed logo will remove confusion and guarantee to develop a stable demand and a regular market for these products. An assured market will help in increasing the organic cultivation in the country. Since the products are sold at a premium price, it will aid in better profit realization for the farmers.

The year 2017 thus brought with it some tragedy and misery for farmers. Falling prices and the inability of the government to protect the farmers from market forces destroyed their financial prospects. Having learned from this, the government and farmers can make some informed choices in the coming year.





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# ANTICIPATORY RESEARCH TO FACE UNCERTAINTIES IN THE MONSOON AND THE MARKET

**A**griculture Today is rendering very valuable service in highlighting the problems facing our agriculture. 2017 has been a difficult year to farmers both due to the uncertainty of the monsoon and the market. The recently concluded World Trade Agreement Negotiation has created further problems for developing countries. I would like to highlight a few of the problems which will need attention during 2018:

## Managing price volatility in urban food security

Currently, the price of tomato, onion and other commodities used extensively in urban areas is going up. Such price volatility is a perennial problem. We should find a permanent solution than merely take adhoc steps to pacify the consumer. A feasible method is the promotion of peri-urban horticulture. Considerable areas of land are available both within cities and nearby areas and they can be used to promote a peri-urban horticulture movement involving the cultivation on rooftops and vacant land with crops like tomato, onion, chilli and other essential food plants. This will confer a double advantage – price stability on the one hand and sustainable nutrition security on the other.

A couple of months ago I had written about the hardship caused to the growers of natural rubber in Kerala as a result of low price. Currently, rubber farmers are experiencing considerable price improvement. But unfortunately, their hopes for higher production will depend upon monsoon behaviour. Extreme heat and drought will reduce the production of latex. In this context, we should take two steps to achieve price stability. First, as suggested by me in a report about

10 years ago, the Governments of Kerala and India, should jointly establish a Price Stabilization Fund. Secondly, drought tolerant and climate smart clones should be planted, while taking up new plantings. The Rubber Research Institute of India (RRII) at Kottayam has developed drought tolerant strains of natural rubber through genetic modification. Because of their GMO origin, they have not been approved for field trials. We should permit field trials since such clones can be of immense value in an era of climate change. Also, the area under natural rubber can be increased in Northeast India with such clones. Natural rubber is one of our greatest assets and through a combination of technology and public policy we should be able to achieve sustainable production and price stabilisation.

## Burning of Rice Straw and Atmospheric Pollution

There is considerable debate going on at present among states, political parties and professionals about the methods of avoiding the burning of rice straw. It is also attracting attention at the legal level. In order to help farmers move away from this practice which is caused by the need to prepare the rice field for sowing wheat on time. Market driven alternatives should be demonstrated. There is no policy so far for bio-mass utilization. The Rice Bio-park established by MSSRF on behalf of the Government of India in Myanmar is a good example of how farmers can have options in ecologically safe use of the straw, the bran, husk and other parts of the plant. Money spent to prevent farmers from burning straw can be utilized better to demonstrate the value of community owned and managed bio-parks. This will also



Prof. M.S. Swaminathan

help to achieve a doubling of farmers' income during the next five years.

## Making National Nutrition Mission a Success

Government has approved a National Nutrition Mission with a three year budget of Rs. 9,000 crore. This is government's response to the widespread malnutrition resulting in children with impaired cognitive abilities. For the Nutrition Mission to be successful, it should be designed on a mission mode with symbiotic interaction among components and with a Mission Director who has the requisite authority coupled with accountability. Earlier Missions were not successful because the concept of the Mission was not fully operationalized. For example, the Nutrition Mission should have the following interactive components to make it a success:

- Overcoming undernutrition through the effective use of the provisions of the Food Security Act and also taking advantage of the enlarged food basket which includes millets in addition to rice and wheat.
- Assuring enough protein intake through increased pulses production and increased consumption of milk and poultry products.
- Overcoming the hidden hunger caused by micronutrient malnutrition through the establishment of genetic gardens of biofortified plants.

- Ensuring food quality and safety through steps for the adoption of improved post-harvest management.

In addition to the above, there is need within the mission for provision of clean drinking water, sanitation, primary health care and nutrition literacy. Further we must ensure that Community Hunger Fighters well versed in the methods of applying agricultural remedies to nutritional maladies are trained with the help of agriculture universities. The Nutrition Mission should have proper monitoring tools so that the efficacy of the intervention can be judged. Thus the term Mission should not only be in terms of a project title but more importantly in the procedure of implementation through synergy and symbiosis among different components of balanced nutrition.

### WTO and Food Security

Minister Suresh Prabhu deserves our gratitude for indicating at the Buenos Aires meeting of WTO that there can be no compromise on food security. WTO exists for promoting free and fair trade. The term "fair" should include the protection of the livelihood and food security of a majority of our people who depend on farming for their livelihood. This is why even in 1992, I suggested that there should be a livelihood and food security box which takes into cognizance the fact that agriculture in many developing countries including India is not just a commercial enterprise but it is the backbone of the livelihood security system of a large proportion of the population. This difference between a purely commercial activity and serving as a livelihood security profession should be kept in view while dealing with issues like food security reserves, and food security act. In other words, WTO should recognise the support needed for achieving Goal 2 ("End hunger, achieve food security and improved nutrition and promote sustainable agriculture") of the sustainable development decade. This should be the basis of the negotiation in agriculture.



**Mrityunjay Singh, Managing Director, CLAAS Agricultural Machinery Pvt Ltd**

"As we move to 2018, the industry continues to expect support from the Government and the farmers to adopt variety of farm equipment specialized for various operations. Harvesters, Balers and Transplanters will help improve efficiency of farm operations and tackle specific problems like those of stubble burning. By growing the network of custom hiring centers, subsidizing equipment where required and empowering farmers to progress, will help mechanization reach the grassroots of Indian fields"

### "India to see balanced fertilizer use in 2018"

I foresee the Indian agriculture will get a major boost in terms of balanced fertilizer use in the coming year. The Hon'ble Prime Minister, Shri Narendra Modi's recent appeal to the farmers to cut the urea consumption by half, will have a major positive impact on the balanced nutrition, specially, keeping in view his greater call for doubling the farmers income by 2022.

It would be imperative to mention here, since urea is out of the ambit of Nutrient Based Subsidy (NBS) Scheme, farmers have been using urea more than it is actually needed, being the cheapest among the macronutrient fertilizers, distorting the nutrient use ratio in the process.

In fact, the Government's decision to reduce the urea bags from the present 50 kg to 45 kg is a welcome move and a step towards balanced fertilizer use. Farmers can now follow the recommendation based on the Soil Health Cards (SHC), a key movement in Indian agriculture now, for balanced use of fertilizers in maintaining soil health and higher farm income.

In addition, reducing the GST rates on micronutrients from 12% to 5% and bringing it at par with the N,P,K would help the farmers in applying more micronutrients in their farms. Needless to mention that the deficiency of micronutrients like zinc is widespread in Indian soils, which is not only deteriorating the crop yield and quality, but also impacting the human health adversely, leading to widespread micronutrient malnutrition in India.

Furthermore, approving the Zincated Urea by the Government, which was included in the Fertilizer Control Order (FCO) way back in 1990's, but still pending due with the Government, will certainly ensure the replenishment of this critical micronutrient, zinc -essential for life, into the soils, crops, livestock and humans.

I am sure, the Government will take a favourable policy decision in the coming year, to encourage the farmers in practicing balanced fertilizer use to realise the Hon'ble Prime Minister's bigger dream of doubling farmers income by 2022.



**Dr. Soumitra Das**  
Director - India, Zinc Nutrient Initiative,  
International Zinc Association



## “Expecting the Government to develop Policy Initiatives for encouraging Pesticide Use”

**D**hanuka Group is in the forefront in introducing eco-friendly crop protection products along with farmer's training about agri-technology for rational use of inputs to optimize return from their investment. The Group is also actively advocating 'Dhanuka Kheti Ki Nai Takneek' which focuses on Integrated Crop Management, along with capacity development of Agri-input dealers who are still the primary source of knowledge for the farmers. Our Group was the first to join hands with the National Institute of Agricultural Extension Management (MANAGE), Hyderabad in their out-reach Diploma (DAESI) for Agri-input dealers. On our initiatives under public-private partnership, three SAUs in Gujarat- Anand, Navsari, and Junagadh have also launched a similar out-reach diploma, and look forward to more SAUs coming forward for creating a credible agri-technology provider work-force of agri-input dealers across the country.



**Shri R.G. Agarwal**  
Group Chairman  
Dhanuka Agritech Limited

At a time when the country is looking for 'Doubling Farmers' Income', can we afford the avoidable colossal loss of around Rs 4 lakh crore per annum by pests? In the coming year, we look forward to working more in public- private partnership and private-private partnership and continuous capacity building of farmers through increased use of 'artificial intelligence tools' to provide timely customized advisory for a specific farmer to enable him to go for adoption of safe and judicious use of pesticides, which are highly cost effective. We expect the Govt. to come up with policy initiatives for encouraging pesticide use which at present is limited to a few areas and crops; reduction in GST on pesticides; and campaign to overcome the unfounded myths about pesticide use. As a part of innovation and differentiation, Dhanuka Group will telecast in the very start of 2018, a 13- Episodes programme on National Channel-ABP News, in which several renowned scientists from the National Agricultural Research System would be sharing their views on how to make the national goal of 'doubling farmers' income by 2022' a reality.



**Mr. Raman Mittal**  
Executive Director, Sonalika International Tractors Ltd

## “India offers huge opportunity for tractor industry”

**G**ood monsoons this year has led to a buoyant tractor industry with growth of 15.5% YTM (April-Oct'17) which is so far the highest ever for the period, while Sonalika has registered growth of 20% during the same period, gaining market share. The country witnessed two major policy changes, demonetization and GST. During demonetisation, industry de-grew (-13.5%) in November'16. However, we at Sonalika, practise a lean inventory structure and during this time, we remained connected with our farmers and channel partners. With the cash flow situation improving and other factors being conducive, farmers started purchasing tractors. December'16 witnessed recovery with industry registering growth (+7.7%) and we continued to grow (+18%) faster than industry, thus gaining market share. There was a minor blip in tractor sales momentum during June 2017, when participants postponed purchases and de-stocked ahead of implementation of GST.

India offers huge opportunity for tractor industry as the tractor availability is quite low at 20 per 1000 ha, as per CRISIL. India has 670,000 villages but industry-wide sales have never crossed the number of one sale per village in a year, hence the potential to grow is huge. In order to address these growing needs, we at Sonalika firmly believe not only in the concept of make in India but also in make quality in India with customized product offerings to meet the needs of farmers across the globe.”



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Asia Africa Initiative

# 'FARMERS ARE THE MOST NEGLECTED LOT IN THE SOCIETY'



## What are the common challenges and issues faced by farmers in Andhra Pradesh?

The issues faced by farmers in Andhra Pradesh are quite substantial and some of those are similar to the challenges faced by farmers in rest of the country. Some major issues are related to prices, crop insurance, agriculture credit, input subsidy and fake prices produced in the market. The state government seems to be more enthusiastic in inviting Multi National Companies and corporate houses for investing in the state, bypassing the interest of the farming community and land-owners, in particular, in contravention of Land Acquisition Rehabilitation and Resettlement Act, 2013. Government has given licenses, exemptions, sales

An Agriculturist, technologist, political and social worker, Sh. Vadde Sobhanadreeswara Rao is a senior politician. A former minister, Rao was elected as a member of parliament in the 10th Lok Sabha from the Vijaywada constituency. Representing the Telugu Desam Party of Andhra Pradesh, he was also the convener of the Raithanga Parirakshana Vedika (RPV). He has written various books like 'Andhra Rytu Avedana', 'Prajala Edurutennulu-Paalakulateerutennulu', and 'Dagapadina Andhra Rytu'. He was member of the Sugarcane Advisory Committee (1990), Governing Body of Andhra Pradesh Agricultural University, High-level Committee on Agricultural policies and programs and the Standing Advisory Committee on Agriculture. He has also received I. V. Subba Rao Lifetime Achievement Award. Excerpts from the interview

tax, cess, subsidies, credit and host of facilities. They propagate, that the seeds sold by the seed company are original and genuine, whereas seeds from the farmers are fake and spurious which do not yield that quality and quantity of crops. Entire cotton seed sector is in the grip of corporates. Seeds must be kept as the domain of farmers, facilities should be reduced from Corporates sector and extended to the farmers.

## How government can deal with the issues of farmers?

Article 38, Preamble, states that 'The State shall, in particular, strive to minimize the inequalities of income, and endeavor to eliminate inequalities in status, facilities and opportunities, not only amongst individuals but also amongst groups of people residing in different areas or engaged in different vocations'. Policymaking at central level and state government level is important as in many instances farm price hits rock bottom. The government should take initiative to balance the prices and to



protect farmers' interests. There is a greater need for the government to frame policies where instant steps are taken to solve the problems of farmers taking into consideration, the time of emergency for any other problems.

**The socio - economic conditions of farmers are very poor as evidenced by the recent suicides. What are your suggestions to address the issues?**

Government of Andhra Pradesh is acquiring fertile land of the farmers by land pooling or acquisition for projects. The frequency of suicides is increasing. Farmers with less than 10 hectares of land are categorized as resource poor as per India's commitment to WTO and in Green-box there are facilities to help farmers by giving them premium subsidy, crop insurance and fair price. The government should not acquire multi-crop land, but opt for barren land instead. The truth is that the food is produced, but without it reaching hungry people it is of no use. Consequent to crop failure, some of the indebted farmers commit suicide fearing insult, harassment and molestation. Immediate and viable option is alluring all the debts - public and private debts of small, marginal and tenant farmers. It also serves to checkmate the harassment of creditors for fear of losing money.

**Central Government under the leadership of Prime Minister, Sh. Narendra Modi has promised to double the income of farmers by 2022. What are your views, suggestions and opinion about achieving the same?**

Farmers are the most neglected lot in the society and have the least consent to government. In the past 45 years, prices of agriculture commodities have increased only by 20 times, whereas salary of the government employees has

increased by an approximate 100 to 110 times. Farmers are not getting fair prices for the crops they grow. To achieve the vision and make it a reality, it is necessary to consider farmers' issues, problems, hard-work and happiness as priority.

**What suggestions you would like to give for the welfare of farmers?**

Methods of CACP (Commission for Agricultural Costs and Prices) should undergo drastic change and it should be made a statutory body from just a recommendatory agency. Commerce ministry should consult the CACP in relation to importing and exporting agricultural products and tariffs on agricultural commodities. India's trade policy in agriculture has a pro-consumer bias which implicitly taxes farmers by placing export restrictions on different crops. Policies more than often harm the farmers' interests, whose scope of getting higher returns globally are curbed. Any possibility of price hikes in agriculture in general and food in particular encourages policy makers to restrict trade. For the sake of international credibility and to avoid retaliatory action, India should stick to a liberal trade and tariff policy. Intervention may take the form of trade policy and/or tariff changes in the sense that restrictions on export or import will be placed or customs tariffs will be raised or lowered to encourage/discourage trade.

**What suggestions would you like to present the current government for improving farmers' condition?**

Bills which were presented by the farming community to the government should be passed, as the policies play major role for the development and success of farmers. Debts which are levied on the farmers should be exempted. 18% bank credit is dedicated for the

agriculture sector but only 5% of this is received by the farmers and the rest is used by agro processing industries. More than 50% of small and marginal farmers are compelled to take loan from private money lenders at 24 to 36% rate of interest, which becomes burden for the farmers rather than becoming a relief for them. Agriculture Market Yards are designed to be managed by the committees elected for the farmers. They are big facilities with huge funds, it can help farmers to realize remuneration price to their produce.

**Do you think leaders of farmers group would be able to compel government to take urgent action to address farmer's issues?**

When it comes to comparing agriculture policies and laws of India with other countries, we realize how far ahead are many countries. Japan imposes heavy import duty on import of rice to protect their farmers and hence farmers are able to live a decent life. In India many farmers are even unable to realize their cost of production. More than 200 farmers' organization all over the country have joined hands and conducted Kisan Sansad at Parliament Street to pass bills on loan waiver and minimum sale price on 20th – 22th November, 2017. Farmers are facing a different kind of threat to their existence, the government should protect farmers and their land. Signing of the Regional Comprehensive Economic Partnerships (RCEP) agreements could prove to be more dangerous than the WTO agreement. Farmers and the agricultural workers are facing the worst crisis ever and things were only going to get worse, if the M.S. Swaminathan Commission recommendations are not implemented.

# POLISH FOOD INDUSTRY: EUROPE'S NEW GROWTH ENGINE

Poland's agricultural sector has undergone significant changes over the past 25 years, and the country now has become Europe's major food production and processing hub. Poland is an important European and global producer of a number of agricultural and horticultural products as well as products of animal origin. Although the sector contributes only 3.5% to the country's economy, more than 60% of Poland's total land area is taken up by farming, and 12% of the country's workforce is employed in the agricultural sector. Agriculture represents 13 percent of the total exports, and 30 percent of all the volume of agriculture production generated are exported. About 75 per cent of the agricultural and food exports are absorbed by the very demanding European market.

There are roughly 1.5 million small family farms of less than 9 ha in Poland and these farms are struggling to remain competitive, and there has been a move to consolidate smaller farms into larger units in recent years.

Accession to the EU gave farmers access to funds from the Common Agricultural Policy (CAP), and in particular, to direct payments for all farms of one hectare or more. Along with EU cash, farmers also benefited from increased domestic spending on agriculture. All this has sparked growth and transformation in agriculture. Between 2014 and 2015, the value of agricultural exports increased 7.7% to €23.6 billion, while imports rose 4.7% to €15.9 billion, resulting in a healthy, positive trade balance of €7.7 billion.

## Polish agri-food products – high quality and unique taste

The food sector is one of the most important and fastest-growing branches of the Polish economy. Currently, Polish agriculture has taken the 7th place in the European Union according to the value of the global production of agricultural holdings. Meat, milk processing, fruits and vegetables, sugar and secondary cereal processing are some of the most competitive sectors. The objective Ministry of Agriculture and Rural Development and

National Support Centre for Agriculture (KOWR) is to place Poland as a leading food producer in the EU.

Polish food products are known all over the world due to their high quality, unique taste and competitive prices. Based on the tradition of family holdings, Polish agriculture combines tradition with modernity. In Poland, small quantities of mineral fertilizers and plant protection products are used, and thus natural environment and landscape remain intact. As a result, Polish food is healthy and attractive to consumers. Polish food industry is equipped with the most modern machinery. Numerous Polish agri-food processing plants have been modernized before Poland's accession to the European Union. In addition, Polish food is always produced with the use of good raw materials and its high quality is confirmed by rigorous control systems at every stage of production. The combination of those features makes Polish products prominent in the markets of Europe and all over the world.



## FARMING IN POLAND

- The primary agricultural sector accounts for 3.5% of the country's economy
- Poland has about 1.4 million farms that are smaller than 10ha.
- This represents about 70% of private agricultural holdings in Poland.
- About 60% of the population of 38 million is urbanized.
- About 12% of the population is employed in the agriculture sector.
- 14.7% of farmers are younger than 35 years.
- Agricultural exports amount to €23.6 billion/year

## The International Trade Fair POLAGRA FOOD reveals the food industry potential

The largest gathering for the food sector, Polagra Food took place in Poznań, Poland on September 25-28. It is the biggest event of its kind in Central Europe with more than 60 thousand visitors and group of journalist from China, India, Vietnam, the UAE, Sri Lanka and hosted by Agricultural Market Agency (ARR), an institution under the Ministry of Agriculture and Rural Development. The agency recently merged with the agency responsible for land and jointly formed Poland's National Support Centre for Agriculture (KOWR).

Polagra Food represents a group of trade fairs that offer a comprehensive review of the industry. Polagra got complemented with the other events in the business block including Polagra Food, Polagra Tech, Pakfood, Polagra Gastro and Invest Hotel. On top of that, the event featured Poland's most important culinary competition addressed to professional chefs, the Polish Culinary Cup.

The whole Polagra trade fair block in Poznań offers the food and gastronomy sector representatives a chance to get familiar with the latest trends, technological solutions and to promote the Polish economy. This year the exhibition included more than 900 exhibitors from 36 countries. The event was complemented with a wide selection of trainings, conferences, contests and culinary demonstrations. Poznań attracted people not only from Poland, but also foreigners who came to the fair from countries such as Singapore, Tajikistan, Uzbekistan, Lebanon, Egypt, Qatar, Romania, Holland, Great Britain, Germany, Belgium and Ukraine, who participated in the event under the hosted buyers program.

The recent Polagra Food offered a possibility to get acquainted with the products of over 200 exhibitors. A significant part of the exhibition area was occupied by Polish companies representing the dairy and meat processing industries. Both sectors presented well-known products from Polish shop shelves, as well as a lot



*The International Trade Fair Polagra Food offers a preview of trends in food industry.*

of products new to the market such as lactose-free and non-GMO cheese, or cold meat prepared using home recipes, is a trend that was observed at the fair in Poznań. Additionally, Polish producers prepared interesting ideas for cheese and meat snacks, including those that consumers are searching for at present, i.e. healthy, fit and eco foods.

Apart from the dairy and meat sectors, the fair was largely participated by companies operating in the fruit and vegetable processing sectors, producers of sweets, snacks, teas, drinks and alcohols. Such products were showcased by entrepreneurs from 21 countries, amongst them representatives from Belarus, Egypt, South Korea, Romania, Turkey, Ukraine, Italy, Finland, Bulgaria, Germany, Hungary, Lithuania, Malaysia and Sri Lanka.

For many years, Polagra Food has been a platform for the development of long-term business relationships.

The fair stands of both Polish and multinational companies attract visitors with their premier products and the latest achievement in the field of food production and technological innovations.

In 2018 Polagra Food will be held in May. New date of the fair will allow a possibility of pre-testing new products in the first half of the year, and an opportunity to present new products and contract their sales in the second half of the year, especially in the Christmas period.

### Polish your cooking

There is no better way to explore a country by actually eating your way through it. Local cuisine is not only delicious but also usually tells you a lot about the country's history and traditions. In many cities you may actually attend cooking classes, through this one can get to know about local products or learn how to make local cuisine.





*Journey through Polish tastes – culinary workshops in “The Plate” culinary studio*



*Traditional apple pancakes called racuchy, was served with apple cider. Also big plates of Polish meats & cheeses to share, along with different dips. Obviously, pierogi (dumplings in Poland) are always the most-awaited meal during the workshops.*

The Plate Culinary Studio in Warsaw brings taste and people together through their cooking workshop of Polish food. They invite you to a unique place where people together create tastes, get to know the secrets of different cuisines, talk about food, travel and life, and have a great time. It ensures culinary experiences on the top-tier level.

## European Poultry – The Power of Quality

Over the past several years, Poland has become number one producer and exporter of poultry products in Europe. This is due to growing consumption of poultry at home and growing sales abroad. Poland's poultry export is valued annually at around 2 billion Euros, representing 0.7 % of GDP. Of this, 20% goes to Asia and Africa. Halal Chicken is 8-10 per cent of the exports, and Poland wants to increase this component as this market is growing.

Consumption of poultry meat is higher than the average in Europe, it is stabilized at the level of 26 kg per person, and the growing surplus of supply is exported. Chicken meat is the majority of export (76%), then Turkey (18%) and other kinds of poultry (duck, goose: 6%)

The Polish poultry industry is highly integrated and export oriented. In 2017, some 30 percent of Poland's poultry meat production was destined for export. Export growth will continue due to expanding demand from intra EU and Asian markets. Major markets within the EU are the United Kingdom,

Germany, France, the Netherlands, and the Czech Republic. Hong Kong, China, and Ukraine are the main markets outside of the EU.

Mr. Rajmund Paczkowski, President, National Poultry Council-Chamber of Commerce in an interaction during the exhibition said, production of poultry in the European Union is dynamically developing. We produce more and more, and surplus amounts are exported to third countries. European poultry has a great potential and a chance to conquer global markets. It is worth highlighting that the EU exports of live animals, offal and poultry products have been growing year on year. Last year we produced 2.8 million tonnes of poultry out of which 1 million was exported to mostly the countries in EU. Sales are all over the European Union however 20% of the total sale also goes to the developing countries. Poland, France and Netherlands are the three main suppliers of poultry to the third countries markets. In 2016, the value of exports of poultry from the EU increased by 10% i.e. 165 million Euro



*Mr. Rajmund Paczkowski, President, National Poultry Council-Chamber of Commerce*

when compared with 2015”.

The European Union has one of the strictest poultry production standards in the world. All the member countries are obliged to implement integrated quality management systems, such as: Hazard Analysis Critical Control Point (HACCP), Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), and Good Agricultural Practices (GAP). They guarantee that the poultry products that reach consumers' tables are completely safe. “The quality of European poultry convinces customers, and it is guaranteed by the industry's quality system -QAFP. Two ideas of poultry production are embraced by this system: production based on the “from farm to fork” concept that guarantees consumers that the product is safe and of high quality and that, there is a constant supervision of veterinary physicians over the poultry production. As a result, consumers who eat meat with the QAFP label can be sure that during its production the following rules were adhered to: ban to inject poultry, ban on using any type of sprinkles or additional substances, ban on using hormones and growth stimulants, and guarantee that care was taken for the well-being of animals. Therefore, European poultry producers are proud of their products which every year gain on popularity and are sold around the world”, said Mr. Paczkowski.

The EU producers have developed optimized solutions which are based on a systemic integration of quality and food safety management and supervision and control of the entire poultry production process. “In the EU countries a great emphasis is put on the full identification of poultry. Monitoring and controlling animals' health from birth to slaughtering guarantee retaining health safety at each stage of poultry breeding. The mere process of slaughtering, cooling, portioning whole poultry, packaging, and transportation also influence its quality. That is why one of the basic requirements of the EU legislation is the possibility to define not only the origin of meat, but also the processing facilities”, he added.

### Meat Industry in Poland

Poland boasts a rich tradition of producing poultry and pork. Meat is a staple part of Polish diets, accounting for 27.9% of the nation's total food sales. Poland is the fourth largest producer of pork in the European Union in terms of production volume. About 90% of beef produced by Poland is exported. Total production accounts for 500,000 tonnes. Poland is proud of its long tradition of producing cold meats, sausages (including kabanos sausages appreciated all over the world), ham, pork loin, bacon and pâtés. The recipes for their production are passed down from generation to generation.

Poland's meat appetites are seemingly focused on two main categories: poultry and pork. Polish Association of Butchers and Meat Processors in an interaction during the exhibition said, “Poultry meat constitutes 38% of total meat consumption, with pork accounting for 55%. Beef, on the other hand, makes up just 2% of Poles' meat eating habits. Lamb, considered a premium product, is eaten even less. Per capita annual consumption of poultry and pork stands at 28.5 kilograms and 40 kilograms respectively, and per capita beef consumption is 1.5 kg per year”.

Association of Butchers and Producers of Processed Meat of the Republic of Poland is the oldest organization working for the meat industry in Poland. The Association currently bands together 210 meat and meat product manufacturers and other companies operating on the meat market, which constitutes a quarter of the total number of Polish manufacturers.

Polish meat stands out against the background of other countries due to its high quality and excellent culinary values. Meat producers follow the farm to fork principle, so as to guarantee safety in the supply chain. According to the association, “Polish meat complies with strict European standards and does not contain any antibiotics or growth hormones. In order to guarantee the highest quality of products, the significant part of Polish meat production is conducted

under national food quality schemes, such as Pork Quality System (PQS), Food Quality Guaranteed System (QAFP), Quality Meat Program (QMP). These systems impose strict conditions of production from animal breeding, through further stages of processing in order to guarantee safety, taste qualities and high nutritional value of products”.

### Milk and Dairy Products

In Poland, milk production is one of the basic spheres of agricultural production. In 2015, the total production of raw materials exceeded 12.7 billion liters. Polish dairy industry is as advanced as those of Western European countries in terms of modernity and sanitary standards. The leaders of the sector make use of the best and most modern technologies. Polish producers offer a wide variety of tasty, high-quality and safe products that reach more and more foreign consumers. In the recent years, cheese and curd have become the most important dairy products exported from Poland. Poland is the sixth producer of these products in the world and the fourth one in the EU.







### Fruits and Vegetables

Poland is an important producer and exporter of fruit and vegetables, which counts in the European and global markets. In 2015, the domestic production of fresh fruits reached the level of 4.1 million tonnes, whereas the yields of fresh vegetables amounted to 4.7 million tonnes. Polish horticulture and fruit growing form the foundation of the national processing industry. One of the more important products manufactured by this industry are high-quality fruits and vegetable juices. The dominant position in the production of juice is occupied by apple juice concentrate.

Poland is one of the leading EU producers of frozen fruit and vegetables as well. The production of frozen vegetables in the years 2009/2010-2014/2015 increased from 521 thousand tonnes to 645 thousand tonnes, i.e. by 24%. At the same time, the production of frozen fruit increased by 35% to 445 thousand tonnes.

Poland is the biggest producer of apples in the EU. In 2015, Poland produced 3169 thousand tonnes of apples, which is approximately 26% share in the collection of the EU. Poland is also in the forefront of production of berries – 518 thousand tonnes of Polish berries were collected

in 2015. As far as processed and preserved fruits and vegetables are concerned, Poland's export potential is outstandingly high.

### Chocolate Products and Sweets

Poland is one of the leading European and global producers of chocolate products. Polish sweets attract consumers with their wide range of flavours and shapes. The most famous Polish sweets include, inter alia, Ptasiemleczko (sort of chocolate-coated foams), chocolate-covered prunes, sesame cookies, fudges, cakes such as gingerbread, Śakotis (sort of spit cake) and Delicje (jaffa cakes). Poland sells its confectionery products in more than 100 countries in the world.

### Honey and Organic Products

Poland is in the European lead in terms of the production of honey, as Polish honey becomes more and more popular in foreign markets. It is known for the diversity of varieties and unique taste qualities.

The market of organic products is developing dynamically in Poland. Organic products have a great export potential. They are safe for health, do not contain preservatives or pesticide residues and are produced using methods consistent

with the principles of sustainable development.

### Poland-India cooperation

Mr. Lukasz Holubowski, Deputy Director General of National Support Centre for Agriculture, known by Polish acronym (KOWR), official host of the tour of senior journalist during Polagro Food talks about Polish agriculture and development opportunities for the Polish economy.

Agri-food sectors are commonly considered as highly regulated, traditional and of strategic importance, mainly due to the food security issues. Changes in the related market structures are subject of constant interest because of their importance for competition and economic welfare of food producers and consumers. In Poland, a rising concentration among various branches of the food industry can be observed. "Poland is the largest agri-food industry producer in Central and Eastern Europe and 7th in the European Union. Our focus is on innovation, developing new products and trends. We prepare food free of pesticides. The polish food industry is among the strongest in Europe and known for its innovation. In 2014 over 2600 companies operated in this sector, producing goods valued at over U.S. \$64 billion. This sector is dominated by small and medium size enterprises. The most important enterprises in terms of value of sold production are meat, dairy, beverage, confectionary and baking industries as well as processed fruit and vegetables", said Mr. Holubowski.

Poland is seeking economic and agriculture cooperation with other European countries and Asia. The trade balance is in Poland's favor, exporting food and agriculture products annually worth 25 billion Euros and importing goods to the value of 17 billion Euros. "Our major agriculture trade partners are EU member countries like Germany and Czech Republic but we are also exporting to non European partners like Asia and Africa. India and Poland recently signed an agreement on the exchange of information and technology in the agriculture sector. The agreement will see cooperation



between the two nations and emphasize on the need to expand their trade relations. The agreement covers exchange of information between the two countries on various aspects of agriculture and allied sectors including agri food trade, plant health and phytosanitary regulations as per international trade requirements, participation in fairs, exhibitions, seminars related to agriculture and agri-food processing. Indian market is very important to us as the general quality of living is improving and GDP is increasing at an impressive pace, so this market in our view has very good potential”, said Mr. Holubowski.

Talking about the current trade volume between the two countries in agriculture segment, Mr. Holubowski said, “We import 139 million Euros of Indian agriculture products, and we only exported Euro 33,000 this year. This is dramatic decrease of our exports but potentially India shall be a very important partner in future. In 2016, our exports declined dramatically, the exports declined by as much as 74 percent, which made our trade balance negative. We are trying to rectify the situation and improve the trade balance. We like to export commodities that we are really good at producing”.

Discussing the importance of family farming in Polish agriculture system, KOWR, DDG, Mr Łukasz Holubowski says that there are roughly 1.5 million small family farms of less than 9ha in Poland. These farms are struggling to remain competitive, and there has been a move to consolidate smaller farms into larger units in recent years. At the same time, the government has attempted to preserve farming traditions by assisting small family farms to diversify and specialise in order to maintain a competitive edge. However, one of the main drivers of agricultural development has been an increase in average farm size from 5 ha to about 9 ha. “There has also been a strong emergence of cooperative-type farming as farmers join forces to strengthen their collective bargaining power, and cooperative-type and government has also been very supportive of agriculture. It’s one of the fastest- developing sectors in the country and that’s why we’re placing a lot of emphasis on developing new markets,” he explains.

Polish government support producers who cater to global trade. The state has many instruments to support agriculture and producers. “We have rural development program which focuses to a large extent on investment in modern technology and processing. The rural development program is multifaceted and extends support for all sorts



*Mr. Lukasz Holubowski, Deputy Director General of National Support Centre for Agriculture (KOWR)*

of activities. We have subsidies for export and wide range of payment system as well. We have direct payment system and payments supporting animal production. As a result of the EU and the government’s support, the Polish farming sector has become one of Europe’s most innovative, and boasts a higher number of young farmers than any other EU country”, added Mr. Holubowski.

Besides trade in agricultural commodities, there are many areas in agriculture segment where the two countries can cooperate. “There is whole range of products and services we could offer to India. We have lot to offer in agriculture apart from just produce. We have know how, technology, machinery, seeding material, genetic material etc. Also, there is possibility of scientific cooperation between the two countries. We have scientific institutes that are interested in cooperation on topics like environmental impact of agriculture and research in the area of food safety. Using Polish technologies to enhance food processing capacity in India could be a win-win formula for companies on both sides”, opined Mr. Holubowski.

# ASIA'S FIRST BIOGAS-BASED BIO-CNG PLANT IN PUNJAB LEADS THE WAY TO SUSTAINABLE AGRICULTURE AND RENEWABLE ENERGY

Finally, a welcome way out of the pollution mess that the capital has found itself in. Punjab based Sampurn Agri Ventures breaks new ground by introducing an innovation for sustainable agriculture and livelihood through paddy straw management in India. With emphasis on national food security and soil health, this wholly indigenous technology will double the farmers' income, rejuvenate rural economy and save foreign exchange by reducing import of fossil fuels. Mr. Sanjeev Nagpal, Founder and Chairman of NASA Agro Industries Pvt. Ltd. and Sampurn Agri Ventures Pvt. Ltd. (SAVPL) belongs to an agrarian background. He has always been in the fore front to find innovative ways for suppressing the devastating effects of Paddy Straw burning w.r.t. depletion in soil nutrients, environment & health problems. He is one of the leading and the most recognised individuals contributing the development of viable & sustainable solutions to replace paddy straw burning.

## What is the background of Sampurn Agri Ventures Pvt. Ltd. (SAVPL)?

We founded (SAVPL) with the primary goal of finding a solution to the environmental and health hazard caused by open field Paddy Straw burning. It is a subsidiary of NASA Agro that was formed with the sole purpose of tackling the two main environmental damages taking place in South West Punjab- paddy straw burning and waterlogging.

## Have you found a tangible solution to these environmental hazards?

SAVPL is the first company in the world to set up a Biogas plant utilising Paddy Straw as the sole feed. In its efforts to develop a technology that could be replicated and fully manufactured in India, at an affordable cost, Sampurn Agri Ventures Pvt. Ltd. had commissioned Indian Institute of Technology, Delhi. Together, IIT-D and SAVPL have successfully found a solution to open field burning of Paddy Straw that will not only prevent its



burning, but also produce renewable energy and organic fertiliser. With the help from the brilliant minds at IIT-D, Sampurn Agri Ventures Pvt. Ltd. was able to convert the most hazardous of Agricultural Wastes, Paddy Straw, into a valuable resource of Renewable Energy, Power and Organic Fertiliser.

## What is the production capacity of your plants?

SAVPL has established Asia's first biogas-based power plant in Fazilka, Punjab. It has been approved and recommended by IIT-Delhi and PAU (Punjab Agriculture University) and it operates on paddy straw for large-scale biogas production. The system is based on 100% use of paddy straw and generates nearly 4,000 cubic meters of biogas per day from 10 tonnes of straw. This in turn generates 1MW power. So, along with the effective management of paddy straw, the facility also produces bio-fertilizer and sustainable energy.

## What are your future expansion plans?

The company has plans to set up 42 projects in the first phase covering every district of Punjab. Each project will employ 30 people and majority of the job will be created for collection and management of paddy straw. The total investment plan for Punjab is Rupees 3000 crores, including infrastructure for CNG distribution. This will be completed in next three years. Each project will process 70 tonnes of paddy straw per day. Every 2500 tonnes of paddy straw handling will create 20 jobs. 30 million tonnes of paddy straw produced in Punjab and Haryana will generate 3.5 lakh jobs directly and another 3 lakh indirect jobs will be created. Further large number of MSMEs will benefit from the manufacturing equipment used in these projects.

### **What are the advantages of paddy straw compost and how can farmers benefit from the project and innovative technology?**

Paddy straw compost is a rich source of silica. Silica is highly useful as fertilizer as it not only provides better growth and yields, but also provides immunity against many crop diseases and prevents them from uptake of toxic materials such as arsenic, cadmium, lead and other heavy metals. Use of Agro waste for making compost also helps farmers financially and generates employment in rural areas. Out of all possible uses, using paddy straw for making compost is the most advantageous for the farmers and also it doubles up as a source of Renewable Energy. Other advantages of composting is recovery of bio-gas which can easily be converted to electric power and automobile fuel. One tonne of paddy straw yields 250 cubic metre of biogas and produces 450 kwh or 115 kg of CNG.

### **What are the subsidiaries and tie ups of the company?**

NAIPL has tied up with IIT Delhi for

technical support and this project has been developed in technical consultation with IIT D. A technology demonstration project has been set up at Fazilka, and it is currently working for betterment of the environment and the farmers. The company has also tied up with PAU (Punjab Agricultural University) for value addition to production of bio-enriched organic manure. IOC has taken the initiative to support us to develop paddy straw processing. A MOU has been signed with IOC to invest jointly in these projects. IOC and NAIPL will invest to set up new production facilities and market the CNG along with manure and other products through IOC outlets. IOC will not only sell their own produce but also support all projects that will come up in Punjab and other parts of the country. This project has been visited by a team of IRRI who have appreciated the project.

It is a combination of different activities which work in synergy with each other and support to develop end to end solution for the overall development and will also be a source of income to farmers as it will add value to their residue by exchanging manure with paddy straw the farmers bring to from the fields.

### **What are the environment and Social benefits of the Bio-CNG plant?**

This technology is environment friendly, commercially viable and socially responsible. This process has zero effluence and can generate employment in remote areas, giving sustainable income to people in rural areas. It also helps in sustainable agriculture and livelihood. Farmers get jobs and natural fertilizers for their crops and residue from paddy is destroyed from the fields without causing environmental pollution. These plants not only generate biogas and fertilizers but also reduces emission of gases and toxicants in the environment.

### **What led you on to this project?**

Excessive use of fertilizers, insufficient amounts of water, increasing incidence of pests and microbes, and the depletion of soil silicon have all led to decline in rice production. It had therefore become important to find ways of enhancing the uptake of available silicon using novel methods. This challenge was taken up by Professor S. Ranganathan of the Indian Institute of Chemical Technology, Hyderabad. As a creative organic chemist who successfully practices and propagates the 'art of organic synthesis, he argued that if one can hook a water soluble small molecule to the hydroxyl arm of silicic acid, one should be able to enhance the transport of silicon from the soil to the plant via the root. He knew that a polymer based molecule has been used earlier to dissolve fine silica from the lungs of affected people. Above all, there is a real need for the support of government and people to initiate the process for the betterment of people, society and environment.

### **What are the recommendations given?**

Paddy straw is an asset not a liability and we need to prevent its burning. There is an immediate need to manage paddy straw in a way that not only prevents burning but creates an environment that sustains our agriculture. Paddy straw if used for production of biogas will produce manure instead of ash and help enrich soil. This will further reduce cost of cultivation and will reduce the requirement of chemical fertilizers, pesticides and fungicides. The Biofuel so produced will replace fossil fuel to further reduce pollution. It is important to manage paddy straw and prevent burning in any form. Whether this is being used as fuel for power or for producing carbon rich fuel for other uses, improving soil health is essential to sustain agriculture.



# “WATER IS THE DRIVING FORCE OF ALL NATURE”

— LEONARDO DA VINCI

**W**ater is an essential element for the sustenance of life. It is chiefly for this reason that the effective management of this precious resource is vital. With advancements in science and technology, various innovative methods have facilitated water management in urban and rural areas. However, of enhanced importance is the judicious management of water in parts of the country where agriculture is predominant and the resource is scarce, for example, the state of Rajasthan.

Rajasthan's climate is primarily arid to semi-arid with short spells of showers brought by the Southwest Monsoon. The Thar Desert and the Aravalli mountain range are primary geographical features of the state. The rivers Chambal, Banas, Luni, and their tributaries drain the eastern and southeastern parts of the state. Being an arid region, the natural vegetation is primarily thorny, with occasional dry deciduous forests near the northern and eastern plains. The average annual precipitation of the state stands at a mere 200 mm, significantly lower compared to the national average of 650 mm. Diurnal and annual ranges of temperature are high across the state.

## Water scarcity

An arid climate with low annual average rainfall makes Rajasthan a water-deficit state. Lack of precipitation reduces the sub-surface water resource. Perched aquifers have dried up in many places. The only option for farmers is to dig deep bore wells and mine the water from deep aquifers. Farmers with large land holdings are able to channel required resources to dig bore wells, but marginal farmers cannot afford the financial risk, as there is no guarantee of hitting the water table. The prohibitive cost of bore well also fuels water trade among farmers. The terms of trade are not beneficial to beneficiary farmers, as access to water is only available once the owner has supplied required irrigation to his/her field. Evidence suggests that untimely and inadequate irrigation reduces the productivity of the crop, and therefore its monetary realization. This further forces the farmer to approach local moneylenders for dear credit, eventually entering a debt trap.

Unavailability of water negatively affects the pastoralist community as well as animal husbandry. Cattle are starved of water, and farmers are unable to cultivate high-quality fodder, both of which are crucial to attain high milk yield. The situation

becomes worse when the majority of the population is dependent on agriculture and allied activities for livelihood and do not have many alternative income sources. Water scarcity increases the drudgery of women and children as they are forced to travel long distances to fetch water for domestic purposes. The villages in Rajasthan are scattered and most families tend to dwell near fields, which increases their difficulty to access village handpumps.

In the water-scarce district of Karauli, per CGWB, decreased rainfall has led to an increase in the extraction of groundwater resources, leading to the classification “overexploited.” As the district is not serviced by any canal or irrigation scheme, farmers primarily depend on groundwater sources for irrigation. A few village ponds were constructed as part of MGREGA that act as drinking water sources for cattle, and also recharge groundwater. During summer months, most ponds dry up, as losses due to evaporation increase due to high atmospheric temperature.

## Initiatives to mitigate scarcity

Scarcity must be addressed with sustainable solutions. To mitigate water scarcity, methods employed are subsequent to the availability of



funds, geography, socio economic factors, technical feasibility, etc. Conventional wisdom suggests that watershed management is the most sustainable and effective method to improve water scarcity in parched regions such as Rajasthan. The state has a history of traditional water management practices in the form of johads and baolis.

To improve water security in the region, the availability of indigenous methods has to be considered, such as water conservation and the willingness of people to participate effectively. The use of indigenous knowledge is expected to provide sustainable solutions. To provide a conducive environment for farmers to double their income, artificial groundwater recharge methods must be designed and implemented. Studies show that the presence of green pastures improves the groundwater recharge capacity of a given land mass. Therefore, an adequate thrust needs to be given to tree plantation on farm bunds and commons. Overall efforts should aim to preserve the natural ecosystem and make agriculture and allied activities more remunerative for farmers.

In the Nadoti block of Karauli district, a series of nine check dams were constructed over three streams, treating a command area of 2,000 hectares. The intervention started

with multiple meetings with villagers and panchayat members, which helped to identify potential locations and consider social, geographical, legal, and technical feasibility. For a successful watershed project, the gram panchayat plays a crucial role. The project could be sustained without the requisite permission from the gram panchayat to undertake water conservation interventions over the common land, which includes non-perennial streams and rivulets. In addition, the villagers participated during the construction phase by contributing their labor for a significant number (250) of days.

To ensure the longevity of the structure, a bank account was opened in the name of the village development committee, and contributions, in cash, by the villagers were deposited in it. Seeing the enthusiasm of villagers of one village, other gram panchayats invited Sehgal Foundation to explore possibilities for water conservation structures within their jurisdictions. The continued enthusiasm of four gram panchayats and seven villages led to the construction of nine check dams, over three streams, within a span of ten months, with a total outlay of INR 1.8 crores.

## Expected benefits

Zeal shown by villagers and

panchayats to conserve water resources in their area led to several qualitative and quantitative benefits:

- Catchment area treated: 2,000Ha
- Water harvesting potential created: 52 million liters
- Number of farmer households benefited: 1,400
- Number of cattle receiving access to water: 4,500
- Number of bore/tube wells influenced by groundwater recharge: 268
- Additional area to be brought under irrigation: 1,300 Ha

## The way forward

Despite being a water-deficit state, Rajasthan has developed its water resource potential by constructing rainwater harvesting tanks. Efforts to rejuvenate traditional water harvesting structures are being undertaken by the state government. New initiatives, such as "Mukhyamantri Jal Swavalamban Abhiyaan," aim to increase groundwater recharge by constructing village ponds and check dams.

To increase water security for rural people and to achieve the SDG of access to safe water, effective participation of local institutions is essential. People-led water conservation interventions ensure effective and equitable distribution of any accrued benefits.

"The water cycle and our life cycle is one."

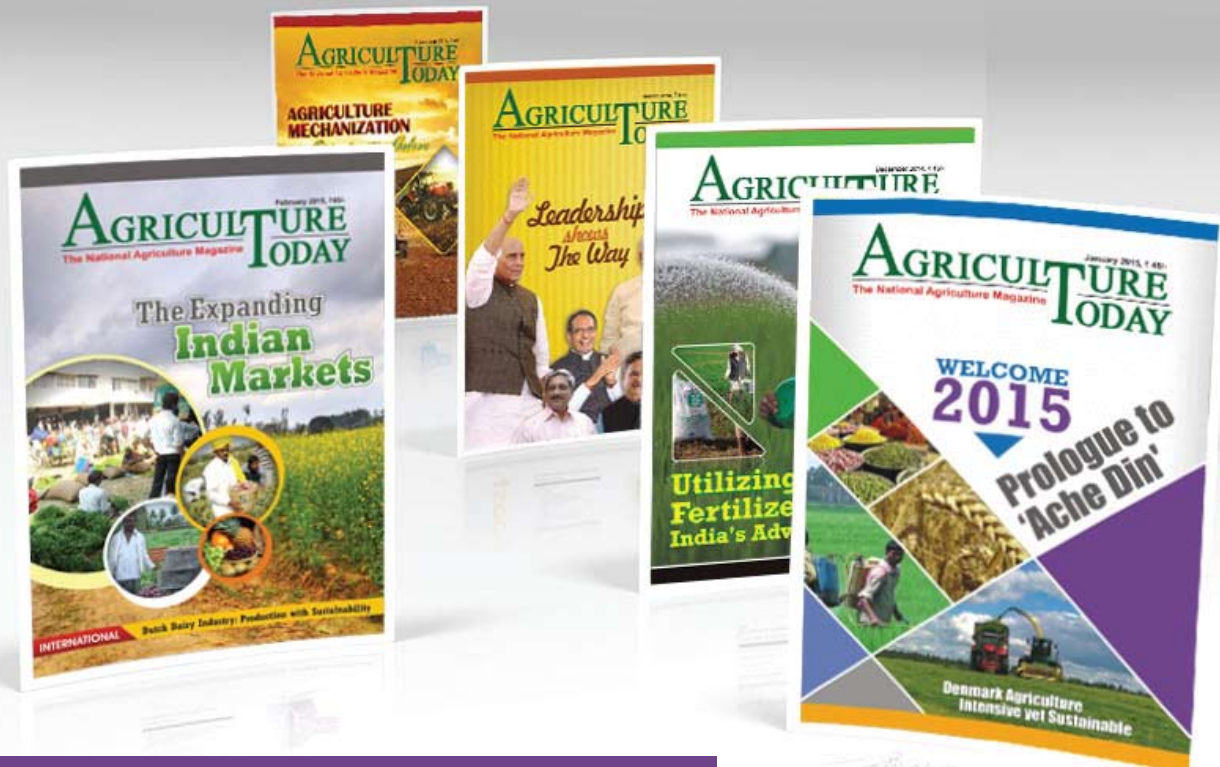
"The conservation of water is the conservation of life."

These quotes emphasize the need to use this precious resource mindfully. Improved water supply and clean and safe drinking water are of paramount importance. The proverb, "Pure water is the world's first and foremost medicine," couldn't be more true today.

**Parth Gohel, Programme Leader,  
Water Management,  
Sehgal Foundation**








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# LINKED INEXTRICABLY: SOILS AND ALL THAT LIVE ON IT

All of us who live above ground survive on what grows on the soils. Hence it stands to a logical suggest that soil health deserves to be put on topmost priority and linked to public health in today's world. By doing so, some amount of information leading to awareness on the health of soil and how in myriad ways uncalibrated human activities affect it's well being and ours in turn may be seen by ordinary people at large. There is certainly a kind of compartmentalization in not believing so, and which may well be by default, with members of public at large imagining that policies, will by themselves, resolve health issues, and even perhaps risk guess that there is an underlying idea that this aspect of holistically looking is not reasonable.

As we continue to expand our understanding of the soils, we would stress into our awareness that soil indeed is a non renewable resource that requires careful and deliberate stewardship to minimize its degradation.

Soil health, in brief is capacity of soil to function and sustain plant and animal productivity as also to maintain water and air quality. All this is clearly dependent on management and land use decisions by each and every one of us to alter it either way (even if we own no land at all !). How we look at "pollution" is in no small way but profoundly explains how we look at soils or not look at all. Farming activities could go a long way in lessening pollution levels and sequester carbon in soils.

Importantly farmers, as they are in the forefront, ought to view the term soil health, with focus on



biological function and protection of environmental quality as being most relevant to eco agriculture. Soil building is serious nation building in more ways than one may imagine (perhaps a role which the farmer has not for himself imagined !). The role of a farmer is a lot more and significant than seen by the public. The farmer,

whilst running the riskiest business, could in hugely unimaginable ways discharge social responsibilities and be appreciated for it too.

The role of microbial diversity relative to soil health is useful in understanding the effects of crops and soil management. Supporters of eco agriculture recognize the vital

## The experts would be feted by farmers for providing soil reports as (illustration) :

Functional Group Biomass & Diversity			
Total Living Microbial Biomass, Phospholipid Fatty Acid (PLFA) ng/g			5021.18
Functional Group Diversity Index			1.581
	Total Biomass	Diversity	Rating
	< 500	< 1.0	Very Poor
	500+ - 1000	1.0+ - 1.1	Poor
	1000+ - 1500	1.1+ - 1.2	Slightly Below Average
	1500+ - 2500	1.2+ - 1.3	Average
	2500+ - 3000	1.3+ - 1.4	Slightly Above Average
	3000+ - 3500	1.4+ - 1.5	Good
	3500+ - 4000	1.5+ - 1.6	Very Good
	> 4000	> 1.6	Excellent
Functional Group	Biomass, PLFA ng/g		% of Total Biomass
Total Bacteria	1881.75		37.48
Gram (+)	1182.99		23.56
Actinomycetes	358.71		7.14
Gram (-)	698.76		13.92
Rhizobia	50.72		1.01
Total Fungi	399.36		7.95
Arbuscular Mycorrhizal	123.64		2.46
Saprophytes	275.72		5.49
Protozoa	45.75		0.91
Undifferentiated	2694.32		53.66

## Community Composition Ratios

Lab No. :

Fungi:Bacteria 0.2122

Bacteria tend to dominate in systems with fewer organic inputs or residues possibly leading to a lower C:N ratio. In addition, bacteria can be more prominent in the early spring or late fall as soil temperatures are usually cooler and vegetation is less active or absent. Dry conditions, slightly alkaline to alkaline pH values, or increased land disturbance through prolonged and extensive tillage, grazing, or compaction may also favor bacteria. While bacteria are important and needed in the soil ecosystem, fungi are desired and more often considered indicators of good soil health. Increased use of cover crops and/or other organic inputs and less soil disturbance should help the soil support more fungi. Adjustments to pH may also be recommended in some more extreme circumstances.

Scale	Rating
< 0.05	Very Poor
0.05+ - 0.1	Poor
0.1+ - 0.15	Slightly Below Average
0.15+ - 0.2	Average
0.2+ - 0.25	Slightly Above Average
0.25+ - 0.3	Good
0.3+ - 0.35	Very Good
> 0.35	Excellent

Predator:Prey 0.0243

This ratio is also expressed as protozoa to bacteria. Protozoa feed on bacteria which helps release nutrients, especially nitrogen. A higher ratio indicates an active community where base level nutrients are sufficient to support higher trophic levels or predators. However, this ratio will always be a relatively low number because the prey will greatly outnumber the predators.

Scale	Rating
< 0.002	Very Poor
0.002+ - 0.005	Poor
0.005+ - 0.008	Slightly Below Average
0.008+ - 0.01	Average
0.01+ - 0.013	Slightly Above Average
0.013+ - 0.016	Good
0.016+ - 0.02	Very Good
> 0.02	Excellent

Gram (+):Gram (-) 1.6930

Gram (+) bacteria typically dominate early in the growing season and/or following a fallow period. They also survive better under certain environmental conditions or stressors such as drought or extreme temperatures due to their ability to form spores. Therefore, it is common to see higher values when the community is coming out of dormancy or is stressed. These values will typically begin to approach those of a more balanced bacterial community as the soil conditions become more favorable throughout the growing season. A gram (-) dominated soil may be due to anaerobic conditions or other stressors such as pesticide application or heavy metal contamination.

Scale	Rating
< 0.5	Gram (-) Dominated
0.5+ - 1.0	Slightly Gram (-) Dominated
1.0+ - 2.0	Balanced Bacterial Community
2.0+ - 3.0	Slightly Gram(+) Dominated
3.0+ - 4.0	Gram(+) Dominated
> 4.0	Very Gram(+) Dominated

## Stress and Community Activity Ratios

Sat:Unsat 2.6072

Bacteria alter their membranes under various environmental conditions in order to maintain optimal fluidity for nutrient and waste transport into and out of the cell. Saturated fatty acids may reflect a better adapted community to current environmental conditions. Communities under stressed conditions will increase their proportion of unsaturated fatty acids. This will likely occur most often as a result of low soil moisture or drastic changes in temperature. In general, a higher number indicates a healthier and more stable community.

Mono:Poly 10.2902

The ratio of monounsaturated to polyunsaturated fatty acids is used along with the sat:unsat ratio to further indicate the degree of community stress. A higher ratio indicates less stress, while a lower ratio would depict higher levels of prolonged stress due to conditions such as temperature, moisture, pH, or nutrient availability (starvation).

Pre 16:1w7c:cy17:0 7.0141

Pre 18:1w7c:cy19:0 6.9336

Cyclo (cy) fatty acids are more prominent during stationary phases of growth or under high stress conditions that influence membrane fluidity and growth rates such as temperature, pH, moisture, and nutrient availability. In general, a higher number or all Pre16/Pre18 is better and indicates an actively growing community experiencing fewer stressors. These values are typically higher early in the growing season (planting) when the community is becoming active and experiencing fast growth. The values may begin to drop towards the end of the growing season (harvest) following a decrease in plant growth activity or as the community approaches a stationary growth phase as the temperature/moisture changes between the seasons.

All ratios should be looked at separately, but should also be taken into context and compared with one another to better understand the big picture. These are general guidelines and statements regarding soil microbial communities. In addition, the scales and ranges presented here are specific for the type of extraction and analytical methods used for PLFA analysis at Ward Laboratories, Inc. They will not necessarily reflect ranges derived from other methods of analysis or the literature. The scales can and should be adjusted slightly depending on the time of year and conditions at sampling along with the climate and soil type of specific regions where comparisons are being made. Conditions such as time of year, past and present crop, moisture, pH, and fertility should be noted or measured close to sampling for PLFA analysis for a more in depth interpretation of results.

significance of soil microbial diversity as a key resource for maintaining the functional capacity of both agricultural and natural eco systems. There is abundance of data which goes to show the many functions driven by soil microbial populations including nutrient cycling, decomposition of organic substances leading to soil organic matter and aggregate formation, protection from plant pathogens, synthesis of plant growth regulating compounds for root growth stimulation and vegetative production. Thriving microbial communities are on the roots and rhizosphere of plants that exude part of their food to them.....like quid pro quo !

For this magical cycle to continue and flourish the farmers would have to move

away from intensive industrial farming which outsources resources by way of fertilizers and chemicals to "in sourcing" of resources by building soils and partnering the microbial diversity to enable that. This will necessarily imply help from the agricultural experts and institutions and towards which end work can be seen but a long and hard way to go yet. The feedback from consumers, by way of offering better prices to farmers for differently grown crops etc is vital for farmers and both segments together may see their individual roles in reducing carbon footprints, in general interests.

**Ashok Trivedi**  
**Tea Farmer**



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## MUKUL SANGMA THE PEOPLE'S CM

**A physician, a musician and an accepted politician, Mukul Sangma carries his multi-faceted personality with élan. Adhering to a liberal, rational and inclusive governance model, Sangma believes in the key pillars of literacy, entrepreneurship, social inclusion and welfare and community development programmes for a better Meghalaya. A stickler for swift execution and completion of development projects, Sangma has been working relentlessly to make Meghalaya a state to be reckoned with.**



**M**ukul M. Sangma, the 11th Chief Minister of Meghalaya is a politician from the Indian National Congress and leader of the party in the state. A practicing physician and a former health and medical officer, Mr. Sangma has held several portfolios- Home & Education, Taxation and Fisheries apart from being the Parliamentary Secretary, Chairman of the Meghalaya Transport Corporation and Deputy Chief Minister, Meghalaya.

Born on 20th April 1965, at Ampati village in the present day South West Garo Hills district to Teacher couple, Binoy Bhushan M Marak and Roshana Sangma, Sangma completed his school education from the Government High School in Ampati and passed his pre-university examination in Science from St. Anthony's College in Shillong. Having graduated in medicine from the Regional Institute of Medical Sciences (RIMS) in Imphal, he started his career as medical and health officer at Zikzak Public Health Centre.

His stint in the political arena started while he was in RIMS. While studying, he had occupied a number of positions in the governing body of the Students Council. Sangma's career in the public health center also acquainted him with the masses and their many-layered problems. These days instilled in him the desire to serve people and help them with their day to day struggles.

Sangma joined active politics in 1993, when he was elected to the Meghalaya Legislative Assembly from Ampatigiri constituency as an independent candidate. Subsequently, he was appointed chairman of the Meghalaya Transport Corporation. He was re-elected to the Meghalaya Legislative Assembly from Ampatigiri constituency in 1998, 2003 and 2008 as an Indian National Congress candidate. Sangma also held office as the Parliamentary Secretary, Government of Meghalaya between the years 1996 and 1998. In 2003, he assumed the role of Home and Education Minister of the Meghalaya government led by Chief Minister D. D. Lapang. In 2004 Lok Sabha elections, he contested against the veteran leader, P. A. Sangma and tasted

defeat. In 2009, he again became the Deputy Chief Minister of the Indian National Congress-led Meghalaya United Alliance (MUA) government led by Chief Minister Dr. D.D.Lapang. When D.D. Lapang resigned in 2010, Sangma took oath as the 11th Chief Minister of Meghalaya. He was re-elected as the Chief Minister of Meghalaya on the 5th of March, 2013.

In a first of its kind, Dr. Sangma launched the Livelihood Intervention and Facilitation of Entrepreneurship (Life) programme in Songsak in the East Garo Hills. It is a self help group that was not just meant for the BPL group, as is the custom with most government programs, but was an all- inclusive program where people were asked to participate in self help groups and help achieve sustainable livelihoods. Sangma has taken several steps to boost entrepreneurship and career prospects in the state. He has always urged the youth to look beyond government jobs and pursue fulfilling careers that can also benefit the masses. Sangma is also known for his innovative measures with regard to boosting tourism and his emphasis on building better roads and offering access to quality healthcare facilities.

Sangma has also come out with several horticultural and agricultural schemes for benefiting people from all walks of life and also for beautifying the state. The Chief Minister has constantly felt that migration of farmers from rural to urban areas has hampered the growth of agriculture sector in Northeast and there was an urgent need to reverse the trend. "Farmers are moving to urban areas not by choice but compulsion. We have to ensure and handhold the farmers, so that they are able to think global and act local", he believes. According to him agriculture and its allied sector is the fastest growing business in the world. He is also aware of the relevance of linking agriculture to technology. Following Sikkim's footsteps, Meghalaya has also resolved to become an Organic state.

Dr. Sangma with his keen desire to solve the problems of the society and driven by his vision for a stronger and more prosperous Meghalaya has become highly popular amongst the people.



“The nation celebrates December 5 as ‘World Soil Day’. I would like to tell our farmers that soil is a very important part of the earth. What if there is no fertile soil anywhere in this world? If there is no soil, there would be no trees, no creatures and human life would not be possible”

**NARENDRA MODI**  
Prime Minister

“Karnataka government’s Organics and Millet call is being answered by farmers across the country. Overlooked since the ‘Green Revolution’ of the 1960s, these forgotten food grains are on the comeback because of their superior nutritional profile and the fact that they are highly drought resistant”

**KRISHNA BYRAGOWDA**  
Karnataka Agriculture Minister



“To make Assam one of the top states in the country in agriculture, both the agriculture and irrigation departments must work hand in hand so that the farmers in the State get motivated to work doubly hard. The new generation of engineers of the departments have a crucial role to play to bring about transformation in the agriculture sector of the State”

**SARBANANDA SONOWAL**  
Chief Minister, Assam



“Research and development projects in horticulture crops have yielded encouraging results, as a result, the production of horticulture crops have been more than food grains irrespective of adverse climatic conditions.”

**KRISHNA BYRAGOWDA**  
Karnataka Agriculture Minister