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2022 is here!!

The year Indian Agriculture has anxiously been waiting for...

Hon'ble Prime Minister's vision of Doubling Farmers Income by 2022 faces the jury to be scrutinized, tried and tested at all echelons of the fraternity. With the issue of a legal guarantee of minimum support price (MSP) for crops expected to be finally decided, the coming year shall be remembered in history. Whether fondly or with disappointment... only time will tell!

World agriculture shall remember 2021 as the year that brought the indomitable spirit of Indian farmers under the spotlight. Along with fighting the farm laws, they were also facing grilling challenges from inclement weather to incessant and intense opposition on various television channels and social media. The onslaught continued even after the government showed grace and accepted their demand for the repeal of the three farm laws that they were agitating against.

Experts are profoundly aware how necessary these laws were, for the long-term reform agenda of Indian agriculture. It has been six years since the special task force under **Dr Ashok Dalwai** gave its report on the policies and the action plan to double the income of farmers by 2022. As per the report, doubling in real income is possible only with a 10.4% annual growth rate in farm sector. Nearing the end of this stipulated tenure, speculations suggest that we are nowhere near the ambitious goal.

Development and reforms in agriculture marketing hold a key place in this very comprehensive report. As we bid adieu to a turbulent 2021 and step towards witnessing a much awaited chapter of Indian Agriculture history, we must look towards strengthening marketing initiatives to support farmers for enhanced trade. Institutions and states join us in this endeavour in the January 2022 edition of Agriculture Today. We extend our gratitude to all eminent authors who have participated in this review.

Here's to new opportunities and achievements.

Fond greetings for an extraordinary 2022 from the Agriculture Today Group.

Happy Reading

Mamta



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DR. M.J. KHAN

ICFA and CEPA sign Trade Promotion MoU

Republic of Korea (RoK) has emerged as a significant trade partner for India. The trade and economic relations between India and Republic of Korea (Korea) have gathered momentum in recent years. Bilateral trade in Jan-Dec 2020, recorded \$16.9 billion. The bilateral cooperation between the two countries cover a range of sectors, including energy, electronics, shipbuilding, information technology, cybersecurity, etc.

With Korea and India signing Comprehensive Economic Partnership Agreement in 2009, the two countries have committed to lowering or eliminating import tariffs on a wide range of goods over the next 8 years, and expand opportunities for investments and trade in goods as well as services.

This is a green signal for India for extending its trade interests in agriculture. Although there is a cautious approach in Korea regarding import of agriculture goods, India can seek the country's expertise in infrastructure and logistics in agriculture and allied sectors. India can thus look forward to investments and cooperation in food and agriculture sector from the companies and industries there in the presence of a facilitator.

Indian Chamber of Food and Agriculture (ICFA) and Korean Government Agency 'Chungcheongnam-do Economic Promotion Agency (CEPA)' signed a comprehensive Memorandum of Understanding (MoU) recently to facilitate trade and investment in food, agro and infrastructure sectors between Korea and India. The MoU was signed at ICFA HO in New Delhi by Dr. NK Dadlani, Advisor, ICFA and Mr. Seung Chang Ha, India Representative, CEPA.

Under the agreement the two sides have confirmed support in promoting cooperation in the areas of commercial, industrial and technical exchanges between the companies and industries from the respective regions for potential collaborations, partnerships, trade, investment and contract manufacturing in food and agriculture sector, including logistics and infrastructure.

ICFA, the apex body in India, working on business, policy and development agenda and serving as global platform for trade facilitation, partnerships, technology and agribusiness services, can be a convenient facilitator in the trade partnership. With its 27 industry Working Groups and sector specific Business Councils, ICFA representing the interests of key stakeholders at the national and international level, is in a position to utilise its rich gamut of experience in fostering partnerships and collaborations effectively. CEPA, the Korean counterpart, also works with similar objectives. Opening up the Indian market for small and medium-sized enterprises in Korea, CEPA provides corporate promotion support. It is an interesting development for both the countries. The two Asian giants' cooperation in agri sector will be beneficial to the respective countries.



How Assam Farmers Are Benefitting Through rkbassam.in



RAJNI SHALEEN CHOPRA

More and more farmers in Assam are benefitting from the digital platform www.rkbassam.in. This digital platform is very new for the Assam farmers. But the efforts put in by International Rice Research Institute (IRRI), Assam Agricultural University and the Department of Agriculture, Govt of Assam are making more and more farmers to connect with this app and benefit in diverse ways.

Rkbassam.in is a user-friendly website available in local languages. The process of creating awareness and capacity building of farmers on use of this platform is going on. A few hundred farmers have installed this app in their mobiles within a very short span of time. People have started browsing the website too.

With the combined use of digital platform and demonstrations the newly introduced stress tolerant rice varieties namely Ranjit-Sub1, Bahadur-Sub1, Swarna-Sub1 and BINA Dhan 11 have received tremendous response from the farmers. It is being observed that farmers are replacing their old rice varieties with these new Sub-1 flood tolerant rice varieties.

Approximately 75% of the beneficiary farmers have adopted these flood tolerant rice varieties. Rkbassam.in enables farmers to access information on the best management practices in rice cultivation. In addition, farmers have found a reliable source of information regarding Paddy Procurement Centres (PPC), contact details of extension functionaries and input dealers of their respective areas.

Assam ranks low in farm mechanisation usage. This trend is changing now. The Assamese farmers have started accessing farm machinery on hiring basis at a reasonable rate through newly introduced Custom Hiring Centre (CHC). The digital platform provides all the CHC contact details.

The use of RKB website or RKB mobile app for accessing information is a new and emerging concept for Assam farmers. The impact of this technology will be visible with added advantages to the extension system in the long run.





NATIONAL COOPERATIVE CONFERENCE PATH OF DEVELOPMENT SHALL BE PAVED THROUGH COOPERATIVES: SHRI AMIT SHAH

Union Minister of Home Affairs and Minister of Cooperation Shri Amit Shah attended the 'National Cooperative Conference' held in New Delhi as the Chief Guest. Many dignitaries associated with cooperatives welcomed the country's first Cooperation Minister, Shri Amit Shah. The Union Minister of State for Cooperation, Shri B L Verma, President of the International Cooperative Alliance (Global) Dr. Ariel Guarko, Secretary, Ministry of Cooperation and Ministry of Agriculture and Farmers Welfare and all co-operatives including India's leading cooperatives – IFFCO, National Cooperative Federation of India, Amul, Sahakar Bharti, NAFED and KRIBHCO and many other dignitaries of the cooperatives family were also present on the occasion.

Shri Amit Shah addressed more than 2,100 members of the cooperatives family from across the country and about 6 crore people connected with the initiative through virtual medium, with a mention of Pandit Deendayal Upadhyay's policy of Antyodaya. Shri Amit Shah said that the vision of welfare of the poor and Antyodaya cannot happen without cooperatives. Whenever there was talk of development in the country earlier, Pandit Deendayal Upadhyay first talked about Antyodaya and today his birthday is the day to receive inspiration for lakhs



Shri Shah said that IFFCO has worked to give a new direction to India's Green Revolution. A society was formed in 1967 with 57 cooperatives. Today it has grown by making more than 36,000 cooperative members and distributes the dividend to about 5.5 crore farmers

“Farmers' welfare is the top priority of the government”

and crores of workers.

Shri Amit Shah said that after 75 years of Independence and at a time when the cooperative movement was most needed, Prime Minister Shri Narendra Modi created the Ministry of

Cooperation. He thanked the Prime Minister on behalf of crores of people of the cooperative sector across the nation for forming the Ministry of Cooperation. He said it is a matter of pride for him to be the country's first Cooperation minister. Shri Shah called upon cooperative leaders and workers across the country that now the time of neglect has ended and the time of priority has started, all shall work together shall take cooperatives forward.

Shri Amit Shah said that cooperatives





AMUL, Lijjat And The Role of India's Major Cooperatives

Describing the positive aspects of the cooperative movement, he mentioned Amul of Gujarat. He said that Amul was born out of the vision of Sardar Patel. He said that in 1946 the British decided that farmers would have to compulsorily give all milk to a private company. There was an agitation against this decision in Kheda district and Sardar Patel told Tribhuvanbhai that unless there is a system to sell milk, the movement against the decision cannot be successful. It was from there that Amul started.

Under the guidance of Sardar Patel, Tribhuvanbhai Patel registered two primary village milk producer societies in which 80 farmers joined. In 2020-21, Amul's group turnover has crossed Rs 53 thousand crore, 36 lakh farmer families are associated with it, and it has tremendously empowered women. What the biggest corporate dairy cannot do, our Amul has done.

Similarly, referring to Lijjat Papad, Shri Amit Shah said that in 1959, a courageous Gujarati woman named Jaswantiben Popat started a cooperative of preparing papads with 80 women. In 2019 her business was more than Rs 1,600 crore with exports of Rs 80 crore. Today around 45,000 women are associated with Lijjat's cooperative movement. This success story is an inspiration for women across the country. Our country's women have made a huge contribution in the success of Amul and Lijjat.

“We are committed to agriculture and the prosperity of farmers.”

the work as nature and culture and shall have to move forward. He said that the path of development of crores of farmers, underprivileged, backward, Dalits, the poor, neglected and women of the country can be paved only through cooperatives.

Shri Amit Shah said that many people question the relevance of cooperatives and they feel that the cooperative movement has become irrelevant. He stressed that the cooperative movement is most relevant today and there is a long way to go. He said that by connecting every village with cooperatives, making every village prosperous with the mantra of prosperity from cooperation and through this making the country prosperous – this is the role of the cooperative movement.

The Union Minister of Home Affairs and Minister of Cooperation said that the word cooperative is made up of the words ‘co’ and ‘work’. Cooperative is to work together, with a goal, in one direction with the fraternity. He said that maybe

make a very important contribution in the development of the country and this contribution is still there, but still many dimensions are yet to be reached. He said that it will have to be thought afresh, it will have to be outlined anew. The scope of our work will have to be increased, transparency will have to be brought in the work, and the cooperative movement will have to be included in

“The government is committed to strengthening the cooperative movement in the country, the benefits of which would go to the grass-root level cooperatives.”



the strength and economic power of all of us working in the cooperative sector is less, but our numbers are so large that if we collect it through cooperatives, then a tremendous force is created, which no one can beat.

Shri Shah said that now the time has come to make a new beginning in the cooperative movement with confidence. Prime Minister Shri Narendra Modi has given a mantra of prosperity from cooperation. Shri Shah said that the cooperative sector will give full thrust to fulfill Prime Minister Shri Narendra Modi's goal which he has set of a US \$ 5 trillion economy. The cooperative sector will exert its full force to fulfill this goal, Shri Shah stated.

Shri Amit Shah said that the cooperative movement will also develop rural society and will create the concept of a new social capital. He said that there are many interpretations of capital, but we are a people carrying 10,000 years of culture. The idea of social capital will take our cooperative movement a long way. Shri Shah said that cooperatives have become ingrained in the nature of the people of India. Cooperation is in our culture and it is not a borrowed concept. This is why the cooperative movement in India can never become irrelevant.

The Union Minister of Home Affairs

“This is the beginning of an unprecedented era of development in India’s agricultural sector.”

and Minister of Cooperation said that he has been associated with the cooperative movement for almost 25 years. The cooperatives in the country do not wait for any circular. But when disaster such as floods take place, the village's PACS (Primary Agriculture Cooperative Societies) help and provide food to the affected and also provide shelter. District PAC Sahakari Banks do not worry about their profits or dividends, but are ready to work in the field, be it famine or storm or flood. The cooperative movement has contributed in bringing our country out of many crises. Cooperative is not new to India. From 1904 till today, the cooperative sector has achieved many new heights, has seen many ups and downs. Sometimes it has fallen, sometimes it has recovered, sometimes it has progressed, but its momentum has not stopped and it is a request to all that the momentum should not stop.

In his address, Shri Amit Shah

remembered and acknowledged those luminaries who supported the cooperative movement like Madhavrao Godbole, Baikunthbhai Mehta, Tribhuvandas Patel, Vitthalrao Vikhe Patil, Yashwantrao Chavan, Dhananjayrao Gadgil, and Laxmanrao Inamdar.

The Union Minister of Home Affairs and Minister of Cooperation said that many people ask him whether the cooperative movement is still relevant today.

Shri Shah said that IFFCO has worked to give a new direction to India's Green Revolution. A society was formed in 1967 with 57 cooperatives. Today it has grown by making more than 36,000 cooperative members and distributes the dividend to about 5.5 crore farmers. He said that if a large company earns money, then the biggest part of it will go to its owner. But whatever IFFCO earns, every penny will go to the 5.5 homes of thousands of farmers. This is called cooperative. Shri Amit Shah expressed confidence that in the coming days, due to cooperative institutions, there will be no need to import fertilizers and manure, and we will become self-reliant. Similarly Shri Shah praised KRIBHCO for its contribution to the country's economic growth.

AGRICULTURE MARKETING CACOPHONY DROWNS CONCERNS

“It is a closed season for open minds” is the advice in the iconic British book and serial *Yes Minister*. The grey headed civil servant gives the minister who in an innocent burst of belief pushes for transparency in governance. Passions do trounce logic

at times.

A la *Yes Minister* posturing, ideological or otherwise, has in recent times characterised debate and discussion on agriculture trade and marketing rather than a healthy engagement. The debate, in fact the absence of it, has been microscopically on a single issue: the three laws steadily aiming at agriculture marketing reforms.

The subject of the laws was agriculture marketing reforms; the laws and reforms both perished without discussion. Well, if you question this statement, please note

that cacophony cannot be termed as discussion, least of all an informed one. And the limited discussion that took place was not on the articles or provisions of the laws but on each one's beliefs and apprehensions, and his or her definition of loyalty towards or against the farmers, the national heroes in the din of chest thumping slogans. The vast multitude of small, marginal and landless may have been ignorant or bewildered spectators in this chaos nonetheless.

Pre-Determined Positions, No Middle Path

An extreme irony as all are well meaning. All agree that agriculture markets are flawed; all agree that market reforms are of paramount importance; all agree that farmers are exploited; all agree that farmers need to be freed from the shackles of the middlemen. But then.....? Even though why and what are hardly disputed, none agrees on how; and as the events of the past more than a year have demonstrated, an open minded discussion on the subject of agriculture marketing is well nigh impossible these days for each one of the participants would both be a farmer friend and a farmer enemy, depending upon who is defining them; there is no middle path. Even here the positions are pre-determined; I haven't come across any dispassionate discussion on the provisions of the laws. The season for open minded engagement is indeed closed.

Uttam kheti, madhyam vyapar, nishkrit chakri, bheekh nidan, goes the



About the AUTHOR

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Most of the governments discouraged private mandis and some even criminalised setting up competing markets. This created the monstrous monopolies of APMC Mandis controlled by influential cartels who have been artificially manipulating the prices. The entire system of management in these Mandis has remained opaque, especially for the small and marginal farmer

private enterprise in the country; more than half our humongous population is engaged in it. Then why the clamour against allowing private marketing? A 100% private enterprise seeking, nay fighting for, 100% government control over marketing. Unbelievable.

The entire gamut of agriculture governance has been production focused; markets are only considered a supportive appendage. Basically food grains and the attendant food security has been the foundation of our agriculture policies over the years. So there is hardly any mechanism to establish a harmony or balance between what the consumer pays, and what the farmer gets. Farmer is perhaps the only producer who produces a commodity without sparing a thought to the market; we can say that he produces to feed; he doesn't view farming as a business. Therefore, he is hardly ever in a position to influence, least of all manipulate the markets.

Market in the context of agriculture commodities would mean the entire supply and value chain; and this happens to be the weakest amongst the other weak links. We produce more than what is required, and in a cruel twist of fate one third or more is wasted or

ancient proverb: farming is the supreme vocation, mediocre is trade and lowly is service; finally if nothing works beggary is the solution to survival. Agriculture sits atop the pyramid. One is reminded of the law of inverse proportion: the less you could or wish to do something about, the more you talk about it. And so it is with agriculture despite such an exalted status. Too many bleeding hearts, too few inclined to challenge the status quo.

Tractor trolleys loaded with onions or tomatoes or potatoes, and at times with sundry vegetables, lined up on the roads of the millennium city Gurgaon, aka Gurugram, from time to time is a familiar sight for me. Such distress sale takes place all too frequently; and on the other extreme the prices of these commodities jump sky high too putting the political class, more than the consumer, to distress; though this brings no relief to the farmer. A price volatility of 500% within a short period of three months or so could be classified as catastrophic in any business but when it comes to agriculture, we have somehow

resigned to its acceptance. This state of affairs is only one dimension of the issues confronting agriculture marketing in India. Why are markets so egregiously flawed? Is it because the producer has no voice, hence no influence? Milk producers do not suffer such ignominy; the lean and flush season prices remain almost the same. So why have we not been able to create such a market security around other commodities?

Why The Clamour Against Private Marketing?

This most debated sector, especially amongst the socially concerned intellectuals, is entirely in the private sector. In fact, agriculture is the biggest



lost, and people starve. So our inability to create and manage efficient supply chains should surely border on being a sin. And the urban consumer hardly ever pauses to think as to how much does a farmer get from a loaf of bread that is part of his breakfast each morning? All this in the regime of iron fist government control over agriculture markets.

Most Governments Discouraged Private Mandis

Do we even know what an APMC market or the government mandi we are so strongly advocating looks like? A common theme permeates the legal and governance regime all across the country viz. the Agriculture Produce Marketing Committee (APMC) Acts of the respective states, the overarching regulatory mechanisms regulating agriculture marketing. The APMC Acts were enacted with the laudable objective of ensuring fair price to farmers and safeguarding them from exploitation of middlemen by creating an environment and institution which made it easier for the farmer to sell. The institution is the APMC and the mechanism for sale of farm produce is the agriculture market or the APMC Mandi as it is commonly

It is no surprise that a large number of farmers, especially the small and marginal ones, do not sell to APMC Mandis but to the intermediaries and unlicensed traders. Various studies place the share of the middlemen at 30 to 55%, lower in case of food grains but very high for horticulture produce

understood. Curiously, the APMC's managed to achieve quite the opposite of what was envisaged.

In their over enthusiasm, most of the governments discouraged private mandis and some even criminalised setting up competing markets. This created the monstrous monopolies of APMC Mandis (Markets) controlled by influential cartels who have been artificially manipulating the prices as the entire system of management in these Mandis has remained opaque, especially for the small and marginal farmer who is unable to take on the might of the wealthy and strong arm traders.

Parliamentary Panel Said APMC

Acts Not Implemented In True Spirit

The Parliamentary Standing Committee on Agriculture in its report of January, 2019 too had commented that the APMC Acts have not been implemented in true spirit. A limited number of traders has led to a cartelisation which dictates the terms of trade. Farmers are subjected to unreasonable deductions from the sale returns of their produce in the form of market fee, commission charges etc., levies which were actually to be imposed upon traders. And on occasions, these are charged multiple times. In lieu of these fees, except for a handful of examples, hardly any infrastructure or facilities exist in any of these Mandis. Wherever they exist, the quality is poor. An organised market or Mandi should necessarily have all the facilities for post harvest management of agricultural produce, such as grading, sorting, packaging etc. Preferably, they should also have supporting services such as banks, post offices, resting places etc. But all this has remained a pipe dream. In most of the cases either the facilities don't exist or they are of extremely poor quality. Moreover, even the number of such markets is grossly inadequate. The National Commission on Farmers has recommended that an agriculture market should service a geographical area of not more than 80 square kilometers whereas the existing national average is 496 square kilometre. We are lacking both in quantity and quality. What a travesty of justice that the institution established to protect farmers from exploitation has become the source of it. Against this background, the Parliamentary Committee too recommended that creating alternative marketing platforms should be a priority as the present Acts and the Mandis established under them are restrictive and obstruct creation of competitive channels of marketing. It is indeed ironic that even in a state of surplus production the farmer does not enjoy the freedom to choose his customer.



INDIAN AGRICULTURE IN 2022 OPPORTUNITY TO SCALE NEW HEIGHTS

Indian agriculture has successfully weathered the storm of the global pandemic which disrupted the supply chains across the globe for two years. Indian agriculture grew when other sectors of the economy declined or remained stagnant. India recorded a relatively high growth in agri-food exports during last two years despite unprecedented challenges. These are pointers to the vast potential of Indian agriculture to become a global leader in agri-food supplies.

Indian agriculture is at an inflection point to move rapidly from being a sustenance based cultivation model hitherto to a value added high growth sustainable commercial agriculture. The last two years have witnessed a steep increase in investments in the agri-food startup space, signifying increasing infusion of innovation. Many of these innovations are based on modern science of digitization,

satellite imagery, artificial intelligence, etc. Introduction of these innovations will help to catalyze our farming, apart from making it attractive to the next generation.

Need To Be Globally Competitive

For enabling Indian agriculture to be a value added, high growth model, it will have to be globally competitive. It will have to compete on costs, quality and innovation. As our current productivity levels are much lower than global average productivity, there is a large opportunity for the policy makers to encourage the latest and progressive science deployment in Indian agriculture to make it competitive.

This first step towards the realization of this goal

will be by manifold improvement in our current R & D efforts. For instance, Indian Seed Industry spends about 3% of its revenue on R&D, while the seed industry in developed countries is as much as 10 to 12% of revenue on R&D. The key reasons for low R&D efforts in Indian agriculture and the seed industry are the relatively weak policy environment on intellectual property protection and lack of clarity on regulatory environment. Clarity on these two elements will be great enablers on making our agriculture globally competitive.

We are close to being the most populous nation in the world and will surpassing China in the next few years. We shall have the largest number of mouths to feed and will have to ensure nutritional security. By making our agriculture globally competitive through an enabling environment, we will ensure improvement in farmers' income. We are optimistic that our policy makers will bring in the required reform measures in 2022 in the long-term interest of Indian agriculture.

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UTTARAKHAND'S STRENGTH IN DIVERSE SECTORS OF AGRICULTURE

FARMING SUCCESS

India's first Integrated Cooperative Development Project in Uttarakhand emerges as a major success
Significant boost to rural economy by giving uplifting co-operative, farm and allied sectors

Uttarakhand's Integrated Co-operative Development Project (ICDP), the first project of its kind in the country, has significantly improved the rural economy by giving a boost to the co-operative, farm and allied sectors.

Technical and financial support for the project has been provided by National Cooperative Development Cooperation (NCDC). The project, worth more than Rs 3,632 crore, has strengthened the rural economy by giving a boost to the cooperative, farm and allied sectors. This has helped the state to check forced migration from the hills.

About 50,000 small and marginal farmers have been directly benefited by the scheme. Through effective implementation of the project, the state has been able to create meaningful employment in rural areas. Additional avenues of employment have been created through commercial activities like marketing of agricultural produce and dairy products.

Uttarakhand's Integrated Co-operative Development Project has played a key role in implementing Prime Minister Narendra Modi's vision of doubling the farmers' income by 2022. The project (ICDP) has consistently worked towards achieving a uniform economic growth in the state by bringing the farm sector at par with the manufacturing sector.

Through ICDP, the state has been able to benefit small and marginal

farmers. Diverse segments of the Integrated Co-operative Development Project have helped to boost all aspects of the agriculture sector including the crop sector, horticulture, aromatic plants and cold water fisheries. It has given a boost to sectors such as animal husbandry, dairy, and has also uplifted the farmers engaged in the rearing of sheep and goats.

Challenges Faced By The State

The state faced many challenges in the agriculture sector. The following were the major challenges:

- * Fragmented & small landholding of farmers
- * Dominance of traditional crops cultivation
- * Unavailability of quality inputs
- * High post harvest losses due to insufficient or inaccessible value chain services
- * Largely rainfed agriculture, limited irrigation facility
- * Lack of post harvest infrastructures
- * Lack of primary & secondary processing
- * High cost of transportation due to hilly terrain
- * Limited Market Access & branding of state products

Through various initiatives in the cooperatives sector, Uttarakhand has been able to address these challenges in a phased manner. The initiatives undertaken by the state in the cooperatives sector include The Silage Federation, Apple Federation, Bakraw-UK goat meat, Anchal's Badri ghee and trout farming, to name a few.

These cooperative projects in Uttarakhand are greatly benefiting the rural community. Along with work at ground level, the state government has also worked at long-term knowledge generation through these projects. The successful practices and models have been replicated across the agriculture sectors in an effort to consistently boost the incomes of the farmers.

Some Successful Agricultural Initiatives of Uttarakhand



About the AUTHOR

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Marketing & Branding of BAKRAW –UK Goat Meat

This has been a highly successful initiative of the Uttarakhand government. The project has been implemented across four districts, five clusters and 29 primary cooperative societies.

The state provided the complete backward linkages to the farmers to enable them to take up goat rearing in an organized and efficient manner. Scientific training in goat rearing was provided to the farmers. The farmers were made aware of the right practices for health care, immunization and deworming for the goats.

Since marketing is a major challenge faced by farmers, the state developed the BAKRAW brand to promote Himalayan goat meat. The state established the 'Meat On Wheels' marketing facility. These are specially developed vans with chilling and meat-cutting facilities that transport high quality goat meat to the buyers.

To provide further marketing support to the farmers, the state established linkages in the NCR region for the

Through Integrated Co-operative Development Project (ICDP), Uttarakhand has been able to give a boost to diverse segments of the agriculture sector

BAKRAW brand of goat meat from Uttarakhand. The Himalayan goat meat is now being exported to UAE. E-commerce platforms are also being tapped.

In order to ensure standardization, the state has established meat processing units. Other meat development activities are being taken up to develop BAKRAW as a strong brand from Uttarakhand. The concentrated efforts towards Uttarakhand's Himalayan Goat Meat Brand have increased the visibility of this brand of goat meat in national and international markets.

Uttarakhand Success in Horticulture

The state has moved from strength to strength in the field of horticulture.

Uttarakhand has around 4.5 lakh farmers growing fruits, vegetables, flowers and other produce. The land covered by horticulture is about 2.96 lakh hectares, with business worth Rs 3,250 crore. The apples produced in Uttarakhand are now regarded as among the best in the market. Apple cultivation in the state covers 25,785 hectares with an annual production of over 62,000 metric tonnes.

Our major apple crop comes from Uttarkashi and Dehradun districts. More than 60 per cent of the fruit in Uttarakhand is produced in these areas. The state plans to develop apple cultivation zones in seven other districts - Nainital, Almora, Pithoragarh, Chamoli, Pauri, Tehri and Rudrapur.

The government wants to double the area under apple cultivation. The state is steadily moving farmers towards crop diversification in order to increase their income. Mushroom cultivation, trout farming, aromatic plants, medicinal herbs, off-season vegetables, pulses, spices – all these are areas of focus for the highly progressive, development-oriented Uttarakhand government.

APEDA's Initiatives for Boosting Agri Exports

Agricultural and Processed Food Products Export Development Authority's (APEDA) thrust on exports, spearheaded by an intense thrust towards standardization and quality, has enabled an export turnover of USD 20.67 billion during the year in 2020-21 for our scheduled products.

APEDA plays the role of a catalyst in making Indian products globally competitive. APEDA's multi-pronged strategy lays emphasis on quality upgradation and creating infrastructural facilities. The organization attempts to provide backward and forward linkages ranging from farm practices to marketing to end consumer. The regular interaction with the manufacturers and exporters and providing inputs to the government in the formulation of policy and India's position in international negotiations are a few of our trade-related functions.

India's huge resource base and a host of natural advantages make it a chosen destination for a variety of agricultural products. APEDA facilitates not only in improvement of Indian agri products but also provides a platform to showcase India's quality produce.

Steps To Enhance Agri Exports

Towards the endeavor to enhance the agri exports of its scheduled products, APEDA has initiated several steps like helping exporters through its financial assistance schemes for setting up specialised infrastructure, branding and market promotion and quality development. Multiple initiatives have been initiated to enhance agri exports and tap the opportunities emerging in global trade.



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Dr Madhaiyaan Angamuthu is an IAS officer of the Assam-Meghalaya Cadre, with ample experience in several key sectors of public administration. He is currently Chairman, Agricultural and Processed Food Products Export Development Authority (APEDA), an apex organisation of the Ministry of Commerce and Industry, GOI, created specifically for export promotion of agro and allied products from India



Collaboration with Missions/ Embassies: APEDA has been regularly interacting with the Indian Missions abroad to tap the opportunities in the importing countries and requirements arising on account of the Covid pandemic.

Virtual Trade Fairs (VTFs): To leverage on the opportunity due to COVID 19 situation and to sustain the existing markets, APEDA introduced its own platform through the in-house team for organizing Virtual Trade Fairs to establish contact between Indian exporters and importers.

Virtual Trade Fairs were organised for the Cereals sector. A Fruits, Vegetables & Floriculture Show was organized in May 2021. Similar trade fairs are being planned for the processed food and organic products sector.

Virtual Buyer Seller Meets: In a bid to boost the exports potential of its mandated agricultural products, APEDA has organized a series of Virtual Buyer Seller Meets (V-BSM) in association with Indian Missions abroad. The meet brought together key stakeholders from

the respective governments and trade on a common platform for strengthening strategic cooperation in the agri food sector.

Since April 2020 till date, 47 V-BSMs have been organized by APEDA in association with Indian Missions with UAE, Kuwait, Indonesia, Switzerland, Belgium, Iran, Canada (organic products), UAE & USA (for GI products), Germany, South Africa, Australia, Thailand, Oman, Nepal, Bhutan, Azerbaijan, Uzbekistan, Vietnam, Netherlands, Brunei, Cambodia, South Korea, Sudan, Japan, GCC Countries, Bahrain, Angola, Egypt, Algeria, Togo, Ghana, Venezuela etc.

E-catalogues were released for each BSM having details of participant exporters, importers, Trade associations. The virtual buyer seller meets have generated interest among the importers. New connections have been established and generated trade enquiries.

Promotion of GI tagged, indigenous, ethnic agricultural products: In tandem with Hon'ble PM's call for *Vocal for Local* and *Atmanirbhar Bharat*, APEDA has been focussing on promotion of exports of locally sourced GI tagged as well as indigenous, ethnic agricultural products. New products

OPPORTUNITIES EMERGING IN GLOBAL TRADE

Since the COVID pandemic, there is an increased shift of focus towards South East Asia, Middle East, SAARC, and Western trade partners by India for creating new opportunities for alliance in agricultural and processed food sector. Though there were challenges with respect to logistics and supplies, government support helped and facilitated the exporters and processors in meeting the increased demand internationally. There is an encouraging trend of increase of agri products exports during FY 2022 also. As per quick estimates of Apr-Oct 2021, fruits and vegetables have shown growth of 11.6%, cereals preparations and miscellaneous processed items 29%, meat, dairy & poultry products 15.6%, rice 10.5% and other cereals 85% in USD.

and new export destinations have been identified and accordingly trial shipments have been facilitated.

During the last one year, the flag off of export shipments has been enabled for moringa, patented village rice, red rice, flavoured jaggery powder, organic millets, jamun, dragon fruit, dehydrated mahua flowers, GI varieties of mango, Bhalia wheat, Madurai malli, king chilli (GI), Mihidana, Sitabhog etc.

Capacity Building programs: Series of capacity building/training programs have been carried out in the agri clusters and states in association with the state departments, SAUs, KVKs for FPOs/FCs/SHGs/exporters. APEDA has provided linkages to farmer groups for exports, and has promoted entrepreneurs to become prospective exporters.

With the support of NCDC, a program was organised for cooperatives to enable their development as agri exporters. Efforts are being made to partner with Ministry of Cooperation and NCCT for providing export oriented training to the Cooperative sector.

Resource Convergence with the following organisations has been established:

NAFED: Subsequent to signing of MoU with NAFED in July 2021, meetings have been held with GM, NAFED for development and strengthening of FPOs for increasing agri exports. Efforts are being made to sensitize the Cooperatives of NAFED for venturing into agri exports. 78 FPOs registered with NAFED have been included in APEDA's Farmer Connect portal.

MSME: Discussions have been held with DC MSME for harnessing the export potential of this sector. A workshop was organised in association with the Ministry of MSME and IIFPT Thanjavur in August 2021 for sensitisation on the schemes



and programs of MSME and IIFPT, prior to the convergence between APEDA & M/o MSME in the form of MoU.

CWC: Interactions have been held with CWC on mutual cooperation for strengthening of export infrastructure, service provider of storage and logistics. The possibility of signing a MoU with CWC for further collaboration is in process.

Ministry of Railways: Several rounds of interactions have been held regarding the necessary interventions for rail transportation for boosting agri exports. An online stakeholders' consultative meeting was organized recently. Concerned trade associations flagged specific issues and the interventions required by them.

Synergy with Line Ministries for cluster development: Efforts have been made for synergy with identified clusters of MoA&FW, MoFPI and DGFT. Cluster development activities are being aligned with the Clusters of MIDH (NHB) identified under the Horticulture Cluster Development Program and ODOP (PMFME) scheme of MoFPI for seeking convergence with their financial assistance schemes.

Towards integration with ODOP initiative of DGFT, APEDA in association with Invest India coordinated with the respective Indian Missions to organise the following events:

Japan: The Mango Festival of India 2021 in Tokyo, Japan in May 2021 involved mango sampling with potential buyers followed by large scale mango promotion with supermarkets, malls, restaurants etc.

UK: The first commercial consignment of GI tagged Bhagalpuri Zardalu mangoes was promoted by exporting to UK in association with HCl, London.

Saudi Arabia: A virtual B2B trade facilitation event was organized in association with Consulate General of India, Saudi Arabia in August, 2021 for promoting exports of 13 agro perishable products. The event saw participation from the Indian Embassy at Riyadh,

exporters and leading Saudi supermarket retailers.

Russia: An event called Agri-Bazaar (Indo-Russian Buyer Seller Meet) conducted in partnership with the Embassy of India, Moscow in August 2021, showcased 11 perishable products from India for exports to major interlocutors and buyers inclusive of retail chains and supermarkets in Russia viz. Metro Cash & Carry, Magnit, X5 Retail Group, Lenta.

USA, UAE, and Japan: Towards integration made with DGFT for synergizing on the Districts as Export hubs (DEH) initiative for promoting exports from Punjab, HP, J&K and Ladakh, a two day virtual outreach event titled 'From India to the World' was

organized in association with DGFT in July, 2021, adopting APEDA's virtual trade fair platform model.

Developing Varanasi/Purvanchal as an Agri Export Hub

APEDA has taken several initiatives to develop the Varanasi Agri Export Hub in coordination with the Ministry of Commerce & Industry. With the intervention of APEDA, infrastructure facilities have been created, FPOs have been strengthened and connected to exports. Multimodal shipments of fresh fruits, vegetables, regional rice have been facilitated to several destinations. The exports of fresh vegetables from LBSI airport to UAE resumed in October 2021 with the commencement of the current season. Three shipments of green chilly have been exported from the region to Dubai by sea route this month.

Organic products export: The organic export has crossed USD 1 billion (USD 1040 million) for the first time after implementation of NPOP. Acceptance has been received from Australia & New Zealand on the proposal of APEDA to enter into mutual recognition for trade of organic products. Certification body has been accredited for certification of processed form of natural fiber under

In tandem with Hon'ble PM's call for Vocal for Local and Atmanirbhar Bharat, APEDA has been focussing on promotion of exports of locally sourced GI tagged as well as indigenous, ethnic agricultural products





NPOP. Accreditation has been granted to a Certification body for certification in EU as per NPOP.

Standards for export of fresh and frozen pork: APEDA has developed guidelines and standards for export of fresh and frozen pork in association with National Research Centre on pig. The standards have been submitted to Ministry of Commerce for notification by DGFT.

Market access issues: APEDA has played an important role in opening of new markets for agricultural products such as Canada, China, South Korea, Taiwan, Portugal, Indonesia, Iran etc. It continues to pursue with the potential countries for gaining market access for various products. The issue for level of aflatoxin in skimmed milk powder exported from India to Saudi Arabia and Egypt has been resolved. Market access has been allowed for pomegranate in Australia, mango/basmati rice in Argentina, carrot seeds in Iran etc.

Implementation of Agri Export policy (AEP)

While giving priority to agricultural exports, export-oriented production clusters have been identified and notified in several districts across the country under the Agri Export Policy. The

Special focus on Himalayan States and NER

In a bid to provide an impetus to exports from J&K, the first consignment of Mishri variety of cherries was shipped from Srinagar to Dubai. Saffron and dry fruits were sent from J&K UT to Saudi Arabian FMCG Lulu Group International. The export of walnuts and apples has been planned from J&K.

More than 30 training programs on good agricultural practices and judicious use of pesticides have been organised for the farmers of Basmati rice at several regions across J&K, Uttarakhand and Himachal Pradesh. The export of Himalayan millets, Himalayan goat meat and fresh vegetables has been facilitated from Uttarakhand along with apples from Himachal Pradesh (in association with HPMC). Handholding has been provided to exporters and farmers in NER. Jackfruit (Tripura), Burmese grapes, red rice (Assam) and GI tagged King Chilli (Nagaland) have been exported to multiple destinations.

institutional mechanism at the state viz. State level Monitoring Committee and clusters viz. Cluster Level Committee has been formed. Many states have finalized the state agri export action plan.

Field visits have been made by concerned officers and a series of stakeholders meetings have been organised in respective clusters to prepare a roadmap for cluster development. Sensitization programs have been organized in the clusters in association with State departments, SAUs, KVKs, NABARD for identification of progressive Farmer groups and strengthening the export linkage of FPOs/FPCs.

APEDA's E-Governance System

A Farmer Connect Portal has been set up by APEDA on its website for providing a platform for FPOs, Cooperatives to interact with exporters. Around 3500 FPO/FPCs and 3000 exporters have been registered in the portal.

To facilitate exports and development of quality parameters in line with importing countries' norms, APEDA has set up traceability system for organic exports (Tracenet); grape exports (Grapenet); peanut exports (Peanut.net); meat export (Meat.net); horticultural products (Hortinet), basmati export (Basmati.net), APEDA member mobile app, farmer connect mobile app etc.

Redefining AGRI-MARKETING TO PROMOTE AGRO-TRADE

Haryana is self-sufficient in food production and the state is second largest contributor to India's central pool of food grains.

Haryana produces more than 10 million tons of food grains with surplus both in wheat and paddy. At present there is a network of 367 mandis/ purchase centers in the state. However, as per need new mandi/purchase centers can be opened

are integrated with e-Nam and farmers are provided an option to sell their produce online on e-NAM portal to the intra and inter-State traders without any extra cost.

The post-harvest management components under AIF will create a competitive market environment and will prevent wastage of agro-produce that happens due to lack of post-harvest handling infrastructure facilities.

Government of Haryana has specified protective price for 19 horticultural commodities under Bhavantar Bharpai Yojana (BBY). Government pays the difference between market price and protective price in case of market price falls below the latter. So far 59,340 farmers and 1.61 lakh acres of area under these Horticulture Crops have been registered. Rs 1,011.81 lakh has been paid to 4,187 farmers. Govt of Haryana has undertaken a program to develop farmer producer organisations and has formed more than 480 FPOs in the state.



if basic amenities are provided by the Haryana State Agricultural Marketing Board and the norms prescribed by the Food & Supplies Department are met.

Farmers are free to sell their produce in the regulated markets as well as outside regulated markets. Inside markets, the Mandi fee and Haryana Rural Development Fund (HRDF) are charged from buyers. Regulated markets are being facilitated to shift their focus from regulatory function to service providing institutions to sustain their existence in the changed marketing regime. 81 regulated markets of Haryana

About the AUTHOR

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State role in crop cluster development programme

Haryana has rolled out a very ambitious plan for boosting horticulture business and increasing farmers' income with planned expenditure of Rs 510.36 crore over three years. Under the scheme, FPOs are entitled to establish the post harvest management infrastructure with the project cost up to Rs 6 crore, with assistance/ subsidy ranging from 70-90%. This crop cluster programme is being implemented from 2018-2019. Survey regarding production of crops and animal husbandry/ dairy and fishery has been conducted for formation of production clusters. Ten clusters have been formed in agriculture in which wheat, rice, sugarcane, cotton, sunflower, Rabi oilseeds. Gram, barley, maize & jawar etc products are included and 393 clusters have been formed in horticulture in which all major horticulture crops are included. Sfach has finalized a project management consulting firm Earnest and young (E&Y) for providing the services like strengthening and capacity building of farmers, for strengthening the post-harvest infrastructure and market linkages and in development of promotion tools and activities for improving market linkages and investments in horticulture sector.

Crop Cluster Development Program

CCDP – A Unique Crop Cluster Development Program is being established for market linkages, in which 1685 pack houses are required and 393 Horticulture Clusters have been identified/ Five pack houses has been formerly established and 39 packhouses are under establishment. They are likely to be completed by 2022. 110 packhouses have been approved and shall be completed by 2023.

Farmer Out-reach Program Initiatives have been taken in Haryana with FPO Formation. 599 FPOs have been formed with 79,000 farmer members. The target is to form 1000 FPOs by 2022. 64 villages of excellence (VoE) have been

SFAC role in developmet of horticulture & agriculture in Haryana

Small Farmer Agribusiness Consortium Haryana is a registered society which enables farmers for agri. Entrepreneurship & agri-business –making agriculture profitable venture/industry. Its mission is to establish sustainable agri supply chain by promoting technology, farmers's aggregation, produce collectivization, agri business and linking with institutions and private sector & potential market/ buyers, to develop farmer socio economic security model in the cluster villages to have farm sustainability, to achieve nutritional security and deliver safe food to the consumers, to have transparent institutional delivery mechanism. To generate employment at the rural level and to have better returns to the farmers, To increase area and productivity and thereby production of all horticultural crops, to develop sustained organized marketing of all horticultural products and thereby achieving the goal of quality, quantity and seamless delivery as per global standards and to mitigate post-harvest losses and value addition.

Small farmers Agri-business consortiums Haryana (Sfach) activities include promotion of agriculture, animal husbandry, Dairy and fishery, formation of farmers organizations, to strengthening farmers capacity, aggregation of produce, Market linkages, Ensuring accedes to and usage of quality inputs. Access to post harvest management infrastructure in a collective mode and Facilitating access to fair and remunerative markets including linking of producer groups to marketing opportunities through market aggregations.



fun FACT

Mrs Misra is fond of photography and writing poetry

been taken in Haryana for horticulture diversification. With less than 0.5% area under horticulture of gross cropped area, it has grown to 7% now, and may go up to 15% by 2030. Mera Pani Meri Virasat (MPMV) scheme has been launched in Haryana. About 1.5 lakh acres have been diversified from paddy to pulses, oilseeds and other agriculture / horticulture crops in Kharif 2021.

Pushing for Pulses Diversification



selected for transfer of technologies to cover 600 farmers. E-pest Surveillance & Fruit Fly Program have been started in 12 districts covering 80 villages, 10000 farmers & 30891 acres.

Crop Diversification Initiatives has

In 2021, 70,000 acres were under pulses & 30,000 under Oil Seed, with Rs. 4000 per acre incentive and 90% subsidy on moong seed.

Haryana is taking initiative in Produce Procurement & Risk Mitigation which

includes Meri Fasal Mera Byora (MFMB) Linked with e-kharid for procurement of all MSP based crop produce and disbursement of payments in this yojna. Around 9 lakh farmers have registered and linked with agricultural and horticultural farmer welfare schemes for online application and processing.

Bajra crop has been covered under Bhavantar Barpayee Yojna (BBY) scheme, providing Rs 600 per quintal over market price. Horticultural crops have been covered with protected price and yield. An amount of Rs. 10.35 crore has been disbursed to farmers. Haryana is in the forefront in providing claim ratio (more than 1), given 3900 crore in agri crops under Prime Minister Fasal Bima Yojna. It is first state to launch an assurance based Mukhyamantri Baagwani Bima Yojna (MBBY) for 21 horticultural crops with very low farmer share of Rs. 750-1000 per acre & crop coverage of Rs 30,000 to 40,000 per acre.

Har Khet Swasth Khet mobile application

Soil Health - Har Khet Swasth Khet mobile application has been developed. In this 70 lakh acre has been targeted by taking 70 lakh samples, backed by network of 52 Static Soil Testing Labs and 59 Mini Soil Testing Labs. These are efficient in-situ & ex-situ management of crop residue, and helped in reduction in incidents of fire/stubble burning year by year with an 11% reduction last year.

India International Horticulture Market is being established with total cost of Rs 7000 crore. Flower market for domestic trade is being set up at Gurugram. Masala Market is being established at Sonapat.

Fruits: covering 10000 ha per year. The target is to increase productivity from 15 MT to 25 MT by 2030.

Vegetables: To increase area twice and production thrice by 2030. Target to increase productivity from 18 MT to 30 MT per ha. Haryana is the leading state for button mushroom production with more than 13000 MT/ annum. More



Some of the major challenges faced in agro marketing include presence of numerous intermediaries in the value chain creating huge price difference between producer and end consumer, as well as high wastage due to lack of access to infrastructure such as unbroken cold chain storage, post-harvest infrastructure facilities in the value chain

than 50 units with year-round facility for mushroom production are being established each year.

Changing Landscape- Modernization Of Agri-Marketing System

The use of technology to improve the agriculture value chain in India is accelerating rapidly. Technological options are available for efficient produce management and marketing. Artificial Intelligence – Image processing is being increasingly used to assay the quality of inputs and produce. E-Marketplaces are proliferating for effective market

linkages to connect producers - farmers, FPOs and buyers-traders, processors and exporters. The e-marketplaces can further transform the sector by addressing gaps in the supply chains and streamline end to end operations to deliver the quality produce from farm to fork. e-National Agriculture market (e-Nam) is an online trading platform for agricultural commodities in India.

The market facilitates farmers, traders and buyers with online trading in commodities. The market is helping in better price discovery and providing facilities for smooth marketing of their produce. e-NAM has been successful in providing benefits to the farmer in numerous ways. Access to prevailing commodity price on mobile app, GPS based feature capturing e-NAM mandis and mandi prices within ~100 kms radius along with route map, advance lot registration available at farm-gate level. Earlier the trade cycle used to take more than 12 hours and even went past 12 midnight. Now with e-NAM the cycle gets completed by 5:30 pm. Statistically, it has been proven that better prices have been achieved on e-NAM even in a highly conservative field like horticulture.

NAFED e-Kisan Mandi (NeKM)

FIFA, a 100% subsidiary of NAFED is

planning to create a nationwide FPO mandis, enabling FPOs and farmers with an access of nation-wide market, where they can offer their produce at best price with an ease. FIFA/NAFED is planning to set up 100 Kisan Mandis in the next two years. These NAFED Electronic Kisan Mandis (NeKM) will be set up in partnership with Cooperative Societies, Farmer Producer Organizations (FPOs) or FPO Federations at different locations across the country. FIFA/NAFED will operate these mandis through its wholly owned subsidiary, Federation of Indian FPOs & Aggregators (FIFA).

Electronic trading and transaction platform FPTCA Act 2020

Farmer Produce trade and commerce (promotion and facilitation) Act 2020. It defines electronic trading and transaction platform to set up to facilitate direct and online buying and selling for conduct of trade and commerce of farmer's produce. It supports seamless electronic trade.

The state is encouraging the formation of groups to create marketing opportunities for small and marginal farmers in cultivation of fruits, vegetables and flowers. Facilities shall be provided for production, storing and export. Maintenance of regulated markets is ensured in order to facilitate buying

India International Horticulture Market is being established with total cost of Rs 7000 crore. Flower market for domestic trade is being set up at Gurugram. Masala Market is being established at Sonapat

and selling of agricultural produce for the benefit of the farming community. Grading of agricultural produce is provided in the regulated markets and at farm holdings to help the producers get remunerative price for their produce.

To create awareness among the farmers about the benefits of grading, marketing, value addition and processing, their produce is taken through regulated markets and they are provided training, publicity and awareness. The state is setting up mega food parks for promoting export of agricultural produce by increasing the area under exportable crops, providing necessary post-harvest management and other infrastructure required and information on prices prevailing at international markets as an integrated approach through computers. The state has provided for Agmark grading of agricultural, animal

husbandry and forestry products for the benefit of the consumers. The state has provided for modern cold storage facilities to enable the farmers to store and sell their produce at favorable price and to help consumers to get quality food products. Food Processing Industries are promoted to minimize wastage of agricultural products, to increase employment opportunities and to enhance foreign exchange.

We have a tradition of agricultural production, marketing and allied commercial activities. Now it is the time for us to brainstorm and come out with new ideas of value added services. These value added services will give the existing agricultural engine a new dimension. The vision of the Department of Agricultural Marketing & Agro Business is to ensure fair price to the farming community who are left behind in the competitive marketing scenario and the mission of achieving this is by enforcing the existing act and rules most effectively and also by devising, implementing new technologies aimed at reducing pre and post-harvest losses through appropriate methods and encourage value addition.

Agricultural Marketing infrastructure plays a pivotal role in fostering and sustaining the tempo of rural economic development. Marketing is as critical to better performance in agriculture as farming itself. Agribusiness is a process, which starts with a decision to produce a saleable farm commodity and it involves all the aspects relating to pre and post-harvest operations including grading, value addition, packaging, processing and transportation. These operations add value to farm produce.

As we look forward into the next 50 years of agriculture sector our goals and priorities will continue to evolve to meet the needs of the businesses, communities and industries that depend on our services. Building on our existing programs and partnership, we will continue to redefine the scope of marketing and increase agricultural business opportunities in the years to come.



DOUBLING FARMERS INCOME

REDEFINING THE SEED INDUSTRY

Seed industry has a huge role to play in the prosperity of the farmer due to the criticality of the yield enhancing genetic potential that seed brings to the farmer. Profits of the farmers can go up either by reducing his cost of cultivation or by increasing his revenues or both. Seeds have an important role to play on both sides of this equation.

Let us look at the transformative changes that the seed industry has to bring about to help in this journey.

Breed superior seed varieties

Seed is the only input that has an inherent capacity to increase yields through higher genetic potential. Seed industry has to step up the research investments to considerably higher levels than now in order to produce world class varieties that can serve our farmers well. Investments are required in creating modern infrastructure, biotechnology facilities, research farms and field testing facilities. Top quality research personnel that we have need to be given sufficient budgets and freedom to develop products that can transform farmers lives. Some of the areas where seed development research needs to focus are:

Reduce cost of cultivation

The immediate need is to reduce cost of cultivation of farmers. Cost savings through reduction in the quantities and number of inputs used or modified agronomic practices through improved plant types

is the need of the hour. Suitable plant varieties need to be developed towards this end.

Increase yields and output quality

Increasing yield will improve incomes of farmers while simultaneously ensuring food security of the country. Regular and significant genetic gain must be targeted by breeders in each crop. Improved quality of the output like oil percentage in oilseed crops, fibre characteristics in cotton, nutrition content in food grains, fruits and vegetables will bring additional incomes to farmers.

Fight abiotic and biotic stresses

Breeders have been working on improving the ability of the plant to withstand biotic and abiotic stresses. These efforts have to be intensified further to tackle emerging abiotic stresses due to climate change and the

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biotic stresses due to the emergence of new pests and diseases.

Use modern science and technology

Seed industry has to be continuously on the look out for sourcing modern scientific methods and cutting edge technologies that are being developed around to world for use in their breeding programmes. This will ensure that we are able to develop new varieties which are superior to the previous generations of varieties in terms of their genetic potential and performance. This will ensure that our farmers are competitive in the domestic and global markets.

Suitability to new agronomic practices:

As we adopt new agronomic practices to conserve natural resources like water and soil there is a need for breeders to develop plant varieties that facilitate and respond well to the new practices. Direct Sown Rice, Minimum tillage are some of the examples. Reducing the need for labour is a high priority as human labour costs in most of the crops are between 40 to 50% of the total cost of cultivation. If breeders can develop crop varieties that can facilitate new agronomic practices that need less labour it would be a huge contribution to improving farmers' profits.

Suitability to value chains for domestic and export markets

Value chains will put more money in farmers hands. The effort of the government is also to connect farmers to such value chains. As we come to demand driven agriculture there is a tremendous need for breeding varieties which meet such needs of the ultimate consumer. The demand may be in domestic or global markets. This is a very sure way of bringing greater profits in farmers hands. Breeders must be continuously connected to the trends in the food markets and regular interactions between seed industry and food industry

Policy support needed

Reimagining seed industry and making it globally competitive will help the Indian farmer with better quality varieties and better returns. It is important that the government helps in this process with policy support. Seed is the only agricultural input which delivers disproportionately high returns compared to its cost. Seed cost in most crops today varies between 3 to 10% of the total cost of cultivation for farmers. It is not a major cost.

If the seed industry has to deliver superior value to the farmer and help him to enhance his profits it has to get sufficient return on the investments it makes in breeding, technology, quality and export development. Policy support is necessary for this. Price controls, tardy enforcement of Intellectual Property laws and uncertain regulatory regimes will impede the growth of the seed industry and in turn will harm the interests of the Indian farmer. Seed industry should be treated as a partner in this effort by the government and a suitable strategic support is to be provided. A national policy document on this project, with the involvement of all states, is urgently required from government side to boost industry confidence to invest more towards redefining seed industry and enhancing farmers profitability.



The government has set a target of Rs.10,000 cr seed exports by 2030. Seed industry should start working on this. It is a great opportunity for our companies to take a share in the 15B\$ global seed trade. This in turn will help our seed growing farmers to increase their incomes

would help in this process.

Suitability to modern mechanized farming and using digital/satellite platforms

As our agriculture is getting more mechanized suitable varieties are needed to facilitate use of machines for sowing, weeding, application of fertilizers and pesticides, harvesting, etc. Example is in cotton where mechanical picking is becoming essential to reduce costs for farmers who is now spending almost 20% of his revenue on manual



harvesting. Breeders have to develop cotton hybrids which are amenable to mechanical picking. Similarly in other crops. Importance of digital, satellite and drone based platforms for improving precision in our agricultural operations is growing rapidly. This will transform agriculture in this decade and reduce costs for farmers. Plant breeders have to keep this in mind and develop varieties that suit deployment of these tools.

Suitability to modern methods of cultivation

Emerging importance of protected cultivation needs our attention. There is a need for development of varieties which suit protected cultivation, especially in vegetables, is a huge opportunity to substitute currently imported varieties with locally developed and less expensive varieties.

It is important that breeders incorporate the above targets into their breeding programs more aggressively and improve farmers profitability. This calls for substantial increase in real research investments by the seed industry. We must move towards 7-8%

There is need for substantial increase in real research investments by the seed industry. We must move towards 7-8 pc of revenue of the industry being spent on research annually to get any significant output from our research efforts

of revenue of the industry being spent on research annually to get any significant output from our research efforts.

Upgrade seed quality to global standards

Seed companies must work on improving seed quality to global standards. We should adopt or develop production practices which make our seed quality on par with the best in the world. Seed quality and seed health are extremely important in improving yields and performance of varieties in delivering the qualities for which they

were developed. Significant investments are to be made by the industry in this area. Seed enhancement technologies should be brought to India for the benefit of the farmer.

Develop seed export zones

The government has set a target of Rs.10,000 cr seed exports by 2030. Seed industry should start working on this. It is a great opportunity for our companies to take a share in the 15B\$ global seed trade. This in turn will help our seed growing farmers to increase their incomes. While developing suitable varieties that cater to global demands in the medium to long term is one aspect of this strategy, multiplication of existing seeds in global markets through contract production systems and taking Indian seeds into global markets will give more immediate results.

The needs of the farmers are loudly expressed by the real farmers through their practices and demands. We have to listen to them and meet their needs through the efforts of both the seed industry and the governments. Policy support is critical in this area.

Climate Change Is Real. Our Climate Action Too.



NABARD Leads

India's Climate Change Agenda Through
Adaptation & Mitigation Initiatives

STRATEGIES, ACTION PLAN SEAFOOD EXPORT BY 2025

India is one of the significant seafood exporters to the world market and is ranked 4th in global seafood export trade. Presently, India has a share of 4% of the estimated world seafood trade of US\$ 165.9 billion (FAO 2018). The USA, European Union, East Asian markets such as China and Vietnam, and Japan are our major markets.

During the financial year 2020-21, India exported 11, 49,510 MT of Seafood worth US\$ 5.96 Billion. USA and China were the major importing countries during 2020-21.



About the **AUTHOR**

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Table 1: Export performance during 2020-21 compared to 2019-20

Export Details	2020-21	2019-20	Growth %
Quantity (MT)	11,49,510	12,89,651	-10.87
Value (Rs. Crore)	43,720.98	46,662.85	-6.30
Value (US\$ Million)	5,956.93	6,678.69	-10.81
Unit Value (US\$/Kg)	5.18	5.18	0.00



Principal item that contributes to exports is frozen shrimp which comprises species such as vannamei, Black Tiger, Indian white, flower shrimp, scampi etc. Various species of fishes, cephalopods such as squid, cuttlefish and octopus, gastropods and bivalves also contribute to exports.

The seafood export was drastically affected by Covid 19 pandemic during the first half of the year. The sector revived well and has shown improvement in the last quarter of the year. However, the seafood export during the year 2020-21 has declined by 6.30% in rupee earnings, 10.81% in US dollar value and 10.87% in quantity. The average unit value remained almost same compared to last year.

The fish production in India is contributed by marine,

inland and coastal aquaculture. It has been noted that the sea catch is almost stagnant for the past few years due to various reasons. The raw material supply to the export value chain is largely contributed by the aquaculture sector as India has emerged as one of the major aquaculture producers. This helps us to retain our share in the world market. The future of India's seafood



exports mainly depend on the increase in our aquaculture production, quality improvement of sea caught material by reducing post harvest losses, value addition, and brand promotion activities.

Constraints In Trade Of Indian Seafood

The major constraints that have affected the exports during 2020-21 were production related as well as market related. Certain issues were also linked to the Covid-19 pandemic. Stagnation/ decreased landings due to Covid-19 and inclement weather, post harvest losses & lower unit value owing to poor infrastructure & handling, stagnation in the shrimp culture area and productivity, heavy dependency on the single species of shrimp (*Litopenaeus vannamei*) for exports, low proportion of value addition and lack of brand image for Indian seafood are some of the issues that affects the export of seafood. In addition, the country faces certain market regulations, commonly called Non Tariff barriers which effectively act as an impediment for smooth trade of seafood.

Way forward and action plan

The seafood export can be enhanced through coordinated efforts of Central and State departments, promotional and development bodies, regulators and stakeholders through concerted efforts to create policies to enhance production, addressing the constraints and effectively implement the interventions at the field level.

The uniqueness of India's fisheries and aquaculture realms play a significant role in formulating the branding campaign of Indian seafood in order to strike the right chords of customer preferences.

An early execution of India-EU FTA and reduction of tariff will help us better market access of Indian seafood in the EU. With respect to India-Korea CEPA, it is understood that during the previous review of the CEPA, duty for the frozen shrimp was agreed to be reduced to 0% with a quota restriction on quantity of imports. This may be urgently made in effect for getting duty benefit for exporting to South Korea



Export Promotion

MPEDA through its multipronged market promotion initiatives is addressing the emerging consumer concerns related to quality, conservation and sustainability, effectively to keep buoyant the merits of Indian seafood in the highly competitive global market.

The pandemic situation has also opened up the scope of effective utilization of digital media in market promotion. MPEDA participated in virtual exhibitions held in USA and Japan. Moreover, we have also used the online platform to organize 37 Primary and Secondary Buyer Seller Meets since April 2020, which has helped the exporters to interact with buyers and keep business relationships steady.

An effective 'Brand India' promotion campaign in major and minor markets will increase the demand for Indian Seafood products and thereby increase our exports to these markets. The outreach plan to promote Indian Fisheries shall encompass Market Research, Brand Promotion, Buyer Seller Meets (BSM), Trade fairs, Free Trade Agreements, and by establishing more Trade Promotion Offices (TPOs) abroad.

A. Market Research

Market Research and Intelligence is a vital marketing tool which can provide in-depth information on a targeted market, which are mainly utilized to penetrate into prospective markets and strengthen the position in existing markets. MPEDA has already initiated a market research on China in March

The Non Tariff Barriers We Face

Bio-security regulations associated with shrimp viruses such as White Spot Shrimp Virus (WSSV) have affected our shrimp export trade to China, South Korea, Australia, Thailand, Saudi Arabia, Kuwait etc. Presence of antibiotic residue and related increased import sampling frequency affects the export of farmed shrimps to EU and Japan. Shortfall in enforcement of regulations to protect sea turtles in India has resulted in lack of certification for Indian wild caught shrimps for export to the USA. A similar regulation under the US Marine Mammal Protection Act (MMPA) could affect the export of all wild caught seafood from India to the USA from January 2023. All the major markets have imposed regulations on Illegal Unreported Unregulated (IUU) fishing under which traceability details of the catch have to be validated and furnished along with every consignment as a part of global measures to curb IUU fishing operations. The US has moved a step ahead and requires the traceability details of aqua farmed products also under its Seafood Import Monitoring Programme (SIMP). China, of late, inspects the consignments for Covid-19 nucleic material, and if found positive, they suspend the units. Sri Lanka has stopped dry fish exports from India citing Covid-19 pandemic. Indian export sector battled all these SPS/TBT measures to ensure steady supply of seafood to the customers aboard.

It is important to establish new offices of MPEDA in the EU, Middle East region and China to tap the potential of those markets, coordinate market promotion activities, forging of market tie ups and to help to resolve the trade issues that affect seafood export

2021, a major market with further growth potential, through a professional agency, and the draft report has given an insight to the strongholds of our competitors in Chinese market and the areas India shall focus to improve market share.

B. Brand Promotion

Publicity, Advertisement, press releases will highlight India's potential and capabilities in the seafood sector and promote Indian Seafood Brand globally. Since there is no specific branding for Indian seafood, MPEDA is doing generic branding through advertisements, social media & TV commercials.

Export promotion visit of buyers/experts/ Journalists etc., to enhance trade relationship need to be organized in addition to advertorials and advertisements in India & abroad. Early this year, MPEDA has organized a TV commercial campaign in BBC covering Europe, North America, South America, Middle East & Africa, which has evinced considerable viewership & interest.



C. Buyer Seller Meets

MPEDA organizes Primary BSMs in the form of Webinars. Secondary BSMs, which provide opportunities to Indian exporters to have one to one interaction with buyers are also arranged. MPEDA has organized 25 BSMs involving markets such as the USA, Japan, China, Belgium, Germany, Spain, Vietnam, Korea, Kuwait and South Africa in 2020-21. Since April 2021, 12 BSMs have already been completed in markets such as Japan, South Korea, Thailand, Qatar, Italy, Philippines, Belarus and Portugal.

D. Trade Fairs

MPEDA disseminates the trade enquiries generated during the seafood shows to the exporters and places it on the public domain, which enables all the exporters to directly contact the buyers and do business. Currently MPEDA facilitates exporters' participation in Seafood Trade Fairs in the USA, EU, China, Middle East & Japan. MPEDA has participated in the virtual fairs organized in Japan & USA. On an average, an increase of 25-30% in exports can be envisaged through targeted promotion campaigns that comprise international fair participation, trade delegations, road shows, Buyer Seller meets, advertisement campaigns, slotting in supermarkets etc.

E. Free Trade Agreements

MPEDA is offering comments and suggestions to the DOC for the execution of new trade agreements

Low proportion of value addition and lack of brand image for Indian seafood are some of the challenges that we face. The country also faces certain market regulations, commonly called non-tariff barriers

and for the periodical review of existing trade agreements. Inputs were offered on trade agreements with Japan, Korea, EU BTIA, Peru, Mauritius, EFTA, RCEP Negotiation, Australia, New Zealand, Canada, MERCOSUR region, Eurasian Economic Union, Chile etc.

An early execution of India-EU FTA and reduction of tariff will help us better market access of Indian seafood in the EU. With respect to India-Korea CEPA, it is understood that during the previous review of the CEPA, duty for the frozen shrimp was agreed to be reduced to 0% with a quota restriction on quantity of imports. This may be urgently made in effect for getting duty benefit for exporting to South Korea.

In brief, proper reviews of trade agreements may be organized to benefit seafood trade from India to different markets, addressing tariff related and origin criteria related issues.

F. Trade Promotion Offices (TPOs):

The Trade Promotion Offices (TPOs) of MPEDA play an effective role in the brand

promotion campaigns besides forging tie ups with reputed buyers for JVs on value addition, over and above their liaising role with Government authorities, and interventions to promote trade. TPOs of MPEDA have done commendable work in the past by addressing various issues in American and Japanese markets, be it dumping / countervailing duty, antibiotic & ethoxyquin issues.

It is important to establish new offices of MPEDA in the EU, Middle East region and China to tap the potential of those markets, coordinate market promotion activities, forging of market tie ups and to help to resolve the trade issues that affect seafood export.

The latest trends in exports show certain revival as the markets ease out restrictions imposed due to Covid-19 pandemic. Active promotion campaigns need to be organized to create a brand image for Indian seafood, which will help to rekindle the memories of customers on Indian seafood. This can be achieved through targeted promotion campaigns, effective participation in seafood trade fairs, regular buyer seller meets, ad campaigns through various media etc. The marketing strategies have to be planned through carrying out market research in potential and existing markets, to identify the customer needs and supply products of their choice. In addition, market access also has to be improved by way of measures in tackling TBTs aided by early reviews and execution of Free Trade Agreements.

RECENT MARKET INTERVENTIONS IN ANDHRA PRADESH HELPING THE FARMER COMMUNITY



About the **AUTHOR**

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The Government of Andhra Pradesh has taken a historical decision of establishment of Price Stabilization Fund (PSF)

of Rs 3000 crore. This fund is aimed to provide market intervention to those farmers whose crops are selling below the MSP. It is also aimed at providing market intervention for those crops which do not have MSP but are selling much below the normal price.

AP is the only state in the country that does procurement at the village / RBK level. The objective is that no farmer should need to go out of his village for selling his produce on MSP. AP Government has taken the historical decision of announcing MSP for major crops which are significantly grown in Andhra Pradesh. Apart from the Centre, AP government has declared MSP on 23 crops for the benefit of the farming community.

- Chillies -7000 per quintal
- Turmeric-6850 per quintal

- Onion-770 per quintal
- Minor Millets-2500 per quintal
- Banana-800 per quintal
- Sweet Orange -1400 per quintal

AP Government has announced Graded MSP for certain crops which are damaged due to untimely rains during 2020-21. The graded MSP has been announced so that the farmers do not have to resort to distress selling and they get fair price for their produce, and also to bring competition in the market.

- Groundnut – 4500/Quintal
- Bengalgram- 4500/Quintal

As per the directions of the Hon'ble Chief Minister, to protect the farmers from distress selling, AP MARKFED has purchased FCV Tobacco at all platforms in Andhra Pradesh from July 1, 2020. AP MARKFED is the 3rd highest purchaser in terms of quantity. It procured 12.93 million kgs of tobacco valued at Rs 119 crores, out of the 128.65 million kgs procured.

AP Government has declared

Benefits Provided Through Rythu Bharosa Schemes

The following benefits are provided by the government of Andhra Pradesh state through the implementation of the Rythu Bharosa schemes:-



- * About 46.89 lakh beneficiaries have benefited from the 'Rythu Bharosa' scheme

- * The government is providing annually Rs 13,500 to each farmer

- * Out of the total amount, about Rs 7,500 is given to the farmers in May for buying crop inputs before the sowing

- * A sum of Rs 4,000 and Rs 2,000 is given in October and January, respectively, to meet harvesting expenditure.

- * The state government is also giving free farm insurance cover.

- * Farmers would only have to pay a nominal amount of Rs 1 for the insurance, the rest of the premium will be paid to the companies by the government

- * Under the 'YSR Sunna Vaddi Scheme', the state government has also decided to bear the cost of the interest levied on crop loans taken by the farmers.

- * The government is due to pay Rs 2,000 crore as an interest to the lending authorities in July.

- * Besides, the state is providing 9 hours of free electricity

- * The government is also setting up of district and Mandal-level agricultural advisory boards as well as 'Rythu Bharosa Kendras' which shall be developed as a one-stop solution for all farmer-related issues.

Drone use on fields is potentially a critical step in reversing the significant impact of climate change on land degradation

Taking Services To Doorsteps Of People

There is a focused attempt by the government to take all services to the doorsteps of the people. In order to achieve this objective, the government is shortly planning to start banking services at Rythu Bharosa Kendras (RBKs).

The initiative has been set rolling by the government's letter to the lead bank, requesting them to post their business correspondents in every RBK. Following the official communication received from the government, the lead bank has written to other banks in this regard.

As part of a government initiative, over 11,000 RBKs were established in the state to provide one-stop services to farmers. The RBKs extend manifold services. They provide seeds, fertilizers, pesticides and maintain records on farmers, crops and cropping pattern. Marketing support is also provided through the RBKs.

The government has decided that agricultural tools shall be made available to the farmers through the RBKs. These shall be in pay-for-use model. For a nominal cost, farmers shall be able to hire the equipment. The agricultural machinery that shall be made available by the government through RBKs includes harvesters, tractors and other machines.

RBKs are an ambitious project of the government. Cold storages and godowns are being constructed and these shall be attached for each RBK. In this way, farmers shall be able to stock their produce till they are offered prices up to their expectations. These and other services including banking services shall be provided at RBKs.



CMAPP as an official app for all the MSP/ MIS operations for all state and central level nodal agencies i.e. MARKFED, Oilfed, Department of Agriculture Marketing, NAFED, FCI & CCI. It is the only app in the country that monitors end to end market intervention starting from price information and ending with farmers/vendor payments on real-time basis.



NATURAL FARMING IS THE BEST ROUTE TO FARMER PROSPERITY



MANISH BHARDWAJ
Secretary Agriculture,
Farmers Welfare & Cooperation
Government of Gujarat

Natural farming is the best choice to protect water, land, environment and human health. In the last two years, various activities have been carried out for the promotion of Subhash Palekar Natural Farming through the ATMA Project under the Department of Agriculture, Farmer Welfare and Co-operation of the state government.

* One million handbills had been distributed at the village level by ATMA for the promotion of Natural Farming.

* The book Prakrutik Krishi written by the Hon'ble Governor of Gujarat Acharya Devvrat ji has been extensively circulated among farmers. 4.5 lakh copies of the book were given to SPNF Master Trainers, Convener/Co-Convener, Gaushala-Panjrapol and other farmers.

* In addition, a success story book of farmers engaged in natural farming has also been released.

MISCONCEPTIONS AMONG FARMERS REGARDING NATURAL FARMING

Farmers have many misconceptions

regarding Natural Farming. There is a misconception that in natural farming, yield is reduced as compared to chemical farming. There is also the misconception that natural farming can't control pest & diseases. There is the misconception among farmers that high yield is not possible without applying fertilizers like Urea & DAP etc. They cannot figure out how plants get nutrition through Jivamrut & Ghan Jivamrut. We are consistently working towards removing these misconceptions among farmers.

INITIATIVES TAKEN BY THE STATE

Many farmers do not have an indigenous (desi) cow. It is essential to have a cow in order to adopt natural farming. The state government has taken many steps to solve the problems of farmers to adopt natural farming.

- A one day mega workshop was organized on Natural Farming for 10,000 farmers & officers at Mahatma Mandir, Gandhinagar

- A seven days residential workshop was organized at Vadtal. It was telecast live in all districts through BISAG,



YouTube, Face book & DD National to prepare master trainers on the subject of natural farming. A total of 21,861 master trainers were prepared.

- These masters trainers had given two days training at 4,715 sessions to 1,72,032 farmers at the village level in the second phase.

- In the third phase, 3,795 trainings given to 1,04,615 farmers.

- Hon'ble Governor Acharya Devvrat ji interacted with the master trainers and also give guidance to 3,67,058 farmers through BISAG on E-Gram centers.

- Natural farming trainings have been organized at all the Krushi Vigyan Kendra (KVK) of the state.

- A seven-day residential workshop was organized at Trimandir, Adalaj in which 2500 trainees including officials and farmers participated.

STEPS TO PROMOTE NATURAL FARMING

The government has launched schemes to support farmers who are willing to adopt natural farming. Annual subsidy of Rs 10,800 is given for the maintenance of desi cow. As part of this initiative, 1,05,000 farmers had been given subsidy of Rs 57.62 crore in the year 2020-21 and 1,97,750 farmers will get subsidy of Rs 213 Crore in the year 2021-22.

- Prakrutik Krushi Kit (Rs 1300 per kit) in the year 2020-21. A total of 42,364 farmers had been given subsidy of Rs

5.72 crore

100% natural farming in Dang district. Rs 31.51 crore are approved for 20,000 farmers which include subsidy, certification and market support.

MARKETING LINKAGES FOR FARMERS

In the last two years, special publicity was carried out by the State Government for the expansion of natural farming. As a result two lakh farmers are currently practicing natural farming with the assistance for indigenous cow maintenance cost scheme. The main advantage of this method is the production is chemical free and the agricultural products are nutrient rich. It is expected that the prices of these farm products will be higher for which various publicity has been done as follows.

- Amrut Aahar Mahotsav was celebrated all over the state from 25/12/2020 to 31/12/2020 in which farmers sold their products directly to consumers. A total of 767 farmers through 516 stalls sold products of Rs. 48.64 lakh.

- Farm Fresh Festival was celebrated at Riverfront, Ahmedabad from 07/03/2021 to 09/03/2021 in which 74 farmers had participated. During the three days, more than one lakh people visited the festival and sold their farm produce of Rs 49.30 lakh directly to consumers.

- At Home program was organized at Raj Bhavan Gandhinagar on 15/08/2021 in which natural products were displayed and distributed to the visiting dignitaries for the purpose of increasing the demand for natural farming.

- To promote natural farming an exhibition cum sale were arranged at Army Campus - Chiloda, Coast Guard - Porbandar, Air Force - Chiloda, Border Security Force, Chiloda and CRPF campus, Chiloda, Gandhinagar where natural farming farmers' products were sold for publicity purposes.

- On 19/10/2021, the first store "The Natural Shop" under Natural Farming campaign was inaugurated by the Hon'ble Governor of Gujarat Acharya Devvrat at Sector 21, Gandhinagar. To increase the scope of natural farming and to impart more information, an exhibition was organized on 20/10/2021 and 26/10/2021 at Raj Bhavan, Gandhinagar in the presence of the Hon'ble Governor and Hon'ble Chief Minister and all the Cabinet Ministers and MLAs of the state.

- In order to get higher prices of agricultural products produced by natural farming system, Gujarat Agro Industries Corporation had given target of 100 FPOs. Among them 84 FPOs have been set up in 33 districts of the state. These FPOs will sell their products in 46 Gram Haats of the Rural Development Department.



REVOLUTIONIZING INDIAN AGRICULTURE WITH DRONES

THE SKY'S THE LIMIT

As of 2020, India stands 71st of 113 major countries in terms of the Food Security Index. With growing consumer demand, diminishing resources and disrupted life sciences and food system value chains, the agriculture sector is at a critical juncture. The industry is tasked with the responsibility to reconcile key issues and maximize opportunities in order to make strides towards farm productivity, food security and sustainability.

India's agricultural landscape is rapidly evolving, but the pandemic further exacerbated existing disparities. India's small and marginal farmers – accounting for 86% of all farmers – only occupy 47% of the total cropping area. They continue to face several challenges, from labour shortages and low farm productivity to limited access to the know-how to mechanize agricultural processes, or to credit facilities and new technologies.

Smallholder farmers are affected by

lack of access to quality inputs or timely agro-advisory, as well as environmental challenges like unpredictable weather fluctuations, which can adversely affect crop yields. As a result, many smallholders adopt traditional farming methods, involving critical, time-consuming and labour-intensive agricultural tasks. An average Asian rice farmer, for instance, spends eight hours daily spraying treatment on muddy fields, toiling away in a hot and humid climate.

Fortunately, modern technology offers a multitude of potential sustainable solutions to alleviate some of these burdens. By augmenting investments in technological innovations and digital farming applications, food production capabilities can be enhanced. This will increase agri productivity, leading to increased crop yields and sustainable incomes for farmers while transforming Indian agriculture and making it globally competitive. Guided by technical expertise and a rich 125-years presence in India, Bayer is committed to enabling access to breakthrough innovations, aligned with the purpose of 'Science for a better life.'

This aligns with the company's broader commitment to spurring food security. Specifically, we aim to support 100 million smallholder farmers in low- and middle-income countries by 2030 in producing enough food to feed themselves and others and enhancing their incomes. Access to digital solutions and agronomic knowledge helps them circumvent



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various daily challenges, catalyzing farmer prosperity.

A Tech-Smart Toolbox

Data-driven precision farming has sizeable potential. Adopting digital technologies, such as mobile applications, water-efficient farming tools and drones or unmanned aerial vehicles (UAVs), supports farmers in managing their lands and crops more effectively. From advanced seed technologies to agronomic data, innovations can help farmers understand field history, navigate weather conditions and even make prescriptive real-time decisions. By providing them with the best tools and solutions, Bayer will support farmers in achieving better harvests, increasing productivity per hectare, using lesser resources (water, land and energy).

Drone technology has risen to the forefront of global agricultural innovations. With proven benefits – as seen first-hand from initial successes with drone usage in Chinese rice paddies – drones have been capturing the attention of farmers around the world. This has created opportunities for Bayer to make inroads with drone technology and conduct follow-up pilots, encouraging growers across Japan, Korea, China and Latin America to adopt these tools. Equipped with these global insights, Bayer will support India's smallholders derive significant value from these technological solutions.

With the recent encouraging announcement made by the Ministry of Civil Aviation, the wait for integrating drones and farming in India is now over. Key players in the sector are looking forward to the swift adoption of drone technology in the country. In order to facilitate this, supporting farmers smoothly transition to this era of advanced technologies is vital. This requires a collaborative effort by various industry leaders, as one company alone cannot propel sectoral transformation or sustainable growth across the ecosystem.

Streamlining Operational



Shaping the Future of Sustainable Farming

Drones enable sustainability in various ways, with productivity and sustainability co-existing as a result of advancing science-driven innovations. Its benefits include – enabling farmers to apply the right amount of treatment on crops through targeted overhead flight and avoiding spraying treatment in unnecessary locations. Thus, such technologies show potential for sustainable management, even of water-intensive practices like rice paddy management, while also being electric battery-powered to conserve fuel. The precise, focused technique of drones counters the 'cover all' approach of human-led spraying, which ensures water use efficiency while also promoting simultaneous cultivation of different crops on the same field.

Drones and agricultural innovations can thus shape the roadmap for sustainable farming in India, while spurring smallholder support and food security. Moreover, drone use on fields is potentially a critical step in reversing the significant impact of climate change on land degradation. It can transform the vital sector, so an era of precision agriculture can take flight, while mitigating risks to farmers and the environment.

Drone use on fields is potentially a critical step in reversing the significant impact of climate change on land degradation

Efficiency

Bayer, amongst other stakeholders, has begun leading extensive research and development (R&D) efforts for drone operations in India. Recently, the company initiated its first drone trial, showcasing a field demonstration on the use of drones in agriculture spraying operations at its multi-crop breeding centre near Hyderabad, in Chandippa. The company is striving to make this technology accessible to smallholders in a simple, beneficial manner that streamlines operational efficiency.

Additionally, drones offer the benefit of

real-time crop advisory, providing useful insights about field history, seed varieties and weather conditions, which can enable a greater sense of preparedness, leading to smarter use of existing resources. Bayer, with the aim to generate data to make drone-based services available to farmers, is also partnering with other stakeholders, including innovative drone startup General Aeronautics, in addition to conducting in-house and external R&D trials with universities and central research institutions.

Based on the initial achievements of drones, its benefits have the potential to cascade across different areas of farming, with growers able to potentially explore its capabilities in aiding paddy, corn, sugarcane, wheat, vegetables, fruits and plantation crops and harvests in the future.

INITIATIVES TO EXTEND MARKETING SUPPORT PROMOTING AGRO-EXPORT FROM HIMACHAL PRADESH

In spite of difficult geographical conditions, Himachal Pradesh has performed very well in Agriculture and Horticulture sectors. The state has only 19% area under irrigation out of total cultivable area of 1.87 lakh hectares. Considering the presence of many agro climatic zones, HP has planned its production pattern which can give maximum returns to growers.

Apple, stone fruits and off-season vegetables are the main crops which have high commercial potential and are utilized by the growers. The production of apple in HP varies between 4 Lakh MT to 8 Lakh MT which contributes around

5000 crores to the state economy. Vegetables grown in off season are peas, cauliflower, French beans, cabbage, capsicum and tomato.

Spice commodities like garlic and ginger are also grown commercially in some regions of Sirmaur and Kullu district. HP is also the natural habitat for super food like Guchhi mushroom, kala jeera, barley, foxtail millet, finger millet, red rice etc. These commodities are grown in small quality but have high medicinal and economic value.

Natural Farming

HP has several initiatives in the field

of natural farming. Under this system of farming fruits and vegetables are grown without use of chemical fertilizer, insecticides and pesticides. The locally available plant material and local cow dung and cow urine products are used to grow the crop. Almost 1.25 lakh farmers have already adopted this system of farming.

Network Of Agri Wholesale Markets

In order to meet the marketing requirement of agricultural and horticultural produce, the state has developed a network of agri wholesale markets. HP State Agricultural Marketing Board (HPSAMB) is the apex body at state level which functions through its 10 APMCs to provide agricultural marketing infrastructure in state.

There are 64 functional market yards which have basic facilities like auction platform, public utilities,

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shops for traders, water and electricity arrangements, market information and market intelligence services to farmers. The agricultural marketing in state is regulated by The HP Agricultural and Horticultural Produce Marketing (Development and Regulation) Act 2005. In this Act all the necessary provisions of model APMC Act like single unified license, single point levy of market fee, provision for setting of private market yards etc have been made.

The private sector has also established procurement and storage infrastructure in the state. Adani Agri Fresh, Dev Bhumi Cold Chain Ltd, BDM Food etc. are some of them. Cremica Group has established a food park in Una district. The state has emerged as a hub for pharma and agro processing industries which manufacture various health and wellness products. Public sector enterprises like HPMC, HIMCU, HIMFED, MILKFED have also developed value addition and processing facilities.

Formation of FPCs/ FPOs

The formation of FPCs/ FPOs by the different government agencies like NABARD, SFAC and Department of Agriculture is going on in mission mode. The FPO/ FPCs will organize the farmers and meet their input and output marketing needs. HPMC has also been selected as the nodal agency for implementation of commodity cluster in HP. The famous Kinnaur apple is selected as the focus commodity in HP as part of this scheme.

In order to facilitate the corporate sector to participate in agricultural supply chain, HP has started various initiatives. These include the following.

- Investor friendly regulatory environment which promotes industrial growth
- Easy availability of resources like electricity, water, land and raw material
- Single window clearances for all major approvals
- Educated and skilled manpower

Two Externally Aided Projects In Agriculture, Horticulture Sectors

In HP two externally aided projects are going on in field of agricultural and horticultural sectors. These are HP Horticultural Development Project funded by World bank and HP Crop Diversification Promotion Project funded by JICA. Under these projects the component of market development has been undertaken. The focus of the government is to develop alternate channels of marketing in addition to the existing APMC system. These shall provide choices to farmers and increase competition for agri produce. Due to large number of market participants in the agricultural supply chain, the price realization to farmers will be high. It shall also increase the farmers' share in consumer price.



The focus of the government is to develop alternate channels of marketing in addition to the existing APMC system. These shall provide choices to farmers and increase competition for agri produce

- as the state has two renowned agricultural/horticultural universities
- Safe and secure social environment
- Close proximity with rail, road and air connectivity
- Suitable infrastructure for various agricultural processing industries like maize starch, fruit and vegetable processing, honey processing, medicinal, aromatic and forestry products

- Suitable climate to produce various commercial crops with export potential like Kinnaur apple, Lahul potato, Rajgarh garlic, Guchi mushroom, natural farming products, milk and meat products of sheep and goats grazing on organic and medicinal pastures
- HPSAMB and APMCs have ventured into CA storages, primary processing facilities like grading, sorting, grading and packing. HP is an ideal destination for investment, especially in agro processing and marketing. The state is creating farm level infrastructure to avoid the wastage of crops and value addition for higher economic potential. Many central and state schemes provide opportunities to all the private sector enterprises/companies to invest in HP for mutual benefits of farmers, consumers and investors.

FARM GATE SALE OPTIONS

MARKETING SUPPORT FOR MP FARMERS

About the **AUTHOR**

Mr Vikas Narwal, IAS, is currently Managing Director, Madhya Pradesh State Agriculture Marketing Board. He is also nodal officer for promotion of agri exports from the state

Farmers have been selling their produce in Mandi premises traditionally. The situation changed with onset of Covid-19 in March 2020. With lockdown restrictions and increasing cases, it became difficult to run mandis on traditional model as the risk to life of all stakeholders was imminent. Farmers needed alternate options for crop marketing.

The Mandi Board started crop marketing operations through Sauda Patrak on 13th April 2020 as provided in Mandi Adhiniyam, 1972. Farmers have been empowered to sell the produce without coming to the Mandi premises. In a way now Mandis have reached at the door step of farmers, and they have alternate options for crop sale even before coming to the Mandi.

Sauda Patrak ensures that only when the farmer has been paid full price for his crop, he gives the physical possession of his crop. Then the crop is credited to the trader's account. Mandi Secretary has the responsibility to compare the price agreed through Sauda Patrak with modal prices to ensure that farmer gets remunerative price

for his crop. During FY 2020-21 (April-June); 5.67 lakh farmers sold 26.03 LMT produce through manual Sauda Patrak.

The analysis for April-June 2020 shows that for Wheat & Paddy about 58% farmers utilized the option of Sauda Patrak, while it was only 28% for Soyabean & Bengal Gram. Farmers preferred Sauda Patrak for relatively stable crops. They switched over to Mandis for high value and market sensitive crops. Similarly, a crop rate comparison for Mandi contract and Sauda Patrak shows that farmers were able to extract almost similar price via Sauda Patrak. This was because the choice to sell produce in Mandi premises was always available to them.

Sauda Patrak Mobile App

The Sauda Patrak Mobile App was launched on 24th April 2021 which shifted manual operations into digital operations. During FY 2021-22, approximately 4.19 lakh farmers sold 17.46 LMT produce through Sauda Patrak App. This accounts for 16.31% of total mandi transactions. The digital platform not only ensures authentic transactions but also enables mandi officials to track farmer payments, crop prices and traders quantity easily.

A three months analysis (Sep-Nov 2021) shows that transactions through Sauda Patrak App are continuously increasing with the increase in arrivals. Mandis have witnessed an impressive growth of 80% as compared to 2020 and 29% as compared to 2019 in the last three months. Sauda Patrak transactions have increased from 7% in Sep 21 to 19% in Nov 21. Crop rates for Mandi contract & Sauda Patrak have been usually at par during last three months.





Multiple Options Available

Farmers are exercising their choices and choosing between Mandi premises & Souda Patrak App intelligently. As they have multiple options now, farmers bargaining power has increased considerably. Farmer is no longer forced to do distress sales and he has a choice to choose the time and place for selling his produce. One of the advantage of Souda Patrak over Mandi is that as long as farmer is getting a comparable price (Mandi price-transportation cost, he has the advantage of not taking his crop back in case he does not get satisfactory price. Also, he gets his payment in advance through Souda Patrak as he does not allow shifting of commodity from his premise before he gets his payment. With the introduction of Custom Processing Centers, farmer can clean and grade the produce at his farm to get better price. Such advantages are simply not possible in Mandi transactions.

MP Farm Gate Mobile App

Mandi Board is now looking forward to

**fun
FACT**



Mr Narwal likes to engage with farming and animal husbandry activities. He is looking forward to establishing an organic farm. As Collector Neemuch, he established one of the first Farmer Producer Company in the state in 2013

increase the Farm Gate sale options by developing "MP Farm Gate Mobile App". This is an advanced version of the Souda Patrak App. Farm Gate App is going to provide actual online auction options to farmers by creating an integrated E-auction platform which will link all registered traders of Madhya Pradesh, E-NAM traders, other E-trading platforms and online export platforms.

Farm Gate App is going to be

integrated with land record data base to ensure authentic and easy registration of farmers. Every transaction through the app can be traced down to farmer level and farmer's payment is to be made before physical delivery of the produce. Hence it will mitigate the concerns like fraud in payments, issues of quality, quantity disputes etc. Mandi Board has already mapped various crop varieties and variety wise rates are being captured in E-Anugya portal. Also, Mandi Board is developing standards for various crop grades to enable farmers to register crops variety and grade wise so that they can get maximum benefit in price discovery mechanism.

Mandi Board is continuously working towards extending marketing support to farmers and by enabling door step mandi operations, new village level entrepreneurs are going to register themselves as traders and service providers. Easy single licenses and wallet based transaction limits are going to require lesser working capital which can enable various FPCs, FPOs and SHGs etc to enter in agri trade easily. The farmer has now got the big choice of saying 'No' to the trader. This is going to provide various options to the farmers for selling their produce before they choose to come to mandi for auction. Also, it is going to expand the arms of Mandi Board to facilitate farmers not only in Mandi premises but also at the door steps of the farmers. Once the farmer gets familiar with various choices, farm gate operations are most likely to have positive impact on farmer's income.





More than 60 Years in Service

CERTIFIED ORGANIC KIWI GROWN IN ZIRO VALLEY, ARUNACHAL PRADESH

NAFED STEPS FORWARD TO PROVIDE STRONG MARKET LINKAGES



We reach out to New Zealand to get a taste of the exotic and world-renowned kiwi fruit. But most of us are not aware that we have such fruit in our very own backyard, in India's northeastern state of Arunachal Pradesh – the state known as “The Land Of The Dawn-Lit Mountains”, or the land that receives the country's first sunrise every morning. Anteri, as the locals call it, is the native kiwi fruit that has been growing wild since times immemorial in this state. With the efforts of the state

As a result of its booming popularity in the recent years, kiwi fruit has seen amazing growth in production as compared to 20 years ago when no one knew how popular it is all over the world. The terrain and agro-climatic conditions of Arunachal Pradesh are conducive for kiwi production. With the organic certification coupled with better marketable prospects, the production will get a major boost.

government and the growers, in October 2020 Arunachal Pradesh became the first state in the country to obtain organic certification for its kiwis. The native fruit has since emerged as a major cash crop in the state, which accounts for more than 50%

of the total production of kiwi in India.

National Agricultural Cooperative Marketing Federation of India Ltd., popularly known as NAFED is the apex level Cooperative Marketing Federation set up with the mission to protect the interest of the



Speaking on the occasion, MD NAFED Shri Sanjeev K Chadha said that the initiative will help in enhancing the livelihood of Kiwi farmers in Arunachal Pradesh and boost the trade of Kiwi outside the state and also internationally



has stepped forward to provide market linkages to the kiwi producers of Ziro valley in the state of Arunachal Pradesh with the aim of improving their price recovery and better marketing prospects for this nutrient-rich fruit.

The Kiwis from Ziro are the sweetest in the market with vast commercial prospects. The fruit is high in nutritional and medicinal value with Vitamin C and E content that is twice that of tomato, guava and avocado. It is also high in dietary fibre, antioxidants and minerals such as potassium, phosphorus and calcium, which provide many health benefits, including supporting heart and digestive health.

The first consignment of organic kiwi from the region was dispatched to Delhi on November 21 for promotion and marketing. Arunachal Pradesh Minister of Agriculture Shri Tage Taki flagged off the consignment to mark the beginning of a new initiative for the benefit of the kiwi growers of the state.

On arrival of the consignment in Delhi, Shri Kiren Rijiju, Union Minister, Law & Justice, along with Shri Kailash Choudhary, Minister of State For Agriculture and Farmers' Welfare, launched this nutrient-rich delicious fruit at Delhi Haat on November 27. Also present on the occasion were Shri PK Swain, Additional Secretary, Agriculture; Shri Sanjeev K Chaddha, MD NAFED; Shri Naresh Kumar, Chief Secretary, Government of Arunachal Pradesh; Shri Pankaj K Prasad, AMD NAFED along with several officials from GOI & NAFED. Senior executives from large retail/business houses of the country like Big Basket, Spencer Retail, Metro and others were also present.

The launch event was followed by a live cooking session for the guests, during which several recipes of kiwi-based dishes were demonstrated, followed by sample-tasting.

The initiative will help in enhancing the livelihood of kiwi farmers in Arunachal Pradesh and boost the trade of kiwi nationally and internationally. The initiative will also contribute to the attainment of the Hon'ble PM's vision of doubling the income of farmers.



On arrival of the consignment in Delhi, Shri Kiren Rijiju, Union Minister, Law & Justice, along with Shri Kailash Choudhary, Minister of State For Agriculture and Farmers' Welfare, launched this nutrient-rich delicious fruit at Delhi Haat on November 27

farmers by providing them a ready market and remunerative prices for their produce. The Federation has been serving the farmers for over six decades and has reach in all parts of the country through its vast network of branches and three-tier cooperative structure.

In one of its latest initiatives, NAFED



AGRICULTURAL MARKETING A TRANSITION PHASE

Agricultural marketing is passing through a critical but evolving phase. Being a vast and gigantic area, the knowledge and wisdom on the subject could not be documented sufficiently initially. In recent years, importance to the efficiency of marketing of agriculture produce has gained momentum in India. It is believed that poor agri-marketing



infrastructure and poor linkages with multiple partners in the marketing channels lead to high and fluctuating consumer prices, and only a small portion of consumer rupee reaches the farmer. Academic exercises and functional research on agri-marketing is limited to price spread, cost and margins and channel analysis. In the long value chain partners, mark-ups between partners are oftenly unsmooth and erratic.

Hub And Spoke Model In

East India

Most of eastern India is blessed with regular period markets. This is a natural hub and spoke format with maximum areas served, population served, adequacy index, seasonality index etc. This helps farmers in selling their produce near their home. The advantage is that the farmer does not have to travel far to sell his produce and gets almost the same price close to his home. This further helps in time saving and transport expenses.

Agricultural marketing is a measure to assure remunerate marketing opportunities that hold the key to continued progress by enhancing farm productivity, profitability and help to provide the reasonable price. But uniquely the uneconomic size of produce

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Each state should have at least one smart mega modern wholesale market with investment of Rs 1000 crore on the pattern of India International Horticulture Market (IIHM) Ganaur of Haryana

and aggregation for maintaining uniformity, traceability, food safety is a big problem in India which needs local and specialized marketing strategies.

Major reforms in agri-marketing were implemented from 2003 to 2018 in the form of the Model APMC Act, 2003; Model Rules, 2007; Doubling Farmers Income initiatives, Model APLM Act, 2017; Model Contract Farming Act, 2018 etc. But still, a lot has to be achieved.

Proper development of effective agricultural marketing strategies will decrease the cost of distribution. It shall also facilitate diverse stakeholders in the economy like farmers, traders, consumers, transporters, warehouse operators, packers etc. Sound market infrastructure and strategies provide support to production activity, income generation and income distribution by bringing auto boost into the system. Improved agricultural marketing infrastructure like payment settlement system, commodity specific handling protocols, ripening chamber, pack houses, pre-cooling, flacks units, packaging, retails, auction Systems, testing lab, organic produces strategies etc. are the primary driving force for commercialization. The benefit of commercialization depends upon infrastructure, and both have push and pull relationship.

Wholesale Fruit And Vegetables Markets

The development of wholesale fruit and vegetables markets in India have been marked by haphazard, ad hoc and defective planning. There is no concept of integrated marketing master plan, no scientific/rational criteria for location selection, no self sustainability etc. These challenges kept the wholesale markets at a primitive stage.

The markets are built in such a way that no other source of income is possible except



that of the market fees. These wholesale markets should focus on understanding as to how innovative revenue generation mechanism can replace the conventional system of market fees.

Unfortunately, wholesale markets of fruit and vegetables face critical problems. Proper investment has not been made in the past. Therefore these markets depend only on the income from market fees. Most of the markets are grains-oriented because maximum fee (80-90%) comes from such markets. In states like Punjab and Haryana, the fee from fruits and vegetable is about 6%. Therefore even investment on the infrastructure for such perishable products has been less than 6%.

Institutions such as World union of Wholesale Markets (WUWM), National Council of State Agricultural Marketing Boards (COSAMB), State Agricultural Marketing Boards(SAMBs),

Agriculture Produce Marketing Committees (APMCs) have no linkages for exchange of knowledge, technology, etc. which is important to survive in this evolving phase of agricultural marketing in the country.

APMCs must be encouraged towards enough opportunities for regular interaction with world -class markets of the globe by becoming members of WUWM. Every state should have its own integrated marketing master plan, so that innovative projects are planned and executed in order to draw investment. Each state should also have at least one smart mega modern wholesale market with investment of Rs 1000 crore on the pattern of India International Horticulture Market (IIHM), Ganaur of Haryana. Market fees versus rentals should be thoroughly examined and studied so that new innovative ways of revenue generation can be explored.

THE UNCANNY CORPORATE REFORMER

KURIEN – THE MILKMAN OF INDIA

In almost every state in India, National Milk Day is celebrated on November 26. This is an onerous day to pay obeisance and tribute to Dr Verghese Kurien, born a century ago. Known the world over for his inimitable, irreplaceable and distinctive designation of the “The Milkman of India”. Dr Kurien made India the world’s highest milk producer and consumer, and from a net importer of dairy products to a net exporter. Considering that more than 80 nations desire to adopt his universally acclaimed and unequivocally successful model of cooperative dairying, Dr Kurien deserves an elevated designation of “The Milkman of the World”. Rightly, the dairymen of India are campaigning for him being awarded the highest national civilian award, the Bharat Ratna.

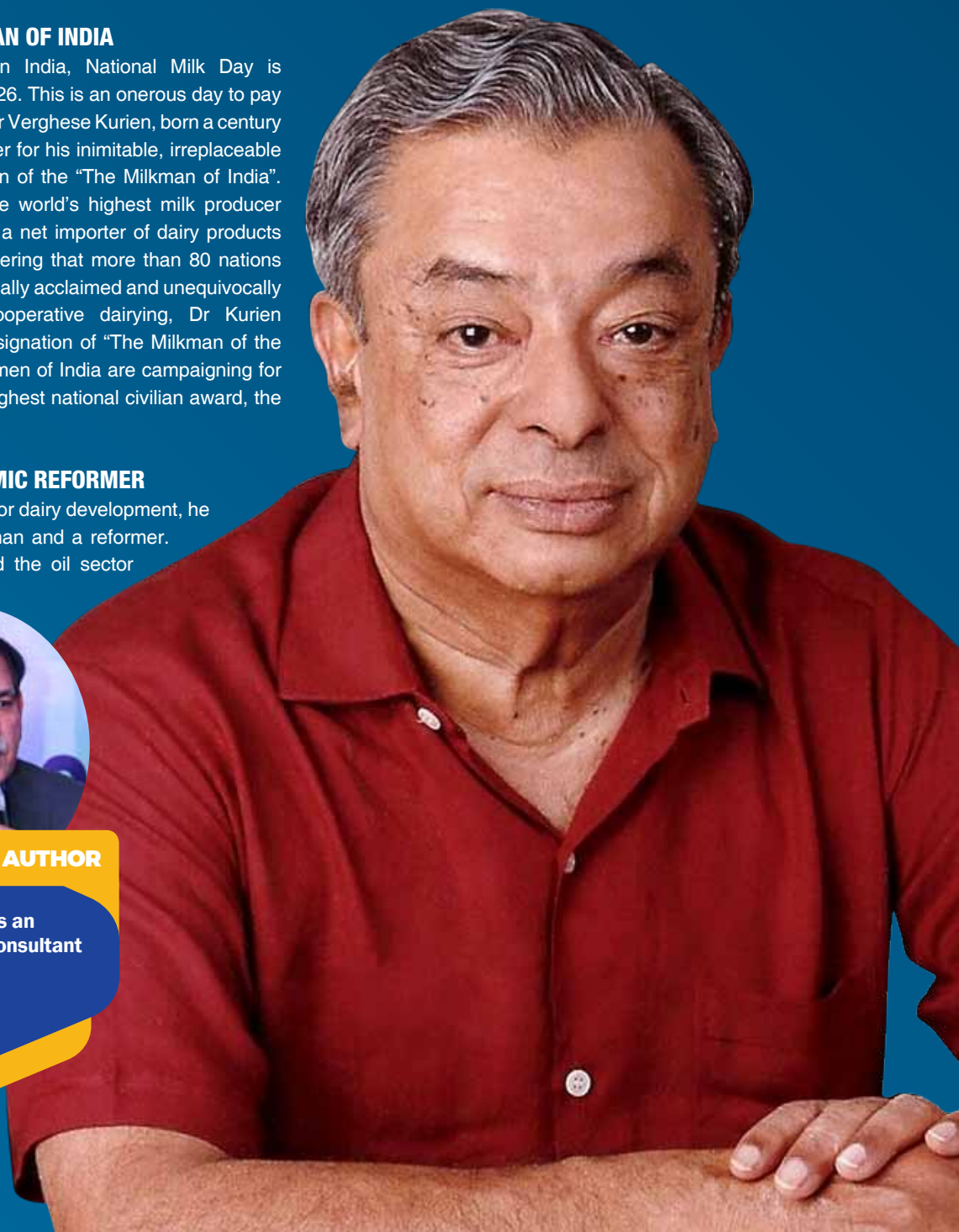
KURIEN – THE ECONOMIC REFORMER

While he is remembered for dairy development, he was an astute businessman and a reformer. He successfully reformed the oil sector



About the **AUTHOR**

Dr RS Khanna is an international dairy consultant





through oil cooperatives making India self-reliant in edible oils. His project of market intervention in oil sector was a landmark. He intervened in getting remunerative prices for their fruits and vegetables through direct procurement from growers. He showed the path of recreating forests through his Tree Growers Federation. He bound all cooperatives in a common network through the National Cooperative Dairy Federations. The federations helped the cooperatives purchase many consumables at the cheapest prices and inter-cooperative model for sale and exchange of dairy commodities. Dr Kurien shall be remembered for his model agreement with states for governing and reforming the loss-making dairy federations. The model agreement incorporated that the profit made will be that of the federation and loss, if any, would be made up by the NDDB.

Dr Kurien has been credited for idolizing the cooperative governance model as democratic, for rural resurgence and for empowerment of the farmer-producer at the lowest rung of the social ladder. Perhaps a very few would know and realize that he had chosen the strenuous path, walked slowly and steadfastly, to reform the unruly, uncontrollable, rigid bureaucratic



system that hindered social and rural development. When Operation Flood was started there was not even one state that shared, willingly or unwillingly, the blue print of cooperative development. In fact almost all the states had demanded that they be given their share of skim milk powder and butter oil that was gifted by the World Food Programme. Each state desired that they would monetize these commodities and carry out dairy development through their own model.

This was a period when the entire animal husbandry management, milk production, processing and sale was under the departments of the state government. The progress was so dismal that instead of increase in milk production, the per capita milk availability was declining. The donated milk commodities, available in

abundance, were distributed free to the consumers. This led to a serious decline in milk price, decline in income to the milk producers and eventually to decline in milk production, while the population was increasing.

KURIEN DISRUPTS DEPARTMENT, PROMOTES FORMATION OF CORPORATION

To bring dairy development out of departmental control and bureaucratic governance, Kurien disrupted the governance model and convinced the states to create Dairy Development Corporations. This was a first step towards decentralization. Not willing to lose their grip on management, the state governments nominated Directors on the Boards, most being civil servants and government officers. The Chairman as well as the Managing Director were generally from the Indian Administrative Service. The only ray of light was that at least one director was from either the National Dairy Development Board (NDDB) or the Indian Dairy Corporation (IDC) and at least one director was from the farming community.

Though much was not achieved, the governance by the Corporations became more responsive than the governance by the departments



Dr Kurien showed the path of recreating forests through his Tree Growers Federation. He bound all cooperatives in a common network through the National Cooperative Dairy Federations

this decentralisation process was the intervention in governance by the NDDB through its spearhead teams. The corporations willingly took initiative to create dairy cooperatives at the district and the village level under the cooperative acts of the states. While village dairy cooperatives were able to elect their own management committees, the Board of Directors of the district cooperatives were still appointed by the government. This initiated the nomination of dairy farmers as directors based on political affiliation. Advantage or disadvantage, the cooperatives at district level had increasing political pressures that were instrumental slowly reducing the bureaucratic controls. The civil servants had to at least listen to the needs of the common dairy farmer.

The spearhead teams created highways across the state, building bridges with bureaucrats, the government ministers, the politicians and above all the village-level opinion makers. The time was ripe for implementing democratic cooperative system that was responsive to common farmer. This was the period when suggestions for improvement in all fields by the NDDB were accepted and welcomed. The strong bureaucratic resistances were shattered.

STRUCTURAL REFORMS IN COOPERATIVES

A decade or so governance by corporations had brought the government closer to the NDDB and find the advantages that were seen in increase in milk production and marketing. Kurien found that this was

were. It was easier for the NDDB to make friendly inroads and get many administrative changes favouring the dairy farmers. The Corporations were found willing to adopt new technologies and techniques in the entire animal husbandry and dairy development practices. The Corporations were open to employing trained dairy technologists, veterinarians, and management specialists for specific jobs.



NDDB SPEARHEAD TEAMS CREATE HIGHWAYS OF DEVELOPMENT

This was also the time when Kurien convinced and successfully created the position of State Coordinator and position held by middle management officer of the NDDB. He was a representative on the board and various management committees of the Corporation, the district cooperatives and steered the governance of the village cooperatives. Through him the NDDB sent nine-member spearhead teams for the creation and spread of village dairy

cooperatives. The NDDB spearhead teams were supported by the shadow spearhead team of the corporation. The NDDB teams trained the shadow teams in management and governance of dairy cooperatives. The corporations started taking over many activities that the departments of animal husbandry were implementing. Dairy cooperatives integrated milk procurement activities with providing services of breeding, nutrition and livestock health and disease control.

The first major achievement of

Dr Kurien taught now co-operatives assisted by competent professional managers can attain levels of achievement far surpassing that of many an established enterprise in the Indian corporate sector. The success of the Gujarat Cooperative Milk Marketing Federation was its complete in self-governance and in appointing professionals for management

the right time to introduce another wave of reforms in governance. The NDDDB created model cooperative act and bye laws for governance at state, district and village level.

The restrictive provisions that were present in the cooperative laws included compulsory amendment of bye-laws by the Registrar, power of government to nominate directors on the committee of management, powers of government to veto annul/rescind resolutions, powers of Registrar/government to give directives, supersession/suspension of the committee of management, automatic supersession of the management committee or board of directors, restriction on term of office of office bearers of cooperative societies, restriction on holding office in more than one cooperative society simultaneously and, compulsory amalgamation and division of societies by the Registrar. These restrictive provisions have severely retarded dairy cooperatives and other cooperatives from striving to achieve their potential and function without the traditional dependencies on governments.

Following the pressure by the NDDDB, continued discussion at various levels in amending the existing laws and implementing standard laws drafted by the NDDDB, some states have taken an initiative to liberate cooperatives and provide them the same opportunities available to other forms of enterprise. Andhra Pradesh, Bihar, Jammu and Kashmir, Madhya Pradesh and Karnataka have passed parallel liberalised cooperative laws that provide an enabling and conducive environment for cooperatives and their development.



Dr Kurien shall be remembered for his model agreement with states for governing and reforming the loss-making dairy federations. The model agreement incorporated that the profit made will be that of the federation and loss, if any, would be made up by the NDDDB

Gujarat, Maharashtra and Orissa are actively considering while Delhi and Rajasthan announced their intention to re-examine the cooperative law. Alagh Committee had recommended incorporation of cooperatives as companies and conversion of existing cooperatives into companies.

The Government has also been

requested to define their policy and encourage the role of autonomous, self reliant cooperatives, by fully exempting them from income tax, reducing incidence of double taxation when transactions take place between a member and its federal co-operative.

DAIRY COOPERATIVE FEDERATIONS ARE BORN

Reforms in cooperative laws created ground for another set of reforms. NDDDB brought about another evolution by changing the dairy development corporations to cooperative dairy federations. Slowly and gradually all the dairy corporations became cooperative dairy federations. Many of them had fully elected boards. Deficiencies still existed. There were hybrid federations, and they exist even today, with chairman and managing director being appointed by the government, most of them being civil servants. I remember Kurien stating while delivering keynote address at the 'Symposium on Socio-Economic Impact of The Operation Flood' to the Indian Dairy Association, Bombay in 1983, he stated, "The Federation has amply proved that co-operatives assisted by competent professional managers can attain levels of achievement far surpassing that of many an established enterprise in the Indian corporate sector. The competence displayed by the Federation should demolish all too frequent criticism of co-operatives that their divided and shared management prevents the attainment of the highest achievements in production and marketing." This sums up the principles of management for the Dairy Co-operatives. The success of the Gujarat Cooperative Milk Marketing

Federation (GCMMF) was its complete in self-governance and in appointing professionals for management.

DAIRY SECTOR LIBERALISED

Until June 1991, the dairy industry was under strict regimentation of the industries act. This had apprehended the private entrepreneur to invest in this sector. Untrue, but surprisingly it was generally perceived that the dairy industry was reserved for the co-operative and not for the private enterprise. GOI delicensed the dairy sector in June, 1991. Private sector companies including multi-nationals were allowed to set up milk processing and manufacturing plants. The basic philosophy underlying delicensing was to encourage the competition in procurement and marketing of milk, thus increasing value for both producers and consumers. Within a year of delicensing, over 100 new dairy processing plants came into being, most of which were designed to manufacture value-added products.

The establishment of new dairy plants was skewed and there was a concentration in the north western India. The creation of capacities for manufacture of milk products was disproportionate to the availability of liquid milk. This caused a scramble for milk procurement. The shortage of marketable rural surplus of milk in comparison to the actual requirement promoted the opportunists to synthesise a look alike of milk from vegetable oils, soap solution, urea, and other harmful ingredients and use the look alike as milk adulterant.

Beginning of adulteration of milk on a commercial scale had Kurien seriously worried. Milk production built brick by brick over a period of more than two decades was threatened for existence by scourge of adulterated and contaminated milk produced and marketed by spurious milk producers. The industrial liberalisation that was expected to unshackle the development

It was too early for Kurien to voluntarily exit as the Chairman of the NDDB in 1998. He would have achieved much more, would have delivered to India many reforms and programmes leading to economic growth in agriculture sector

and growth of this sector suddenly attacked the health and well being of the nation. The meaning of globalisation should not be construed to be a grant for unwarranted and unbridled criticism, right or wrong, of any act, order or rule that is restrictive or regulatory in nature promulgated to protect the well being of the citizen.

KURIEN CLAMPS MMPO

It is to meet with these strict requirements that Kurien brought out the Milk and Milk Products Order, 1992, by GOI. It was in the interest of the general public to regulate production and supply of liquid milk and milk products of desired quality. In fact after the industrial and trade liberalisation the GOI has completely altered its role showing concern for the health of the citizen, the food safety, and quality of food products meant for local consumption and export. Like MMPO the GOI has promulgated Fruit Products Order, Meat and Meat Products Order, to monitor the food safety and production, processing and marketing of processed fruits and fruit products, processed meat and meat products.

REVIVING SICK DAIRY COOPERATIVES

Reviving a sick Dairy Co-operative was considered if not impossible, a very daunting task. Agreed, daunting it was. But a day had to be called a zero day and beginning was made. There were examples of the sick co-operatives

that have been brought out of almost moribund condition. The Dairy Co-operatives in Punjab, Rajasthan, and Karnataka were taken up for revival. I was instrumental in bringing the RCDF from out of moribund state. The process of decentralising the staff to district level created an irreversible impact.

I remember the administration used to transfer persons at the lowest rung to far off district cooperatives. This caused tremendous problems and disturbed the family and life of the transferee. With the approval of the Jodhpur High Court, entire staff upto the rank of deputy manager was permanently allocated to the chosen district cooperative. The district unions found that their survival depended exclusively on their own financial performance.

Even after the NDDB exited the state, most of the district unions have been growing well financially, increasing their milk production, manufacture of milk products, diversifying their range of milk products, their sale and almost all areas of management and growth. The RCDF is now the third largest dairy federation in India. A model of success of the intervention by the NDDB and well thought out Kurien intervention in the agreement that "loss if any would be borne by the NDDB".

WISH KURIEN HAD STAYED LONGER

In conclusion I wish to quote extensively from the final evaluation report of Operation Flood. The World Bank (Wilfred and Kumar, 1998), concluded that the principles of Anand pattern for full farmer control have been facing a continuing problem of "rejection by the politicians and bureaucrats... politicians continue to harass the co-operative system...issues of governmental interventions, cost control and subsidies are intertwined" lead to "mixed ownership and control" of co-operatives which has a "subtle and corrosive effect of government intervention" on the co-operatives. The problem has been diagnosed to the fact that the government



still owns the physical infrastructure and has guaranteed the repayment of loans. The net result of this intervention is that it reduces the efficiency, increases the costs and “undermines the value of the state’s assets” and the symptom this conflict according to the study is “continued appointment of civil servants as managing directors”.

The government draws the powers for interfering in the functioning of co-operatives through the State Co-operative Act, rules and regulations. There is nothing new in the information that is being furnished. Way back in 1991 the Brahm Prakash Committee had enlightened that “the essence of co-operative organisation is the principle of democratic management, signifying institutional regulation by members and their elected representatives in accordance with the bye-laws, It precludes control and interference by any agency including Government...” The Committee had identified the following restrictive provision in the State Co-operative Societies Act that empowered the Government/ Registrar to: Notify compulsory amendment of bye-laws; Nominate directors on the Management Committee/Board

of Directors; Veto, annul, rescind resolutions of the Board/General Body; Give any directives; Supersede/suspend the Management Committee/ Board of Directors; Restrict the terms of office of office bearers and Compulsorily amalgamate/divide the co-operative societies. Because of these restrictive provisions Kurien called the Registrar of Cooperatives the ‘Brahma, Vishnu and Mahesh of Cooperatives’.

The other is the management intervention. The assistance is generally in the form of appointment of chief executive from the civil services. There is merit to it. Experience of managing large organisations as a generalist has its advantages. It is possible to highlight many cases of success in business enterprises. The conflict arises when compared to others the dairy enterprise is considered backward or of secondary importance in the state. Appointments are for indeterminately brief periods. Priorities of the government in personnel placement invariably supersede the business needs of the Federation. From frequent changes the organisation invariably suffers from continuous discontinuity of the chief executive. There is consequent breach

in the policy statement, implementation of policy, style of functioning, reporting and communication. In fact the entire organisational behaviour undergoes changes so often that it suffers from severe schizophrenia. Such a discontinuation in top management negates an expression of the Dairy Co-operative being a business organisation.

Kurien, with his NDDDB under him, fought relentlessly with everyone who crossed his path wrongly. His strong, sturdy, persuasive and many a times arrogant discourses made ways for creating a strong and efficient dairy sector. The sector has continued to perform, support the dairy farmer and create a resurgent rural economy. Milk production despite much less intervention and investment by the government is consistently. India is enjoying the smooth walk on the dairy highway that he structured and built. I strongly believe that it was too early for Kurien to voluntarily exit as the Chairman of the NDDDB in 1998. He would have achieved much more, would have delivered to India many reforms and programmes leading to economic growth in agriculture sector.

How I wish Kurien had lived longer!

PROMOTION OF AGRO-EXPORTS IN CHHATTISGARH INITIATIVES TO EXTEND MARKETING SUPPORT

Chhattisgarh, the rice bowl of the country, has 19,116 varieties of known rice gene pool and is a top paddy producer. Major Kharif crops include maize, green gram, black gram, pigeon pea, sugarcane etc. Vegetables, millets, chickpeas, green peas, wheat, lentil, lathyrus etc are grown during Rabi, while maize and vegetables are summer crops. Mango, guava, lime, litchi, cashew, sapota are the major fruits crops. Beans, cabbage, cauliflower, tomatoes, plantains are the major vegetables here. Chili, ginger, garlic, turmeric, coriander and methi are the major spices. Marigold, tuberose, roses, gladiolus and orchid are grown along with medicinal crops like Ashwagandha, Sarpagandha, Tikhur, Asparagus etc. and aromatic crops like Lemon grass, Palmarosa, Jamarosa, Patchouli etc. Horticulture and fisheries are the emerging agri economic sectors.

The state's support for agri-related sectors is multifold. Short term interest free loan to farmers, procurement of 60% of total paddy produced at MSP, production incentives for all Kharif crops and crop diversification under the Kisan Nyaay Yojana, soil health card distribution, solar pump scheme, additional top up subsidy of 15% to small and marginal farmers and 5% to other farmers, 6000 units of 3HP pump and 7500 units of 5HP pump free electricity have created tremendous impact on the sector. Millet Mission is focused on enhancing the agri marketing prospects. Maintaining 29,047 germplasm accession of various crops, the states is endowed with robust

agricultural research infrastructure with 28 agriculture colleges, 6 horticulture colleges and 4 agriculture engineering colleges apart from the establishment of a new State Horticulture and Forestry University. The agriculture university of the state is a leading research institution impacting the policy design of Chhattisgarh.

Geographically strategic, Chhattisgarh's robust infrastructure has stimulated growth in agriculture marketing in significant ways. The state ranks first in freight loading capacity generating 1/6th of Indian railway's revenue through 1196 kms of extensive rail network. Twelve national highways over 35, 411 kms encompass the high-speed east west corridor. The multi modal logistics hub is being set up by CONCOR. The upcoming international cargo complex at the airport will be

supplemented by three more airports proposed in the state.

Located merely 548 kms from Vizag port, two inland container depots in Raipur enable direct exports and five ports provide easy access through efficient rail and road link. 24 rake points with rake point warehousing are located in ten districts. APEDA is soon expected to open its regional office in Raipur. 24.15 lakh MT warehousing

The growth of the organic sector in the state is impeded by several challenges at the level of the producers, processors and consumers

capacity and 4 lakh MT cold chain storage capacity in more than 80 cold storages along with the status of zero power cut state provide impetus to agri exports and marketing.

Investment opportunities are abundant in agriculture and allied domains. Cold chain enhancement has potential due to the developing logistics hub in central India. Ready access to agri produce and forest produce, electronic markets and physically closer markets, animal feed manufacturing and dairy, high productivity of poultry, meat and fish strengthens the logistics hub catering to central and eastern India and also abroad.

Major Potential For Organic Agriculture

Traditionally, Chhattisgarh has been endowed with naturally viable organic



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Gothans as nodal centers of rural development

The flagship schemes *Narva Garua Gurua Badi* (NGGB) And *Godhan Nyaay Yojana* (GNY) have evolved gothans (common grazing lands) as nodal centers of rural development. This has been done to promote the use of residual resources of allied sectors to generate alternative source of income through women self help groups. This is possible through the convergence and integration of various departments - PRD, Urban Development, Cooperative, Agriculture, Horticulture, Animal Husbandry, Watershed, Forest etc. The most significant activity in the Gothan is the production of Vermicompost by women self help groups. Gothans also are special purpose vehicles which enclose sites of rural industrial parks.

forms of nutrients, especially in Bastar plateau and northern hills. The cultivated area under organic certification process in Chhattisgarh has increased to 10,824.36ha in the last 5 years. Additional area OF 27.242ha is also under certification process under wild harvest collection category. 15 districts of central Chhattisgarh account for 42% of the total organic area in Chhattisgarh. 4580 tonnes of marketable production from cultured area and 5905 tonnes from wild harvest collection for crops like mango, lime, vegetable, wheat, rice, millets, herbs and medicines have been managed organically.



The majority of organic produce is paddy at 70%, pulse area at 22% and other cereals at 7%. The organic produce of the state can be a prime agro export product. The growth is impeded by producer, processor and consumer level challenges. Some producer level challenges are as follows:

- * Prolonged certification standards
- * Processes required for organic produce
- * Lack of market for pre-certification produce
- * Lack of standardisation for commodity certification
- * Incentives for farmers
- * Lack of organic cultivation research and extension

* Lack of standardized organic agriculture inputs

Global competence, supply chain issues, lack of proper organic supply chain and absence of proper branding and packaging are challenges at the level of processors. Consumer level challenges include lack of awareness



fun FACT

I am an ardent reader of Indian writing in English, love wandering about and enjoy narrating experiences of my adventurous early administrative life nestled in forests with dacoits

among consumers, high cost of organic food products and limited availability of organic food.

The state can realize its immense potential and achieve optimal value in agri exports by formulating an Organic Farm Policy enabling the setting up of Chhattisgarh Organic Produce Board, Centre of Excellence in Organic Farming, nurturing farmer institutions to facilitate agro exports and enhancing the creation of value added agro and forest produce.

STATE AGRICULTURAL MARKETING BOARD, UTTARAKHAND

INITIATIVES FOR DEVELOPMENT & FARMERS WELFARE

The Uttarakhand State Agricultural Marketing Board and Agricultural Produce Market Committee was established to achieve the following purposes. To ensure the welfare of farmers. For effective regulation of marketing system of agricultural products. For establishment and development of proper and modern market system for upliftment of agro processing and agricultural exports. The



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Board and the committee deal with the development and welfare activities under the Uttarakhand Agricultural Produce Market (Development and Regulation) Act, 2011.

Under the supervision of the State Agricultural Marketing Board, the APMCs have effectively implemented the agricultural marketing system. They ensure that a fair price to the farmer for his produce has to be provided by the trader. They also perform the following roles.

- * Prevent unauthorized deductions by the trader
- * Check the irregularities of measurement
- * Provide free weighing and storage facility

- * Information regarding market price
- * Resolving farmer-trader disputes
- * Implement farmer welfare schemes such as damaged crop compensation scheme
- * Provide accidental insurance schemes
- * Provide scholarship scheme for students of agricultural faculty in the PG colleges
- * Provide subsidized agriculture produce carry boxes and saplings distribution to the farmers.
- * Purchase of hilly regions cereal crop such as mandua, jhingora etc. on MSP
- * Construction of connecting roads in villages, ropeways so that agricultural produce can be easily carried to the nearest market



Grading and testing laboratories have been set up in 16 mandis so that the agricultural produce can get the best price according to its category. Subsidized agricultural produce carry boxes are distributed to the farmers to make it easier for them to bring their produce to the market

farmers etc. Proper arrangements are made for rest houses, parking etc. for farmers in the market premises.

Free saplings are distributed to the farmers every year. More than 3,80,456 saplings have been distributed. Welfare schemes such as Scholarship Scheme, Farmer Producer Damage Assistance Scheme and Personal Accident Assistance Scheme are provided by the Marketing Board for the farmers and for the people involved in agricultural activities. More than 1866 scholarships, 388 personal accident claims and 481 crop compensation have been distributed.

Provision of contract farming, private mandi and e-trading have been made in the act, for the welfare of farmers.

E-NAM in Uttarakhand

E-National Agriculture Market Scheme is being implemented in 16 mandis of Uttarakhand, through which farmers sell their products through online trading. Till date 53984 farmers, 4706 traders, 2595 commission agents and 171 FPOs have been registered. Also, till date 26.25 lakh quintal produce worth of 329.71 crores have been traded online. Trade of 154001 lots and 118817 lots has been verified and more than 104 crore e-payments have been made to the farmers.

Under the grain purchase scheme from hill farmers, more than 4617 quintals of Mandwa, Jhingora etc. have been purchased at the MSP. Flower sales center, Banana ripening center, processing unit, etc. have been constructed under central government funded schemes. Daily price information for farmers has been made available on toll free number 18001024608. During the pandemic, the APMCs ensured the arrangement of fruits and vegetables at subsidized rates for the consumer in the area and the availability of food items was ensured in the notified region. Mandi fee and development cess are the main sources of income of the APMC, which is the significant source of income of APMC.

* Installation of hand pumps to ensure the drinking water on the way or in the village

* Construction of collection centers, cold storage, ware houses so that agricultural produce can be stored for future sale in the market

* Construction of market yard, sub market yard, farmer-consumer market so that farmer get opportunity to sale the agricultural produce near the farms.

* Ensure that farmers are not exploited by the middlemen and they get a fair price for the produce.

The auction of the arrivals brought by the farmer to the mandi premises is done as per the guidelines of the committee so that the farmer gets a fair price for his produce. Till date more than 9388 lakh quintal of arrivals have been traded in the market yards of Uttarakhand. The APMCs have levied more than 1287 crore of fee from traders so that farmers welfare activities can be accomplished through such funds in the notified market regions.

E-National Agriculture Market Scheme is being implemented in 16 mandis of Uttarakhand, through which farmers sell their products through online trading

Facilities In Mandis

Market yards are constructed according to the requirement of the area so that along with the facility for selling the agricultural produce by the farmer, the business gets promoted and the economy get boosted. In this sequence, 28 mandis and 44 sub-mandis, 7 Apanu Bazar, 21 collection centers, 291 commercial and rural warehouses are available in the state.

In order to facilitate the farmers to bring their produce to the market yards, contact roads are constructed in the market area. More than 1238 km of contact roads have been constructed and 3953 hand pumps have been installed to provide drinking water to the

ORGANIC FARMING

A GAME CHANGER FOR ATMANIRBHAR BHARAT

Organic farming is at a nascent stage in India. According to the data by Ministry of Agriculture and Farmers' Welfare, about 2.78 million hectares of farmland was under organic cultivation as of March 2020. This is about two per cent of the 140.1 million hectares of net sown area in the country. Out of the 2.78 million hectares of farmland, about 1.94 million hectares fall under the National Programme for Organic Production (NPOP), about 0.59 million hectares fall under the Paramparagat Krishi Vikas Yojana (PKVY), while 0.07 million hectares is under the Mission Organic Value Chain Development for North-Eastern Regions (MOVCDNER) and about 0.17 million hectares come under various state schemes or non-schemes. Organic farming has a tremendous opportunity to play a seminal role in uplifting the health of the economy and



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citizens.

At present, Indian agriculture is at the receiving end of the benefits of indigenous skills of its farmers, scientific temperament, strong political will and potential for growth, which has helped India become one of the largest organic producers in the world. With PM Modi's clarion call to build an Atmanirbhar Bharat, Indian organic farming sector stands at the cusp of a reformation that might catapult India to the number one spot in the coming years, both in terms of world's organic agricultural land and total number of producers.

Even though India has very small organic area under cultivation, in terms of the number of organic farmers, it ranks first. As per the March 2020 estimates of the Ministry of Agriculture and Farmers' Welfare, India has over 1.9 million farmers, which is 1.3 per cent of an estimated 146 million agricultural landholders.



Since farming is a state subject, state governments have a seminal role to play in taking revolutionary steps to make the shift to organic farming possible

MP - Pioneering Role

There is tremendous growth potential for organic farming in India. Farmers can increase their organic farming scope or transition in a phased manner to organic farming. Since farming is a state subject, the state governments have a seminal role to play in taking revolutionary steps to make this change possible.

Madhya Pradesh is leading the way in growing the potential of organic farming in India. MP has about 90 per cent of its organic area under the National Programme for Organic Production and tops the list with 16 lakh hectares of area under organic farming.

In 2011, Chief Minister Shri Shivraj Singh Chouhan had envisioned that MP should become a developed and pioneering state in the field of organic agriculture. This vision has been the guiding force behind helping the state farming community generate sustainable livelihood, toxin-free food items, ensure nature conservation and efficient food management, while securing the status of surface water and ground water levels in the state.

MP has been ranking first on several parameters as compared to other leading organic farming states with large farmlands. In the state-wise organic farm

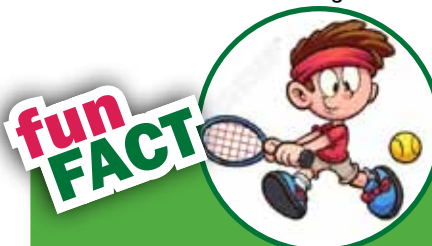
production ranking for the year 2020-21, MP tops the list with a figure of about 13,92,096 metric tonnes, as compared to other large states of Maharashtra, Karnataka and Rajasthan, which have respectively contributed about 775775, 355719 and 256386 metric tonnes. For the same period, MP has increased its organic production from wild areas to 9594.24 metric tonnes, which is about 250 times the production of Maharashtra, 12 times that of Karnataka and 2 times that of Rajasthan. The focus of the MP government in bringing wild organic produce under its ambit has also provided tremendous growth opportunities for the large tribal community in the state.

MP has extensively promoted organic farming under the Rashtriya Krishi Vikas Yojana (RKVY), having invested ₹ 5412 lakh in implementing over 20 schemes since 2008. The government has carried out awareness campaigns to promote the development of organic farming and concepts like vermicomposting, uptake of micronutrients and bio-fertilizers, development of organic fields, construction of eco-fertilizer and biogas production units, and testing labs for bio-fertilizers, among others.

If organic farming must take root in India, the state governments must act proactively with the long term in sight. With strategic policy and technological interventions, state governments must prolifically engage with the farming community through targeted awareness campaigns to allay their doubts and reservations, like in the case of Madhya Pradesh. Organic farming can become a game-changer in ensuring the economic and physical health of Atmanirbhar Bharat only when we take a targeted approach to embrace it.

MP Initiatives

MP government has taken various significant steps to ensure that organic farming picks up traction. MP has consistently ranked first nationally in organic farming for the last 6 years, having expanded the size of the area under organic cultivation to over 16 lakh hectares. This is more than four times that of Rajasthan, placed second on the list. The state government established the MP Organic Certification Agency (MPSOSA) in August 2006 to provide a strong foundation to the organic farming movement in the state and handhold the farmers in the right direction. The creation of this agency has led to the promotion and standardization of organic farming, bringing the organic certification process within the reach of small farmers. MP is also one of the first states to have created a recognizable organic produce brand titled MP Organic. This has created a differentiating factor vis-a-vis marketing, thereby engendering a greater interest amongst the state farming community to transition to organic farming.



I enjoy an occasional session of tennis and love to read to de-stress my mind

CHEMICAL PESTICIDE OVER-USE

MAJOR ENVIRONMENTAL CHALLENGES ARISING



During the 20th century, a focus on feeding our rapidly expanding global population led farmers across the world to adopt aggressive agricultural practices – heavy machinery, monocultures and increasing volumes of chemical pesticides. However, as these practices moved further and further away from nature, there were inevitable consequences on our soils, our air, and our water supplies.

The environmental challenges arising from the over-use of chemical pesticides, in particular, have widespread implications that must be realised and addressed.

Our increasing dependency on pesticides

Since the middle of the 20th century, our



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use of chemical pesticides has grown steadily. Now, it is estimated that more than 1.1 billion pounds of pesticides are applied to crops every year.

It is easy to see how we have come to this situation. From 1950 to 2010, world population increased from 2.5 billion to 6.9 billion, or by 174%. Even at the most basic level, that would mean a 174% increase in food production, with related pressures on crop yields. Added to this, modern consumers demand 'blemish-free' fruit and vegetables, putting even more pressure on growers to eliminate pests and diseases. As average meat consumption has also increased, crop yields have needed to grow disproportionately to feed livestock.

These pressures have driven growers to apply more and more pesticides and chemicals, in a constant quest for greater yields, 'clean' produce, and a never-ending battle with nature as they fight pests and diseases that would undermine those efforts.

However, as well as adding toxins into our own food chains, the huge volumes of chemicals applied to our fields has led to problems for natural habitats and ecosystems.

Impact Of Pesticides On Environment

The problem with chemical pesticides is that they eventually end up polluting the environment. Residues in our soils gradually leach through the ground to

contaminate groundwater sources and waterways, while eroding soil quality (as microorganisms and earthworms vital to soil health are killed), air quality (affecting plant life) and wildlife populations.

Pesticides are designed to kill pests that would damage crops, spread disease, or infect livestock. Yet they are also toxic to other living things, including non-target insects such as bees, earthworms and other beneficial soil microbes, birds, fish, mammals, and humans.

In other words, chemical pesticides are frequently non-selective in their targets, and their application often risks harm to non-target organisms in our soils, air, and waters.

Pollinators are the most frequently cited example of the non-selective harm done by pesticides, but there are many others, often interrupting natural cycles of life, and exacerbating the root problems. When pesticides are applied to land or water for mosquito control, their impact reaches far beyond the target organism - often killing beneficial insects like dragonflies which eat mosquitoes and help keep other insect populations under control.

The most common type, organo-phosphates or OP, are neurotoxins. These pesticides have been shown to kill many species of animals, including birds, fish, and amphibians. Not only do they affect the environment where they're sprayed but also pollute our groundwater supply too.

The use of chemical pesticides can be reduced, and sometimes avoided altogether by the implementation of more sustainable solutions that are founded in nature and do not present the same toxic challenges

The Solution Lies In Nature

If we take time to understand the natural cycles and relationships in agriculture, we can harness that nature to help control pests and diseases, without the intervention of toxic chemicals.

At its most simple crop rotation and mixing plant species can limit pests and prevent an infestation by removing host plants from areas in which pests and disease organism populations have grown. By rotating crops over a period long enough to deprive those populations of food, long enough for them to die out, those pests and diseases can be controlled with no additional interventions at all.

Another strategy is to grow disease-resistant plants; breeders can utilize genetic technology to grow plants that are able to produce their own pesticides (but this also has its limitations as some pesticides like those made by wasps cannot be reproduced in such ways).

Other alternative methods harness the natural relationships between predators and prey. For example, introducing certain kinds of wasps can control pest infestations without harming other organisms or nearby wildlife. This is a traditional example of what we now refer to as ‘biopesticides’.

‘Biopesticides’ present a return to nature and the utilization of macroorganisms, microorganisms, natural plant chemicals and other biochemicals that can be used to kill or affect the physiology of crop pests and diseases. As they harness natural inter-organisms relationships, these solutions are usually highly selective for the target organism, providing effective control without affecting other beneficial insects or microbes. Their natural origin also mean that they biodegrade after use, replenishing the soil rather than polluting it. For more information about biopesticides, click here <https://bionema.com/biopesticides-biological-alternatives-to-chemical-pesticides/>

In the past two decades organo-phosphates have emerged as widespread contaminants in soil and water supplies, posing a significant toxicological threat to aquatic ecosystems, soil, and human health.

How To Reduce Impact

It is important to remember that not all pesticides are harmful. In fact, some pesticides help reduce the need for more toxic chemicals and can be used safely by informed individuals. However, the toxic effects of a growing number of chemical pesticides, on humans and the environment, are leading an increasing number of countries to ban these chemicals.

The Pesticide Action Network (PAN) has a searchable map that shows which states have banned use of pesticides on lawns, gardens, childcare play areas, school grounds, golf courses/country clubs, parks and campgrounds. States with pesticide bans are shown in green and states lacking any ban or regulation are in yellow (<https://www.pan-uk.org/>).

Countries like Australia have implemented a ban on certain pesticides, but this solution has led to the overuse of others. Therefore, it is not enough to

simply ban chemical pesticides – other strategies must be employed, to allow the adequate control of crop pests and diseases in a manner that does not challenge the environment and allows us to protect our planet as well as our crops.

The use of pesticides may be in some cases, but we must be aware of any potential impact on the environment and do all we can to limit those effects by making sure that they are used responsibly by farmers and manufacturers alike.

The use of chemical pesticides can be reduced – and sometimes avoided altogether – by the implementation of more sustainable solutions that are founded in nature and do not present the same toxic challenges caused by the over-use of chemical pesticides. Bionema can help identify natural pest control solutions for horticulture, forestry,

fun FACT



I like watching Bollywood movies with my wife in my free time, if I have any and going for long walks

turf and amenity, and public health.

Bionema’s innovative solutions can help to reduce chemical pesticide use and protect the environment, while controlling pests and diseases effectively at the same time.

AGRICULTURAL MARKETING SYSTEM IN GUJARAT

NEW STRIDES FOR FARMERS' PROSPERITY

The APMCs of Gujarat have consistently performed their role for farmer welfare and support. The state government has consistently supported the addition of value-added infrastructure at our APMC yards so that farmers are not exploited by private players and are able to get better prices for their produce by undertaking primary processing. The state provides financial support for providing modern facilities to existing APMCs. This creates healthy competition between private players to provide all facilities to the farmers. The state is creating a healthy atmosphere for the market players to invest more and more in the agriculture sector.



Kisan Kalpavriksha Yojana

Gujarat has implemented the ambitious Kisan Kalpavriksha Yojana to provide all basic and modern facilities in the market committees. In the last five years, Rs 23347.75 lakh has been provided as assistance to 157 APMCs. The market committees of tribal areas have been provided assistance up to 75% of their project cost.

A display board has been set up in the market yard, connected to a computer under the Agmarknet to display prices of all commodities. The state provides 100 per cent assistance for setting up of information kiosks in the vegetable market.

With the strengthening of the marketing system, the fruits of development have reached the farmers. Detailed information about all facilities



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is given in the agricultural festival held every year. Farmers have become aware and come to the market yard with their produce.

Ambitious Provisions For Farmers

Gujarat amended The Agricultural Produce Market Act in 2007 and added ambitious provisions such as private market, e-market, direct purchase market system, contract farming, farmer consumer market system etc. With this, the market system of Gujarat has been able to withstand national and international competition.

The market committee shall levy and collect market fee from buyers in respect of notified agricultural produce including livestock bought by such buyer in the principal market yard, sub -market yard or market sub-yard either brought from

outside or within the state, at such rate as may be prescribed ad valorem on transacted agricultural produce including livestock.

There shall be a single license applicable to the whole state for the trader to be granted or renewed by the Director or the officer authorized by him in such manner and in such form, as may be prescribed, to operate as trader in any principal market yard, sub-market yard, market sub-yard, private market yard and sub-yard, e-trading platform or any other space identified for the purpose in the state.

The market committee may levy and collect entrance fee on vehicles which may enter into market yard at such rate as may be specified in bye-laws, that no such fee shall be levied and collected from agriculturist-seller.

The state has consistently worked on the strategy to enhance coverage of purchase at village level, setting up of specific commodity APMCs and strengthening of weak APMCs. Now APMCs have been included in the AMI Scheme. APMCs can be the major beneficiary of this proposed scheme and can develop infrastructure facility through it.

Another facility for farmers is setting up of web portal of GOI for getting current market prices within and outside of Gujarat. We can make and operate a web portal which shows the complete data and information regarding arrival market price, income of cess month wise, commodity wise and APMC wise through Agmarknet portal. So it will be another option for farmers to sell their agriculture produce.

Farmer-Centric Facilities

Apart from market reforms, Gujarat always takes initiatives in providing assistance under state plan and central schemes in agriculture marketing for various projects to modernize the existing system. More than 195 APMCs have benefited under Rashtriya Krishi Vikas Yojana. Economically weak APMCs have benefited with farmer-centric



APMC Support For Public Welfare

Gujarat's APMCs have donated Rs 3,12,41,000 to the CM Relief Fund and Rs 31,53,000 to PM Relief Fund, thus contributing Rs 3,43,94,000 in total so far

On the basis of Model APLM Act 2017 of GOI, Gujarat recently amended the Gujarat Agricultural Produce Market (Promotion & Facilitation) Act 1963. Important provisions were included like declaring one market for the entire state, provision of Unified Single License, provision of Market Yard of Importance, e-trading etc. These provisions will give farmers more options to sell their farm produce. As a result, we can move towards doubling farmers' income in 2022.

facilities like electronic weigh bridges, CC floor, auction sheds, export facility center for mango and banana, grain cleaning facility, soil testing laboratories, drinking water and sanitary facility and Multipurpose Farmers Training Centers in the premises of the yard. These services ensure that farmers can get better services at reasonable rates and get better price for their produce.

Setting up of Soil Health Lab in APMCs

We provide the facility of Soil Health Testing at APMCs level. In Gujarat 63 APMCs have Soil Testing Laboratories.



EXOTIC FRUITS AND VEGETABLES GOOD DEMAND, ROBUST PRODUCTION



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Exotic vegetables and fruits have become very popular in India in recent years. Mushrooms, tangy kiwis, green olives, fresh broccoli, dragon fruit are some of the major exotic farm items that have occupied an important place in urban kitchens. The change in eating habits has been well received by Indian farmers. There has been a significant increase in the domestic production of exotic vegetables and fruits, which are easy to grow and ensure good returns. There is a small gap between the growth in the consumption of exotic farm items and their domestic production.

India is the second-largest producer of fresh vegetables and fruits in the world and a significant exporter of these perishable farm commodities. In 2020-21, India exported 3,148,077

tonnes of fresh vegetables and fruits, which included kiwis, olives, broccoli. This indicates India has a good future in exporting exotic farm items that are grown in the country. In 2018, India had imported fruits and vegetables worth USD 3 billion. The figure slumped to USD 1.2 billion in 2019. This suggests the increase in domestic production of exotic fruits and vegetables.

Exotic fruits that are popular in India include Japan's Fuji apples and other varieties of green apples, red grapes, dates, berries, kiwi fruit, different types of mandarin oranges, pomelo and several other varieties of citrus fruits. Local farmers too have started cultivating them. Exotic vegetables such as broccoli, iceberg lettuce, colored capsicum, asparagus, celery, parsley, Brussel sprouts, zucchini, and cabbage are imported from various countries

including US and Australia.

Multiple Health Benefits

These exotic farm items are rich in essential nutrients and have exhibited several health benefits, besides sweetness and aroma. They are a good alternative for consumers who are dependent on plant-based foods to meet the body's nutrition requirements.

Avocado is an excellent source of vitamin C, E, K, and vitamin B6. Kiwis are packed with vitamin C, K, E, potassium, folate, and vitamin E. In addition to antioxidants and fibre, both of these exotic fruits are also good sources of vitamin C.

Dragon fruit is a classic example to illustrate the changing trend. It was introduced in India in the 1990s. It is nutrient-rich, good for value-added processing industries, and regularly used in salad making. It has low maintenance and high profitability. So, it was taken up by the farmers in Maharashtra, Karnataka, Andhra Pradesh, Telangana, Gujarat, Odisha, West Bengal and even remote islands of Andaman and Nicobar. According to ICAR -National Institute of Abiotic Stress Management (NIASM), dragon fruit was grown on 400 hectares of land in India in 2017-18. The cultivation area increased to 3,085 hectares in 2020. In June, India exported its first batch of Dragon fruits. Export of exotic vegetables and fruits can help farmers earn better, thus facilitating the government ambitious target of doubling farm incomes.

Lettuce, a famous leaf vegetable used in burgers and salads, has become an important crop in the Nilgiris district in Tamil Nadu. The demand for lettuce has seen a 25 pc increase year on year. In different parts of the country, many farmers are cultivating lettuce using hydroponics polyhouse farming.

Another nutrient-rich fruit from Mexico, Avocado has been introduced in Himachal Pradesh. The climatic conditions in the state were found suitable for the cultivation of Avocado,

Polyhouses, Aeroponics, Hydroponics, Aquaponics

India has diverse agro-climatic conditions, which means a large number of farm commodities can be grown. Indian farmers have cultivated the hybrid variety Lal Ambri apples -- a cross of Ambri and Red Delicious breeds. This apple variety can be cultivated throughout the year and is used for making jams, jellies, and desserts. Polyhouses have become regular sightings in India these days. Different types of exotic fruits and vegetables can be grown in polyhouses with the help of different techniques such as aeroponics, hydroponics and aquaponics, under artificially controlled light, nutrients and temperature.

The concept of vertical farming is taking shape in urban areas, in which crops are grown in vertically stacked layers. It helps in reducing carbon emissions. Vertical farming is the best platform to grow exotic food crops that are export-compliant since farmers can control the flow of nutrient, chemicals, fertilisers and pesticides. Many young entrepreneurs are coming up with innovative ideas and using entrepreneurial skills to produce exotic fruits and vegetables in urban farms.

The Centre has planned to import original planting material to produce seeds that will ensure exotic fruits and vegetables of the best quality are produced in India, and thus imports are reduced

which cost Rs300-400 in retail. There is a growing demand for this fruit in India and across the globe for its nutritional



and medicinal properties.

A few months ago, Indian scientists carried out trials for the introduction of Monkfruit, a non-caloric natural sweetener, making it ideal for diabetics. Its cultivation holds huge potential.

Now, one can see exotic fruits and vegetables in markets in all major cities. Several online shopping platforms promise customer deliveries of fresh, clean and safe farm commodities directly from farms.

Various state governments and central government have taken measures to enhance production of exotic fruits for domestic needs and also earn foreign exchange. The central government has planned to import original planting material to produce seeds that will ensure exotic fruits and vegetables of the best quality are produced in India, and thus imports are reduced. The seeds of exotic varieties include apples, almonds, walnuts, grapes and date palm. It has also been decided to encourage 10 exotic farm crops of commercial importance and expand the cultivation area to 8,951 hectares in 2021-22. This can be the beginning of a golden narrative for India's food basket, self-sufficiency and farm remuneration.

SEWA

ORGANIZING WOMEN WORKERS FOR FIVE DECADES

SEWA has been organizing women workers from the informal economy for around five decades. Through its work, SEWA has understood that women are the backbone of an informal worker's household and are shouldering the responsibility of fulfilling the family's food and nutritional needs. Women also play a major role in the entire Food Value Chain System – in production, in processing, in trading of food and in making decisions about consumption and purchase of food at household level.

Despite their importance in the food system, due to patriarchal cultural norms and gender discrimination, women have been facing constraints such as lack of land ownership, access to other productive resources and an ecosystem to increase their income. "...Women play multiple roles – as wives, mothers, sisters, daughters, in-laws, producers, food-processors, vendors, cooks... And yet, do not have access land ownership, credit, financial services, subsidies etc. All this really puts them at a disadvantage as they juggle all these responsibilities..." quoted Ms. Nsimadala, President of PAFO at the side-event on "Women, Work and Food Systems" during the UNFSS Pre-Summit.

Currently, women are shouldering around 60-65% of agricultural responsibility, especially upstream of the food supply chain. Despite this huge number, it is perversely counter-intuitive that the agricultural support systems and the associated organizations are predominantly male-



oriented, male-controlled and male-populated. As a result, women are not only facing the challenge of their voices not being heard, but also they are hardly having any visibility in entire Food Value Chain System. Therefore,

institutionalizing gender equality and gender transformative approaches in our homes, our farms, our communities, and in entire Food Value Chain System has become utmost important.

Moving in this direction, SEWA had organized a series of webinars on "Women, Work and Food systems" at Regional, National and also Global level during the Pre-summit Dialogues. The objective was to offer a platform to the informal sector women workers to bring forth their issues, challenges and solutions and eventually integrate them into the workings of the UNFSS work-streams. These women participants were from the countries of Global South and were engaged across the entire food value chain system. These economically suffering women were small and marginal women farmers, agricultural laborers, share croppers, small scale food processors, street vendors and many such from informal sector economy.

These dialogues were successful



Reema Nanavati



in providing these women workers an opportunity to enhance their visibility, identity and livelihood in the food system in the presence of a diverse audience constituting appropriate policy makers, private sector organizations, grassroots workers' organizations, philanthropic foundations, scientists, academicians, Govt. representatives, CSOs, economists and individual consumers.

Some of the key takeaways from these series of webinar are:

- **Organizing is the key:** Organizing women helps in building their collective strength and their bargaining power. It is also a key element in building women's leadership. Organizing the women is bringing solidarity amongst the women workers in the food systems. It is enabling the women, even the ones from highly conservative communities and indigenous communities, to make their voices heard, respected and take on roles which are traditionally in the hands of the men.

- **Pro-women Policies:** In the countries of Global South, Agriculture is a family occupation. Therefore, there is a need to look at "Family as a unit", while organizing the informal workers especially in the food systems and related policy mechanisms. Food System and Agro-policies need to enhance Women's decision-making in legal frameworks. Policy reforms, especially for agro-policies and schemes, disassociating

RUDI: KAMALA SEWA'S GAME CHANGING SOLUTIONS

SEWA has organized over 250,000 small and marginal farmers into their own agri business enterprise connecting farmer to the end users. It is fully owned and operated by the small scale women farmers. The company has its own procurement channels, processing centers, packaging units and a distribution network.

It brings nutrition and food security to over a million households today. In this process, the farmers get fair returns and the landless laborers get employment.

With an annual turnover of over Rs 100 million, RUDI has been a great success in transforming the grave agriculture situation of smallholder farmers into favorable and sustainable.

Additionally, SEWA has also trained over 2500 informal sector women workers (both urban and rural) into making nutritious food and also organized them in to organic and traditional food processing initiative Kamala. With the objective of promoting smart foods, Kamala processes the coarse grains produced by SEWA's farmers into traditional hot and dry snacks, bakery products, condiments etc. and sells it. Thereby, Kamala promotes nutrition security through smart foods.

Similarly, SEWA has also linked hundreds of small and marginal vegetable and fruit growers directly to customers in niche urban market, thereby eliminating the exploitative middle men. Through these initiatives, SEWA has successfully integrated informal sector women workers at all stages in the supply chain making them owner and managers of the entire food value chain. Scaling of such women-owned solutions can generate employment opportunities for several more informal women workers and make food systems just and equitable.



them from land-ownership will ensure small and marginal women farmers, landless agricultural laborers as well as share-croppers can benefit from them. This will also help explicitly recognize and promote the rights of women who are structurally disadvantaged.

- **Treat Farm as an Enterprise:** Promoting women-owned and managed food social enterprises and bringing

in technology and skills to strengthen the decentralized supply chains, would not only link consumers directly to producers through producer led value chains but also make farmers and other stakeholders in the value-chains as equal partners. There is a dire need of bringing pro-poor and pro-farmer policies that promote traditional food for supporting and strengthening this approach.

IMPROVING ACCESS TO SEEDS WHICH ARE THE LEADING COMPANIES IN SOUTH AND SOUTH-EAST ASIA?

Hunger is a daily reality for almost one billion people around the world. The global population is expected to grow by a further two billion in the coming decades, precisely in those regions that are currently considered food insecure. Improving access to seeds for farmers in those regions is key to meeting future food demands. This is where the seed industry can play a crucial role. The Access to Seeds Index evaluates and compares seed companies according to their efforts to improve access to quality seeds of improved varieties for smallholder farmers. The Index seeks primarily to identify leadership and good practices, providing an evidence base for the discussion on where and how the seed industry can step up its efforts.

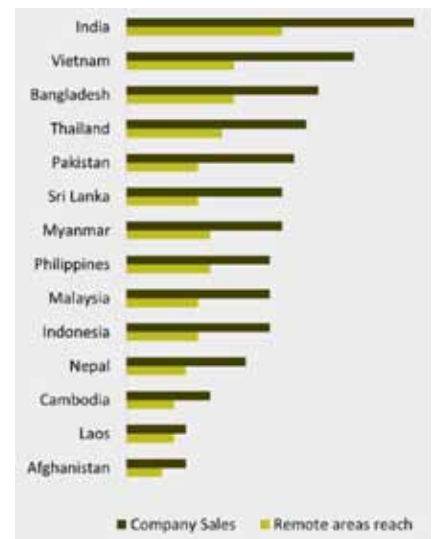
Prior to the 2021 index, two indexes have been published, first in 2016 and the second in 2019. The industry has shown an overall improvement in performance in these indexes indicating the industry's growing recognition and responsive approach towards improving access to seeds for smallholder farmers. However, more needs to be done. Published by the World Benchmarking Alliance, the 2021 Access to Seeds Index assessed 67 seed companies in 55 countries from three regions i.e. Western and Central Africa, Eastern and Southern Africa and South and South-East Asia. The methodology to assess the companies was finalized based on input from farmers, companies and policymakers, and was reviewed by experts from each region. It outlines 32 indicators for examining and assessing companies'

activities across six measurement areas, matching company performance with stakeholder expectations.

Access to seeds Index: the companies leading in South and South-East Asia

Thirty-one seed companies are assessed for the South and South-East Asia index. East-West Seed tops the 2021 Index, as in the 2019 index, followed by Advanta and Bayer. These top ranking companies perform strongly across all measurement areas, with a variety of programs, initiatives and projects designed to improve access to seeds for smallholder farmers in the region. Regional companies Mahyco

Company presence (sales)



Grow and Acse Hyveg ranking fourth and fifth have demonstrated improved performance in various measurement areas and improved disclosure of their activities. The other companies among top ten are Rijk Zwaan, Lal Teer Seed, Syngenta Group, JK Agri Genetics and Namdhari Seeds. Companies that rank lower in the index are the result of a lack of transparency in disclosure of activities where they may have good practices to reach smallholder farmers in the region.

The 2021 Access to Seeds Index focused on South and South-East Asia highlighted that the seed industry continues to be driven by innovation and release of new varieties to help drive productivity in the region, similar to the 2019 index findings. Companies have further continued their access to seeds activities all 14 index countries. Still, they can improve their distribution to reach remote rural areas closer to the farm gate. While companies report



About the AUTHOR

Ms Aarti Misal is leading the research for the Access to Seeds Index. Prior to joining World Benchmarking Alliance, Ms Misal has worked with several seed companies based in India



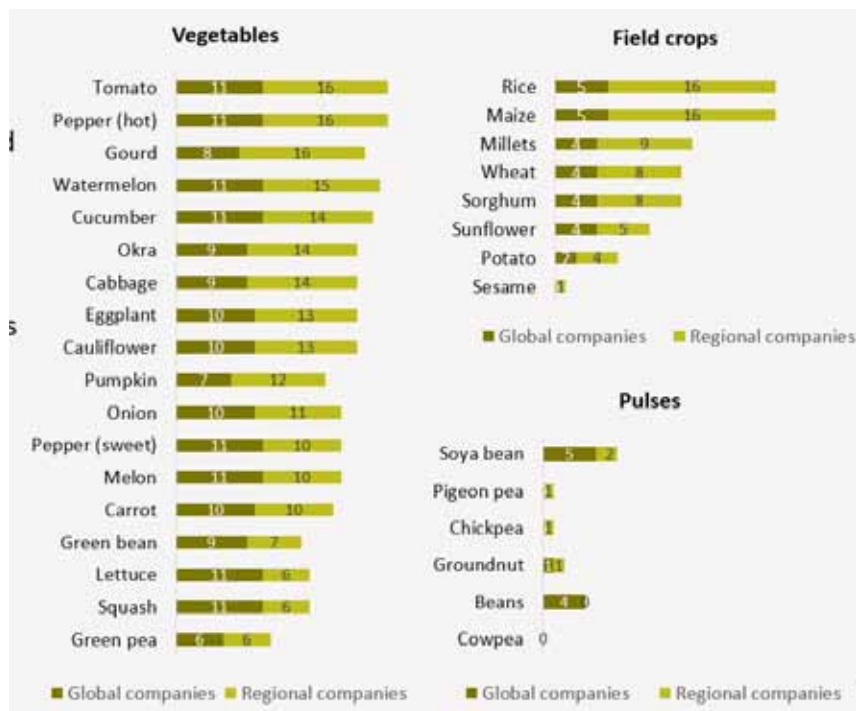
The 2021 Access to Seeds Index focused on South and South-East Asia highlighted that the seed industry continues to be driven by innovation and release of new varieties to help drive productivity in the region

to have highest presence with sales in India, Vietnam, Bangladesh, Thailand and Pakistan, countries that remain overlooked by companies include Afghanistan, Laos and Cambodia.

Moreover, sales activities of these companies are not often accompanied by training to help farmers in adapting their practices and adopting new technologies. Companies can increase their training support to match their efforts in sales activities to ensure that smallholder farmers maximize the benefits of quality seed of improved varieties.

The industry offers a broad portfolio of vegetable seed that continue to be one of their main business drivers. For field crops, most companies report being active in rice and maize. Hybrids continue to dominate the crop portfolios for many global vegetable and field crops, while regional companies offer a diverse portfolio that includes both hybrids and open pollinated varieties (OPVs). Companies in the region are

Crops found in company portfolios:



fun FACT

I enjoy going for a walk, or for a hike in the nature



continuously introducing new products to the markets they serve which is evident by the age newest variety in the portfolio of these companies being below two years for over half of its portfolio.

While companies involve smallholder farmers in their seed production activities, they often lack adequate systems to respecting social and labour rights across seed production activities. This includes the right not to be subject to forced and child labour, respecting the health and safety of workers, and paying workers a living wage. Several global and regional companies have policies to respect these issues. However, they lack effective monitoring systems for these both when seed production is carried out by the company itself or through intermediaries. With high prevalence of these important issues in the seed industry, the companies need to step up their efforts to ensure respecting the social and labour rights of workers in seed production in index countries.

For more information and the full regional results of Access to Seeds Index, visit WBA's website.

COLLABORATIVE APPROACH BY FAO, MANAGE CAPACITY BUILDING FOR NUTRITION SENSITIVE AGRICULTURE

Prevalence of Malnutrition in India is 'Severe'. Research suggests that every dollar spent on nutritional interventions in India could generate \$34.1 to \$38.6 in public economic returns – three times more than the global average. India loses up to 4% of its gross domestic product (GDP) and up to 8% of its productivity due to child malnutrition.

More than 9.2 lakh children in India are severely acute malnourished, with UP and Bihar alone accounting for more than 6.5 lakh, according to the report of the Ministry of Woman and Child Development, until November 2020. This figure is a clear indication that there is a need to build linkages with the various stakeholders in food system to ensure that not only the food security of the deprived and the under privileged section is addressed but also gets translated into nutritional security.

Nutrition Sensitive Agriculture (NSA) is a concept that drives agriculture by focusing on nutrition and integrating it into the food systems. In order to achieve Sustainable Development Goal (SDG) 3 "To achieve zero hunger" by 2030, the target demands to shift the focus now towards NSA. This is the pathway that can lead the nation towards making India malnutrition-free.

Achieving this ambitious target and sensitizing the community towards NSA calls for action by all concerned stakeholders to work in synergy and through collaboration and linkages.

Nutrition Sensitive Agriculture

MANAGE and FAO are working together



Participants of FLS Pilot Training Program, FAO and MANAGE team

on "Strengthening Capacities for Nutrition Sensitive Agriculture and Food Systems-Integration of Nutrition into the Training by Agricultural EAS Providers in India". As part of this collaboration and project, two sets of training modules for Extension Advisory Services (EAS) providers has been developed, which was pilot tested through organizing a



Participants engaged in 'Dotmocracy' activity



Participants discussing during 'World Café' activity

About the AUTHOR

Dr Veenita Kumari is Deputy Director (Gender Studies), National Institute of Agricultural Extension Management (MANAGE), Hyderabad, Telangana





Valedictory of MSL Pilot Training Program



Participants during 'Group activity'



Back at work Plan of the participants

three-days pilot training program for Mid-Senior Level (MSL) officers in Agriculture and Allied Sectors from 15th to 17th November, 2021 and 18th to 20th November, 2021 for the Field Level Staff (FLS) on physical mode at MANAGE, Hyderabad.

MANAGE in collaboration with FAO is committed to bring sensitization among the key stakeholders in Nutrition Sensitive Agriculture and integrating nutrition into the food systems through capacity building of Extension Advisory Services (EAS) providers working at mid-senior and field level across the nation. 17 participants from mid-senior level category and 22 participants from field level category from across India attended the pilot training program, representing Karnataka, Andhra Pradesh, Telangana, Jharkhand, Bihar, Haryana, Manipur, Kerala, Odisha, Arunachal Pradesh, Himachal Pradesh, Gujarat, Jammu and

Feedback From Participants

The participants were highly benefitted through this pilot training program. They have given valuable suggestions for refinement and finalization of the training module.

* The training was very valuable in providing information about nutrition and related activities to be organized at field level: Mr Rajeev Khurana, Mid-Senior level participant

* The training gave good insights about Nutrition Sensitive Agriculture which is the need of the hour: Ms Pushpa Verma, Field level participant



Participants working on identification of stakeholders for collaborations

Kashmir, Uttarakhand and Pondicherry.

During the training, the participants were sensitized on diverse topics. These included prevalence of malnutrition, locally available nutritious crops, bio-fortification, nutrition sensitive agriculture value chain, management of post-harvest losses, gender inclusive

agriculture and food and nutritional security, designing effective NSA activities. The sessions discussed the challenges faced in these sectors. Many activities were conducted for enhanced understanding and engagement of the participants. These included word cloud, photo talk, world cafe, back at work plan, logotherapy, idea speed dating, photo gallery, dotmocracy, role play etc. In order to increase the interest of the participants and prompt them for greater interaction, some learning videos, quiz competition, cross word puzzles etc., were also included related to the session topics.

After revision of the training module, it shall be institutionalized by MANAGE for creating awareness and sensitization among all the concerned stakeholders. The developed training module will be useful for EAS providers in creating awareness and sensitizing the stakeholders at Mid-Senior and Field Level to focus their activities from nutrition perspective, including the farmers.



VITAL ROLE OF R&D

BOOSTING AGRI TRADE AND MARKETING

Innovation, research and development (R&D) are among the vital pillars of the Union Budget 2021, and doubling farmers' income is one of the goals of the agriculture budget. The budget allocation for agricultural research and education is Rs 8500 crores. Agricultural research and development are found to be critical factors in driving agricultural growth and development and increasing national food security.

Since the green revolution, R&D in the agriculture sector has mainly focused on addressing the constraints of productivity and production improvement through varietal development and enhancements, improving access to irrigation, credits and other inputs, mechanisation, pest and disease management, subsidy and incentive policies, and extension activities.

As a result, India has made tremendous achievements in agricultural production. The food grain production has increased from 50 million tons in 1950-51 to nearly 300 million tons in 2019-2020. Pulses

production has increased from merely 8 to 23 million tons during the period. Oilseeds production has increased from 5 to 33 million tons. Sugarcane production has increased from 57 to 356 million tons. Similar achievements have been made in cotton and jute

production. Horticultural production also showed a similar trend, from 97 million tons in 1991-91 to 320 million tons in 2019-2020. Continued R&D with focus on addressing current and future challenges and meeting the demands of growing population is considered to be an essential investment in agriculture.



About the AUTHOR

Dr Sudhanshu Singh is the Director of IRRI South Asia Regional Centre (IRRI-SARC), Varanasi. Dr Vikram Patil is an Agricultural Economist at IRRI-SARC



Consumer driven R&D towards trade and marketing

One of the challenges that needs focus is our highly distorted and complex agricultural markets. This leads to a wide gap between farm gate prices and retail prices. A recent study conducted by RBI finds that the average share of farmers in the consumers' rupee is found to be as low as 28 per cent for some crops.

The political economy of some of the crops' production and associated policies often leads to increase in the production of those crops and distorted markets, leading to sub-optimal economic welfare. Consequential glut in the market, price crash and inappropriate measures to handle them force the farmers to sell their produce at

throwaway prices or dump the produce on the road in protest of the price crash. Identifying domestic and global niche markets to channel excess production with producer-favourable trade policies and value additions play a significant role.

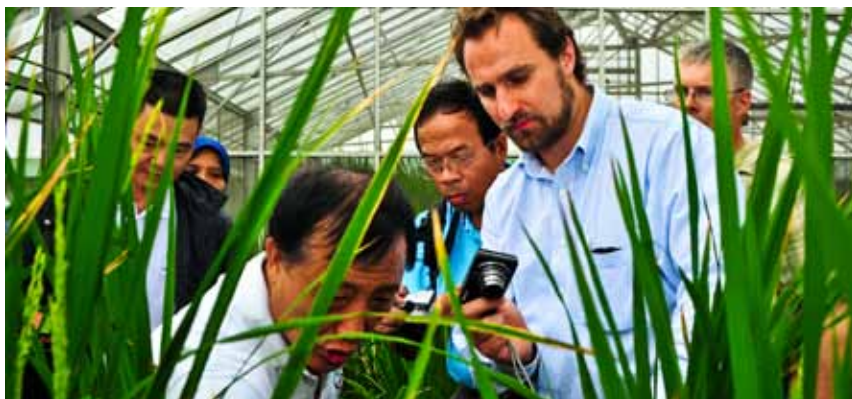
In order to address these last mile issues and double farmers' income, R&D should also focus towards various dimensions of trade and marketing of agricultural produce. This will facilitate establishing forward linkages and upgrading value chains and complement mainstream research for R&D of market-driven products and technologies.

The old approach, *'If the product is good it will sell itself'* is no longer viable in the current digital and information era. It applies only to highly exceptional products. Due to several factors, consumers' dietary preferences and habits, sensory preferences, and perceptions towards food are changing swiftly. Research and development should focus on understanding these factors and developing consumer-driven products or technologies such as varieties, value-added and processed products, which meet consumer demand and fetch higher prices to farmers.

Data driven R&D towards trade and marketing

It is highly encouraging that budget allocation is being made for agriculture innovation fund that supports agri-tech solutions, startups and digitalisation at different levels of the agriculture value chain. Robust market research is needed to create and analyse quality data and information for effective policy interventions and connecting to niche markets.

The current digital and information era is generating a large volume of data and information. Given the complex nature of agricultural markets, there is potential to tap the big data for data-driven trade and marketing. Strengthening data driven trade and



IRRI Efforts For Fortified Rice Varieties

In a similar line, International Rice Research Institute (IRRI) is working on developing various technologies. For instance, the number of people living with diabetes has increased fourfold in the last 40 years (~422 million adults, the majority of them living in developing countries). Vitamin A deficiency (VAD) is another serious public health problem affecting millions of children and pregnant women globally. At least half of the daily caloric intake is obtained from rice in the south and southeast Asian countries. Developing and promoting rice varieties with low glycaemic index (GI) and enriched with beta-carotene can be part of a healthy diet for such people. Golden rice is one such product developed by IRRI. These are important steps towards consumer-driven interventions.

R&D towards trade and marketing will help design better policies and establish infrastructure needs enabling farmers' access to modern market channels, forward linkages to domestic and international markets and upgrading value chains, which contribute to doubling farmers' income

marketing research and analysis, using big data and artificial intelligence – these help identify niche markets, forecast demand for crop produce, and provide information to farmers, government and other stakeholders involved in the supply chain. R&D in this direction facilitates forward linkages and targeted trade and marketing of agricultural produce. Besides, R&D towards efficient location- and crop-specific coordination and integration strategies (vertical or horizontal) will help design and implement inclusive policies that improve smallholders' access to modern marketing channels and thus, increase their income.

Therefore, R&D towards trade and marketing, mainly focusing on these aspects, will help design better policies and establish infrastructure needs towards enabling farmers' access to modern market channels, forward linkages to domestic and international markets and upgrading value chains, which contribute to doubling farmers' income.

fun FACT



I spend my leisure time, if any, reading books on Indian history and discussing Indian or international politics. Sightseeing is another hobby that gives me the desired peace of mind in stressful times



TECHNOLOGY TOOLS

DEMOCRATIZING INDIAN AGRICULTURE

Indian agri-markets today face dual problems. If tackled effectively, these challenges can become the solution for one another. On the one hand, more than 40% of the agri-produce is wasted, according to the United Nations Food & Agricultural Organisation (FAO). At the same time, farmers across India are limited by physical agri-markets (mandis) to sell their produce in their local geography. Imagine a scenario where farmers and buyers can meet at a single marketplace without barriers of distance, place, state, or timing!

Is it possible? Yes, technology is the most significant enabler to empower Indian farmers, especially small and marginal, to ensure a fair price for their produce. Also, no agri-produce will get wasted in India due to not finding a buyer at the right time or lack of storage and



About the AUTHOR

Mr Amith Agarwal is the co-founder and CEO of www.agribazaar.com, India's first and largest integrated online private e-mandi. Views expressed are personal



scientific warehousing facilities.

Our Prime Minister, Shri Narendra Modi, while announcing the withdrawal of the three farm laws recently, clearly stated that the modernization and progress of the Indian farmer is a key focus, irrespective of the current temporary setback. Every change, especially one that is transformational and happens after a long period, is initially met with disbelief or cynicism. It is the job of industry players alongside the government and farmer leaders to dispel and educate the farmer community of the benefits of change, especially through technology enablement.

Integration Of Agri-Growers With Buyers, Retailers Is Essential

Experts suggest that the integration of agri-growers, especially of perishable commodities like fruits and vegetables,

with buyers like food processors, retailers are critical. It will give the farmers a fair price, avoid local and often artificial shortage or excess based price fluctuations and reduce wastage. For this to happen at a micro or each village level, technology will play a critical role. According to published research, we need to remember that nearly 87% of Indian farmers own less than 2 hectares of land while 69% does even possess a hectare of land.

Creating an electronic marketplace is key to solving this problem on a large scale basis, with minimum investment and within the limited physical infrastructure currently available in Indian villages. By 2025, rural India will likely have more internet users than urban India, according to a report published by the Internet & Mobile Association of Indian (IAMAI). Agri-players need to ride on this growth opportunity and help farmers shift their selling to digital platforms additional to local mandi opportunities.

Creation Of Frictionless Online Marketplaces

The government is already linking all existing APMC mandis through National Agriculture Market (eNAM), a pan India electronic trading platform with a vision to create a unified national market for

**fun
FACT**



**Mr Agarwal loves to play cricket.
It is his favourite stress-buster**

By 2025, rural India will likely have more internet users than urban India, according to a report published by the Internet & Mobile Association of Indian (IAMAI). Agri-players need to ride on this growth opportunity and help farmers shift their selling to digital platforms additional to local mandi opportunities



agricultural commodities. Technology will help create frictionless online marketplaces where buyers and sellers can interact in a transparent, trusted, and fair manner. Such platforms are duly supported by online payment and apps, making transactions faster and ensuring traceability for the entire agri-value chain – from tracing the produce, the buyer, seller, price, and payments.

Small and marginal farmers can access the e-mandi app through their phones or community centre laptop at each village. By connecting the farmers directly with buyers, intermediation costs and inefficiency will get curtailed. The farmers will gain from the time and price benefits. Additionally, farmers can access information on a crop, weather, soil, seed and agri-nutrients, farming tools and machinery, financing for their produce, etc. An online marketplace creates a holistic, integrated, and democratic environment for every participant, irrespective of other socio-economic aspects like rich, poor, small and big, etc.



With India's entire over six lakh villages getting high-speed internet connectivity, digital empowerment will lead the way to empower the Indian farmer, small, marginal and everybody.

Electronic agri-mandis are propelling Indian farmers to experience superior customer service and drive socio-economic upliftment for rural India.

INDIA'S AGRICULTURAL SUCCESS TECHNOLOGY HOLDS THE KEY



The farm sector in India, the second most populous country in the world, faces a dual challenge today. On the one hand, the number of people who need to be fed is constantly rising, while on the other, the productivity of traditional farms and farming techniques is nose-diving due to several reasons including erratic rainfall and climate change.

It's a fact that climate change is now a threat to the prospects of sustainable development. This phenomenon may have grave impacts on agricultural production. Hence, construing farm risks through robust farm risk management frameworks is indispensable for containing the impact of agricultural hazards.

Understanding of risks helps in effective implementation of risk mitigation measures such as crop insurance and incorporating climate



About the **AUTHOR**

Mr Navneet Ravikar is Chairman & Managing Director, Leads Connect Services. He embarked on his entrepreneurial journey in 2009, after quitting his job as a Manager in IFFCO Tokio. He founded Leads Connect Services Private Limited – agriculture technology and farm risk management company, and a month later ventured into insurance brokerage with Leads Insurance Brokers Pvt. Ltd



smart agriculture practices / appropriate climate smart technology interventions.

Agri tech companies are coming up with new technology interventions to identify and develop sustainable agri-value chains to meet the food demand of increasing population for minimizing the pre-harvest and post-harvest risks of agriculture.

The current challenges, in fact, go much beyond the yield issues that Green Revolutions were trying to solve. Now, the country needs to adapt to climate change-triggered extreme weather events such as droughts and floods, scale agriculture in sustainable ways and also explore food distribution models that are fair and equitable.

Technology holds the key

One of the ways in which this challenge can be fixed is through the adoption of the latest technology in the field of agriculture. This is the reason there has

been a surge in the number of agri-tech startups in the country recently.

Calling them as a ray of hope, the India Brand Equity Foundation (IBEF), a trust established by the Department of Commerce, Ministry of Commerce and Industry, Government of India, claims there are more than 450 Indian start-ups in the agritech space with Indian start-ups featuring among one in every nine companies globally. The government body says the startups are emerging in almost all the value chain of the farm sector, highlighting the growing potential and need for the same.

Industry body NASSCOM says agritech startups raised an impressive Rs. 1,825 crore (US\$ 248 million) as of June 2019. In 2020, more than 20 agritech start-ups have cumulatively raised more than Rs. 920 crore (US\$ 125 million) across equity, venture debt and conventional debt rounds. Experts predict that the sector is expanding at a rate of 25 per cent annually and can grow into a \$24 billion market by 2025.

Saving the environment

Agri Startups are also expected to play a crucial role in developing climate-smart agriculture interventions as traditional agri-food systems are responsible for one third of global anthropogenic greenhouse gas emissions, which are responsible for global warming, says United Nations' Food Agriculture Organization. Climate-smart agriculture interventions broadly focus on:

1. Increasing productivity through farm mechanization.
2. Enhancing resilience and reduce vulnerability to drought, pests, diseases and other climate-related risks and shocks
3. Reducing greenhouse emissions by pursuing lower emissions for each calorie or kilo of food produced, avoiding deforestation from agriculture and identifying ways to absorb carbon out of the atmosphere.

These are being realized by introducing



Startups are relying on satellite and aerial surveillance to ensure real-time mapping of fields. The advantage of such technology-driven interventions is that it not only lowers the input cost in the long-run, it also ensures the same quality of fruits and vegetables throughout the year

automation in the crop-production cycle. While some start-ups are promoting resource-efficient farm techniques like hydroponics and aeroponics, others are betting high on internet of things in farming. There are also a few examples where startups are relying on satellite and aerial surveillance to ensure real-time mapping of fields. This technology is also being used in certain developed countries to power driverless tractors. The advantage of such technology-driven interventions is that it not only lowers the input cost in the long-run, it also ensures the same quality of fruits and vegetables throughout the year.

A promising future

Though still in a nascent stage, the covid-19 pandemic has escalated the adoption of agri-technology in the country. What is needed next is a policy framework that not only promotes agri-tech but also enables innovation, data-sharing, infrastructure, and enables end-time information access to farmers. This will go a long way in converting these promising technologies into real-life solutions.



fun FACT

Mr Ravikar loves cooking, especially specialties from Bihari cuisine. He is also an avid trekker. His most recent and favourite trek was the 360 degree Trek to Phuladhar in Jahtingdi, Himachal Pradesh

apollo

TYRES

PARTNERS PROGRESS OF AGRI MECHANIZATION IN INDIA

Farm mechanization is critical for increasing productivity through judicious use of other inputs and natural resources and at the same time reducing the cultivation cost.

The overall farm mechanization in India has been lower at 40-45 per cent compared to other countries such as USA (95 per cent), Brazil (75 per cent) and China (57%)

Tractor penetration as of fiscal 2020 is estimated to be about 1.8 hp/ha (horsepower per hectare). In developed countries, tractor penetration is estimated to be in the range of 3-4 hp/ha, which facilitates superior crop yields. Tractors penetration is growing fast in India now as it help increase cropping intensity (multiple crops sown on the same land) and also earn rental income.

Nearly 13 million tractors required to till India's entire arable area

Assuming a requirement of 50 tractor-hours per hectare per year, it would require 7.86 billion tractor-hours per year to till India's entire arable land of 159.2 million ha. Industry interactions indicate tractors are typically used for 700-1,000 hours a year. While about 30% of this usage is in non-farm activities between cropping seasons, a tractor is used for about 600 hours a year on farming activities for two cropping seasons. To meet the requirement of 7.86 billion tractor-hours, 13 million tractors (excluding tractors purchased purely for commercial purposes) would be required compared with the tractor population of 6.3 million in fiscal 2020.

We also see upgradation

from 31-40 hp tractors to 41-50 hp tractors, realising the benefits of mechanization and higher productivity from increased usage of implements along with tractors. Additionally, the growing trend of collaborative farming, increasing commercial usage, and higher irrigation intensity will boost usage of higher hp tractors. We expect a more gradual movement towards 51 hp and above tractors, as they are less amenable to multipurpose applications (like the 41-50 hp) and the price gap is big (at least 10-15% between a 50 hp and a 55-60 hp tractor since emission norms change at 50 hp). The market for 70-75 hp tractors is niche and is still evolving in India. These tractors are used mainly for farming along with implements, while 41-50 hp tractors can also be used for haulage and commercial activities such as sand mining.



Apollo Tyres is India's no.1 Tyre company and an Indian multinational with manufacturing facilities in India and Europe and a strong global presence across regions. Apollo offers a complete Range of tyre solutions from scooter to Ultra Large Mining Trucks. Along with Tyres Apollo also makes Tubes, Flaps and Tyre Retread Material to the market.

APOLLO Agriculture Tyres

Apollo is a leading player in Agri Tyres segment and has a **strong vision to achieve leadership** position in the segment across OE & Replacement Channels.

Apollo has always led the **innovation in the Agri Tyres** category and has focussed on providing **fit to application** solutions to the customers.

Apollo Tyres was **first to introduce Agri Radials** in India and still rules the segment with its best performing range of Farmking Radial Tyres.

In the general application segment, **Krishak Gold** is our flagship product with a wide range of offering from 18 inch Rim size to 28 inch Rim size.

Apollo became the first brand to challenge the convention and offer **15.9-28** size for growing segment of 47-55 HP tractors.

Apollo also has a premium offering of **VIRAT 23 for Hard soil and pure Haulage** application. VIRAT 23 is again an innovation from Apollo. Its India's only 23 Lug tyre which promises longest Tyre life in tough applications like Primary tillage in very hard soil conditions and haulage with heavy load conditions without the challenge of alternate Lug wear.

As farm mechanization is growing



fast in India, Apollo is ready with its complete range of **specialty application** segment requirements.

Today, horticulture production has surpassed the food grain production in India which has led to high demand of compact tractors.

Apollo offers **FX212 & FX515** Range with 10 sizes from 12 inch rim size to 24 inch rim size specially developed for **Orchard, vineyard and interculturing** operations.

We also have now 4 sizes in our **Row crop range** (Narrow width tyres) for operations like spraying and weeding in crops like soybean, Cotton, potato

We anticipated the growth of **Puddling segment** in India and

have already developed a strong Range of 10 sizes from 18 inch rim size to 30 inch rim size under **FX222 brand** specially curated for puddling operation. FX 222 is Deep Lug Bias range designed for facilitation Puddling application without usage of cage wheel.

On the top of the above range, Apollo is aligned to the changing requirement of new gen farmers and is now ready to soon introduce a new range of Tractor Rear and Tractor Front Tyres under the brand name **VIRAT**, which will set a new benchmark of performance & aesthetics in Tractor Tyre Market.

In addition to the Apollo Range of products, we also have a complete Range of Agri Tyres in our European Brand **Vredestein** catering to European and American Markets. We have shifted production of a large portion of this Range to India and will be progressively adding more sizes.

We have many innovations in our service offerings as well like 7 years manufacturing warranty, Tyre Suraksha Beema (special warranty), AQS (Apollo Quick service) for speedy resolution of customer complaints, Apollo Farm Zone, India's first full service Agri Tyre Retail centre and doorstep service through Apollo service Tractor.

Apollo is fully geared up to be a strong partner in progress of mechanization in Indian Agriculture with many new products under development.



40 years of bridging the urban rural divide with rural infrastructure



DEVELOPMENT BANK OF THE NATION FOR FOSTERING RURAL PROSPERITY

NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT