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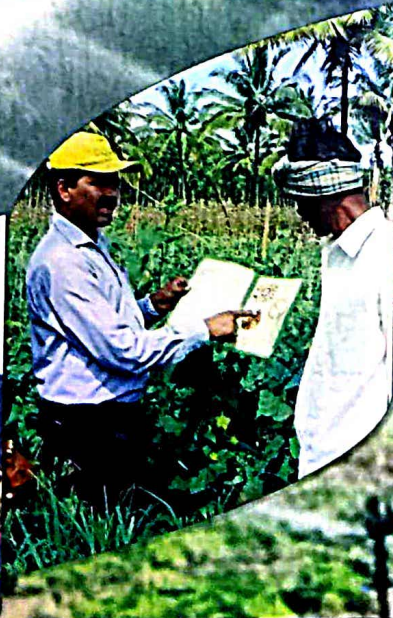
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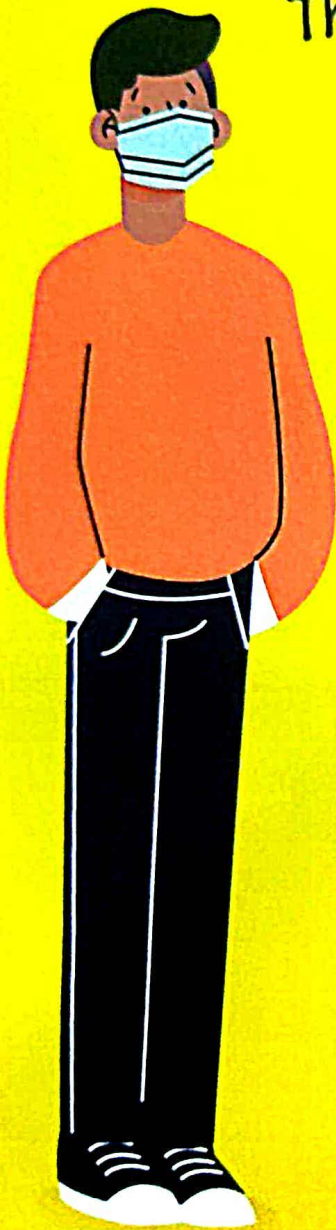
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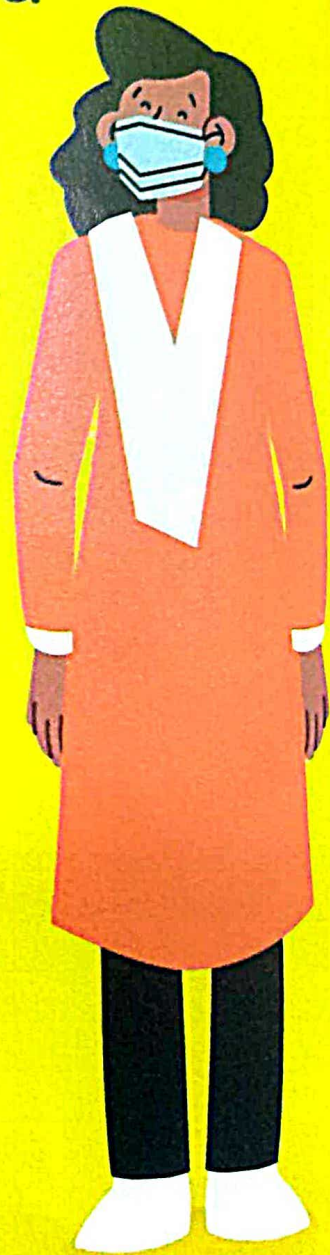
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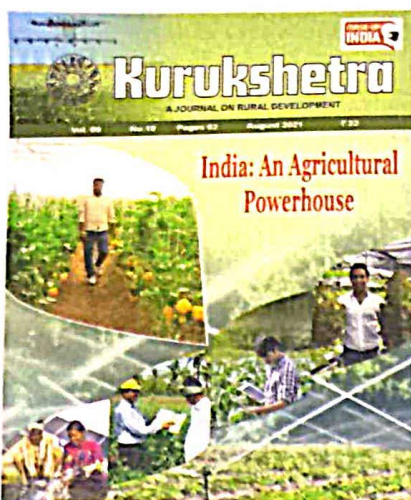
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EDITOR

Pankhuri Awasthi
Shiela Chaudhary

ASSISTANT DIRECTOR (PRODUCTION)
Sanjay Kumar Pandey

COVER DESIGN
Rajender Kumar

EDITORIAL OFFICE

Room No. 653,
Publications Division,
Soochna Bhawan, C.G.O. Complex,
Lodhi Road, New Delhi-110003
Phone : 011-24362859
Email : kurukshetrajournal@gmail.com

For Subscription Enquiries,
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Information, Please Contact:

Journals Unit,
Publications Division, Room No. 779,
Soochna Bhawan, C.G.O. Complex,
Lodhi Road, New Delhi-110 003
(Monday-Friday, 9:30 AM-6:00 PM)
TELE : 24367453 FAX: 24365610
Email : pdjucir@gmail.com
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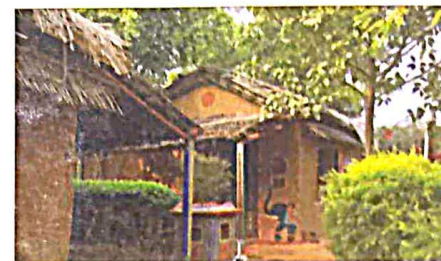
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Kurukshetra seeks to carry the message of Rural Development to all people. It serves as a forum for free, frank and serious discussion on the problems of Rural Development with special focus on Rural Uplift.

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India's agriculture revolution is a success saga par excellence. Agricultural achievements have changed the country from being a food importer to an exporter of a range of food products. The Green Revolution resulted in India becoming self-dependent in terms of food-grain production by the end of the 1970s, but it was the second Green Revolution wave that significantly enhanced rural incomes and consequently, the overall economic development of the country.

Making optimal use of advanced technologies was not the only intervention from a policy perspective. Major timely initiatives have been taken in the domain of agriculture marketing and public procurement and distribution. As a result, not only has the agrarian economy improved significantly, the country has also undergone agriculture led socio-economic transformation.

As we celebrate "*Azadi ka Amrit Mahotsav*", commemorating 75th Anniversary of Indian Independence; it is a matter of immense satisfaction that our country today has a prominent place on world map as a major contributor to global food basket. Blessed with 20 agri-climatic regions, 15 major climates and 46 soil types, India produces an amazing variety of agricultural products. As a testimony to its evergreen nature, even during the difficult times of pandemic, Indian agriculture contributed its share in the world food supply chain, displaying great resilience.

The articles in this August issue of Kurukshetra illustrate the journey and prowess of India as the world's agricultural powerhouse. Food grain production has gone up at a higher rate as compared to total population during the last seven decades; and remarkable progress has also been made in the production of horticultural and live stock products. Although, India ranks amongst the top 10 exporters of agricultural products, there is scope to further boost agri-exports with renewed focus.

Agriculture financing plays an important role in supporting both on and off-farm agricultural activities and businesses. Thus, consistent efforts have been made over the years to enhance the access of agricultural sector to institutional credit. Agriculture sector is finding new strengths in form of Agri-Startups and Agri-enterprises which are augmenting relevant and innovative solutions across the agricultural value chain. Agri-tourism, which combines agriculture-based activities and tourism aspects that bring visitors to the farms, not only offers a means to promote integrated urban and rural development, but can bridge the urban and rural gaps to cultivate and nourish a joyful life and economy.

We hope that our readers will find the articles interesting and informative, and it may encourage them to be a partner in the bright future of our Agri-sector, which is going to be driven by sustainable practices and country's global environmental commitments.

We wish our readers a Happy Independence Day. Stay Safe.

Jai Hind!



Agriculture in India – A Retrospect and Future Prospects

Dr. Neelam Patel and Ranveer Nagaich

There are many lessons to be learnt from India's past successes in ensuring food security. The role of improved technology, patterns of production, and public procurement and distribution system have been crucial towards achieving food security. Nutritional security is now the next frontier that we need to conquer.

India has come a long way from once being a food deficit nation to a food surplus one. In the years since Independence, food shortages and deficits were common. Productivity was a problem that India was grappling with. With most of the cropped area rainfed, the monsoon was a crucial determinant of production and hence, the hunger levels of the country. Fertiliser application was miniscule. The lack of assured irrigation and unavailability of fertilisers and pesticides held back India's productivity.

Technology was the way out for India to achieve food security. New varieties of wheat and rice, investments in irrigation, increasing availability of fertilisers and pesticides resulted in a huge increase in productivity and availability of foodgrains. However, today, India stands at

cross-roads once again. Whilst India has achieved food security, nutritional security remains elusive. Environmental considerations have come to the fore; requiring urgent interventions to ensure the hard fought gains in achieving food security are not diminished.

The Turning of the Tide: Achieving Food Security

India has even witnessed famines in 1964-65 and 1965-66. One of India's greatest achievements since Independence has been the non-existence of large scale famines. However, it was only until the 1960s where India made significant efforts to combat food shortages. Research was already underway in the 1950s and 60s on the development of high yielding varieties (HYVs), the application of fertilisers and pesticides. However, these initiatives

were yet to achieve scale, till the mid-1960s, when the Green Revolution was well and truly underway in the country.

The results were there for all to see. In 1951, the yields of wheat stood at 663 kg/ha, and that of rice at 668 kg/ha. Wheat yields saw a marginal improvement to 730 kg/ha by 1964. By 1972, the yields had improved to 1,380 kg/ha in the case of wheat and 1,141 kg/ha in the case of rice. In 2019, the yields of rice had further increased to 2,659 kg/ha and that of wheat to 3,507 kg/ha. Owing to this rise in productivity, per-capita net availability of foodgrains has seen a significant improvement. In 1951, the availability stood at 394.9 grams/day. By 2020, this number has increased to 512.6 grams/day. This is an impressive achievement, given that our population has nearly quadrupled since Independence. Provision of formal credit played an important role in enabling an increase in productivity. The availability of credit allowed farmers to procure the necessary inputs to enhance their productivity.

A similar achievement was made in the production of milk, through Operation Flood, launched in 1970 through the National Dairy Development Board (NDDB). Milk production, which stood at 17 million tonnes in 1951, increased marginally to 21.2 million tonnes by 1969. With the launch of Operation Flood, milk production grew at an increasing pace. By 1980, milk production expanded to 30.4 million tonnes. By 1997, India was the largest producer of milk in the world. In 2019, India recorded production of 187.7 million tonnes, maintaining its record of being the largest producer in the world. Together with the Green Revolution, we also saw a White Revolution in India at the same time.

The availability of advanced technologies was not just the only intervention from a policy perspective. Major initiatives were taken in the domain of agriculture marketing and public procurement and distribution. More regulated markets were needed where farmers could bring their produce to be sold through a transparent price discovery mechanism. Being a state subject, state governments enacted Agriculture Produce Market Regulations (APMR) Acts during the 60s and 70s. The legal framework through these regulations meant that agriculture produce could only be

bought by licensed and registered traders in these markets. These regulations also meant that anyone who was not a licensed and registered trader could not procure from farmers and all transactions would take place in the designated market yards. The objective behind these regulations was to ensure that agriculture trade was carried out in a transparent, unhindered, and fair manner, with adequate remuneration to farmers as the key outcome of these regulations.

At the same time, an extensive public procurement and distribution system was setup. The Food Corporation of India (FCI) was setup in 1965, to undertake price support operations, to distribute foodgrains under the public distribution system (PDS) and to maintain buffer stocks of foodgrains. Minimum support prices (MSPs) were determined through the Agriculture Prices Commission, which was then renamed as the Commission on Agriculture Costs and Prices (CACPC) in the 1980s. Procurement of key foodgrains took place at MSPs to be distributed in the PDS. The procurement at MSP of these crops further incentivised their cultivation, further increasing the availability of foodgrains in the country. Whilst the PDS system has undergone several changes since then, the goal remains the same, to ensure the distribution of food and non-food items at subsidised rates to India's poor. The net was significantly expanded with the National Food Security Act, 2013. In terms of milk production, the cooperative model worked wonders. The model evolved and perfected in Anand, Gujarat, was replicated in many parts of the country.

The Need for a New System

As we moved towards achieving food security, there have emerged several issues that are detrimental to the long-term growth of India's agriculture sector. The first major constraint emerged in that of agriculture marketing. Over time, the system designed to protect farmers, was doing the opposite. The number of markets failed to grow, and the fragmentation present in the system created inefficiencies in the movement and trade of agricultural commodities. Whilst the markets were expected to be avenues for transparent price discovery, the opposite started to occur. Due to the requirement of only licensed traders being able to procure from these markets,

the traders with licenses often blocked the entry of new entrants, and acted in a collusive manner, fixing prices, rather than engaging in open auctions, as envisaged. The role of commission agents also started to gain prominence. With markets often far away from villages, commission agents acted as a conduit between farmers and traders. Intermediation costs, owing from fragmentation and presence of intermediaries, occupied a larger and larger chunk of final retail prices, with the share of farmers getting smaller. There was also a lack of investments across the value chain, especially private investment. Post-harvest losses were then estimated to cost the nation Rs. 90,000 crores annually. Linkages to food-processing and export markets remained weak as well. The reforms introduced by the government in the form of the three farm bills were aimed at addressing these inherent inefficiencies in agriculture marketing. At the same time, state governments have also been amending their own APMC Acts towards a more liberal trading environment. To further support infrastructure creation in agriculture, a Rs. 1 lakh crore Agriculture Infrastructure Fund (AIF) has also been created, in which existing APMC market yards are also eligible.

The second constraint or shortcoming has emerged in the area of sustainability. It is no secret that the threat of climate change is upon us, and that crop yields are likely to be impacted. Mitigation and adaption strategies are the need of the hour. Inefficient and unsustainable practices in production have led to many environmental issues. Flood irrigation, lop-sided fertiliser usage, and excessive fertiliser use are just some examples. Agriculture also contributes to air pollution, not just through the emission of greenhouse gases, but also through stubble burning, for instance. Degrading soil health is perhaps the biggest challenge to sustaining our production levels. Soil organic carbon (SOC), cited as an important indicator of soil health, has seen a decline across India. Data available from the Soil Health Card

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 Parliament Monsoon Session 2021

The New Farm Laws Helping Farmers Get the Right Price





- 

The New Farm laws provides an ecosystem where the farmers can enjoy the freedom of choice relating to sale of farmers' produce
- 

Facilitate direct buying from farmers in the trade area by traders, processors, exporters, FPOs, etc
- 

Farm laws provide additional marketing opportunities outside the APMC market yards ; Farmers are free to sell their produce in APMC as earlier
- 

More investment in marketing & value addition infrastructure near the farm gate creating more employment opportunities


 DATED 20 JULY 2021

(SHC) scheme showed that at the time of the launch of the scheme, an average of 9 percent of all samples tested 'very low' for SOC during Cycle I (2015-17) and an average of 33 percent of samples tested 'low' for SOC. This implies that a little less than half of all the samples tested under the first phase of the SHC saw low or very low levels of SOC. Cycle II (2017-19) saw some improvements. From 9 percent, the proportion of samples testing 'very low' for SOC fell to 7.8 percent, whilst the proportion of samples testing 'low' declined to 31.6 percent, a marginal improvement. The link between imbalance in fertiliser use and declining soil health has been examined by many scholars at the National Academy of Agriculture Sciences (NAAS). It has been noted that imbalance in the use of fertilisers has been a contributor to declining soil health. The consumption of nitrogenous fertilisers, over others has been the primary cause. For instance, against a prescribed N:P:K ratio of 4:1.6:1 in Punjab, the actual usage was 33.9:7.9:1, reflecting the imbalance. A similar case arised

in Haryana, where against a prescribed ratio of 4.0:1.7:1, the actual usage was 22.6:6.2:1.

Water is another area where urgent action is required. Groundwater levels are depleting in several areas as the pace of extraction is exceeding the pace of recharge. Assessed in 2017, by the Central Groundwater Resources Board, close to 17 percent of all groundwater assessment units were overexploited, meaning that the water levels have been declining. Punjab, Rajasthan, Delhi and Haryana were the states with the highest levels of over-exploitation of groundwater resources. Close to 90 percent of all groundwater extracted annually is for agricultural purposes. Nearly 2/3rd of the water used for irrigation comes from groundwater. The conventional flood irrigation used by farmers in India, is inefficient, when compared to micro-irrigation systems. The efficiency of micro-irrigation reduces water use which ranges from 30-60 percent, depending on the method of irrigation employed (drip or sprinkler).

Nutritional security is now the next frontier that we need to conquer, having gotten over the first hurdle of food security. According to the National Family Health Survey 4 (2015-16), 35.7 percent of children under 5 were underweight and 38.4 percent were stunted. The Comprehensive National Nutrition Survey (CNNS) 2016-18 found the prevalence of underweight and stunting to be 33.4 percent and 34.7 percent respectively. Recognising this, the government launched first the Poshan Abhiyaan and Mission Poshan 2.0. As per the Tata Cornell Institute (TCI), agriculture and nutrition outcomes are linked. The first mechanism is through household income effect which in turn improves the access of households to more diverse and nutritious foods, better health and sanitation facilities. The second mechanism is that of access to more diverse foods. Low diet diversity, as per the TCI has been linked to both stunting and obesity. Biofortification is another link.

The Need for a New Paradigm

Three key challenges have been identified that Indian agriculture must tackle in the coming years. The first is that of agriculture marketing. The second is the issue of sustainable intensification. The third is centred around achieving nutritional security. All three goals are inter-linked, and policy must be designed taking these interlinkages into

account. Our success story in wheat and rice leaves us many lessons – some to replicate, some perhaps to refine.

The Role of Technology:

Just as India required technological breakthroughs in the 1960s to achieve cereal security, we now stand at a similar crossroads. Frontier technologies such as artificial intelligence (AI), blockchain, Internet of Things (IoT) amongst others are permeating industries like never before. Agri-Tech, or Ag-Tech, has emerged as one of the most attractive investment destinations for start-ups. A recent report by Bain & Company has highlighted the growing importance of ag-tech in India, with India already the 3rd largest ag-tech market. The applications range from enhancing productivity to ensuring traceability and access to credit. Many companies are engaging in developing models to predict yields using satellite data, administrative data and weather data through AI-ML models. Several pilots are underway across the country where blockchain platforms are being developed to provide end-to-end traceability of agriculture produce, a key constraint to growing our export base. Handheld gadgets, along with image recognition powered by AI-ML are being developed to assay and grade produce, another key constraint in marketing. Recognising the potential of the digital transformation of the agriculture sector, the Ministry of Agriculture & Farmers' Welfare has been developing the IDEA platform, a database of 10 crore+ farmers, on which the private sector can build solutions that can be scaled across India. The application of technology may also promote sustainable intensification.

Sustainable Intensification:

Now that India has made significant productivity gains, sustainable production is a trade-off that India can perhaps afford now. With declining soil health and dropping water tables, urgent interventions are necessary to reverse this trend. Shifting the production base of rice and wheat to areas where the benefits of the Green Revolution have not yet reached, for example in East India, is one avenue. However, this is easier said than done, as incentive mechanisms will have to be designed for farmers who are currently growing wheat-rice in water-stressed areas to switch to different crops.

Agro-climatic regional planning (ACRP) is a concept that has started gaining traction again. Aligning cropping systems with agro-climatic systems may boost biodiversity and enhance India's adaptation and mitigation capabilities in combating climate change.

Agroecological farming is another concept that has been brought back into the limelight, given the sustainability concerns with the present system of production. In 2019, the Food & Agriculture Organisation (FAO) constituted a High Level Panel of Experts (HLPE) on Food Security & Nutrition, which called for a large scale transition to agroecological principles. In India, Natural farming is promoted as Bharatiya Prakritik Krishi Paddhati Program (BPKP) under the Centrally Sponsored Scheme- Paramparagat Krishi Vikas Yojana (PKVY). BPKP is aimed at promoting traditional indigenous practices, based on use of on-farm cow dung-urine formulations with application of recycling, mulching, periodic soil aeration and exclusion of all synthetic chemical inputs. Natural farming practices have now been adopted by more than 20 lakh farmers across 9 states. States such as Andhra Pradesh, Himachal Pradesh and Gujarat are leaders in this movement. There is increasing evidence of beneficial results from these practices, both for farmers' welfare and environment protection. NITI Aayog has been taking the lead in promoting natural farming, through a multidimensional approach, involving scientific evaluation, documentation of best practices and case studies, global and national level consultations, and technological interventions for traceability and certification of produce.

Learning from Past Success to Drive Future Success:

The lessons from our success in the Green Revolution is not just limited to the application of technology and public investments in irrigation infrastructure, for instance. There are also important lessons to be learnt from the success of the public procurement and distribution system, which had a large role in creating demand and incentivising farmers to grow rice-wheat. Assured procurement and minimum support prices (MSPs) creates incentives for farmers to grow more rice-wheat, in alignment with the government policy. The distribution of these grains through the PDS generates further demand, with a knock-on effect on production.

In the context of nutrition security and sustainability, crops such as millets are clear winners. They are more nutritious and require lesser water to grow. However, due to the relative economics, in terms of productivity and prices received in markets, millets lose out to cereals. Whilst MSPs for millets are declared; procurement and distribution under the PDS is miniscule when compared to rice-wheat. Including millets at a large scale in the PDS may have the effect of aligning incentives between government policies and farmer growing decisions. At the same time, efforts in research and development (R&D) need to be directed towards raising productivity of millets relative to cereals.

The success of the cooperative model was demonstrated in the White Revolution. Recognising the potential of farmer collectives, the Central Government is committed to creating 10,000 Farmer Producer Organisations (FPOs). The recently formed Ministry of Cooperation is a further demonstration of the commitment to strengthen farmer collectives. The benefits of bargaining power, both in input markets and output markets are a key strength of farmer collectives. Given that raising our agriculture exports is a target of ours, standard production practices, as per export requirements, are easier to execute through farmer collectives. By making FPOs eligible to borrow under the AIF, shared post-harvest infrastructure can be created, allowing for greater reach to terminal markets and hence lower wastage.

There are many lessons to be learnt from India's past successes in ensuring food security. The role of improved technology, public procurement and distribution were crucial in ensuring consistent supply and demand of cereals. Farmer collectives saw India become the largest producer of milk in the world, with much of the potential still untapped. Now, nutritional security and sustainability are key challenges to be tackled. Public procurement and distribution can play a major role in ensuring consistent demand and supply of nutrient-rich foods. Agro-ecological practices can be scaled up to ensure sustainable intensification. Frontier technologies can be leveraged to increase productivity and ensure traceability and certification of produce, which is key to tapping export markets.

(The authors are Senior Adviser [Agriculture] and Public Policy Consultant, NITI Aayog. Email: ranveer.nagaich@gov.in. Views expressed are personal.)

Agricultural Exports – Growth, Potential and Opportunities

Dr. Jagdeep Saxena

Agricultural exports will play a pivotal role in realising the vision of doubling farmers' income by 2022. To achieve export targets as envisaged in Agriculture Export Policy, Government has made an impressive progress in agricultural reforms and has initiated several schemes to explore potential in several agri-commodities while addressing challenges.



India is predominantly an agrarian country with a prominent place on world map as a major contributor to global food basket. Blessed with 20 agri-climatic regions, 15 major climates and 46 soil types, India produces an amazing variety of agricultural products that are largely consumed at domestic level. But a small part thereof is exported in overseas markets fetching remunerative prices to traders and farmers. Indian agricultural produce, that includes horticultural produce and processed foods, are exported to over 100 nations with major markets in USA, Middle East and European Union. India is at advantage point being the largest producer of milk, pulses, spices, tea, cashew and jute, while being the second largest producer of wheat, rice, fruits and vegetables, sugarcane, cotton and oilseeds in the world. But, paradoxically, country's share in global agricultural exports does not match its potential

and opportunities. It was merely 1.1 percent in 2000 that rose to 2.27 percent in 2017 valued at 39 billion US dollar. Currently, India ranks amongst the top 10 exporters of agricultural products in the world, but can be among the top five exporters according to the World Trade Centre. Promotion of agri-exports by renewed thrust and focus on supportive policies, infrastructure, Science and Technology (S&T) interventions, and value addition could potentially propel India into the top bracket of agricultural exporters.

In the institutional mechanism of Government of India, Agricultural and Processed Food Products Export Development Authority (APEDA) is the chief agency primarily responsible for the export promotion and development of listed agriculture, horticulture, dairy and livestock products. To promote agricultural exports, APEDA runs a specific promotional scheme under which financial assistance is provided for infrastructure

development, quality development and market promotion. APEDA also conducts several outreach programmes with buyers and sellers for understanding issues of common interest, and resolving them by appropriate interventions. Additionally, the Department of Commerce under Ministry of Commerce and Industry works to develop strategies and policies for increasing foreign trade across sectors, including agriculture sector. The Ministry of Food Processing Industries provides leverage to agricultural exports by focusing on entire value chain, value addition and logistics. Ministry of Agriculture and Farmers Welfare along with Ministry of Fisheries, Animal Husbandry and Dairying largely focus on enhancing production, quality improvement and creating opportunities for exports.

The Growth Story

The growth story of India's agri-exports is a success saga par excellence despite comparatively late awakening on the issue. Soon after independence in 1950-51, the value of agri-export was about Rs. 149 crores which took giant strides reaching to the level of Rs. 2.53 lakh crores in 2019-20. A substantial increase has been recorded in export of almost all the agricultural commodities in the last 15 years. According to Economic Survey (2019-20), India has been a net exporter of agri-products since the roll out of economic reforms in 1991. Marine products, basmati rice, buffalo meat, spices, non-basmati rice, cotton raw, oil meals, sugar, castor oil and tea are the major commodities exported from India. Looking back, an increase of nearly seven times was registered in export value from Rs. 38,078 crores in 2004-05 to Rs. 2.7 lakh crores in 2018-19. Even during the hardships and restriction of movements during COVID-19 pandemic, India maintained its world food supply chain and exports. During April, 2020 to February, 2021 value of agri-exports aggregated to Rs. 2.74 lakh crore as compared to Rs. 2.31 lakh crore in the same period last year registering an increase of 18.49 percent. Wheat, rice (non-basmati), other cereals, soya meal, spices, sugar, fresh and processed vegetables, raw cotton are among key commodities which posted significant growth in exports.

Looking at commodity-wise increase in exports as compared to last year (2019-20 Vs

2020-21), wheat registered a tremendous growth of 727 percent (Rs. 425 crore to Rs. 3283 crore). On specific demand from countries, NAFED has exported 50,000 MT wheat to Afghanistan and 40,000 MT wheat to Lebanon under G2G arrangement. A significant growth of 132 percent was recorded in non-basmati rice (Rs. 13,030 crore to Rs. 30,277 crore) mainly due to capture of new overseas markets in countries such as Brazil, Chile, Bangladesh, Vietnam, Madagascar to name a few. Growths were also recorded in soya meal (132 percent), processed vegetables (42.69 percent), sugar (39.64 percent), fresh vegetables (17.54 percent), spices (11.44 percent) etc.

Recently, India has expanded its cereals export foot prints by shipping rice, wheat and other cereals to newer destinations. The sharp spike seen in 2020-21 is mainly attributed to synergy and collaboration between various stakeholders, farmers, millers, exporters and government agencies. Concerted efforts of APEDA to boost export of specialty rice varieties (non-basmati) have now started yielding results. On 4th March, 2021 the first consignment of 'red rice' was flagged off to the USA. 'Red rice' is a naturally iron rich variety grown traditionally in Brahmaputra valley of Assam. Locally referred as 'Bao-Dhaan', red rice is an integral part of the Assamese food. Hopefully, as the exports of 'red rice' grow, it would enhance income of farming families of the Brahmaputra flood plains. During May, 2021 another record was created by flagging off first consignment of non-basmati rice from Paradip International Cargo Terminal, Odisha to Vietnam. The rice exports through this terminal would boost export of non-basmati rice to south-east countries and would also push-up income of at least two lakh farmers from odisha and adjoining states. In an innovative step, APEDA facilitated export of a patented rice variety, 'Village Rice' to Ghana and Yemen through air and sea routes. Enriched with protein, fibre and a variety of minerals, the 'Village Rice' was sourced directly from farmers of Kumbakonam, Thanjavur district, Tamil Nadu by a start-up.

In addition to rice, demand for wheat and other Indian cereals was robust during 2020-21 with shipments dispatched to several countries for the first time. Wheat was sent to countries such as

Yemen, Indonesia and Bhutan, and other cereals have been exported to Sudan, Poland and Bolivia. Demand for millets, black rice and pseudo cereal quinoa is also rising due to their special health benefits.

A surge is also recorded in export of fresh fruits and vegetables mainly due to demand-driven diversification in export basket and exploration of new destinations. During 2019-20, India exported fruits and vegetables worth Rs. 9,182.88 crores which comprised of fruits worth Rs. 4,832.81 crores and vegetables worth Rs. 4,350.13 crores. Grape, pomegranate, mango, banana and orange account for large portion of fruits exported, while onion, potato, tomato and green chilli are major constituents of the vegetable export basket. The major destinations for Indian fruits and vegetables are Bangladesh, UAE, Netherland, Nepal, Malayasia, UK, Sri Lanka, Oman and Qatar. Among fruits, India is the largest producer of mango in the world with over 1,000 varieties in hand. But, currently, our exports are dominated by Alphonso and Kesar. However, there is a lot of demand for other varieties too, given the Indian diaspora across the globe as well as from others, according to APEDA. The Authority has plans to push a number of varieties from North India, such as Langda, Dussehri, Himsagar and Zardalu. Efforts are also underway to add new markets beyond the strongholds of the UAE, the European union and Nepal. New markets are being explored in Japan, South Korea, Australia and Mauritius. Recently, APEDA has focused its efforts in Uttar Pradesh, Bihar and Uttrakhand by conducting trainings and setting-up export related facilities in Varanasi and Saharanpur as per global norms. Besides, new irradiation facilities have been planned in Mathura, Uttrakhand and Bihar in addition to those in Lucknow, Nashik, Bengaluru and Vashi.

Policies for Promotion

Ministry of Agriculture and Farmers Welfare has worked vigorously to prepare a comprehensive action plan/ strategy towards promotion of agriculture trade. A detailed analysis and exploration of issues, such as pre-production, production, post-harvest management, export potential, challenges etc, were taken into account for developing a holistic strategy. Primarily, the action plan addresses two

main issues-boosting export with value addition, and import substitution. Timed action plans were rolled out for product groups, and then specific commodities. For example, in the recent export strategy for wellness food/health conscious food/ nutraceuticals, a product market matrix has been developed containing list of products of strength, new destinations having potential, and a list of known markets where new products can be introduced.

At the behest of Ministry of Agriculture and Farmers Welfare, agri-product specific Export Promotion Forums (EPFs) have been created under the aegis of APEDA. So far, EPFs for eight agri and allied products have been made functional viz. Grapes, Mango, Banana, Onion, Rice, Nutri-cereals, Pomegranate and Floriculture. Each EPF is headed by Chairman, APEDA with members drawn from exporters panel and official members representing concerned Ministries/Departments of Central and State Governments. Maintaining close interaction with stakeholders, EPFs facilitate, support and provide solutions to challenges and problems faced by exporters.

There has been a long felt need for a dedicated agricultural export policy to harness export potential by Indian agriculture and raise farmers' income. The Department of Commerce came up with a comprehensive Agriculture Export Policy (AEP) that was formally launched by Government of India in December, 2018. AEP was developed with a target to double agricultural exports from present US dollar 30+ billion to US dollar 60+ billion by 2022 and reach US dollar 100 billion in the next few years thereafter. It also emphasises diversification of export basket, promotion of organic and ethnic agri-products, and boost high value agricultural exports.

Broadly, policy recommendations are categorised into two categories – strategic and operational. Among strategic interventions, development of robust infrastructure is recommended as a critical component to boost exports. In alignment with recommendations, Government has initiated a major exercise to create Mega Food Parks, integrated cold chains and state-of-art testing centres. Logistics and facilities are being developed and improved for pre-harvest and post-harvest handling, storage

and distribution and processing. Given the perishable nature of horti-products, major ports are under renovation to provide 24x7 customs clearance and sufficient quarantine areas with better hinterland connectivity. The AEP envisages greater involvement of State Governments in agriculture exports due to their different set of priorities and different agroclimatic zones with different cropping patterns. Ideally, there should be a nodal agency at state to resolve and co-ordinate issues with regard to promotion of exports and facilitation. The Department of Commerce has been assigned a proactive role in capacity building, supporting and handholding of such agencies. Each State may have its own State Export Policy to further give fillip to agri-exports with State-specific provisions. Most importantly, States have been advised to adopt an innovation based approach of developing product specific clusters in different agro-climatic zones. It will help in dealing with various supply side issues and integration of exporters with farmers. The State level nodal agency and related departments would strive to enable the clusters to increase productivity, increase area under cultivation and improve quality of exportable produce. After successful implementation of these clusters, AEP suggests to further create Agri Export Zones to facilitate value addition and creation of common facilities. Use of best practices in the area of smart agriculture, such as mobile apps, AI, drones etc., will be promoted in clusters on sharing basis.

In the current global trade scenario, innovative strategies for marketing and branding of agri-produce can be a game-changer. The stakeholders have suggested constituting separate funds dedicated to marketing of organic, value added, ethnic, GI, region specific and branded products. This fund may primarily be utilised to launch media campaigns across key targeted markets. Recommendations say that marketing campaigns be created for individual fruits or products, such as 'Wonderful Pom', 'Bananas of India' etc. Region specific agriculture/processed products, popular with Indian diaspora, may be popularised in destination markets with their distinct identity, such as Agra Petha, Hyderabad Biryani, Makhana from Bihar etc.

Many exporters voiced the need of a reliable market intelligence tool to strategically plan export

activities. Responding to the call, Department of Commerce has created a portal on trade analytics which provides the trends for different commodities in different markets. Taking the cue, APEDA and MPEDA are operating 'agri-exchange' and 'fish-exchange' portals respectively to provide market intelligence to their stakeholders. The Federation of Indian Export Organisations runs a India Trade Portal that provides information related to tariff scenario (in Free Trade Agreement and non-FTA situations), delivers SPS (Sanitary and Phyto-Sanitary) notifications, and also provides a window for Indian Embassies to offer market leads. Information on market intelligence, scattered in different web pages, needs to be integrated on a single portal for real time updates on several related issues so that exporters may take well-informed decisions on pricing, hedging etc. There is a need to develop 'Manual of Importing Country Requirements' for all the major agriculture products exported from India for all major importing countries. Compliance to manual will help minimising the risk of rejection of exported consignments.

Opportunities and Challenges

To achieve export targets as envisaged in Agriculture Export Policy, Government has made an impressive progress in agricultural reforms and has initiated several schemes to explore potential in several agri-commodities while addressing challenges. Extension of new technologies and innovations at ground level need to be intensified to raise high value, high yield quality products without export rejections, almost nil chemicals and losses due to climatic conditions, pests etc. In this context, concept of 'Farm Factories' is a new approach in which high value crops are grown in temperature, moisture and nutrition controlled environments assuring high organic yield. Fruits and vegetables are best suited for farm factories as they naturally use less water with higher profitability as against cash and cereal crops. Moreover, the consumption of vegetables is going up in the USA and many other advanced countries. COVID-19 has further accelerated the demand due to their immunity boosting properties. For example, India exports Rs. 700 crores worth of gherkin (a variety of cucumber) pickle to European countries. This is an ideal crop for farm factories with potential to

increase exports up to Rs. 2,000 crores. Onions and shallots, tomatoes, potatoes, cabbage, mushrooms, garlic, sweet corn, and peppers are some of the top agri-products with untapped potential in USA, Vietnam, UAE, Malaysia and Sri Lanka. In case of fruits, UK, Netherlands, USA, Germany and Thailand are top overseas markets with greatest potential. Moreover, value addition of fruits and vegetables is another area where great potential exists due to increasing demand of processed products. For example, cashew requires boost in value added forms such as cashew-apple jams and pastes, flavoured cashew, roasted/salted nuts etc.

Spices have a major share of about 37 percent in the total export value from horticulture products, but there still lies untapped potential due to amazing diversity in Indian spices. Spices Board has initiated steps to implement Entrepreneurship Development Program for pushing export in ODOP (One District One Product) districts. Export of five major spices under 26 ODOP districts are being promoted through vigorous marketing efforts. For the first time, Kashmiri saffron is being exported to UAE. Ginger is being exported from ODOP districts of Karnataka, Sikkim, Assam, Himachal Pradesh, Orissa and Manipur; benefitting thousands of farmers. To increase export of turmeric, its various forms and value added products, such as turmeric oleoresins, have been introduced in overseas markets. Cumin sourced from Gujarat and Rajasthan is gaining acceptance and popularity in target countries. Export of spices, which have known therapeutic qualities, like ginger, pepper, cinnamon, cardamom, turmeric, saffron etc. have grown substantially due to fresh demand from new destinations. Export of spices touched highest ever level of US dollar 4 billion during 2020-21.

Due to increasing health consciousness at global level, the organic exports during 2020-21 were US dollar 1040 million as against US dollar 689 million in 2019-20,

registering a very impressive growth of nearly 51 percent. Organic products from India include oil cake/meals, oilseeds, cereals and millets, spices and condiments, tea, medicinal plant products, dry fruits, sugar, pulses, coffee etc. However, recently some new products have been added in the organic export basket such as moringa leaves powder, moringa freeze dried value added product, organically certified gluten free jackfruit powder, retort packed jackfruit cubes etc. North Eastern Region leads in the production of organic products followed by Uttarakhand, Madhya Pradesh, Rajasthan, Maharashtra and Goa. Experts have recommended creation of exclusive 'Organic Product Export Zones' in these states and the N-E region having common infrastructure for processing, standardisation, storage, logistics, and connectivity to ports and air ports. Branding of products and registration as GI could further facilitate exports of value added organic products.

Apart from a huge potential market in organic produce, India has the world's largest resource of medicinal plants. Based on therapeutic



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GOVERNMENT LAUNCHES KISAN SARATHI

A Digital Platform Facilitating Farmers to Get
'Right Information at Right Time'

Farmers can now avail personalised advisories on agriculture and allied areas directly from scientists of Krishi Vigyan Kendra (KVKs) in their desired language



properties, over 960 types of medicinal plants are traded, of which 178 species have yearly consumption levels of over 100 metric tonnes. The total world herbal trade is estimated at US dollar 120 billion, in which India's share is at lower level as compared to its huge potential. However, the export of herbs and value added extracts of medicinal plants has been gradually increasing over years. During 2017-18, India exported US dollar 330.18 million worth of herbs at a growth rate of 14.22 percent over the previous year. Also, exports of value added extracts of medicinal plants and herbal products in 2017-18 stood at US dollar 453.12 million, registering a growth rate of 12.23 percent over the previous year. Demand of Indian herbs and herbal products is rising in many countries, especially in European and other advanced nations. Export of popular Ashwagandha herb has doubled in the USA in past two years. To boost export of medicinal plants, India needs to improve quality control procedures, processing methodologies along with standardisation in products and regulatory framework for trade.

Presence of pesticide and chemical residues is a major cause of concern for agricultural exports in India. Consignments of India food exports sometimes get rejected due to residue levels that are higher than Maximum Residue Limit (MRL) set by importing nations. Basmati rice is the major sufferer but the list is long, from grapes to peanut and so on. Lack of awareness among farmers regarding the judicious and timely use of chemicals has been a major impediment. Sometimes, due to lack of knowledge, farmers use pesticides which are not permitted or increasingly being banned in other nations. Few years back, EU nations reduced MRL of tricyclazole from 1 ppm to 0.1 ppm in Basmati rice, but exporters could not get critical information on time resulting in large scale rejection of Basmati consignments. Residue of buprofezin was also an impediment in Basmati exports. As a quick response, EIC testing has been made mandatory for Basmati exports to EU, which led to substantial decrease in the number of alerts. As a result of constant pursuasion by the Department of Commerce, the Government of Punjab imposed a ban on

sale of nine chemicals, including tricyclazole and buprofezin, during the Kharif season 2020. APEDA, in collaboration with trade bodies, has taken measures to create awareness on such issues among farmers.

In order to ensure desired quality of agri-produce for exports, traceability to the farm level is vital. Effective traceability systems improve the ability to implement safety and quality compliance by regularly monitoring the production, processing and distribution stages. A number of digital platforms have been developed for enabling smooth flow of business and ensuring transparency in the system. BasmatiNet, HortiNet Mango, TraceNet, MeatNet, Peanut. Net are some of the major traceability systems serving farmers, farmer organisations and exporters.

To address the transport and logistics issues, Government of India has initiated several new projects in recent times. India Railways 'Kisan Rail' is an exclusive service primarily to enable farmers and producers to transport their agricultural produce from rural areas to major towns and cities at affordable cost. Currently, 157 Kisan Rail services are being operated on 18 routes for transportation of fruits, vegetables and other perishables. 'Kisan Rath' mobile application facilitates farmers and traders to get best transportation services for their produce at competitive prices. So far, nearly one lakh tractor trolleys and 9.85 lakh trucks have been on-boarded for providing services. The scheme 'Transport and Marketing Assistance' for specified agricultural products is providing assistance for the international component of freight along with assistance for the marketing of agricultural produce. The Ministry of Civil Aviation is set to launch the 'Kisan Udan' scheme to facilitate air transport of perishables, especially in the north-eastern region and tribal districts. Government of India is endeavouring hard to propel the country in to the top bracket of agri-exporters at global level. Moreover, agricultural exports will play a pivotal role in realising the vision of doubling farmers' income by 2022.

(The author is Former Chief Editor, Indian Council of Agricultural Research, New Delhi. Email: jagdeepsaxena@yahoo.com. Views expressed are personal)

Emerging Trends in Agricultural Production

Dr. H.L. Sharma

India has made a remarkable progress in the field of agriculture and allied sector during the course of seven decades of planned economic development. In India, the major food crops are cereals like rice, wheat, maize, jowar, bajra etc. and pulses like gram, tur, moong beans, masur, peas etc. Presently, India is not only self-sufficient in food grains but also a net exporter of agricultural products, occupying seventh position in the world.

Agriculture is considered as the backbone of Indian economy. It plays a vital role in national income, output, employment generation and foreign exchange earnings. There has been a tremendous increase in the production of agriculture and allied sectors during the planned era of development in the country. The real gross value added (RGVA) at constant prices by primary sector (including agriculture, forestry, fishing, mining and quarrying) which was to the tune of Rs. 1,50,191 crore in 1950-51, went up to Rs. 23,25,548 crore in 2020-21, registering a compound growth rate of 3.99 percent per annum. Due to structural changes in the economy, the contribution of primary sector to RGVA came down from 53.71 percent in 1950-51 to 18.85 percent in 2020-21 (Fig. 1). Though the share of this sector in real gross value added has steadily declined, it is still very high in view of the world average of four percent of global GDP. The share of this sector in employment generation has decelerated from 69.40 percent in 1951 to 43 percent in 2021. The contribution of agriculture and allied sectors to foreign exchange earnings has also slid down from 44.24 percent in 1960-61 to 14.34 percent in 2020-21. Despite a fall in its share in national output and employment, agriculture and allied sector still remains the country's major source of livelihood for more than half of the population of the country. The importance of this sector is brought out by the fact that 54.6 percent of the total work force derives its sustenance through direct employment in agriculture either as cultivators or as agricultural labourers as per the latest population census report.

Trends in Agricultural Production

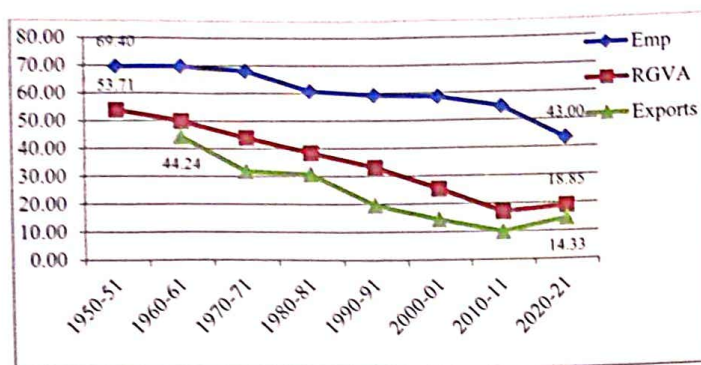
India has made a remarkable progress in the field of agriculture and allied sector during the course of seven decades of planned economic development. In India, the major food crops are cereals like rice, wheat, maize, jowar, bajra etc. and



pulses like gram, tur, moong beans, masur, peas etc. Total foodgrain production in the country went up from 50.8 million tonnes in 1950-51 to 305.44 million tonnes in 2020-21, reflecting an annual compound growth rate of 2.60 percent (Table-1). Whereas, the production of cereals shot up by more than six times, the production of pulses went up merely by three times during the period under reference (Fig 2). India is the largest producer of pulses in the world. It is noteworthy, that foodgrain production in the country witnessed a higher annual compound growth rate (2.60 percent) as compared to the growth rate of population (1.95 percent) during the period from 1951 to 2021, as per the latest United Nations projected population data. As a result of rapid growth in foodgrain production, per capita per day availability of foodgrains in India has gone up from 395 gms in 1951 to 512.5 gms in 2020.

The major commercial crops of India are cotton, jute, tea, coffee, rubber, sugarcane, oil seeds etc. Table-1 brings into light that among commercial crops, production of potato went up at the highest annual compound growth rate of 5.02 percent followed in descending order by rubber (4.05 percent) and cotton (3.63 percent) from 1950-51 to 2020-21. The oilseed production increased at a rate of 2.83 percent per annum and went up from 5.2 million tonnes to 36.57 million tonnes during the period reference. Production of sugarcane increased from 57.1 million tonnes

Figure 1: Share of Agriculture and Allied Sector in GVA, Employment and Exports (%)



Source: Economic Survey 2020-21, Volume 2, Pp. A5-A7, A102-A104

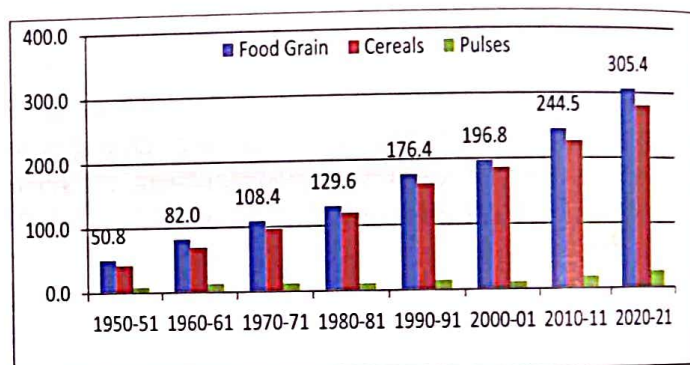
to 393.8 million tonnes yielding a growth rate of 2.8 percent per annum. For cotton, growth rate of 3.61 percent per annum was achieved resulting in an increase in production from 3.04 million bales to 36.49 million bales during the period under context.

Trends in Horticultural Production

The diverse agro climatic conditions and wide varieties of soil in the country make it possible to grow almost all types of horticultural products like fresh fruits, vegetables, root and tuber crops, flowers, aromatic and medicinal crops, spices and plantation crops. There has been an unprecedented growth of this sector during the last two decades. As per first advance estimate of the Department of Agriculture, Co-operation and

Farmers Welfare, total horticultural production in India has reached at 326.58 million tonnes in 2020-21 as compared to 145.78 million tonnes in 2001-02, registering ACGR of 4.34 percent during this period. In fact, the production of horticulture crops in the country has continuously outpaced the production of foodgrains since 2012-13. Vegetables constitute more than 59 percent of total horticulture production in India. The production of vegetables stood at 193.61 MT from an area of 10.71 million hectares in 2020-21. Fresh fruits are also an important part of horticulture sector. They account for nearly 31 percent of total horticulture production in the country. The annual production of fresh fruits is expected to reach at the level of 103.23 MT from an area of 6.96 million hectares in 2020-21. India has made a remarkable progress in the

Figure 2: Trends in Agriculture Production in India



Sources: (i) Agricultural Statistics at a Glance, (Various Issues)
(ii) Economic Survey (Various Issues).

Table 1: Trends in Agricultural Production (quantity in million tonne)

Commodity	1950-51	1970-71	1990-91	2010-11	2020-21	CAGR (%)
Foodgrains	50.8	108.4	176.4	244.5	305.44	2.60
Cereals	42.4	96.6	162.1	226.3	279.87	2.73
Pulses	8.4	11.8	14.3	18.2	25.57	1.60
Oilseeds	5.2	9.6	18.6	32.5	36.57	2.83
Sugarcane	57.1	126.4	241	342.4	393.8	2.80
Cotton@	3.04	4.8	9.8	33	36.49	3.61
Jute & Mesta#	3.3	6.2	9.2	10.6	9.62	1.54
Tea	0.28	0.4	0.7	1	1.4*	2.36
Coffee	NA	0.1	0.2	0.3	0.3*	2.27
Rubber	NA	0.1	0.3	0.8	0.7*	4.05
Potato	NA	4.8	15.2	42.3	48.7*	5.02
Milk	17	22	53.9	121.8	198.4*	3.63
Egg (Million No)	1832	6172	21101	63024	114419*	6.18
Fish	0.75	1.76	3.84	8.4	14.2*	4.35

@ Million Bales (170 kg each), # Million Bales (180 kg each), * Data for 2019-20

Source: Directorate of Economics & Statistics, Ministry of Agriculture and Farmers Welfare.

Table 2: Trends in Agricultural Exports and Imports of India (Amount in Rs. Crore)

Years	Agriculture Exports	Percentage of Agriculture Exports to Total Exports	Agriculture Imports	Percentage of Agriculture Imports to Total Imports	Agriculture Trade Balance
1990-91	6013	18.49	1206	2.79	4807
1995-96	20398	19.18	5890	4.8	14508
2000-01	28657	14.23	12086	5.29	16571
2005-06	45711	10.78	15978	3.26	29733
2010-11	113047	10.28	51074	3.41	61973
2015-16	215396	12.55	140289	5.63	75107
2019-20	252000	11.35	147000	4.37	105000

Sources: (i) *Agricultural Statistics at a Glance, (Various Issues)* (ii) *Economic Survey (Various Issues)*.

production of flowers also. Its total production of loose and cut flowers reached at 3.00 MT in 2020-21. In fact, India has emerged as the second largest fruit and vegetable producer in the world after China. The country occupies first position in the world in the production of fruits like mango, banana, sapota, pomegranate and aonla and vegetables like peas and okra. Further, it occupies second position in the world in production of brinjal, cabbage, cauliflower and onion, and third in potato and tomato. India has the honour to be the largest producer, consumer and exporter of spices and spice products. The total production of spices during 2020-21 stood at 10.24 MT from an area of 4.41 million hectare, as per the first advance estimate of Department of Agriculture, Co-operation and Farmers Welfare for 2020-21.

Trends in Livestock Production

Livestock is an important sub-sector of agriculture in India. It contributes nearly 30 percent to total agriculture and allied sector output. India has been the largest producer of milk in the world continuously for last more than two decades with over 198 million tonnes of production and per capita availability of 407 grams per day as against the world average of 299 grams. Nearly, 19 percent of the world's total milk production is contributed by India. Total milk production in the country increased from 17 million tonnes in 1950-51 to 198.4 million tonnes in 2019-20 yielding a growth rate of 3.63 percent per annum (Table 1). Poultry production in India has taken a quantum leap through the adoption of scientific farming practices and technological interventions. The egg production in the country increased from 1,832 to 1,14,419 million numbers during 1950-51 to 2019-20 witnessing 6.18 per cent ACGR during this period. As a result of robust

performance of poultry farming in the country, India has emerged as the third largest producer of eggs in the world. The per capita availability of egg has also reached at 86 eggs per annum in 2019-20.

The fisheries and aquaculture is also an important source of income and employment generation in India. Its contribution to total agriculture and allied sector output is more than 7 percent. Due to its vast coast line and varied inland resources, India has emerged as second largest fish producing country accounting for 7.58 percent of global production. The total fish production in the country was 0.752 million tonnes in 1950-51, which shot up to 14.20 million tonnes in 2019-20 registering ACGR of 4.35 percent. The sector provides livelihood to about 16 million fishers and fish farmers. The sector has been one of the major sources of foreign exchange earnings, with India being one of the leading seafood exporting nations in the world. During 2019-20, exports of fish and fish preparations stood at 651 thousand tonnes and valued at Rs. 23,501 crore. In order to boost the fish production through the creation of additional infrastructure facilities in the country, Fisheries and Aquaculture Infrastructure Development Fund (FIDF) worth Rs 7,522 crore was created in October 2018. The fund aims to boost annual fish production to 20 million tonnes by 2022-23 and generate over 9.40 lakh employment opportunities. With a view to bring about blue revolution through sustainable development of the fisheries sector, Pradhan Mantri Matsya Sampada Yojana was launched on 10th September 2020. Under the scheme, total estimated investment of Rs. 20,050 crores is to be implemented over a period of 5 years from FY 2020-21 to FY 2024-25. The scheme sets an ambitious target to enhance the fish production to

22 million tons by 2024-25 and generate about 15 lakhs direct gainful employment opportunities.

Diversification of Agriculture

Agriculture and allied sectors consist of four major sub-sectors namely, crop sector, livestock, forestry and fisheries. The contribution of these sub-sectors in the total Value of Production (VoP) from agriculture has undergone a sea change during the last decade. Figure 3 reveals that the contribution of crop sector to GVA by agriculture which was 67.39 percent in 2010-11 declined to 58.15 percent in 2019-20. On the contrary, share of livestock sector in VoP from agriculture shot up from 19.02 percent to 28.26 percent during the same period. Similarly, the contribution of fishing and aquaculture also improved from 4.35 percent to 6.52 percent during the last decade. Thus, in recent years, agricultural sector has been diversifying to produce more livestock products like milk, egg, meat, fish and other marine products. The crop sector includes field crops, plantation crops, horticultural crops, drugs and narcotics crops. Among the farm sector products there has been a shift toward commercial crops and horticultural crops viz., fruits, vegetables, spices etc.

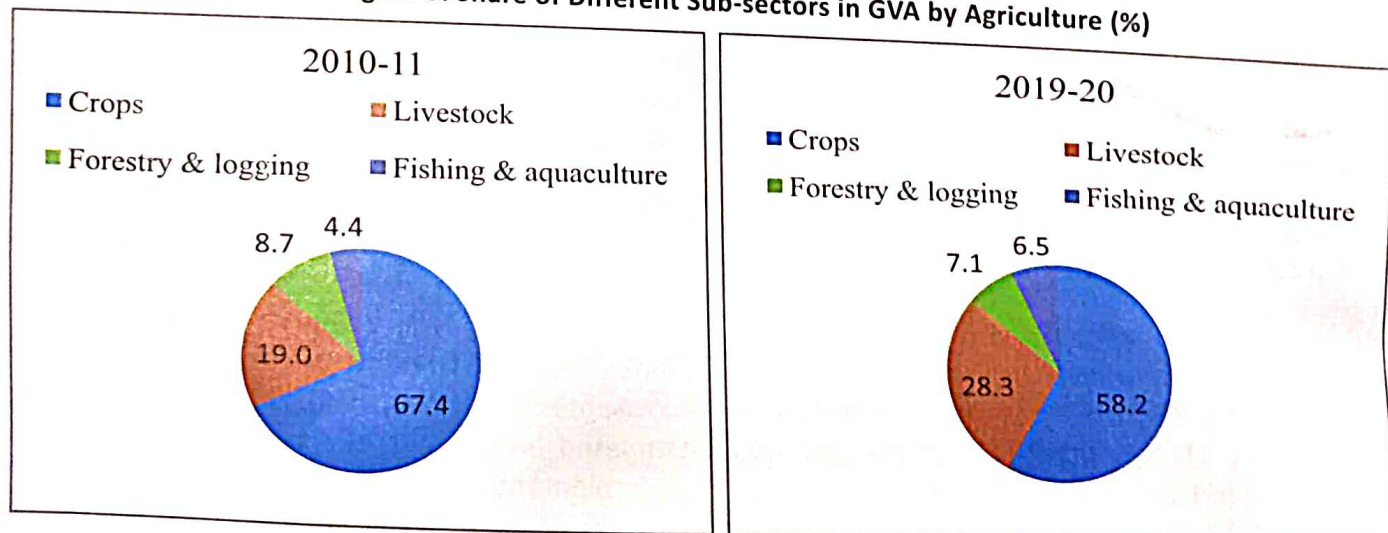
Trends in Agricultural Trade

Presently, India is not only self-sufficient in food grains but also a net exporter of agricultural products, occupying seventh position in the world. Though the exports of agricultural commodities picked up after 1970-71, a greater impetus is observed after 1994-95 with the launch of global trade reforms and progressive cuts in agricultural

tariffs under WTO regime (Fig. 4). India's export of agricultural and allied products (such as rice, pulses, fruits, vegetables, tea, coffee, tobacco, spices, sugar and molasses, cashew, raw cotton, fish, meat and processed food etc.) which were worth Rs. 284 crores in 1960-61, up surged to Rs. 6,013 crore in 1990-91 and further shot up to Rs 2,52,000 crores in 2019-20 reflecting a high ACGR of 12.19 percent (Table 2). It is noteworthy that whereas the overall balance of trade of India has always been negative, the trade balance of agricultural goods has not only been positive but also increased nearly by 22 times during the last two decades, which reflects the significance of agriculture in generating foreign exchange for the country. The composition of Indian agricultural exports has undergone a substantial change during the post liberalisation period. There has been a structural shift from traditional agricultural exports like tea, sugar, molasses, tobacco, cashew kernels, oil cakes etc. towards more value added items such as processed and canned fruits, juices, vegetables, meat, fish and fish preparations and other packed products. The major export destinations of India's agriculture and allied products are Bangladesh, China, Iran, Indonesia, Japan, Malaysia, Nepal, Netherland, Pakistan, Saudi Arabia, Thailand, UK, USA and United Arab Emirates etc.

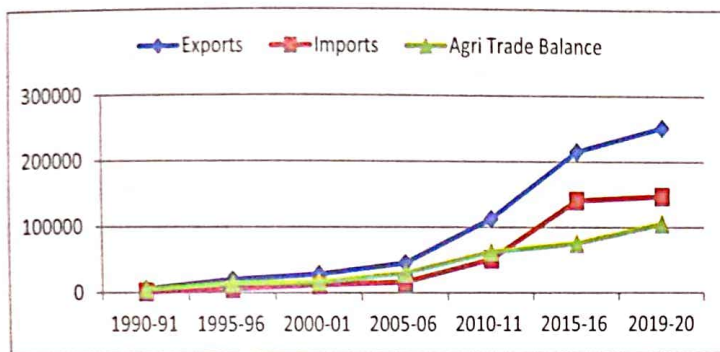
Despite a multi-fold expansion in agricultural exports, India's agri-export basket accounts for a little over 2.5 percent of world agri-trade. Its overall share in total world exports has always been less than 1.7 percent. Considering the diverse agro ecological zones in the country, there is huge scope to enhance its agricultural

Figure 3: Share of Different Sub-sectors in GVA by Agriculture (%)



Source: Monthly Bulletin, April 2021, Ministry of Agriculture and Farmers Welfare.

**Figure 4: Trends in Agricultural Exports and Imports
(Amt. in Rs. Crore)**



Sources: (i) *Agricultural Statistics at a Glance, (Various Issues)*
(ii) *Economic Survey (Various Issues)*.

exports through focused interventions. In this direction Mission for Integrated Development of Horticulture (MIDH)-a centrally sponsored scheme was launched from 1st April, 2014 for the holistic growth of the horticulture sector. The MIDH provides financial, technical and administrative support to State Governments for the development of the horticulture sector covering fruits, vegetables, root and tuber crops, mushroom, spices, flowers, aromatic plants, coconut, cashew, cocoa, bamboo and saffron. Apart from this, in order to promote horticultural exports, several centers for perishable cargoes and for post harvest handling facilities have been set up with the assistance of APEDA in the country.

Conclusion

Agriculture continues to be the most crucial sector of Indian economy. Despite a steady decline in its share in gross value added, it continues to remain the largest employment providing sector and a major source of foreign exchange earnings. In the course of seven decades of planned economic development, Indian agriculture has made great strides. The country has been able to attain not only food security to its increasing population but also emerged as the net exporter of agricultural products, occupying seventh position in the world. The foodgrain production in the country has gone up at a higher rate as compared to total population during the last seven decades; as a result, per capita availability of foodgrains has gone up significantly. India has made a remarkable progress in the production of horticultural and live stock products also. There has been steady transformation of the

farming sector from traditional food crops to commercial and horticultural crops based on modern scientific production techniques. The foreign trade of agricultural goods has expanded multi-fold witnessing a significant structural shift in the composition and direction of trade. India's agricultural export basket is now diversified with more value added and non-traditional items such as processed and canned fruits, juices, vegetables, meat, fish and other marine products. After the introduction of modern agricultural technique along with the adoption of HYV seeds, extended irrigation facilities and intensive method of cultivation; yield per hectare of all crops has recorded a rising trend in the country. But, India lags far behind the developed countries of the world in the yield per hectare of field as well plantation crops. In order to improve productivity of agriculture, adoption of modern farm practices along with the rational and efficient use of quality inputs including HYV seeds, water, fertilisers and pesticides is essential. Easy access to institutional credit at affordable rate of interest is also needed to be promoted for the purchase of modern agriculture machinery, tools, equipments and other expensive inputs. Above all, the role of timely Government intervention in agriculture marketing can also not be denied.

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(The author is Associate Professor of Economics, Govt. College Jukhala District Bilaspur, H.P. Email: hlsharmabl@gmail.com. Views expressed are personal)

Expanding Viable Agri-Finance

Surbhi Jain and Sonali Chowdhry

The agriculture sector has not only become self-sufficient but has emerged as a net exporter of several agricultural commodities like rice, marine products, cotton etc. Indian agriculture is dominated by small and marginal farmers that account for 86 percent of all holdings and 47 percent of the operated area - with an average landholding size of 1.08 hectares. They contribute more than 50 percent of the total agricultural and allied output. Institutional credit at reasonable cost all along the agri-value chain can catalyse the transformation of subsistence farmers into vibrant commercial farmers. A win-win model to spur agriculture growth is linkage of Farmer Producer Organisations (FPOs), marketing cooperatives and integrators with banks, as exemplified by the SHG-bank linkage programme. This will enable them to reap the benefits of economies of scale as well as of assured markets for their produce.

Agriculture plays a significant role in the Indian economy and provides employment and livelihood to a large section of the Indian population. Approximately, 44 percent (as per ILO estimate of 2018) of the working population is employed in agriculture and allied sector. Share of agriculture sector in Gross Value Added (GVA) on an average stood at 19.2 percent during 2000-01 to 2020-21 with an annual growth rate for the agricultural sector at 3.3 percent during the period.

Indian agriculture and allied sector broadly covers four activities, viz., crop, livestock, forestry and fisheries. Various policy thrusts to the sector

have enabled transformational revolutions, viz., green revolution in cereal production (late 1960s-early 1980s) succeeded by the white revolution in milk production (starting in 1970s), the gene revolution in cotton production (in early 2000s) and the blue revolution which focused on increasing fisheries production and productivity (1973-2002). As a result, the agriculture sector has not only become self-sufficient but has emerged as a net exporter of several agricultural commodities like rice, marine products, cotton etc.

Indian agriculture is dominated by small and marginal farmers that account for 86 percent of all holdings and 47 percent of the operated area -



with an average landholding size of 1.08 hectares. They contribute more than 50 percent of the total agricultural and allied output. This institutional structure poses a unique challenge in enabling easy access to modern inputs, technology and finally remunerative markets.

Agriculture Credit as a Bulwark in Enhancing Development

Agriculture financing plays an important role in supporting both on and off-farm agricultural activities and businesses. For a farmer, access to affordable institutional credit becomes crucial to start and sustain a good crop cycle based on quality inputs. In an indirect manner, credit facilitates other important agricultural functions such as marketing, warehousing, storage and transportation, all of which are crucial to productivity. Agricultural credit also plays an important role in providing essentials during adversity. To be able to absorb the shock of crop failure due to reasons such as drought and pest infestation or loss incurred due to price crash, the farmers must be financially equipped.

Agriculture sector is, however, fraught with inherent challenges which makes it unattractive for formal financial institutions. Two core features of agricultural production are the long time lag between input investment and profit realisation, and the large covariate risks imposed on agricultural production by weather shocks. These two dimensions create a set of interlocking problems both on the supply side (financial institutions face large and systemic risks in providing credit to agriculture) and on the demand side (farmers face many risks beyond their control in trying to finance the investments necessary to increase productivity).

Consistent efforts have been made in India over the years to enhance the access of agricultural sector to institutional credit.

Evolution of Agriculture Institutional Credit Policies

The timeline of the agricultural credit initiatives in India can be traced back to early 20th century, with measures that sought to establish and strengthen the credit co-operative movement. The objective of this movement was to provide

affordable credit to farmers, especially the small and marginal ones. The Agricultural Credit Department was set up in the Reserve Bank of India (RBI), through the RBI Act, 1934, to provide refinancing to the co-operative credit structure¹. Till the end of the 1960s, this cooperative structure had assumed the responsibility of providing production credit to the farmers. Realising the importance of institutional credit in fostering the growth and development of the agriculture sector, the All India Rural Credit Survey Committee (AIRCSC, 1951-54) laid the foundation of the institutional framework to establish a sound credit delivery system for financing agriculture and allied activities. The nationalisation of commercial banks in 1969, the economic reforms in 1991 and the introduction of Kisan Credit Card (KCC, in 1998) followed by the doubling of agricultural credit (in 2004) led to a large-scale credit expansion with a view to create a strong institutional base in rural areas².

Since 1976, the commercial banks became the primary lending institutions, and their branches in rural areas increased exponentially from 7,690 in 1976 to 36,168 in 2019. An important intervention for expanding the coverage of agricultural credit, especially to small and marginal farmers, involved the establishment of the Regional Rural Banks (RRBs) in 1976. At the end of March 2020, there are 43 RRBs managing an aggregate network of 22,042 branches throughout the country³.

Agricultural Credit under Priority Sector Lending:

Priority Sector Lending (PSL) was launched in 1974 to statutorily earmark a fraction of credit to areas deemed as priority sectors. The objective of the PSL has been to ensure that vulnerable and weaker sections of the society get access to credit. At present, RRBs and Small Finance Banks (SFCs) are required to meet a target of 75 percent towards PSL. Besides the overall PSL targets (40 percent), banks are required to achieve agriculture target of 18 percent and a sub-target of 8 percent of ANBC for small and marginal farmers. The sub-targets are being gradually revised from 2020-21 onwards to 10 percent by 2023-24 in a phased manner. As per the new guidelines, the approach of agriculture under priority sector is to focus on 'credit for agriculture' instead of 'credit in agriculture' to

give impetus to financing of supply value chain in the sector. This is in alignment to the policy focus on developing agriculture holistically to enhance farmer incomes.

Data reveals that, at the aggregate level, banks failed to achieve the agriculture target of 18 percent at system-wide level (17.2 percent in 2018-19). However, banks have been able to achieve the sub-target of small and marginal farmers under PSL. Though this reflects a satisfactory performance in terms of achievement of target by banks, RBI Report (2019)⁴ showed that only 40.90 percent of small and marginal farmers could be covered by SCBs and there was a wide divergence in credit share among states. Thus, in the recent order dated September 4, 2020, RBI has given higher weightage to incremental priority sector credit in 'identified districts' where PSL credit flow is comparatively low. It has also raised the start-up funding limit to ₹50 crore. The effort here is to redirect funds away from 205 districts which received a PSL per capita of over ₹ 25,000 to 184 districts which receive less than ₹6,000.

NABARD - Fostering Rural Prosperity:

Another important landmark approach to promote sustainable and equitable agriculture and rural development was creation of "The National Bank for Agriculture and Rural Development" (NABARD) in 1982. NABARD, in 1992, introduced the Self-Help Group (SHG) model to further enhance financial inclusion of the excluded segments. With the primary objective to connect the informal workforce to the formal banking sector, the SHGs employ their pooled resources to disburse loans to their members through the agency of the banks. The banks issue credit against the groups' guarantee and the size of loans could be multiple times that of the resources deposited with the banks. NABARD is responsible for refinancing such credit, and the progress made by this initiative is reflected in 102.43 lakh savings-linked SHGs and 56.77 lakh credit-linked SHGs covering about 12.4 crore households in India by March-end 2020⁵.

Kisan Credit Card Scheme:

The Kisan Credit Card scheme, introduced in 1998, is aimed at providing adequate and timely credit support from the banking system under

a single window with flexible and simplified procedure for the farmers for their overall credit requirements. As per 2020 data, 65.3 million KCC are operative and ₹6.97 lakh crore is outstanding against these operative KCCs. As per Agriculture Census 2015-16, the number of land holdings were approximately 145 million, which implies that around 45 percent of farmers possess operative KCCs. However, there may be farmers with multiple KCC cards and the actual coverage may be lower. As per NAFIS Survey 2016-17, 4.6 percent of agricultural households hold more than one card and only 10.5 percent of agricultural households were found to have a valid KCC. Hence, there is a need to take measures to improve the penetration of KCC by banks across the country.

KCCs should be made Aadhaar enabled and a centralised database should be created across the states to track the number of KCCs issued, in operation, amount of loan availed, defaults at any bank etc. by a farmer. This database can be integrated with the PM-Kisan database to enable robust credit monitoring and financing needs of farmers.

Evaluating the Performance of Banking System

Banks in India have made commendable progress in terms of scale and outreach of formal credit to the agriculture sector. From ₹37.71 billion in 1980-81, the outstanding advances to agriculture and allied activities have grown significantly to ₹16.04 trillion in 2019-20 (15.2 percent of total bank credit). The long-term trend in institutional agricultural credit revealed that over time, significant progress has been achieved in terms of scale. Agricultural credit as a percentage to Agriculture GDP increased from two percent in 1970s to 47 percent by 2019-20, portraying significant progress made in lending to agriculture. In India, scheduled commercial banks (79 percent) are the major players in supplying credit to agriculture sector followed by rural cooperative banks (15 percent), regional rural banks (5 percent) and micro finance institutions (1 percent). Small finance banks set up with the objective of deepening financial inclusion have started their operations recently. They would be catering to small and marginal farmers, low

income households, small businesses and other unorganised entities.

Some of the other important initiatives taken by the Government include the implementation of Interest Subvention Scheme (ISS) for providing credit for crop production at reduced interest rate, Soil Health Cards (SHC) for improving agricultural productivity, Pradhan Mantri Krishi Sinchai Yojana (PMKSY) to ensure irrigation facilities and Pradhan Mantri Fasal Bima Yojana (PMFBY), for providing a safety net against natural calamities.

Pradhan Mantri Fasal Bima Yojana (PMFBY) introduced in 2016, is the world's largest crop insurance scheme in terms of farmer participation and 3rd largest in terms of premium. Over 5.5 crore farmer applications are received on year-on-year basis. Integration of land records with the PMFBY portal, Crop Insurance mobile-app for easy enrolment of farmers and usage of technology such as satellite imagery, remote-sensing technology, drones, artificial intelligence and machine learning to assess crop losses; are some of the key features of the scheme. The scheme has made it easier for the farmer to report crop loss within 72 hours of occurrence of any event.

The claim benefit is provided electronically into the bank accounts of eligible farmer. As of now, out of total farmers enrolled under PMFBY, 84 percent are small and marginal farmers ensuring that financial assistance is provided to most vulnerable farmers.

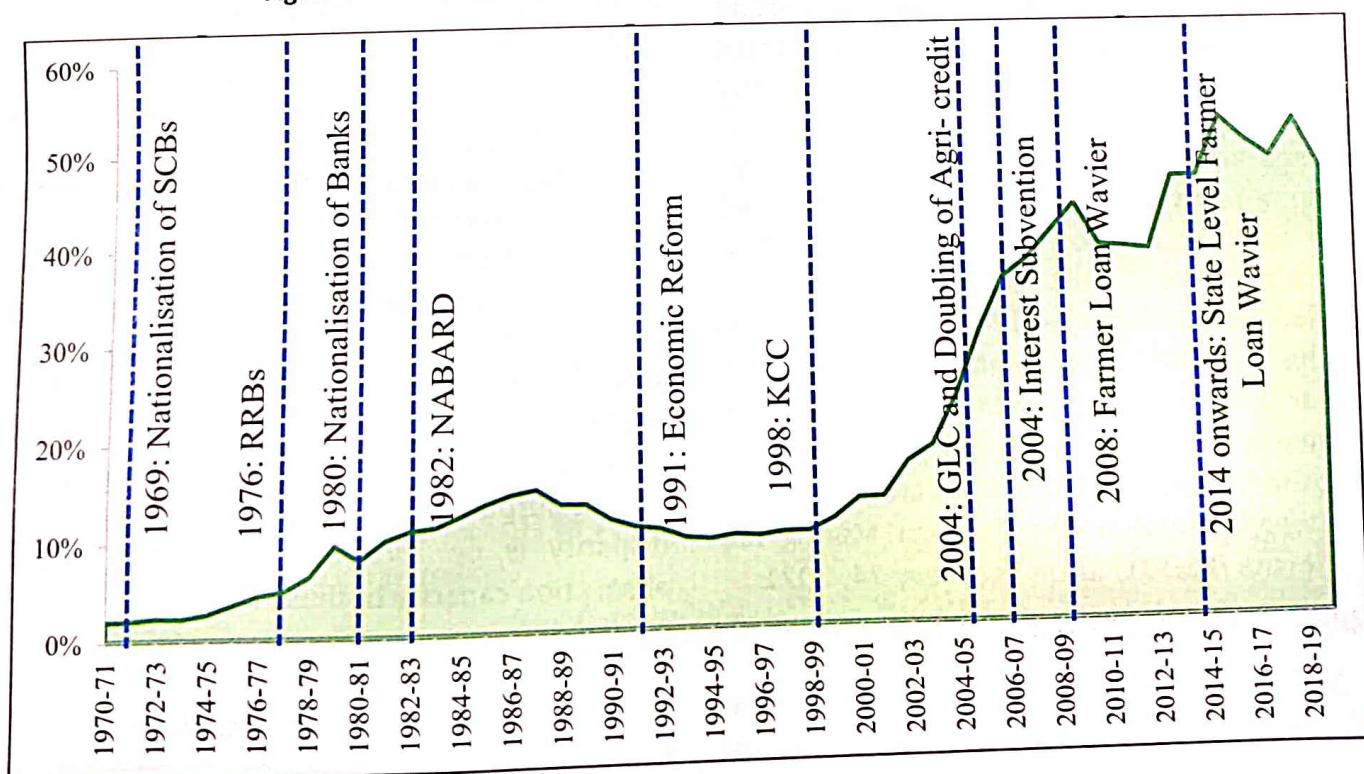
Synergising Basket of Financial Initiatives with use of Technology

Digital technology and the use of digital means to communicate, transact, source and analyse data have introduced new channels of service delivery and new product types that are changing the business model, incentives and cost/benefit analysis of serving the agricultural sector for financial service providers.

Digitisation of Land Records:

Gol started the Computerisation of Land Records Scheme to digitise all land records in 1988-89. Thereafter, in August 2008, the Digital India Land Record Modernisation Programme (DILRMP) was launched by Government of India, with the aim to minimise scope of land or property disputes and enhance transparency in the land records. Digitisation of land records has the potential to address various issues relating to agricultural credit, provided banks are given

Agriculture-Credit outstanding to Agriculture-GVA at current prices



Source: RBI

Note: GLC implies Ground Level Credit

access to view land records online and/or they are given the facility to create charge online over land. This will help in reducing the instances of double or multiple financing on the same piece of land.

One Nation One Market:

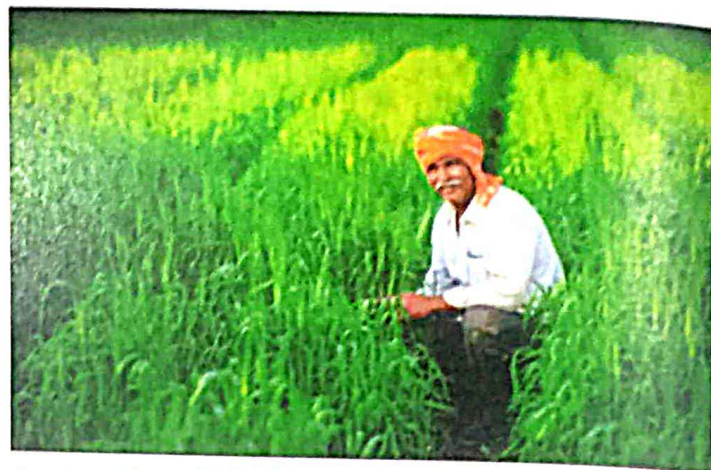
National Agriculture Market popularly known as e-NAM launched in 2016, is an innovative initiative in agricultural marketing to enhance farmer's accessibility digitally to multiple numbers of markets and buyers, and to bring transparency in trade transactions with the intent to improve price discovery mechanism, quality commensurate price realisation and to develop the concept of "One Nation One Market" for agriculture produce. Better market linkage was provided under e-NAM by integrating 1000 markets across 18 States and 3 UTs. So far, more than 1.69 crore Farmers and 1.55 lakh traders are registered on e-NAM platform and total traded volume stood at 4.13 Crore MT. The online and transparent bidding system is encouraging farmers to increasingly trade on e-NAM platform.

Pradhan Mantri Jan Dhan Yojana:

The Pradhan Mantri Jan Dhan Yojana (PMJDY) was launched in August, 2014 with the objectives of providing universal access to banking facilities to all households, conducting financial literacy programmes, creation of credit guarantee fund, micro-insurance and unorganised sector pension schemes. These accounts have been linked with several social security and insurance schemes i.e., Pradhan Mantri Jeevan Jyoti Bima Yojana, Pradhan Mantri Suraksha Bima Yojana and Atal Pension Yojana in May 2015. A digital pipeline has been laid through linking of Jan-Dhan accounts as well as other accounts with the account holders' mobile numbers and Aadhaar [Jan Dhan-Aadhaar-Mobile (JAM)] and is providing the necessary backbone for provision of composite financial services. 41.93 crore accounts have been opened under Pradhan Mantri Jan Dhan Yojana (PMJDY) as on February 24, 2021.

Challenges in Agriculture Financing

Despite the impressive growth in formal agricultural credit, there are still several challenges that need to be tackled. Data on the average loan taken by agricultural households,



as per the NABARD's Financial Inclusion Survey Report 2016-17, indicated that 72 percent of the credit requirement was met from institutional sources and 28 percent from non-institutional sources. The report further states that out of the total agricultural households, approximately 30 percent still avail credit from non-institutional sources. For instance, while KCC has emerged as a preferred credit instrument for disbursing crop loans, the incidence of crop loans outside KCC is very high. This may be because farmers are availing agricultural loans against gold as collateral. This ultimately leads to diversion of funds and consequently, high incidence of indebtedness among the farmers. Further, the short term crop loans are eligible for Interest Subvention Scheme that incentivises farmers to avail such agricultural loans leading to misutilisation of government subsidy.

The problem of financial exclusion gets aggravated due to lack of legal framework for landless cultivators as the absence of documentary evidence becomes a major hindrance for extending credit to this segment of the farming community, who take up cultivation work on oral lease. Further, in the RBI report (2019)⁶ of state wise flow of institutional agricultural credit has revealed uneven distribution of credit amongst states compared to their corresponding share in overall output. To a certain extent, such regional disparity is on account of variation in credit absorption capacity of these regions.

Thinking Outside the Box

To cater to the challenges, Internal Working Group formed by RBI to review agricultural credit, made assorted recommendations which could assist in resolving the stated challenges.

First, banks should develop an MIS to flag agricultural loans sanctioned against gold as collateral in core banking solution (CBS) to segregate such loans for effective monitoring of end use of funds. Second, banks should provide crop loans, eligible for interest subvention, only through KCC mode to curb the mis-utilisation of interest subsidy. Third, Banks should be allowed to give consumption loans to farmers upto a sanctioned limit of ₹1 lakh under PSL provided banks are able to obtain collateral security and are satisfied with their repayment capacity based on the cash flows of the borrowers. However, such loans will not classify for PSL-Agri.

Fourth, to improve ease of credit, the limit of ₹3 lakh for waiving collateral security by the banks in case of tie-up arrangements should be revised to ₹5 lakh under the existing KCC guidelines subject to the condition that the tie-up arrangements are between the producers and processing units without any intermediaries.

Fifth, for better monitoring of branches by banks and easier implementation of KCC, there should be uniformity in scale of finance (SoF) for both crops and allied activities. Towards this objective, state-wide SoF for crops should be prescribed separately for irrigated and unirrigated areas by the State Level Bankers' Committee (SLBC). IBA in consultation with NABARD should fix a pan-India SoF for allied activities.

Sixth, the corpus of Rural Infrastructure Development Fund (RIDF) should be enhanced. State governments should be sensitised to allocate a larger portion of their borrowing from RIDF for the purpose of absorbing funds for rural infrastructure development in their state.

Seventh, Government of India should push state governments to complete the digitisation process and updation of land records in a time bound manner. State governments should give access to banks to digitised land records to verify the land title and create charge online.

Eighth, aggressive efforts are needed to improve institutional credit delivery through technology driven solutions to reduce the extent of financial exclusion of agricultural households. Also, Government of India should identify the successful models, for example, mobile

warehouses/cold storages and mobile based apps providing farm machineries on rental basis which can be scaled up across the country. Further, banks should be encouraged to provide credit to such innovative solutions which support the agriculture sector.

Way Forward

Institutional credit at reasonable cost all along the agri-value chain can catalyse the transformation of subsistence farmers into vibrant commercial farmers. A win-win model to spur agriculture growth is linkage of Farmer Producer Organisations (FPOs), marketing cooperatives and integrators with banks, as exemplified by the SHG-bank linkage programme. This will enable them to reap the benefits of economies of scale as well as of assured markets for their produce. This will also be in line with the enhanced role being envisaged for FPOs in the agri-ecosystem and synergise the efforts of the policymakers in propelling farmer incomes.

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(The authors are Economic Adviser and Consultant in Department of Economic Affairs, Ministry of Finance. Email: surbhi.jain@nic.in. Views expressed are personal)

Gandhiji and Sanitation

Yugal Kishore Joshi

The Swachh Bharat Abhiyan (SBM) has become an embodiment of the collective spirit of the nation, showing that with a strong and committed political leadership, public financing, partnerships and most importantly people's participation in the development process, no goal is impossible to achieve. Swachh Bharat Abhiyan has provided a framework for large-scale social transformations. In five years, under Swachh Bharat, more than 10.2 Crore toilets were constructed and extensive, focussed and sustained campaigns for behaviour change were launched.

The history of sanitation in modern India begins with Father of the nation Mahatma Gandhi. There was no contemporary political leader or social reformer who emphasised and worked so much for sanitation as much Gandhiji did. As a social reformer Mahatma Gandhi had led the sanitation movement from the very beginning of his public life. Even before plague outbreak in South Africa and his experiments with toilets in Tolstoy Ashram, and frequent writings about need to improve sanitation in colonies of Indians; he had a life-learning lesson on swachhata from Uka, a boy who used to clean child Mohandas's house

at Porbandar. This lesson from the little boy who kept their house clean yet himself was considered unclean and untouchable, moved young Mohandas Karamchand Gandhi and transformed him into a lifelong crusader against inequality, injustice, insanitation, and untouchability.

When 'whites' petitioned that Indians should not be given ownership rights in free hold properties in South Africa because they neither had a sense of sanitation nor they wanted to improve, Gandhiji opposed it. He wrote, "We firmly believe that the agitation owes its origin not to the habits of Indians as regards to sanitation, but to trade jealousy, because owing to their



frugal and temperate habits, they have been able to keep down the prices of necessities of life and have therefore been an inestimable boon to the poor classes of the society in the State."¹ He also arranged a visit of an English doctor from Transvaal to describe the condition of Indian community and their settlement. But, he also urged Indians to follow good sanitation practices and said, "In the matter of outward sanitation we have to learn a great deal from the West." In South Africa, when Natal Indian Congress was constituted in 1894 with active help of Gandhiji, his first advice and campaign was for individual and social sanitation.

Before the eruption of black plague, Gandhiji once again alarmed the British to improve sanitary conditions of Indian settlements. What he wrote is still relevant to any municipal or panchayat administration of today. Gandhiji warned, "I feel convinced that every minute wasted over the matter merely hastens a calamity for Johannesburg and that through absolutely no fault of the British Indians...I feel that a few hundred pounds now spent will probably cause a saving of thousands of pounds; for, if, unfortunately, an epidemic breaks out in the Location, panic will ensure and money will then be spent like water in order to cure an evil which is now absolutely preventable."²

And as it happened, the town council did not pay attention to Gandhiji's warning and plague broke out. Gandhiji and his team devoted full time in preventive and nursing care. In fact, later the town council expressed its gratitude for Gandhiji's work and his quick decision to quarantine the patients.

His experiences in South Africa convinced Gandhiji that, "The meanest of us should know the value of sanitation and hygiene...Is not cleanliness its own reward? Would it not be an inestimable boon to ward off another attack of the plague? ...This is the lesson we would have our countrymen learn from the recent trial they have undergone."³ He gave a clear advise to all Indians in his article published in October 14, 1905 issue of the Indian Opinion. He said every educated Indian had a unique privilege: he could become a missionary in hygiene and sanitation.

During this period, his advocacy for the need of latrines for all and to keep latrines clean became more profound. He started writing on issues of latrines and open defecation more frequently.

When Gandhiji returned back to India in 1915 and toured the country for two years, he became aghast to see the filth and faeces everywhere. We all know his painful remarks on the filthy state of public places, after his visits to religious places, town and villages and the railways. Here, I would like to quote what he said in his maiden public speech at the inauguration of Benares Hindu University. He said, "If even our temples are not models of roominess and cleanliness, what can our self-government be?"⁴

Wherever he visited, Gandhiji emphasised on the need for a clean India. His addresses to students, political leaders, or general public always had a common important theme, and that was sanitation. Addressing the Bihar Students Conference in Bhagalpur in 1917, he told students to become torchbearers in the movement for sanitation and hygiene. He advised them to behave and educate the fellow public.

From very early days of his public life, Gandhiji realised that sanitation and social hygiene was a huge problem in India. He was convinced that it was not the lack of knowledge alone but also the mind-set, which prevented the people to adopt clean habits at home and in public places. Thus, sanitation and hygiene become an important constructive programme for Gandhiji and he declared that, "Conservation of national sanitation is a Swaraj work and it may not be postponed for a single day on any consideration whatsoever."

Gandhiji's popularity was rising exponentially and hundreds of youth wanted to join his movement and attend the Satyagrah Ashram set up in 1915. Gandhiji welcomed all but warned that anyone wanted to join the Ashram had to pass the test of cleaning the toilet bucket. He insisted that whosoever goes to villages for Swaraj work, "He will not go as a patron saint of the villages; he will have to go in humility with a broom-stick in his hand."⁵ He described insanitation, poverty and idleness, as a trinity of evil plaguing our villages.

Gandhiji urged people to respect a sanitation worker like they respect a learned Brahmin. In Gandhiji's words, like a mother washing her baby of the dirt ensures baby's health, a sanitary worker safeguards the health of the entire community. He argued that if the Indian society had given due recognition and status to the sanitary workers'

communities deservingly equivalent to that of a Brahmin, Indian villages would have been clean and sanitised.⁶

Till his last breath, Gandhiji fought for sanitation. Even in his last tours to douse the flames of communal hatred, at Sambhal, on December 27, 1947, he urged the villagers to keep the villages free of dirt and dung in every way. He said, "And it should be free from foul smells. You should follow the rules of sanitation."⁷

Therefore, it was natural that Gandhiji's ideals would find a place in independent India's Constitution. Any constitution represents a break from the past, yet past influences it. The new constitution accepts something from the past and rejects something.

When India adopted its constitution on 26 January, 1950, it was a fresh start in its system of governance. Part IV of Indian Constitution provides for Directive Principles of State Policy. These principles are fundamental in the governance and it is the duty of the State to apply these principles in making laws. These represent the aspiration of the State and through these a perfect national life and social order with social, economic and political justice has been envisaged.

The freedom movement has inspired the Constitution in a big way and the subject of health, sanitation and environment was no exception. Article 47 of the Constitution provides inter alia that the State shall regard raising the standards of living of its people and improvement of public health as among its primary duties. Article 48-A provides for protection and improvement of environment as an endeavour of the State. Without adequate and appropriate sanitation none of the three—raising the standards of living, improving public health and protection and improvement of environment—are possible.

Fittingly, the five-year plans launched since 1951 attempted to address the basic amenities to independent India's people. In the first five-year plan (1951-56), health and sanitation was identified as a priority and a budget of Rs. 140 Crore was sanctioned for these two priorities. In 1954, the National Water Supply and Rural Sanitation Programme was launched for providing water supply and improving sanitary practices in rural India. Financial assistance was committed

to the states for identifying and solving sanitation problem. A special grant of Rs. 24 Crore was provided to the states and 250 urban sanitation projects across 16 states were taken up during this phase.

However, since then sanitation remained as such, a low priority programme with inadequate budget. Indian struggle for safe sanitation spanned for decades, with far from satisfactory results. In first five five-year plans due to negligible fund allocation and low political priority, rural sanitation was never on the horizon of policymakers' vision.

In the later decades of twentieth century, world began thinking seriously about the consequences of pollution, insanitary practices, unmindful dumping of filth and sewage in water bodies, open defecation etc. Countries started enacting and implementing pollution control acts and launched large-scale sanitation drives in late 1960s and early 1970s, around United Nations Conference on the Environment at Stockholm in 1972. Only when the UN declared 1980s as International Drinking Water and Sanitation Decade, Sixth Plan (1980-85) gave some prominence to rural sanitation. The responsibility for rural sanitation at the central level was given to Rural Development Department.

In 1986, India's first rural sanitation programme, Central Rural Sanitation Programme (CRSP) was launched. However, it interpreted sanitation simply as construction of toilets, and focussed on promoting the pour-flush toilets through hardware subsidies. Key issues of behaviour change and promotion of toilet usage were neglected. As a result, despite investment of more than Rs. 660 Crore and construction of over 90 lakh latrines, rural sanitation hardly improved.⁸

Based on CRSP experience, Government of India launched two more campaigns, first the Total Sanitation Campaign (TSC) in 1999, and then Nirmal Bharat Abhiyan (NBA) in 2008. However, due to poor capacity building at grassroots and lack of focus on behaviour change, these two programmes could not achieve the desired results.⁹

Thus, even after 67 years of independence, Gandhiji's dream of a clean India looked remote

and his 'test of people's knowledge of sanitation is the condition of their latrines' was foreign to more than 55 Crore Indians who were defecating in open.

In 2014, inadequate sanitation caused economic loss equivalent to 6.4 percent of India's GDP at US\$ 53.8 billion. It accounted for over 55 percent of the global burden of Open Defecation.

Then, on 15 August, 2014 came a watershed moment for sanitation in India. In his first address to the nation from the ramparts of the historic Red Fort, the Prime Minister Shri Narendra Modi brought sanitation into national consciousness and mainstream national discourse. The fact that crores of Indians still defecated in open every day pained him, especially the fact that mothers and sisters had to wait till dark to relieve themselves, and be exposed to various diseases. He asked all Indians if they do not owe it to Mahatma Gandhi for Indian villages, cities, streets, communities, schools, temples, hospitals and all public places to become free from dirt and filth. He urged and challenged the people to commit for a target of ending open defecation forever and fulfilling Bapu's dream of a Swachh Bharat by 2 October, 2019, Gandhiji's 150th birth anniversary.

From the very beginning, the Prime Minister was sure that this audacious goal could never be achieved as a Government programme only. His firm belief was, "Swachhata had to be taken up as a collective national responsibility by every citizen of India. If we all come together and joined hands to make it a people's movement, then there was no reason why we would not be counted among the cleanest nations of the world." He was certain that, "This movement was important for the health of the poor, the health of our children, the health of the weakest in our society."¹⁰

Whosoever volunteered for the cause of swachhata and associated with this unique movement, the Prime Minister gave him the name, Swachhagrahi. And the jan-andolan became 'Satyagrah se Swachhagrah.' Embodying the ideas and ideals of Gandhiji, and responding to the call of the Prime Minister Shri Narendra Modi, millions of swachhagrahis provided a new momentum, a new energy and a new life to make India open defecation free. In the words of the Prime Minister, "Just as the satyagrahis led India to political freedom, the swachhagrahis are leading India to freedom from open defecation."¹¹

People from all walks of life, pradhans and sarpanches, students and teachers, government

An Interesting timeline between India's achievements in sanitation versus in other fields can be seen from the table below

Sr. No.	Year	Achievement	Sanitation Coverage
1.	1947	India becomes independent	Less than 1%
2.	1952	First General (Lok Sabha) Elections	Less than 1%
3.	1966	Green Revolution	Less than 1%
4.	1974	First satellite Aryabhata launched	1%
5.	1982	New Delhi hosts IX Asian Games	1%
6.	1983	First Indian car Maruti in market	1%
7.	1983	India lifts cricket world cup	1%
8.	1986	Central Rural Sanitation Programme launched	4%
9.	1991	Indian economy opened and first super computer Param 8000 launched	9%
10.	1998	India's second nuclear test	18%
11.	1999	Total Sanitation Campaign launched	19%
12.	2008	First space mission, Chandrayaan-1	29%
13.	2012	Nirmal Bharat Abhiyan launched	34%
14.	2014	India becomes polio free	39%
15.	2014	PM Shri Narendra Modi launches Swachh Bharat Abhiyan	39%

employees and faith leaders, artistes and sports persons, politicians and media, artisans and corporate, women and children, old and young, all played a key role in this movement.

The Swachh Bharat Abhiyan (SBM) became an embodiment of the collective spirit of the nation, showing that with a strong and committed political leadership, public financing, partnerships and most importantly people's participation in the development process, no goal is impossible to achieve. Swachh Bharat Abhiyan showed the path and provided a framework for large-scale social transformations.

In five years, under Swachh Bharat, more than 10.2 Crore toilets were constructed and extensive, focussed and sustained campaigns for behaviour change were launched. Led from the front by the Prime Minister as 'Communicator-in-Chief', crores of Indians participated in these campaigns. Led by the Prime Minister, the Team SBM included 12 Crore school students, over 10 lakh masons, many of whom were women, 5 lakh swachhagrahis, 2.25 lakh sarpanches and thousands more. 'Swachhata hi Seva' became the inspiring mantra to 1.3 billion Indians. More than 55 Crore Indians started using toilets and on 2 October, 2019, all Indian Districts and States declared themselves as Open Defecation Free (ODF).

Achieving an ODF India in record time also meant that India attained Sustainable Development Goal (SDG) 6.2 – Sanitation for all – eleven years before the UN's SDG target of 31 December, 2030. From having the dubious distinction of largest number of people defecating in open in the world to achieving ODF status through behaviour change at scale is a miracle, inspired and led by the Prime Minister.

The Information, Education and Communication (IEC) campaigns and the involvement of all sections of society in this behaviour change effort were so impactful that a 2019 study by the Gates Foundation found that a communication spend of approximately Rs. 25,000 Crore was mobilised by SBM from various stakeholders, which is ten times the Government's budgetary investment in behaviour change efforts, i.e. Rs. 2,500 Crore. The study further estimated that on an average, every rural Indian has been reached by SBM-Grameen messages at least 3,000 times during 2014-19.¹²

The vision of swachhata as dreamt by Gandhiji and envisaged by the Prime Minister Shri Narendra Modi is much beyond use of toilets. One goal is achieved but there are many more to be attained. As the Prime Minister said on 20th October, 2019 at Ahmedabad on the occasion of 150th birth anniversary of Mahatma Gandhi, "But

PROFOUND IMPACT OF SBM

STUDIES BY GLOBAL AGENCIES



SBM saves lives

307,000 diarrheal deaths avoided when India becomes ODF



SBM Leveraged resources

Mobilised a spend equivalent to INR 26000 Cr on monetary and non monetary IEC activities



SBM saves the environment

ODF villages 11.25 times less likely to have groundwater contaminated



Hon'ble Prime Minister receiving the Global Goal Keeper Award 2019 for reducing global open defecation load by 50% through Swachh Bharat Abhiyan.



SBM ROI

430% Return on Investment



SBM saves money

Household in an ODF village in India saves on average approx. \$720 per year



SBM creates jobs

7.55 million jobs created between Oct 2014 and Feb 2019

now the question is – whatever we have achieved is that enough? The answer is simple and clear. What we have achieved today is just one stage, only one level. Our journey towards Clean India continues unabated.”

Thus, to pursue the objectives of Clean India, based on extensive discussions with the States, Union territories, other Ministries/ Departments of Government of India, NITI Aayog and other stakeholders; Government of India, in February 2020, approved the Phase II of the Swachh Bharat Mission-Grameen (SBM-G). It has a total outlay of Rs. 1,40,881 Crore to focus on the solid and liquid waste management (SLWM) and on the sustainability of ODF status. At about same time the 15th Finance Commission report for the year 2020-21 was released. It also provided much-needed tied grants for sanitation to rural local bodies. Thus, the Phase II of the Swachh Bharat Mission-Grameen is planned to be a novel model of convergence between different verticals of financing and various schemes of the Central and State governments.

The Department of Drinking Water and Sanitation (DDWS) is implementing this in a Mission Mode from 2020-21 to 2024-25. The Phase II will provide impetus to the rural economy through construction of household toilets and need based community sanitary complexes, as well as the infrastructure for solid and liquid waste management such as compost pits, soak pits, waste stabilisation ponds, bio-gas plants, material recovery facilities etc.

Thus, when India enters into 75th year of independence, swachhatayatra continues. As the Prime Minister said, achieving ODF status is just one stage, one level. The journey to realise the

dreams of Bapu towards clean India continues unabated.

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(The author is Director, IEC in Swachh Bharat Mission at Ministry of Jal Shakti. He is a recipient of Prime Minister's Award for Excellence in Public Administration for IEC in Swachh Bharat Mission in 2018. Email: hiyugal@gmail.com. Views expressed are personal)

Kurukshetra

FORTHCOMING ISSUE

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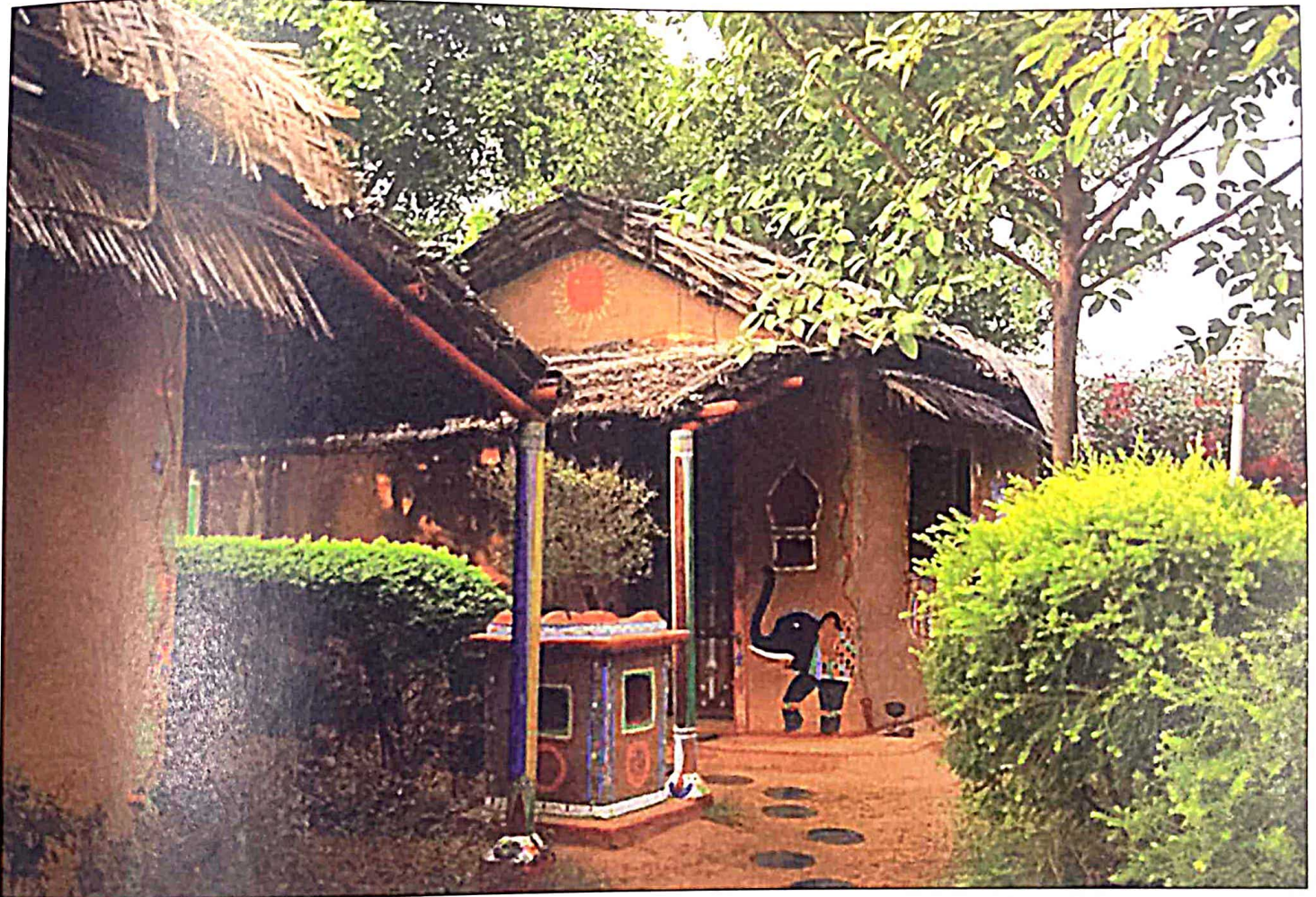
COMING SOON

Social Transformation in Rural India

Prospects of Agri-Tourism

Souvik Ghosh and Usha Das

Agri-tourism is regarded as the intersections of tourism and agriculture. In other words, agri-tourism can be defined as the conjunction between a working farm territory aided with remunerative tourism unit, which is broadly a segment of rural enterprise. Agri-tourism is presently getting popularity as producers emphasise diversification in agriculture and an increase in profit; urban visitors prefer the touring to rural areas to experience the peaceful rural environment.



Agri-tourism is being promoted for the development of rural areas in the developed countries of the world since past decades and it is being considered as a vital factor which can positively influence economic, environmental, demographic and sociological aspects. It is being encouraged in the areas having high biodiversity and landscape diversity. Agriculture is a mainstay of the Indian economy being deeply rooted in the Indian culture. The concept of agri-tourism is not very new; however, it is gaining importance and growing in the recent years. Agri-tourism provides the urban tourists an experience of rural life by opening up the farms to them. Agri-

tourism combines agriculture-based activities and tourism aspects that brings visitors to the farms, where they not only enjoy the vacation and leisure but also understand and appreciate the activities performed by the farmers, who in turn get an opportunity to maximise their profit and employment potentials on farm products and services. Agri-tourism is presently getting popularity as producers emphasise diversification in agriculture and an increase in profit; urban visitors prefer the touring to rural areas to experience the peaceful rural environment. Farm visits, farm stays and trail visits have been a preferences of many tourists in recent times to experience something different as compared to

traditional sightseeing at the places of tourists' interest. The rural economy gets substantial boost from the union of agriculture with tourism sector resulting in agritourism. The term 'agri-tourism' is alternatively used as agro-tourism, farm tourism, agricultural tourism, agritainment. It is also viewed as a part of rural tourism. To promote agri-tourism, its concept needs convergence with the concepts of rural tourism, eco-tourism, health tourism, and adventure tourism. In India, agri-tourism stands on three pillars, viz. farm recreation, farm stays and marketing of local farm produce. With diversified agro-ecosystems, rich heritage in artifacts, historical facts, natural resources and infrastructure; agritourism has been considered as a potential option to boost agrarian economy in India.

Concept

Agri-tourism is regarded as the intersection of tourism and agriculture. In other words, agri-tourism can be defined as the conjunction between a working farm territory aided with remunerative tourism unit, which is broadly a segment of rural enterprise. Basic principles of agritourism are to have something for the tourists to see, to do and to purchase. The farms have a series of activities involving production, post production and processing activities, which are linked to the tourism sector that attracts visiting tourists to such ventures or activities. These activities and ventures have a dual purpose, one being educating the tourists about the local practices of farm with certain entertainment for them and the other involves source of income generation for the host farmer.

Blending of certain facets of tourism with agri-entrepreneurships helps to attract the tourists to visit these ventures or working farms. The main focus is on increasing farm income along with providing recreation, entertainment, and/or educational experiences to visitors. Agri-tourism activities may vary over the space and time ranging from small operations with limited customer services and being seasonally operated only, to large and continuous activities carried throughout the year, providing several consumer services. The urban people who tour the farms, prefer to stay at farm house, engage in farming activities, enjoy different rides like animal rides,

bullock cart ride, and tractor ride, eat local food, purchase farm fresh fruits and vegetables, experience and understand the local art and culture. The farmer maintains both farm and home for stay of urban tourists, brings innovations to attract new tourists, sells farm produce at a remunerative price, and earns a livelihood all year round. Farmers offer a number of services to the tourists. These, however, vary from one farm to other. The products and services include accommodation, entertainment, therapies at farms, farm retailing, catering, participatory mode of farming etc.

Agri-tourism can be categorised based on the type of farm setting, farm facility or experience and types of activities involved. Agri-tourism can be of passive tourists contact, indirect tourists contact and direct tourists contact. In case of passive tourists contact it restricts to accommodation, food and entertainment activities of the tourists (passive agritourism). Indirect contact agritourism adds other activities like exposure of tourists to farm demonstrations and basic farm education. Direct contact agri-tourism includes all the above-mentioned activities as well as participation of the tourists in different farm operations like seeds sowing, planting, gardening, harvesting the produce, milking a cow, etc.

Importance

Agri-tourism is another realm of tourism sector that has potential to grow immensely across the globe, including India. Agriculture makes significant contribution to India's GDP and thus the backbone of Indian Economy. Agri-tourism would increase the share of agriculture in national GDP thereby providing additional source of income along with conventional agriculture and tourism industry. This becomes further crucial because around 90 million farmers (80 percent of them are small and marginal farmers) covering 6.25 lakh villages are responsible for feeding our entire nation and thus they have the most urgent need for income diversification along with additional income generation.

Agri-tourism has a potential to reduce the uncertainty of farming or agri-entrepreneurship/agri-businesses by generating additional income

and creating job opportunities to the farm families. Farmers in many regions have realised the importance and desire to diversify their farming and/or agri-businesses into agritourism to create attention of the tourists and meet their needs. A number of financial, educational, and social benefits are provided to tourists, farmers and rural communities by agritourism. Agri-tourism brings together elements of agriculture and tourism all together, providing an opportunity for both to thrive better financially. It helps farmers in direct marketing of their farm produce to consumers. Farmers choose agri-tourism as a supplementary source of income in addition to their primary occupation along with the involvement of entire farm family for extending various services to the tourists. The tourists get involved in the farming activities during their farm stays, enjoy the nature as well as local foods, visit fairs, purchase farm produces and locally produced handicrafts. Thus, it boosts the tourism industry and creates new employment opportunities. To preserve agricultural lands, and promote on-farm entrepreneurial activities/business enterprises, agri-tourism provides educational opportunities as well. It also reduces the migration from rural to urban areas and attracts as well as retains the youth in agriculture. Therefore, it is worth saying that agri-tourism is environmentally conscious, socially responsible, culturally compatible, ethically valuable, market competitive and economically profitable.

Progress in India

In India, as per Census of 2011, about 69 percent of total population resides in villages and 62 percent of population depends on agriculture for their livelihoods. The tourism sector in India generated about 37 million employments, thereby contributing about nine percent of total employment in 2015. Tourism sector has been expanding that can be facilitated through agriculture under agritourism. Ecological beauty, water bodies and traditional handicrafts of the region enables the tourism in rural areas. Rural tourism was initiated during 10th five-year plan

where in 103 projects were sanctioned that was boosted by 69 rural tourism projects in 11th FYP; and 12th FYP allocated Rs. 770 crores for this purpose. Rajasthan and Kerala took early advantages of this initiative. Later on, Maharashtra became the most progressive state in implementing agri-tourism at different districts. Agri-tourism Development Corporation (ATDC) was established in 2004. Initially, it launched agritourism as a pilot project in Palshinwadi in Baramati Tehsil of Pune covering 28 acres in 2005. The main activities include operating agritourism centres, encouraging more farmers to take up agritourism, and conducting training and research programmes. Most of the tourist reservations and the visits to different agritourism centres are booked by it; thus, it saves marketing cost of the farmers. Under Maharashtra State Agritourism Vistar Yojana, ATDC launched training and skills development programmes in 2007. This initiative aimed to help and conserve the village environment, traditions, culture, customs, arts and handicrafts and initially involved 52 farmers. The agri-tourism model was replicated in 328 agri-tourism centers in 30 districts of

A number of financial, educational, and social benefits are provided to tourists, farmers and rural communities by agritourism. Agri-tourism brings together elements of agriculture and tourism all together, providing an opportunity for both to thrive better financially.

Maharashtra. According to the ATDC survey, about 0.40 million, 0.53 million and 0.70 million tourists have visited these centres in 2014, 2015, and 2016 respectively, generating Rs. 35.79 million income for the farmers, rural

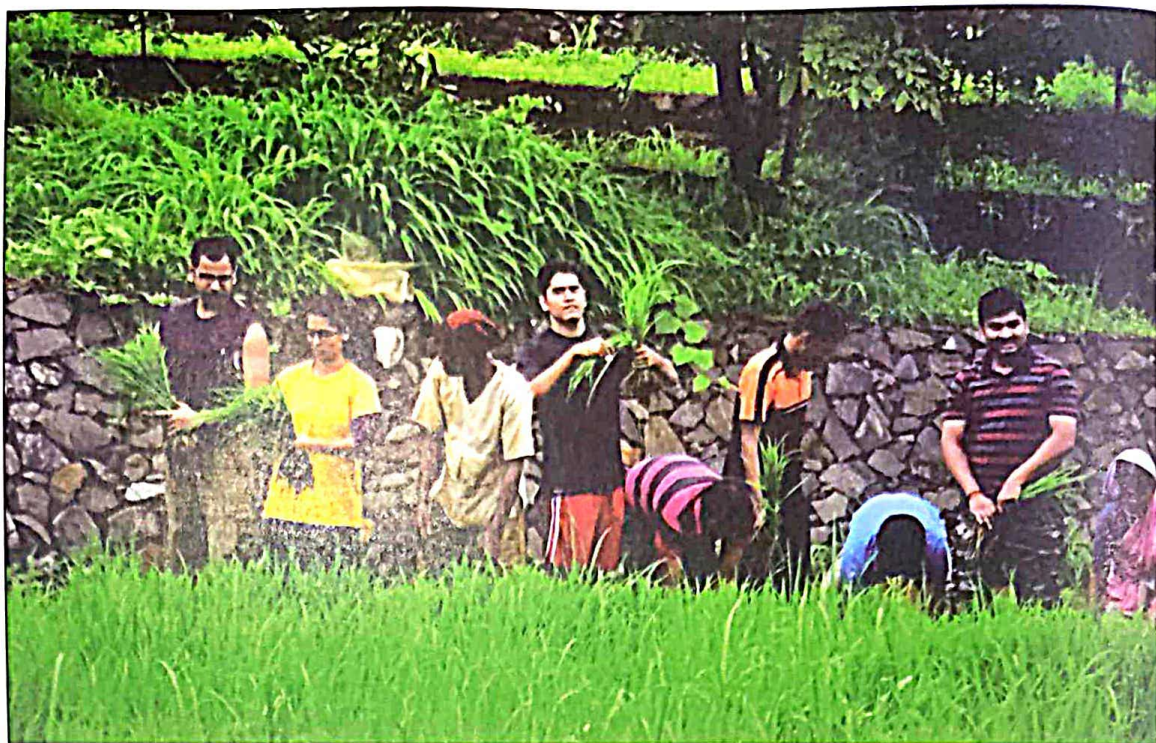
women and rural youth. Thus, agri-tourism creates a win-win situation balancing farmers, tourists and the government. An area with high rates of biodiversity and landscape diversity is ideal for the development of agri-tourism. Agri-tourism was given a major lift in Maharashtra Tourism Policy 2016 with a focus on agritourism for the small farmers, fifth to tenth standard school students' compulsory educational tour to agritourism centres, marketing and promoting agri-tourism under "Mahabhraman Scheme" of Maharashtra Tourism Development Corporation, and helping small farmers getting financial assistance from the Banks including NABARD to set up agritourism centres. There are many success stories from different districts of Maharashtra (www.agritourism.in). Several agri-tourism initiatives have been implemented in other parts of our

country; few of which are mentioned here. The homestays amidst the wheat fields and scenic mountain views with participation in different activities in the villages surrounded by the hills in the state of Uttarakhand, is being promoted as one of the agri-tourism models. Tourists from other different regions of India as well as from abroad have showed

their interests in the cattle fairs held in the eastern regions of the country. The Montana homestay and annual flower festival of Sikkim, the spice garden tours in Kerala and Tamil Nadu are attraction of the tourists as well. Andhra Pradesh Tourism Development Corporation (APTDC) has been promoting agri-tourism in terms of integrated horticulture farms, dairy, fishing, vegetable poly houses and farm stays of the tourists at guest houses to enjoy natural environment and rural life. Most success stories about agri-tourism sector revealed that the marketing potential of the working farms with tourism services transforms the lives of the farmers and the concept of tourism. In India, agri-tourism is penetrating slowly to other Indian states like Kerala, Karnataka, Punjab, Rajasthan and Andhra Pradesh; which marks the growth of another new industry in most of the agricultural states in India.

A Way to Increase Income

Agri-tourism provides a potential option to farmer to increase his/her income. A farmer needs to expand farm operation so as to create interests of the tourists. Arrangements of selling the farm produce as farm fresh immediate after harvesting, processing of produce in front of tourists, value addition of the produce and on-farm marketing, not only draws attention but also provide the farmer immediate income. Direct selling of farm produce develops new consumer niches in that particular area. Creating the avenues of tourists'



interests and involvements in the farming activities like harvesting of the produce, parks with gardens, food parks, agri-museums, etc. gives different sources of income. Establishment of agri-preneurship using the farm produce as resources, creates agri-business and employment opportunities. Thus, agri-tourism can provide additional income through several forms viz., (i) farmers' market, where tourists can purchase farm products, (ii) picking up own products, where tourists harvest produce by themselves, (iii) local food, where tourist prefer to have local flavor in breakfast, lunch, dinner, (iv) participation of tourists in different farm activities and other entertainment activities like animal rides, bird watching, etc., and (v) experiencing rural life through local tours at different rural settings.

Agri-tourism creates income and employment opportunities not only to the farmers directly but also to the rural localities indirectly. Tourists need other amenities and products while touring the agricultural farms for which other local people also get involved in different business activities; thus boosting local business activities, income and employments. Agri-tourism also helps in preserving local traditions, art and culture. Tourists visiting farms also tend to purchase the local handicrafts and souvenirs. Agri-tourism facilitates upgradation and revitalisation of community facilities. It helps in empowerment of rural women, diversifies and improves rural economy.

Benefits

Agri-tourism benefits all its stakeholders in several ways. Among the different stakeholders, farmer is at the centre of agritourism network. Agri-tourism is a potential way for the farmers to diversify and extend farm operations by innovatively using farm produces. This helps in establishing new consumer market niches, which are more aware of local agricultural products, thereby enhancing farm revenues. This also guides in maintaining agricultural land in an efficient and effective manner, involving family members directly or indirectly in different activities, improving farm livelihood, creating farm recreation opportunities, developing entrepreneurial as well as managerial skills and establishing agri-entrepreneurship and sustaining the agriculture and agri-businesses. There are several strengths of agri-tourism in terms of its feasibility even among small farmers. It doesn't require large land holding and farmers of age group between 30 to 60 years, having a higher level of education, are operating most of the agritourism centres. Out-migration from rural to urban areas for seeking livelihood has been an emerging issue that can be addressed with the promotion of agritourism.

Agri-tourism is also a vehicle for development of local communities. It enables additional revenue generation for local businesses and services due to presence of tourists in the locality, upliftment of common facilities for local communities and tourists, maintenance of rural landscapes and natural environments for tourists and local people. This also invigorates the local art, craft and culture, promotes inter-regional and cross-cultural communication and understanding. Agri-tourism helps in raising public awareness about agricultural activities and related issues and values, thus improving use of local agricultural products and services; generation of income and employment in rural areas thereby strengthening rural economy; and creation of facilitative environment for establishment of rural entrepreneurships through micro enterprises.

From the perspectives of the tourists, agri-tourism is least expensive with respect to travel, accommodation, food and entertainment. The urban people's preference for the pollution free,

less crowded, peaceful countryside to relax in the natural environment away from stressful urban life and provide exposure to the children to the farming and rural areas have expanded the scope of agritourism in recent times. Agri-tourism provides recreation to whole family in a cost-effective manner. The emerging desires for Ayurveda (a pro-nature medical approach having roots in villages) and organic foods have been visible in health-conscious urban population looking for naturopathy, peace and tranquility. These are inbuilt in agritourism as it is close to nature and away from urban areas. As Mahatma Gandhi said that "India lives in its villages", the urban population are aware about their roots in rural areas which creates desires in them to visit the countryside and stay at farm, observe farm activities and enjoy rural recreations. Educational value of agritourism in terms of creating awareness about rural life and knowledge about agriculture among urbanites further widens its scope. It is also considered as a potential educational and training tool. Favorable policy environment is reflected since 10th Five Year Plan in terms of promotion of brand 'Incredible India', enhanced budget allocation from Rs. 525 crores to Rs. 2900 crores for tourism sector and allocation of Rs. 50 lakhs per village for village tourism.

The tourism agencies obtain benefits from agri-tourism by mixing tourism packages and services for potential tourists, attracting visitors to rural areas, utilising peak and lean season of one type of product/ service with another to sustain year-round tourism business, placing rural regions in tourism industry, and creating fund flow into local businesses.

Challenges

The establishment of agri-tourism faces certain challenges like attractions, accommodation, recreational activities, entertainment pro-programmes, food arrangements, safety and security aspects, medical facilities, and risks and liabilities in case of accidents. Development of agritourism needs continuous efforts in different stages, viz., land development (knowledge centre), developing accommodations and other facilities (farm stay), developing enterprise (processing, value addition and marketing farm produces) and other required

infrastructure development for establishment of agrotourism centre. Some of the major challenges in up-scaling and promoting agri-tourism include lack of farmer's knowledge, lack of training opportunities to learn about agritourism and absence of infrastructure support. Identification of potential farmers and entrepreneurs who can implement agritourism projects requires skilled advisory services. Moreover, establishing and managing agri-tourism is a challenging task for farmers and agricultural entrepreneurs in the absence of a good planning and understanding of management practices. Farmers are to be given advisories to make them understand the importance and create desire to diversify their agricultural businesses into agritourism to provide value added products and services that meet the need of tourists. Quality and complexity of services as well as cooperation amongst the stakeholders are challenges to implementation of agri-tourism. Agri-tourism network involves farming, medical facilities, transportation, safety aspects, media and communication, tourism agencies, government and hospitality industry. The coordination between all aforesaid services providers determines the successful implementation of agri-tourism.

Agri-tourism Promotion Strategies

Promotion of agri-tourism primarily needs proper recognition of the agri-tourism industry; supportive government policies; education and capacity building of the farmers to develop their agri-business/ entrepreneurial skills; formation of farmers' cooperative for implementation of agritourism; financial assistance; training of the farmers for improvement in products and service quality; proper marketing; risk management and conflict management; development of strategic partnerships; and setting up location specific successful agritourism models.

Agri-tourism business management and related issues covering fundamental knowledge in agriculture and tourism, can be addressed through a need based professional programme. In this context, the School of Agribusiness and Rural Management of the Dr. Rajendra Prasad Central Agricultural University, Pusa, Bihar has decided to start Post Graduate Diploma Programme on Agri-tourism from 2021. Such needful course should

cover a basic understanding of agri-tourism; agri-tourism business management; agri-tourism products and services; destination development and management; marketing management; marketing strategies; and networking with business stakeholders.

From the perspective of farmers, the strategy with respect to implementation of agri-tourism considers products, pricing, place and publicity. Accommodation availability, transport facility, capacity building of farmers, are some of the issues that need immediate attention and these can be networked through public-private partnership. Agri-tourism promotion needs development and popularising thematic images of Indian farm experiences similar to tourism themes like Incredible India, Kerala tourism and Goa tourism.

Conclusion

Farmers convert their farm land into a destination for the tourists to get multifaceted unique experiences starting from staying in rural setting and enjoying the natural environment to learning/ education through participation and recreation. It is becoming increasingly popular in different states of India. Agri-tourism offers benefits to farmers, farm families, rural communities, tourists and tourism operators. It is important to provide advisory services and building capacities of the farmers, who are the nucleus of agritourism industry, to implement, manage and sustain the agri-tourism centres. It is vital to create information on the available agritourism centres across different states of the country to draw attention of the potential tourists. Agri-tourism needs to be an integral part of available tourism packages, and developing strategic partnerships for its further promotion in India, will contribute in strengthening Indian economy in general and rural economy in particular.

(The authors are Professor, Institute of Agriculture, Visva-Bharati University, Sriniketan, Birbhum, West Bengal and Doctoral Scholar, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand. Email: souvik.ghosh@visva-bharati.ac.in and usha24.das@gmail.com. Views expressed are personal)

Scaling Agri - Startups and Enterprises

Saravanan Raj and Sagar Deshmukh

The Government of India, the State governments, private sector, and the NGOs have initiated several steps towards strengthening of the agri-startup ecosystem. The stakeholders are working more cohesively like never before. The financial agencies are infusing handsome money in startups and helping them to scale up, reach wider geographies and penetrate deeper to reach maximum number of customers.



Agri-Startups and Agri-business enterprises are emerging considerably across the country to support the agriculture value chain activities and also to deliver efficient, innovative technologies, products and services to the agricultural development stakeholders including farmers and consumers. In the last few years, there has been an evident cultural shift towards entrepreneurship development especially in the form of Agri-Startups and enterprises.

Government of India's Startup India initiative; Agri-entrepreneurship and Innovation component of RKVY-RAFTAAR; Startup incubation and innovation funding support from DBT, DST, NABARD and NITI Aayog; are accelerating the scaling-up of Agri-Startups. Similarly, infrastructure development fund for Agriculture and Animal Husbandry, Fisheries (PM Matsya Sampada Yojana), Food Processing (PM Kisan Sampada Yojana) and Vocal for Local initiative

of Ministry of Food Processing and Industries to promote micro food enterprises, are promoting agri-business eco-system and supporting Agri-Business enterprises.

Startup India

This Government of India initiative was announced on 15th August, 2015. The action plan of this initiative is focussing on three areas: Simplification and Handholding, Funding Support and Incentives, and Industry-Academia Partnership and Incubation. The Department for Promotion of Industry and Internal Trade (DPI&IT) is supporting startups for the registration, land permissions, foreign investment proposals, and environmental clearances.

In 2015-16, India had approximately 200 startups registered on Startup India portal representing all the sectors (www.startupindia.gov.in). In 2021, agriculture and allied sector account for 14,311 startups.

Initiatives Towards Promoting Agri-Startups

Various national initiatives taken up by the departments and organisations are given below:

Rashtriya Krishi Vikas Yojana - Remunerative Approaches for Agricultural and Allied Sector Rejuvenation (RKVY-RAFTAAR):

In the year 2018, Department of Agriculture, Cooperation and Farmers Welfare (DACFW), Ministry of Agriculture and Farmers Welfare came up with Rashtriya Krishi Vikas Yojana – Remunerative Approaches for Agricultural and Allied Sector Rejuvenation (RKVY RAFTAAR) scheme under the component called “Innovation and Agri-Entrepreneurship Development”. The scheme was launched for providing financial support and nurturing the incubation ecosystem. It aims to encourage start-ups in agriculture and to contribute directly or indirectly to enhance the income of farmers by providing them with some new opportunities and providing employment to youth.

Under the scheme, 24 RKVY-RAFTAAR Agribusiness Incubation Centres were established across India and for their handholding, five Knowledge Partners are entrusted. National Institute of Agricultural Extension Management Hyderabad, National Institute of Agricultural Marketing (NIAM) Jaipur, Indian Agricultural Research Institute (IARI) New Delhi, University of Agriculture Science Dharwad, and Assam Agriculture University at Jorhat are the five Knowledge partners and they are also the Centre of Excellence in Agribusiness Incubation.

The program comprised of supporting the entrepreneurs at two stages of growth i.e., ideation stage and scale up stage. Agripreneurship Orientation program is meant for the entrepreneurs at the ideation stage. They are supported by providing two months of training, stipend of Rs 10,000/- per month, internship, mentoring support to convert an idea into prototype and Grant in aid up to Rs 5,00,000/- per startup.

Startup Agribusiness Incubation program aims at supporting the startups at the scale up stage. They are trained for two months, provided with business support services and grant in aid up to Rs 25,00,000/-. After receiving the grant, startups are further provided with handholding

support for one year, until utilisation of grant in aid amount.

In the year 2019-20, total 346 start-ups in the agriculture and allied sectors were supported with the grants. The funded startups were working in the areas like Agro-processing, Post-Harvest, Food Technology & Value addition, Artificial Intelligence (AI), IoT, ICT, precision farming, Digital agriculture, Blockchain technology, Agricultural Logistics, Value & Supply chain management, Online/virtual platform, Agricultural Extension, Agricultural Inputs, Farm mechanisation & innovations, Organic farming & products, Natural Resource Management, Renewable Energy, Waste to Wealth, Animal Husbandry, Fisheries, Dairy, Secondary agriculture, etc. All these startups are addressing the key issues in the agriculture sector with their intervention.

Department of Science and Technology (DST):

Under Department of Science and Technology, Science Technology and Entrepreneurship Park were already operating in India and supporting the aspiring entrepreneurs to set up businesses and scale up further. The emphasis of these institutions was primarily on businesses backed up by deeper technologies.

The National Science and Technology Entrepreneurship Development Board (NSTEDB), established in 1982 by the Government of India under the aegis of Department of Science and Technology, is an institutional mechanism to help promote knowledge driven and technology intensive enterprises. The Board, having representations from socio-economic and scientific Ministries/Departments, aims to convert “job-seekers” into “job-generators” through Science & Technology (S&T) interventions. (<https://www.nstedb.com/>)

Atal Innovation Mission (AIM):

Atal Innovation Mission (AIM) is Government of India's flagship initiative to create and promote a culture of innovation and entrepreneurship across the length and breadth of our country. It is an initiative of NITI Aayog. AIM's objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platforms and collaboration opportunities for different stakeholders, and create an umbrella structure to oversee the



innovation & entrepreneurship ecosystem of the country (<https://aim.gov.in/>).

Department of Biotechnology (DBT):

Biotechnology Industry Research Assistance Council (BIRAC), which is a not-for-profit Section 8, Schedule B, Public Sector Enterprise, has been set up by Department of Biotechnology (DBT), Government of India as an Interface Agency to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs (<https://www.birac.nic.in/index.php>). Financial assistance up to Rs 50 lakh is available under the BIRAC BIG Grant.

Ministry of Micro, Small & Medium Enterprises– ASPIRE:

A Scheme for Promotion of Innovation, Rural Industry & Entrepreneurship (ASPIRE) is curated by Ministry of MSME, GoI. Under the scheme, Livelihood business Incubator and Technology Business Incubators can be established (<https://aspire.msme.gov.in/ASPIRE/AFHome.aspx>). The startups can get funding of Rs 4 lakh at ideation stage and Rs 20 lakh at scale up stage.

Pradhan Mantri Mudra Yojana (PMMY):

PM launched Pradhan Mantri Mudra Yojana, wherein Micro Units Development and Refinance Agency Bank or MUDRA Banks provide loans at low rates to micro-finance institutions and non-banking financial institutions, who in turn provide low-interest loans to startups and MSMEs. Loans up to Rs 10 lakh can be availed under the MUDRA scheme. (<https://www.mudra.org.in/>)

There are three categories of businesses, which can avail loans under MUDRA loan for startups:

- Shishu - For new businesses. Loans up to Rs. 50,000 can be availed

- Kishor - For mid-aged business. Loans up to Rs. 5 lakh can be availed
- Tarun - For an existing, experienced business. Loans up to Rs. 10 lakh can be availed.

Agri-Clinics and Agri-Business Centres (ACABC), DAC&FW, MoA&FW:

The Agri-clinics and Agribusiness Centres (ACABC) is an innovative scheme of the Ministry of Agriculture and Farmers Welfare, Government of India and implemented by the National Institute of Agricultural Extension Management and National Bank for Agriculture and Rural Development, to take better methods of farming to every farmer across the country. It aims to provide self-employment opportunity to the agricultural graduates through entrepreneurship development training and appropriate financial-subsidy support to establish agri-enterprises and consultancy services to support farmers and also to complement the public extension systems for the overall agricultural development. So far, 74,761 entrepreneurs are trained and 31,391 agripreneurs have established their agribusiness ventures (www.agriclinics.net; July 1, 2021).

Initiatives of Indian Council of Agriculture Research (ICAR):

ICAR has come up with several initiatives to promote agri-entrepreneurship and technology transfer. Some of the initiatives are explained below:-

- Intellectual property and technology management (IP&TM) - The IP&TM scheme launched during 2008 can be seen as driver towards implementation of policy. Under the scheme Institute Technology Management Unit (ITMU) were established across all 100 institutes in ICAR. Five Zonal Technology Management Units (ZTMU) were constituted with the mandate to oversee the activities of ITMUs in the respective zone. The overall supervision of the scheme was by IP&TM unit at ICAR headquarter. It was ably guided by Agriculture Technology Management Committee (ATMC) comprising of recognised experts and the top management of ICAR.
- Business Planning and Development (BPD) - World bank funding under National Agricultural Innovation Project led to establishment of

Business Planning and Development Units at Institutions/Universities of ICAR. Under this project ten BPD units were initially established, five in ICAR institutes and five in state agricultural universities. Based on the experience and with a view to upscale across the system, 12 more BPD units were established during 2013-14. ICRISAT, ICAR and World bank came together in this endeavour.

ii. Agri Business Incubators - ICAR has established altogether 50 Agribusiness Incubators in Research Institutions and State Agricultural Universities of the ICAR.

i. Agri Entrepreneur Growth Foundation- Syngenta Foundation India and Tata Trusts jointly established the Agri Entrepreneur Growth Foundation (AEGF) in 2019. AEGF adopts a decentralised approach towards empowering rural youth and training them to become Agri-Entrepreneurs (AEs) in rural areas. By doing so, the AEs began playing key roles in developing the agriculture of their surrounding regions. This initiative brings services, such as credit, market linkage, access to high-quality input, and crop advisory, together under one roof for associated farmers, who can avail previously inaccessible services and earn improved incomes. It aims at developing 1,00,000 AEs in the coming five years to ultimately achieve the goal of serving 20 million smallholders.

Number of other government schemes which are supporting Agri-Startups and enterprises are listed in the Startup India webportal. (<https://www.startupindia.gov.in/content/sih/en/government-schemes.html>).

State Government Initiatives

Followed by Centre, all states came up with state specific startup policies to promote Agri-startups. A few of them are mentioned below -

Kerala has initiated a government startup nodal agency called "Kerala Startup Mission (KSUM)". KSUM supports startup ecosystem by means of different components such as infrastructure, human capital development, funding, governance, public-private partnership, global collaborations and scaling existing and establishing new startup ventures from Startup-Boot Up-Scale up model for moving fast from ideas to IPO.

Telangana has launched the largest incubation centre in India as "T-Hub". Besides Startups, Andhra Pradesh has allocated a 17,000-sq.ft. Technological Research and Innovation Park as a Research and Development laboratory. It has also created a fund called "Initial Innovation Fund" of Rs 100 crore (US\$14 million) for entrepreneurs. The government of Madhya Pradesh has collaborated with the Small Industries Development Bank of India (SIDBI) to create a fund of Rs 200 crore (US\$28 million). Rajasthan has also launched a "Start-up Oasis" scheme (Startup India, n.d.).

MANAGE Centre for Innovation and Agripreneurship (MANAGE-CIA)

The MANAGE Agribusiness Incubation centre, MANAGE-Centre for Innovation and Agripreneurship (CIA) is a Centre of Excellence (CoE) in Agribusiness Incubation and Knowledge Partner for strengthening, hand-holding and demonstrating best practices to the RKVY-RAFTAAR Agri-Business Incubators (R-ABIs) and also implementing Startup Agri-business Incubation and Agripreneurship Orientation Programmes of the RKVY-RAFTAAR (<http://cia.manage.gov.in/>).

Incubation Programme:

Center for Innovation and Agripreneurship (CIA)-MANAGE runs a regular Incubation Programme to facilitate early stage Agri Startups to scale up their business.

Membership Programme:

Any aspiring entrepreneur can apply for membership, at free of cost. The members are entitled to get multiple benefits such as access to the regular updates and activities of CIA, registration to paid events at a subsidised price, information on success stories besides networking with multiple stakeholders of the startup ecosystem.

Krishi Vikas – Search for Agri Innovations:

Krishi Vikas is one of the flagship programmes of CIA-MANAGE, wherein grass root level innovations across the country are identified and facilitated.

Impulse – An Agribusiness Mentoring Platform:

Impulse is another prestigious initiative of CIA-MANAGE, which facilitates in connecting aspiring entrepreneurs with Mentors. It addresses

A list of a few Venture capital firms investing in Agri-startups are indicated below:

S. No	Venture Capitalist	Weblink
1	Omnivore	https://www.omnivore.vc/
2	Ankur Capital	https://www.ankurcapital.com/
3	Caspian	https://www.caspian.in/
4	Tiger Global Management	https://www.tigerglobal.com/
5	ABG Capital	http://abgcapital.com/
6	Steadview Capital	https://www.steadview.com/
7	Elevar Equity	https://elevarequity.com/
8	responsAbility	https://www.responsability.com/en
9	Accel Partners	https://www.accel.com/india-home
10	Nuveen	https://www.nuveen.com/en-us
11	Lightbox	https://lightbox.vc/
12	LGT Lightstone	https://www.lgt.com/en/
13	Aspada	https://www.aspada.com/
14	FMO bank	https://www.fmo.nl/
15	Bertelsmann India Investments	https://www.biifund.com/
16	Chiratae Ventures	https://www.chiratae.com/
17	William R Jarvis	https://www.jarvisinvestments.com/

the crucial need of expert guidance to establish agribusinesses in rural India on a larger scale.

Aqua Clinics and Aquapreneurship Development Programme (AC&ADP):

Since 2018, Aqua Clinics and Aquapreneurship Development Programme (AC&ADP), a 28-day free residential training program supported by the National Fisheries Development Board (NFDB), Hyderabad, is being implemented by the MANAGE in collaboration with the Fisheries Universities, colleges and institutions across India.

Aqua One Centres (AOC):

Aqua One Centres provide aquaculture support service to the Fish Farmers, disseminate newer technologies and innovations, and facilitate their wider adoptions. Twenty AOCs in 10 States were established with the financial support from the National Fisheries Development Board (NFDB).

Scaling-up Startups: Funding Sources

Bootstrapping/Self-financing:

Bootstrapping a startup means growing your business with little or no venture capital or outside investment. It means relying on your own savings and revenue to operate and expand.

Friends and Family:

This is also a commonly utilised channel of funding by entrepreneurs still in the early stages.

Business Plan/Pitching Events:

This is the prize money/grants/financial benefits that is provided by institutes or organisations that conduct business plan competitions and challenges.

Incubators:

Incubators are organisations set-up with the specific goal of assisting entrepreneurs with building and launching their startups. Not only do incubators offer a lot of value-added services (office space, utilities, admin & legal assistance, etc.), they often also make grants/debt/equity investments.

Government Loan Schemes:

The government has initiated a few loan schemes to provide collateral-free debt to aspiring entrepreneurs and help them gain access to low-cost capital. Some such schemes include CGTMSE, MUDRA, and Stand-up India.

Angel Investors:

Angel investors are individuals who invest

their money into high potential startups in return for equity. One can reach out to angel networks such as Indian Angel Network, Mumbai Angels, Lead Angels, Chennai Angels, etc. or relevant industrialists.

Crowd funding:

Crowd funding refers to raising money from many people who each contribute a relatively small amount. This is typically done via online crowd funding platforms.

Venture Capital Funds:

Venture capital (VC) funds are professionally managed investment funds that invest exclusively in high growth startups. Each VC fund has its own investment thesis – preferred sectors, stage of startup, and funding amount – which should align with your startup. VCs take startup equity in return for their investments and actively engage in mentorship of their investee startups.

Banks/NBFCs:

Formal debt can be raised from banks and NBFCs at this stage as the startup can show market traction and revenue to validate their ability to finance interest payment obligations. This is especially applicable for working capital.

Venture Debt Funds:

Venture Debt funds are private investment funds that invest money in startups primarily in the form of debt. Debt funds typically invest along with an angel or VC round.

TReDs:

To decrease the financing concerns faced by MSMEs in India, RBI introduced the concept of TReDS in 2014, an institutional mechanism for financing trade receivables on a secure digital platform. Trade Receivable Exchanges such as M1xchange, standardises the process of funding MSMEs via Invoice Discounting. TReDS addresses the gaps in MSME industry as enterprises face challenges in getting their payments on time, thus creating working capital discrepancies.

Venture Capital Funds:

VC funds with larger ticket size in their investment thesis provide funding for late stage startups. It is recommended to approach these

funds only after the startup has generated significant market traction. A pool of VCs may come together and fund a startup as well.

Private Equity/Investment Firms:

Private equity/Investment firms generally do not fund startups however, lately some private equity and investment firms have been providing funds for fast-growing late stage startups who have maintained a consistent growth record.

Initial Public Offering:

Initial Public Offer (IPO) refers to the event where a startup lists on stock market for the first time. Since the public listing process is elaborate and replete with statutory formalities, it is generally undertaken by startups with an impressive track record of profits and who are growing at a steady pace. One of the benefits of an IPO is that a public listing at times can increase the credibility of the startup and be a good exit opportunity for stakeholders. Any Angel investor, VC, or PE fund may buy out investors of a previous round to get their equity share as well.

Conclusion

Several interventions are being taken up by Central and State governments, Private Sector and NGOs towards strengthening of the agri-startup ecosystem. The ecosystems stakeholders are working more cohesively like never before. The financial agencies are infusing handsome money in start-ups and helping them to scale up, reach wider geographies and penetrate deeper to reach maximum number of customers.

These start-ups are making significant impact on the lives of farming community. Simultaneously they are also creating employment opportunities. Initiatives like Startup India, Standup India, RKVY RAFTAAR, AC&ABC, etc. are shifting the mindset of youth and others towards entrepreneurship in agriculture and allied sectors. In a nutshell, the ecosystem is contributing profusely towards scaling up of the startups.

(The authors are Director [Agricultural Extension] and Assistant Professor with the National Institute of Agricultural Extension Management [MANAGE], Hyderabad. Email: saravananraj@hotmail.com. Views expressed are personal)



Agriculture Key to India's Prosperity

Karishma Sharma

India is the world's agricultural powerhouse not just in terms of diversity of crops but also in terms of the sheer quantities of production. The proposal of the new laws is a part of a series of reforms and policy interventions that seek to further globalise India's agriculture sector. Alongside lucrative opportunities for farmers and investors, the future will also bring food security to the world by channeling the excess of Indian agriculture to the world market.

With Thar Desert in the West, Himalayas in the North, Gangetic Delta in the East and Deccan Plateau in the South, India can easily be called the heart of global agriculture owing to its vast agro-ecological diversity. Agro-climatic diversity in the country makes possible the cultivation of innumerable types of crops powered by the large agricultural labour capacity of India. From the tea leaves of Darjeeling to cardamoms of Coorg and the unique India specific spices, agriculture in India is beyond just production of crops. It has made its way to the hearts and plates of global community.

Despite ups and downs caused by domestic and international externalities, agriculture

continues to be a vibrant part of Indian culture and economy. Agriculture in India has covered a formidable journey, from facing fatal famines and extreme food insecurity in the early independence period, to making India a food surplus nation in the present. From a food grain production of around 55 million tons at the time of independence, India boasts of a production of more than 250 million tons of food grain as per 2011 census; the credit primarily going to the introduction and success of Green Revolution.¹ Indian agriculture further experienced successful revolutions including White Revolution for milk production, Yellow Revolution for edible oil and Blue Revolution for fisheries.

India is the world's agricultural powerhouse

not just in terms of diversity of crops but also in terms of the sheer quantities of production. Agriculture employs a majority of the almost 70 percent Indian population living in rural hinterlands. Consequently, India is the world's largest producer of milk, pulses, and jute, and ranks as the second largest producer of rice, wheat, sugarcane, groundnut, vegetables, fruit, and cotton, accounting for 10.9 percent and 8.6 percent of the world fruit and vegetable production, respectively. It is also one of the leading producers of spices, fish, poultry, livestock, and plantation crops.²

The gross value addition of agriculture sector in India has consistently increased through the past decade.³ The agricultural exports as a percentage of India's agricultural GDP has increased from 9.4 percent in 2017-18 to 9.9 percent in 2018-19. While the agricultural imports as a percentage of India's agricultural GDP has declined from 5.7

percent to 4.9 percent, indicating exportable surplus and decreased dependence on import of agricultural products in India.⁴

As a testimony to its evergreen nature, even during the difficult time of pandemic and consequent lockdown, Indian agriculture contributed its share in the world food supply chain, displaying great resilience. The export of Agri commodities during March 2020 to June 2020 was Rs. 25,552.7 Crore against an export of Rs. 20,734.8 Crore during the same period in 2019, showing a sharp and rather surprising increase of 23.24 percent.⁵

There has been substantial and laudable increase in export of almost all the agricultural items in the last 15 years, but despite being one of the top producers of agricultural products, India does not feature among top exporters of agricultural produce. India holds second rank in the world wheat production but ranks 34th in its export. Similarly, despite being world Number 3 in production of vegetables, the export ranking of India is only 14th. Same is the case for fruits, where India is the second largest producer in the world, but its export ranking is 23rd.⁶

Despite being the heart and soul of majority of India's population and experiencing impressive developments, agriculture in India has seen little to no change in practices. Lack of adoption of global best practices has resulted in little net development in the sector with the achievements being offset by the stagnant system. The Indian farmer has been essentially cut off from the global market and an average Indian farmer continues to make decisions based on minimum support and procurement policies of the government rather than global supply and demand. While India has become surplus in most agri-commodities, farmers have been unable to get better prices due to lack of investment in cold storage, warehouses, processing, and export.

Farmers of the country are also not agriculture graduates or professionals and thus heavily rely on rudimentary practices. This is further worsened by migration of youth, especially

As a testimony to its evergreen nature, even during the difficult time of pandemic and consequent lockdown, Indian agriculture contributed its share in the world food supply chain, displaying great resilience.

the educated bunch, to urban areas. The sector also faces large regional disparities with some states experiencing high agricultural prosperity

while other states struggle at subsistence level. Under such circumstances, it is even more commendable that India has carved out a space in global agriculture map. It effectively goes on to display the potential Indian agriculture has if given the right conditions.

The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020 attempts to remedy the existing situation and also widen India's area on the said agriculture map. The law aims to open up the vastly and rather arbitrarily regulated agricultural market of the country. Through infusion of technology the act stands to modernise the long stagnant sector and make it globally competitive. It also offers opportunity to the private sector to collaborate with farmers to reach a mutually beneficial optimum. Once implemented, the act can drastically improve India's share to the global food market, which is still marked by insecurity.

The proposal of the new laws are a part of a series of reforms and policy interventions

that seek to further globalise India's agriculture sector. Previously, the Department of Agriculture, Cooperation and Farmers Welfare has been organising the 'India Agricultural Outlook Forum' since 2017. The first Agricultural Outlook Forum was organised in collaboration with the United States Department of Agriculture with the focus being on farm revenue and sustainability, role of innovative technology, use of big data in agriculture, and strengthening of crop estimation systems. Two more forums have been organised since then, allowing open exchange of knowledge between stakeholders and providing a platform for beginning of innovation.

The department has also prepared a comprehensive action plan for promotion of agri trade. A detailed exploration of data and issues of pre-production, production, and post-harvest has been undertaken to craft an end-to-end approach for developing a holistic strategy. An analysis of product groups and then specific commodities was done to understand present status of production and thereafter interventions were identified after consultations with stakeholders. The twofold approach addresses boosting Agri Export with emphasis on value addition and focussed action plan for Import Substitution. The interventions so identified have been converted into a timed action plan.

The Export strategy focuses on export promotion of fast evolving niche market of nutraceuticals and development of "Brand India" in campaign mode to help penetration into new foreign markets and of new products. A product market matrix has been made containing list of products of strength which can be expanded in new geographies and list of known markets which can be introduced with newer products. At the behest of Department of Agricultural Cooperation & Farmers' Welfare, product specific Export Promotion Forums have been created to lead agri exports to new heights. Export promotion forums for eight agri & allied products viz. Grapes, Mango, Banana, Onion, Rice, Nutri-Cereals, Pomegranate and Floriculture have been constituted under the aegis of Agricultural and Processed Food Products Export Development Authority, Department of Commerce.

Despite the challenges and loopholes, India's agriculture is a success story worthy of analysis and deriving learnings from. The sector rose through colonial ruins, third world challenges, food insecurity and more recently the COVID-19 pandemic and is now getting much needed attention from policymakers as well. Contrary to the popular perception, India is no longer an underdog in food production industry, and it is now time for the world to take notice of the entrepreneurial spirit of Indian farming community. With its vast resources, both natural and manmade, India can lead the global war against food insecurity. Alongside lucrative opportunities for farmers and investors, the future will also bring food security to the world by channeling the excess of Indian agriculture to the world market.

Focus of ongoing reforms has not been only on economic and trade related aspects of agriculture but also on driving sustainability in the sector and fulfilling the country's global environmental commitments. Through water management, decreased use of pesticides and agricultural education, India is making great strides in not just agricultural production but also in larger environment friendly governance. The agriculture powerhouse of the world is set to undergo a complete metamorphosis through expert created, targeted policies.

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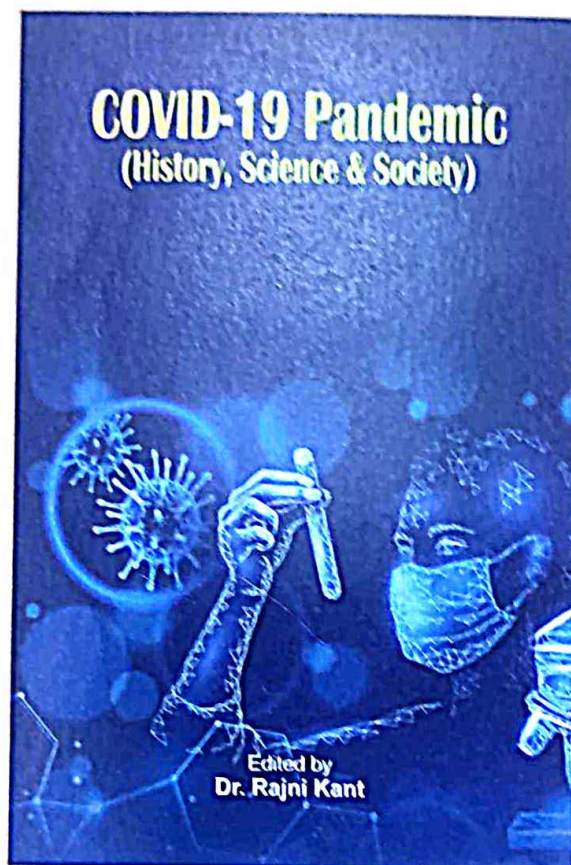
(The author is Researcher at Invest India. Email: karishma.sharma@investindia.org.in. Views expressed are personal)



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