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P2C Communications
38-B, 3rd Floor, Musaf Sarai, Green Park
New Delhi 110016
Phone no: +91-11-64555667
Mob: +91-9266155667

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Empowering agripreneurs...



"Booster dose for
agriculture from
budget"

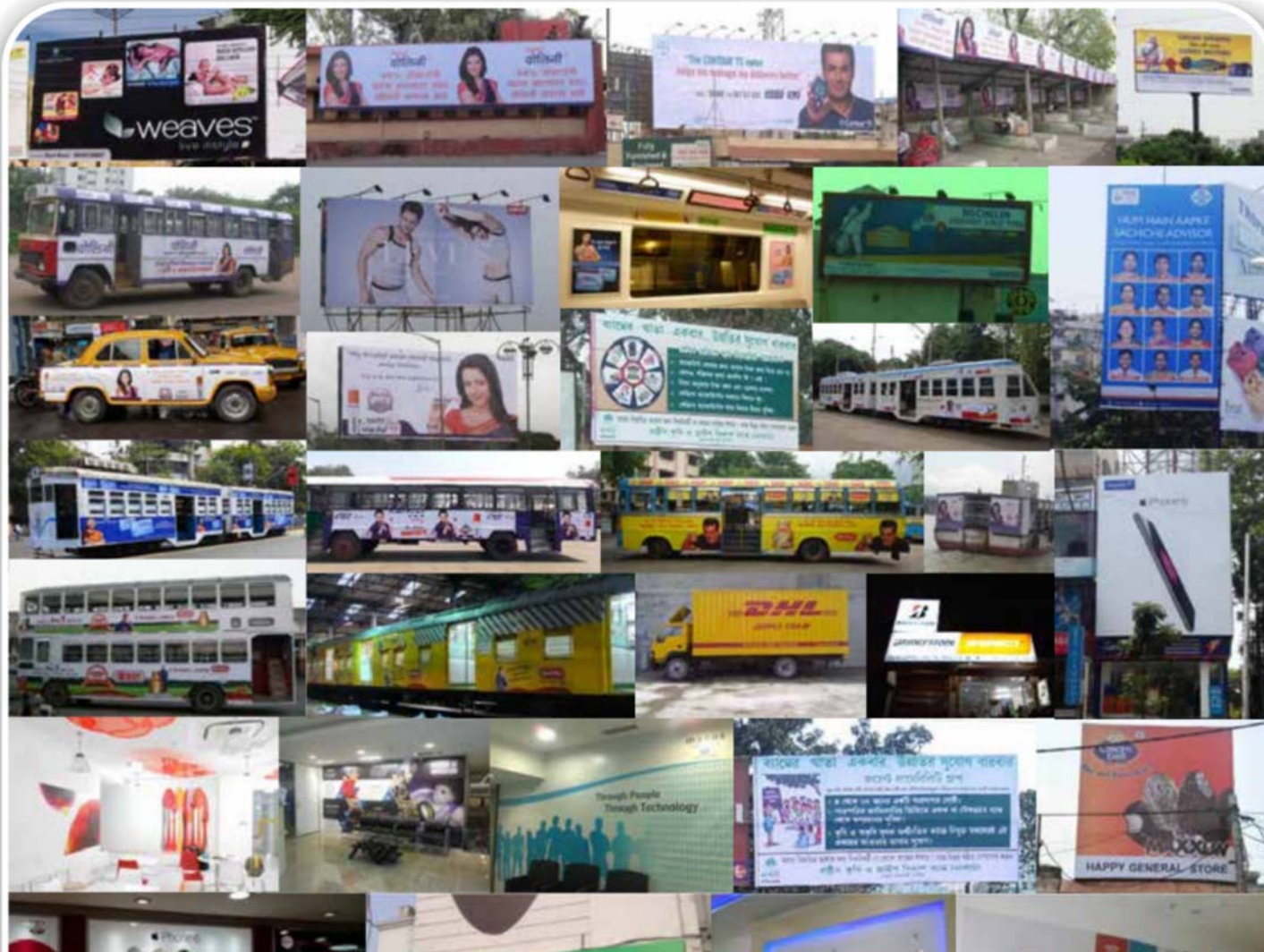
Dr. K. K. Tripathy



Micro Irrigation, micro benefits
In Memory, reproduced
last interview of BH Jain,
Chairman, JSL



Banking on
Tribal Agriculture
S. K. Kale





From the Editor

Can the budget boost agriculture and processing sector?

The Union Budget for 2016-17 witnessed a spurt in agricultural spending. It has surprised many including the opposition parties. The government's focus on increasing investment in agriculture and allied sectors is intended to boost the farm income, thereby strengthening rural economy.

While allocation to agriculture and irrigation taken together recorded 84 per cent hike in Budget 2016-17, at Rs. 47,912 crore, over the Revised Estimates (RE) in 2015-16, at Rs.25,988 crore.

Agriculture provides work and employment opportunity to nearly 50 per cent workforce in India where 68 per cent people live in rural areas. But what is a matter of concern is the declining growth rate of agriculture for last couple of years.

Recent estimates released by Central Statistics Organisation (CSO) reveal that the growth rate in the Gross Value Added (GVA) of agriculture and allied sector during 2014-15 was recorded at -0.2 per cent against 4.2 per cent in 2013-14. The growth in the GVA of agriculture and allied sector for the year has been pegged at 1.1 per cent which is far below than that of 2013-14.

When the farm sector in the country has seen a protracted period of distress with drought and farmers' suicide cases doing around, the government's renewed focus on hiking spending on agriculture sectors including irrigation, rural infrastructure, e-market platform, crop insurance and soil health card has been appreciated.

The incumbent government, which was dubbed as pro-industrialist, has made a conscious effort for an image makeover by announcing Union Budget 2016-17 as pro-farmer and pro-entrepreneur. The real challenge lies in coordination between centre and state, and the timely implementation of schemes.

As far Food Processing sector is concerned, every effort is being made for the development of this sector. Government has announced 100 per cent Foreign Direct Investment in marketing of food with the restriction that the product must be of Indian origin. There is a big push for SME sector with a proposal to raise the threshold limit of turnover from Rs 1 crore to Rs 2 crore.

There is, of course, some concern in the agricultural and agro-processing industry about the Krishi Kalyan cess of 0.5 per cent that the government will introduce from June 1, 2016. The government's proposal for 100 per cent tax deduction for three years for start ups set up during April 2016 to March 2019 may facilitate the future growth of the food processing sector.

The government has also announced a number of financial assistance schemes in the past few years. Food parks and mega food parks which have big potential to boost the sector are yet to take off in a big way. Thus, a mechanism should be put in place to monitor the progress of the schemes and projects and further measures need to be taken to develop this sector.

Dr. K. K. Tripathy
editor@smartagripost.com

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Dr.K.K.Tripathy



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Reproduce last interview of Bhavachal Hahil Jain,
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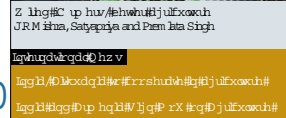
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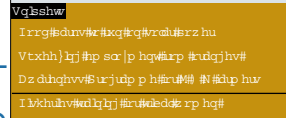
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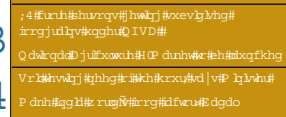
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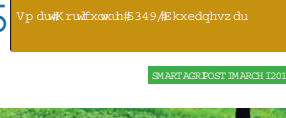
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COVER STORY

Booster dose for agriculture from budget

With two consecutive droughts, in as many years, to tackle, this year's Union Budget has tried to step up its focus on agriculture and the rural economy. Will it achieve its objective?

Dr. K. K. Tripathy

With 68 per cent of country's population living in rural areas and 49 per cent of the total workforce dependent on agriculture, it was expected that the Budget 2016-17 would lay intense focus on the factors impinging on the overall GDP growth with special emphasis on rural and agriculture sector.

Recent estimates released by Central Statistics Organisation (CSO) reveal

"Besides, measures related to rural electrification, swachh bharat abhiyan, self-help groups, social sector, education and skill development are expected to boost rural demand significantly."

that the growth rate in the Gross Value Added (GVA) of agriculture and allied sector during 2014-15 was recorded at -0.2 per cent against 4.2 per cent in 2013-14. The growth in the GVA of agriculture and allied sector for the year 2015-16 has been pegged at 1.1 per cent which is far below than that of 2013-14.

While allocation to agriculture and irrigation taken together recorded 84

per cent hike in Budget 2016-17, at Rs. 47,912 crore, over the Revised Estimates (RE) in 2015-16, at Rs.25,988 crore, rural development and drinking water budget allocation, at Rs. 1.01 lakh crore, witnessed 13 per cent rise against the RE 2015-16, at Rs. 90,185 crore. Besides measures related to rural electrification, swachh bharat abhiyan, self-help groups, social sector, education and skill development are expected to boost rural demand significantly. Rs. 2.87 lakh crore allocation to local self-government institutions would most likely improve rural demand provided these funds are effectively and efficiently spent on the activities as budgeted for.

Soil Health Card Scheme

The objective of the Soil Health Card Scheme (SHCS), launched in 2015, is to get information about the nutrient level of soil and to ensure productive use of fertilisers and pesticides, besides encouraging organic farming. The

budget provides for Rs 368 crore for National Project on Soil Health and Fertility and also facilitates provision of around 2,000 model retail outlets of fertiliser companies with soil and seed testing facilities during next three years (2016-19), covering India's 14.1 crore farmer households.

The Ministry of Agriculture and Farmers Welfare is promoting organic farming through various schemes under the National Mission

"The objective of the Soil Health Card Scheme (SHCS), launched in 2015, is to get information about the nutrient level of soil and to ensure productive use of fertilisers and pesticides, besides encouraging organic farming."

of Sustainable Agriculture (NMSA), Paramparagat Krishi Vikas Yojana (PKVY) and Mission Organic Value Chain Development for North Eastern Region (MOVCDNER) and Mission for Integrated Development of Horticulture (MIDH). With a budgetary provision of 432 crore in 2016-17, PKVY and MOVCDNER registered a 9.9 per cent increase over 2015-16 allocation of 375 crore. While PKVY aims at bringing 5 lakh acres of agri-lands under organic farming over the next three year period, MOVCDNER would ensure and enhance value addition in agriculture and horticulture products in the high potential and unexplored organic regions of seven North Eastern States and Sikkim.

The country has also witnessed a decline on the area coverage of food-grains from 125.04 million hectares during 2013-14 to 124.3 million hectares in 2014-15. Considering that irrigation coverage is only 46% of net



PM launches 'Soil Health Card scheme', presents Krishi Karman Awards in Rajasthan



cultivated area of 141 million hectares in the country, the Budget focused on strengthening Pradhanmantri Krishi Sinchai Yojana (PMKSY) by bringing in 28.5 lakh hectares under irrigation under this scheme. PMKSY envisages providing end-to-end solutions in irrigation supply chain, viz. water sources, distribution network and farm level application. This programme is expected to lay focus and ensure access to water to every agriculture farm and to increase agricultural productivity by intensifying availability and warranting efficient use of water."

"This programme is expected to lay focus and ensure access to water to every agriculture farm and to increase agricultural productivity by intensifying availability and warranting efficient use of water."

Irrigation Benefits Programme (IBP) has been reviewed and it is proposed to complete the on-going projects before the next financial year. The Budget also proposes for the implementation of a major programme for sustainable management of ground water resources with an estimated cost of Rs. 6,000 crore with multilateral funding.



To supplement an extensive irrigation drive, the Budget has announced the creation of a long term irrigation fund in National Bank for Agriculture and Rural Development (NABARD) with an initial corpus of Rs. 20,000 crore. The status in the completion of irrigation projects under Accelerated



Access to both domestic and international markets for realising appropriate income level is critical for our farmers. The positive and improved agriculture terms of trade which were a major reason of cheer for the exporting farmers started deteriorating since 2010-11 and continued up till 2015-16. The rigidity in the domestic agri-marketing through local mandis has led to realisation of low prices by farmers bringing agri-produce to these markets. Keeping in view the critical nature of the easy spread of transparent and effective agri-markets, the Budget has supported rolling out of a unified agricultural marketing electronic platform which will be deployed in select 585 regulated wholesale market points.

Yojana—an umbrella programme for various development programmes viz. soil health card, integrated scheme on Agriculture Cooperation, Agriculture marketing, Agriculture Census & Statistics, Horticulture, sustainable

"The rigidity in the domestic agri-marketing through local mandis has led to realisation of low prices by farmers bringing agri-produce to these markets."

One cannot deny the fact that the Indian farmers suffer from various structural disadvantages arising out of small and fragmented landholdings, depletion in soil quality, lack of access to markets and technology, low level of productivity and income. Inadequate attention to these factors has been the prime reason for not witnessing equitable and desirable improvements in productivity and yield during the post-green revolution era. At this juncture, a budgetary big push was needed to boost the initiatives proposed under Krishnamati



agriculture and National Agri-tech infrastructure. It is expected that these schemes are reviewed afresh and larger investment is made for their effective implementation. These schemes have seen a hike of 29.66 per cent in 2016-17, compared to 2015-16, from Rs. 5,845.45 crore to Rs. 7,579.79 crore.

Crop Insurance and Rural Finance

Just a few days before the Budget 2016-17 announcements, the government expressed a need for an effective crop insurance scheme for farmers welfare and approved the Pradhan Mantri Fasal Bima Yojana (PMFBY) and a pilot Unified Package Insurance Scheme (UPIS). The PMFBY, upon its implementation, would replace the existing schemes of National Agriculture Insurance Scheme (NAIS) and Modified NAIS from Kharif 2016. The scheme, which is optional for States and UTs, has a few innovative provisions for expanding the coverage of crop insurance and making this scheme popular among farmers in the rain-fed areas. This new scheme has got Rs. 5,500 crore in the Budget with a view to facilitate extension of farm insurance coverage from the existing 23% of gross cropped area to 50% in next two to three years.



The Budget also underscores the importance of timely and adequate flow of rural credit by setting up an ambitious target of Rs. 9 lakh crore of credit target during the next fiscal against Rs. 8.5 lakh crore pegged in 2015-16. Rs. 15,000 crore has been provided in the Budget Estimate 2016-17 towards interest subvention on farm loans to ease the burden of loan repayment by farmers.

Skill Development

The Budget lays prime focus on education, skill development and job creation. To encourage entrepreneurship, the Budget has proposed establishment of 1,500 multi-skill development centres with an allocation of Rs. 1,700 crore targeting one crore youth in the next three years. Setting up of a National Board for Skill Development Certification would remove the difficulties in the skill certification across different sectors and would ensure acceptability of youth in skill based manufacturing and services sectors.



Developing Dairy Sector

The Budget has acknowledged the significance of dairy sector in enhancing the earnings of the farmers in rural areas. To make dairy sector more remunerative, the Budget has proposed to introduce four new projects to promote animal welfare, advanced breeding technology, marketing infrastructure and boost productivity of indigenous breeds through a National Genomic Centre at a total cost of Rs. 850 crore. Dairy has traditionally been a partner economic resource of the farmers and with the help of improved dairy technology and investment surge into this sector, the country's youth would be attracted towards this sector.

Employment generation in dairy sector would restrict rural-urban migration and exodus from farming activities.

Rural Roads

Rs. 19,000 crore has been allocated to PMKSY which would allow the States to lay roads and improve existing roads in villages and hamlets. The rural connectivity would ensure ease in travel of rural farmers who would find it easy to market their produce at a better price in more affluent markets than the existing local area markets.

Rural Wage Employment

Several studies on the effectiveness of MGNREGA indicate that the works taken up under this right-based

programme, if planned properly with the assistance of technical resource personnel at the local level, could revive the agri-economy at a large scale. It is also well documented that today's rural India requires sufficient work opportunities to meet the burgeoning demand for casual wage employment in the agriculture as well as rural non-farm sectors. The positive impacts of MGNREGA have prompted the government to remain committed to supporting this right-based rural wage employment programme during 2016-17 with a view to broaden occupational choices and to assure generation of employment opportunities in the rural areas along with creation of productive quality

community assets. While allocating Rs. 38,500 crore for 2016-17, against a total Revised Allocation of Rs. 36,967 crore in 2015-16, the Finance Minister underscored this wage employment programme in supporting irrigation and soil health management efforts by taking up more than 5 lakh farm ponds and 10 lakh compost pits for production of organic manures in rural areas. It also proposed to set up cluster facilitation teams under MGNREGA to ensure water conservation and natural resource management.

Although public works programmes like MGNREGA are prone to leakages and corruption, transparency and accountability provisions are in-built into the rights-based MGNREGA. The real challenge is how the Centre guides the States to implement the provisions made in the Act without compromising the basic spirit and objectives of the Act.

(The author is Private Secretary to Hon'ble Minister of State for Agriculture and Farmers Welfare in the Ministry of Agriculture and Farmers Welfare. Views are personal. Email: tripathy123@rediffmail.com)





Micro irrigation, macro benefits

Changing its portfolio from just providing irrigation systems to farmers, to offering them integrated farm solutions, is what propelled Jain Irrigation Systems (JIS) into the black, disclosed B. H. Jain, Chairman, JIS, in his last interview to Smart AgriPost before he passed away february this year. We re-produce the interview as a tribute to him.

How did you enter the agricultural sector?

My mother is my biggest source of inspiration. When I ventured out, her advice to me was "Do something which will not only fill the stomachs of you and your family but do something that will enable you to feed even the birds

and the animals who do not have words to speak. There is no one to attend to their woes." Hence I forayed into agriculture as it was the only vocation that could meet such a mandate.

What is the current business portfolio of JIS?

There is more to JIS than just

irrigation. It has other divisions such as Solar, Food Processing, PVC Pipes, PE Pipes, PVC Sheets and Plumbing Products. Its total exports amount to \$1000 crore while its annual turnover is a billion dollars. We have over 10000 employees, including 1000 scientists. JIS offers a wide range of precision irrigation products suited to various agro-climatic conditions and



and increased interest in farm-level practices and traceability, JIS helps farmers meet international standards. Its own farms are global gap certified.

Do you also offer customised solutions for Indian farmers?

The company has developed with IFC, the Jain gap standards for its small farmer suppliers who supply fruits for processing, which helps the company meet its buyers' concerns without significantly increasing costs for low-income farmers. Global gap is an internationally recognised set of farm standards dedicated to good agricultural practices or gap. Under global gap, farmers adopt safe and sustainable farm practices and use prescribed quantity of water, fertilisers, pesticides and other inputs for their produce. JIS trains farmers and helps them adapt to these norms and get the certification, which helps them sell their produce to global buyers. At present farms of around 10,000 farmers who are providing mango, banana and onion to JIS are Jain gap certified.

What in your view could be done to strengthen India's irrigation system?

The first is the ability and willingness of the farmer to make the initial capital investment. Traditional cost or no cost way of using the

irrigation water, lesser awareness of the benefits of technology and poor realisations of the farm produce of farmers continue to defer decision of adopting micro irrigation technology. Other challenges include relatively smaller land holdings, cropping patterns & crop rotation issues, availability of power and dealing with dispensation of subsidy by the government.

Moreover, it is true that Micro irrigation has already covered over 5% of the irrigated cultivable land in India, in percentage terms, this is no great achievement. The US, Israel and some parts of Europe pioneered the use of micro irrigation in the early sixties. We in India adopted MIS in late eighties or to be sure early 90s. All said and done, we already have the 2nd largest land under cultivation through MIS. The no.1 slot is occupied by US.

We can take a number of steps to increase the penetration. First and foremost the government must

change its ways to help the farmer by way of capital subsidy. It must be paid to the farmer online on first come first served basis. This will cut avoidable delays and host of malpractices in subsidy distribution on some water guzzling crops such as sugarcane and banana. The use of MIS needs to be made mandatory. The government under

PPP scheme must embark on a nationwide campaign for adoption of MIS for field crops such as rice and wheat. The MIS manufacturers also need to provide after sales service and the quality of their products needs to improve. MIS is location specific and must be tailor made for every farmer and its farm geometry. The agronomic services



crops, which also include rice. At Jaisaon, the company has a high-tech agriculture institute spread over a 2,500 acres. The institute, equipped with technology demonstration farms, houses a full-fledged training and extension centre. The company, with its diversified offering and services, has emerged as an integrated farm solution provider.

When you say integrated farm solution provider, what do you mean by it?

Our scientists and technologists provide various extension services including soil and engineering surveys and agronomic support to farmers and, accordingly, offer them the right kind of irrigation solutions. They work in the field with the farmers, who are the customers for micro-irrigation systems. They go to the field, carry out surveys of farms and collect details related to crops and their spacing, water source, field dimensions and other agro-climatic information. Soil and water samples are collected and tested to ascertain various parameters. Then, depending upon the agro-climatic data, such as rainfall and temperature, as also crop details such as variety, age and

root system, a system is designed and prescribed for irrigation, which should not only be effective, but also economically viable in the long run.

Over the years, the company's efforts have enabled farmers to switch from flood irrigation to more water-efficient systems which yield water savings of 30-65 per cent over the traditional surface irrigation systems. In response to its major buyers' concerns about food safety





by the manufacturers have to be made compulsory on online basis. The artificial differentiation on the ground such as small scale versus large scale have to be dispensed with in the interest of the farmer. Additionally, proper training to them has to be made obligatory on the part of the manufacturer. Wherever power is not there or it is difficult to be provided or wherever the farmers are using diesel powered pump sets, the government ought to provide substantial capital assistance to acquire the Solar agri pumps. These measures can increase the penetration dramatically.

What's your view on agriculture subsidy?

The subsidy given to farmers should be treated as an investment for creation of infrastructure and assistance for empowerment of marginal farmers, rather than financial aid or assistance. When the government can treat the investment on irrigation storages as a "grant", why cannot the drip

Subsidy also be considered as an investment in infrastructure for agriculture rather than a Subsidy?

How much of a challenge does the size of land holding pose in adoption of MIS?

Nearly 80% of the 140 million farming families hold less than 2 acres of land. Large land holdings enable the farmer to implement modern agricultural techniques and boost productivity. Small land holdings restrict the farmer to use

traditional methods of farming and limit productivity.

As land holdings are small, more people invariably work on the farms in the rural areas and coupled with the obsolete technology, farm incomes come down. We can however adopt contract farming on large scale and minimise the need for corporate farming with large areas owned by the companies. This model will probably suit the psyche of the Indian farmer because he is very much attached to the land.



JSL went through a tough period in 2009-10. How did you turn it around?

The company disposed off its unrelated, non-core businesses. Finance was deployed to improve the revenues of its core activities. In addition, we sold part of our equity to an equity fund and raised about 200 crore to settle the accumulated debt burden and thereby reduce the corporation's burden of interest payments. We also brought about operational efficiencies in all of our activities including purchase, manufacturing and marketing.

The future growth plans include organic growth as well as expansion through acquisition. We envisage vast scope for our Food Processing and Green Energy Divisions. We are also planning to introduce integrated projects which offer resource to root approach for enhanced productivity of per unit

of land, water and other resources employed in agro activities.

Do you think private participation in agriculture sector should be encouraged?

Yes, private investment is essential if agriculture is to fulfill its vital function of contributing to economic development, poverty reduction and food security. Agricultural production needs to increase by at least 60 per cent over the next 40 years to meet the rising demand for food resulting from world population growth, higher income levels and lifestyle changes. Given the limited scope for net area expansion, agricultural growth will rely mainly on new increases in productivity, supported in particular by innovation and private investment in physical, human and knowledge capital. Agricultural investment can help contain upward pressure on food prices in a context of rising land and water

scarcity, thereby enhancing global food security.

What are the interventions required to transform agriculture sector in India?

While the government repeatedly states that agriculture is a priority sector, it has paid only lip service to the farmers' cause. The capital formation by the government and private sector has been consistently and constantly going down over past six decades.

On the contrary, Jain Irrigation as a public corporation has invested a significant amount (over 4000 crore) in the past three decades in agriculture and agri business including agri produced processing activities. The climate change, proverbial debt ridden saga of the farmer makes it difficult even for the government to do much about the farm and farming. The government knows that agriculture only accounts for 18% of the nation's GDP though it continues to provide employment to over 55% of the population.

Moreover, the crop and food distribution as well as marketing policies of the government do not support the farmers or they are not designed to offer him a fair deal. The communication and digital revolution have somehow bypassed the agriculture sector. Despite policies and pronouncements to the contrary, the governments financial support in real terms is much less than desired. The farmer suicides cannot be stopped without making the credit roll to the farm sector smooth and timely. The private moneylenders continue to have a field day and usurp the farmers hard earned money and incomes. Lack of education is another factor which does not allow the farmer to adopt new technologies in the area of better seeds, superior planting material, water management and judicious use of chemical and organic fertilizers and other nutrients.

BANK & INSURANCE



economic, political and cultural life of tribal people has left an overall impression on the tribal culture. All these factors are bringing significant changes in the tribal areas but the rate of changes evidently differs in the different type of tribal cultures and sometimes at different points of times in the same cultural continuum.

The tribal population of India, as per 2011 census, is 10.43 crore, constituting 8.6% of the total population distributed over 94,000 tribal villages/hamlets. Out of this 89.97% of them live in rural areas and 10.03% in urban areas. The decadal population growth of the tribals from Census 2001 to 2011 was 23.66% against that of 17.69% for the entire population. The states where majority of tribal population is concentrated are Madhya Pradesh (14.51%), Maharashtra (10.17%), Odisha (9.66%), Gujarat (8.87%) and Rajasthan (8.42%).

NABARD's concept of WADI

It is against the above background, NABARD designed and supported "WADI" projects under the aegis of Tribal Development Fund (TDF) to bring about a change in the lives of tribal people on a pilot basis. The core of the programme is "WADI" i.e. development of small fruit orchard of 0.5 to 1.0 acre and other development interventions built around the plantations. Wadi involves Orchard development as the core component, along with Soil and moisture conservation measures. It also focuses on Water resources development and management, providing Sustainable agriculture, Human resource development and Women development through components such as drugery reduction measures, on-farm and non-farm income generating activities and formation of SHGs.

Wadi also provides for Community

Health, Micro-enterprises for landless people, Processing & marketing as well as Other auxiliary components to dovetail with above activities.

NABARD set up TDF with a contribution of Rs. 50 crore in 2003-04. The cumulative amount sanctioned under the fund as on 31 March 2015 was Rs.1901.31 crore and the sum disbursed was Rs.1010.21 crore covering 4.72 lakh tribal families in 610 projects across 27 States/UTs. The fund seeks to create replicable models of integrated development of tribal families, on participatory basis, through adoption of sustainable income generating activities based on potential of the area and the tribal needs, as well as build and strengthen institution of tribals which would enable the communities to become partners in development for improving their social and economic status leading to inclusive development.



Banking on Tribal Agriculture

Agriculture can be the way out of social and economic deprivation of India's tribal population, and NABARD's tribal development fund through its wadi programme is creating a new class of tribal agri-preneurs

S. K. Kale

The tribal communities are dependent mainly on agriculture, forests and livestock for livelihood. But the dwindling forest resources accentuated by primitive agriculture practices like shifting cultivation, mono-cropping etc. have jeopardized the agriculture and livestock productivity in addition to shrinking

of water resources and reduced fuel & fodder supply. This has largely affected family income leading to rampant migration leaving their productive assets idle.

In many parts of the country, the tribal communities reside in inaccessible areas that are still devoid of common infrastructure facilities such

as road and communication, health, education and safe drinking water, which do not allow them to absorb technological and avail financial facilities provided by government. Concerted and planned efforts made by the Central and State Governments for bringing about a comprehensive and integrated change in the social,

The fund support is need based, location specific and flexible for appropriate utilisation. The funding is being done either by way of grant or loan or a blend of both as found appropriate. The grant support is extended to the selected tribal families through community for project interventions and to the Project Implementing Agency for project management expenditure. The "WADI" may be of mango or cashew or guava or any fruit crop suitable to the project area or a combination of these fruit crops, with forestry species on the periphery of the land holdings. Two or more fruit crops are selected in the "WADI" model to minimise the climatic, biological and marketing risks. Small and Marginal Tribal families are included in the project for development of 1 acre WADI each by way of raising about 60-80 fruit plants suitable to local

conditions and approximately 200 forestry plants on the boundary. Other development interventions viz., soil conservation, water resource development, agriculture development, women development, health care are woven around the WADI and the tribal families under the project.

Tribal scenario in Odisha and Implementation of "WADI" Programme

Odisha, with the largest categories of tribal communities in the country, has a tribal population of 95.91 lakh, constituting 22.8% of the total population of the State and 9.66% of the total tribal population of India. The Scheduled Tribe population in the State is overwhelmingly rural, with 89.97% residing in villages. There are 62 tribal communities including 13 Particularly Vulnerable

Tribal Groups (PVTGs) in the State. Odisha has the third largest concentration of tribal population in the country. About 44.70% of the State's geographical area is classified as Scheduled Area, which extends over 118 out of 314 Blocks in 12 districts and covers 68% of the total tribal population.

Although the tribals are inhabitants in almost all 30 districts of the State, 8 districts viz., Mayurbhanj, Malkangiri, Nabarangpur, Gajapati, Rayagada, Kandhamal, Sundergarh and Koraput have more than 50 percent tribal population and 6 districts viz., Keonjhar, Sambalpur, Nuapada, Deogarh, Jharsuguda and Kalahandi have more than 25 percent but less than 50 percent tribal population.

The tribes of Odisha are at various stages of socio-economic development. At one end of the scale are the group which led a

relatively secluded and archaic mode of life keeping their core culture intact, while at the other end there are settled agriculturists who are indistinguishable from the general agrarian communities. Programmes and policies directed towards amelioration of poverty of the tribal population could have an overall impact on the tribal economy of the State.

"WADI" projects are being implemented by NABARD in Odisha from the year 2005. As of March 2015, 47 WADI projects are being implemented in the State covering 17 tribal dominated districts spread over 35,312 acre on the private land involving 38437 families as detailed below. These lands classified as cultivable wastelands and non-productive assets, have become productive and sustainable assets as a result of orchard based activities.



District wise "WADI" details

District Name	No of WADI projects	Area (Acre)	No. of Beneficiaries	Area (Acre)	No. of Beneficiaries	Project Implementing Agency (PIA)
Angul	1	500	500	100	100	FES
Bargarh	1	500	500	100	100	Ahinsha Club
Dhenkanal	1	1000	1000	525	525	PRAVA
Gajapati	2	1100	1100	1000	1051	Suraksha
Ganjam	1	500	500	500	650	Gram Vikas
Kalahandi	6	3675	5101	2377	3293	Harsha Trust, AFC, Jansahaya, Antodaya
Kandhamal	4	3800	3800	2266	2367	BSS, Jagruti, Swati, Samanwita
Keonjhar	4	3010	3010	2155	2155	SG Foundation, WOSCA
Koraput	1	1000	1345	1000	1119	Agramee
Malkangiri	3	2100	2157	1690	1749	SLNDS, ORRISA
Mayurbhanj	11	9500	9580	8203	8644	Dulal, Sambandh, SDOVA
Nabarangpur	1	490	490	490	521	OPDSC
Nayagarh	2	1437	1611	1374	1394	Niswartha, GUC
Nuapada	2	2000	2000	1512	1512	CPSV, SVA
Rayagada	2	1100	1600	1100	1648	Harsha Trust
Sambalpur	1	1000	1413	594	687	SSSS
Sundergarh	4	2600	2730	1593	1945	SGUP, Pragati, Angna
Total	47	35312	38437	26579	29460	30 PIAs

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Formation of Farmer Producer Organisations (FPOs) in Wadi project. Collectivisation of Wadi beneficiaries into producers organisation has emerged as one of the most effective pathways to address the challenges faced by them. Most important among them were poor access to investment, technology, input and market. The process of forming community based producers organisation also involved facilitation of systematic and smooth transition of Wadi beneficiaries who have moved from paradigm of competition to paradigm of co-operation and trust. Considering the above challenges, NABARD has promoted 18 Farmers Producer organisations within Wadi project area under "Produce Fund".

Major achievements under "WADI" projects in Odisha

35312 Acre of wasteland is being developed by horticulture crops in Odisha under WADI programme of NABARD. The major horticulture crop promoted under the programme in Odisha are Mango (60%) and Cashew(30%). However, in few pockets lemon, guava, litchi, sapota have also been planted on

the demand of local tribal farmers. The popular mango varieties supported under the programme are Amrapalli, Dusheri, Malika, Himsagar, Baiganpalle, Lengda, Totapuri and Alfonso whereas Venguria-4, Bhubaneswar and Balabhadra are popular varieties of cashew planted under the programme.

During the year 2016-17, 23 WADI projects are under fruiting stage and the coverage of Mango and cashew fruit bearing plants is approximately 17000 acre. It is estimated that the current year production of mango under WADI project will be 1600 tonnes and that of raw cashew will be 1400 tonnes apart from other horticulture and farm produce like vegetables, pulses, oil seeds etc.

The availability of protective irrigation through water resources development has increased cropping intensity. A shift in cropping pattern towards commercial crops such as vegetables and pulses has resulted in generating regular/sustainable income.

Considering the fact that the horticulture crops will yield benefit to tribal families only after three to four years, NABARD emphasises that

inter cropping must be focused from the first year itself. For the purpose, all the beneficiaries are motivated to take up inter crop and inputs like irrigation, quality seeds and fertilisers were provided to each beneficiary through UVS at their door steps. Farmers are motivated for cultivation of Vegetables like lady finger, tomato, brinjal and other crops like Ahar, Sun flower, Black gram, Sweet potato, Tili, onion, Beans, Pumpkin etc. As a result the average annual income of wadi beneficiaries has increased from Rs.11000/- to Rs.25000/- before wadi to Rs. 40000/- to Rs. 75000/- in the first year itself.

The production of vermicomposting and NADEP compost and emphasis on bio-pesticides in the programme has opened up avenues for production of organically grown produce.

Seasonal migration has been reduced to a great extent as WADI provides year round employment opportunities to tribal families. This has also resulted in increased enrolment in schools in project areas. The increase in production of cashew and mango due to modern horticultural practices has opened



up avenues for processing activities through activity based farmer producers groups (FPOs). There is a substantial rise in employment opportunities for landless in procurement and marketing of farm produce and processing of cashew and mango as well as other income generating activities in non-farm sector.

The health care programme has reduced the incidences of infectious diseases in the area and has improved health and sanitation in the project villages. Along side, the successful functioning of community organisations like Udyan Vikash Samiti (UVS) and SHGs has developed confidence among the participants in asset and fund management. SHG movement has provided voice to tribal women and

brought out their entrepreneurial skills which is demonstrated by the micro enterprises and income generating activities such as nursery management, vermicomposting etc. undertaken by them.

Initiation of informal credit delivery system (credit through UVS and SHGs) has increased access of tribals to credit for income generation activities. It has inculcated saving and repayment habits amongst the beneficiaries. But the biggest gain has been the participation of hitherto Non-participant families who have started adopting the WADI model in the programme area by the "seeing is believing" principle.

The author is Chief General Manager, NABARD, Odisha Regional Office, Bhubaneswar

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Insuring India's food security

The billion and a half dollars committed to the New Crop Insurance scheme, introduced by the government, is expected to protect farmers from the vagaries of the monsoons and also ensure that farmers don't feel the pinch of insurance premia

Narendra Dev

The government and the policy makers have always faced a few challenges vis-à-vis the task of ensuring food security, higher agri growth and adequate jobs in agri sector. There has been always a long felt need to bring together at one place all conceptual issues, detailed institutional framework and operational details related to

farmers' welfare, risk management of farming community and the crops during drought and floods and other localized risk factors.

The broad policy on drought and natural disasters management prepared by the government has prescribed multifold actions vis-à-vis the disaster mitigation plans, relief

measures required for providing succor to the affected population and the need to integrate these with long term objectives.

In other words, steps were required to be taken on a war footing with a well thought of and far-sighted vision and action plans, both in short term and long terms.

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around Rs 5000 crore annually for the last five years for various disaster relief measures even as the governments new move will now mean a tentative expenditure of about Rs 9000 crore. This will be more helpful especially for farmers as the risk factor would be looked into. According to many, the Pradhan Mantri Fasal Bima Yojana will also rid farmers of the web of complex rules

of the earlier insurance schemes.

The new scheme includes successful aspects of the existing schemes and "effectively addresses" whatever was lacking in earlier schemes. The scheme has the lowest premium, it entails easy usage of technology like mobile phone, quick assessment of damage and disbursement within a time frame," the PM said.

The government would have to cough out Rs 8,800 crore annually whereas the coverage would be for a crop area of 194.40 million hectare. It is significant to note that after coming to power in May 2014, the Modi government had announced that it would bring a new crop insurance scheme.

Experts also say that the mechanism of higher subsidy for crop premia is not out of line with international standards. The United States, for instance, covers over 120 million hectares and gives subsidy to the tune of around 70 per cent. China insures its farmers for a sown area of around 75 million hectares with a subsidy on premia of about 80 per cent. In the Indian context, during the next five years, the plan would probably cover over 50 per cent of the cropped area.

A game-changer

There are a few significant features about the new scheme which are expected to make it both farmer friendly and a game-changer in the long run. The new Crop Insurance Scheme is in line with One Nation-One Scheme theme. "It incorporates the best features of all previous schemes and at the same time, all previous shortcomings/weaknesses



The New Crop Insurance scheme must be understood from that perspective. This is all the more relevant at a time when the country is facing drought for the second straight year due to poor monsoon rains.

Under the new scheme that would cost government Rs 8,000-9,000

crore annually, the farmers' premium has been kept at a maximum of 2 per cent for foodgrains and oilseeds and up to 5 per cent for horticulture and cotton crops.

To be rolled out from the Kharif season this year, the much awaited scheme - Pradhan Mantri Fasal Bima Yojana - will also be executed by

private insurance companies. The governments move will enhance insurance coverage to more crop area to protect farmers from vagaries of monsoon.

For Rabi crops, the farmer's share has been rightly fixed at 1.5 per cent - against actual premia of 8-10 per cent. For year-long cash crops and horticulture crops this has been capped at 5 per cent.

The PMFBY will replace the existing two schemes National Agricultural Insurance Scheme (NAIS) as well as the Modified NAIS.

In terms of Service Tax, as the new PMFBY is a replacement scheme of NAIS / MNAIS there will be exemption from Service Tax liability of all the services involved in the implementation of the scheme. It is estimated that the new scheme will ensure about 75-80 per cent of subsidy for the farmers in insurance premium.

It is worth mentioning that the government is already shelling out



have been removed," an official announcement said, thus highlighting the end of the web of complexities the farmers had to face earlier.

Importantly for the beneficiaries, risks leading to crop loss are to be covered under the scheme include Yield Losses for standing crops on notified area basis. Thus a comprehensive risk insurance is provided to cover yield losses due to non-preventable risks, such as Natural Fire and Lightning, Storm, Hailstorm, Cyclone, Typhoon, Tempest, Hurricane, Tornado. Risks due to Flood, Inundation and

Landslide, Drought, Dry spells, Pests and Diseases also will be covered.

Similarly, in cases where majority of the insured farmers of a notified area, having intent to sow or plant incurred expenditure for the purpose, and are prevented from sowing/ planting the insured crop due to adverse weather conditions, shall be eligible for indemnity claims upto a maximum of 25 per cent of the sum-insured.

In post-harvest losses, coverage will be available up to a maximum period of 14 days from harvesting for those crops which are kept

in "out & spread" condition to dry in the field. Loss or damage from identified localised risks like hailstorm, landslide and inundation, affecting isolated farms in the notified area, would also be covered.

Moreover, it has been made clear that there will be "no upper limit" on the Government subsidy. Even if balance premium is 90 per cent, it will be borne by the Government. Earlier, there was a provision of capping the premium rate which resulted in low claims being paid to farmers. This capping was done to limit Government outgo on the premium subsidy. This ceiling has now been removed and farmers will get claim against full sum insured without any reduction.

The new scheme envisages among other things that there will be use of technology. More technology and science will be encouraged. Smart phones will be used to capture and upload data of crop cutting to reduce the delays in claim payment to farmers. Remote sensing will also be used to reduce the number of crop cutting experiments sources say.

The author is a Delhi based journalist. Views expressed are personal





Chilled out waste

As the second largest producer of fruits and vegetables in the world, India's sees nearly one-fifth or 18 per cent of its 268 million tonnes per year horticulture output go to waste. A new technology can help utilise that waste too, in providing cooling for cold storages.

Akash Agarwal

Chilled out waste

As the second largest producer of fruits and vegetables in the world, India's sees nearly one-fifth or 18 per cent of its 268 million tonnes per year horticulture output go to waste. A new technology can help utilise that waste too, in providing cooling for cold storages.

Horticulture contributes almost 30 per cent to India's GDP, using about 10 per cent of the total arable area. When fruits and vegetables are harvested, they are cut off from their source of nutrition and start to deteriorate. i.e., they lose quality and potential storage life. Both time and temperature are important factors in post-harvest product deterioration. The cooler the temperature, the slower the deterioration and longer the storage life. The more quickly the product is cooled, the longer it will remain marketable. As a rule of thumb for perishable crops, every hour of storage without cooling results in a loss of approximately one day of shelf life.

Produce	Storage Life in Ambient Conditions (days)	Storage Life in Cold Storage (days)
Bitter melon	2	6
Carrot	5	12
Cauliflower	7	12
Cucumber	3	8
Green chilies	3	6
Kinnow	8	60
Ladies finger	1	6
Mango	8	15
Peas	5	10
Plum	4	10
Spinach	3	8

Table 1: Storage life of various farm produce with and without cold storage



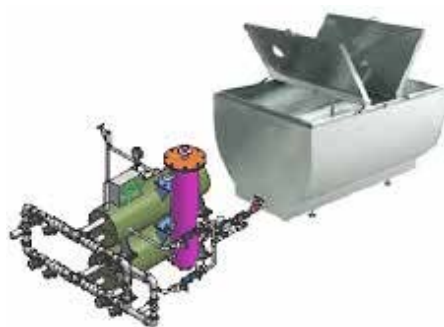
All the hot water and the ambient water are re-circulated to avoid wastage. Since the system has no compressor, it requires very little power to operate. A conventional compressor based 7 KW cooling capacity cold storage requires 4 KW of grid power to operate; this VAM needs less than 10%, i.e. 0.3 KW to operate. This may be obtained either from an inverter that stores power or from a Solar photo-voltaic (PV) panel. Also, since the system does not have a compressor and thus no moving parts, it suffers no wear and tear while in operation and requires little or no maintenance leading to a long product life.

Climate Concerns and Addressable Issues: GreenCHILL VAM uses R717 (Ammonia) as the refrigerant. Ammonia is a natural refrigerant and has a zero global warming potential (GWP). Conventional refrigerant R22 has a GWP=1800 and R134a has GWP= 1300. GWP is a measure of how much effect a refrigerant will have on Global Warming in relation to Carbon Dioxide. CO2 has a GWP = 1. It is known that every refrigeration system leaks the refrigerant in the atmosphere which is a cause for worry for global warming. As per ASHRAE (American Society

of Heating, Refrigerating and Air-Conditioning Engineers) Ammonia is not a contributor to ozone depletion, greenhouse effect or global warming. Thus, it is an environment friendly refrigerant. Ammonia has no cumulative effects on the environment and a very limited (a few days) atmospheric lifetime. Due to the short lifetime of ammonia in the atmosphere, it is considered to

be biodegradable. It is even used to reduce harmful stack gas emissions by injection into boiler and gas turbine exhaust streams. Ammonia exists in nature and may be released to the atmosphere by sources such as decaying organic matter, animal excreta, and fertilization of soil, burning of coal and wood or by volcanic eruptions. Ammonia may be released into water as effluent from sewage treatment and/or industrial processes or as run-off from fertilised fields or areas of livestock concentrations.

With increased regulation being placed upon the use of chlorofluorocarbon (CFC), hydrochlorofluorocarbon (HCFC) and hydro-fluorocarbon (HFC) based refrigerants, and pending phase-out of CFCs and HCFCs altogether, alternative refrigerants for use in existing refrigeration systems are actively being investigated. These alternative refrigerants must have thermodynamic characteristics similar to those of Halocarbons and also be safe for humans and the environment. Ammonia is



Challenges To Deploying Contemporary Technology Systems: If this 268 million tonnes (MT) per year of horticulture produce has to be pre-cooled at the farm level it would require about 10,000 million units of grid power per year or about 2,500 million litres of diesel to provide power to run these refrigeration systems. To meet this added requirement will put enormous pressure on the existing grid capacity which is already under reeling under the present demand. The country will be burdened with additional investment in power generation and distribution including regular outflow of precious foreign exchange for import of crude. Producing the power through use of fossil fuels, viz. coal, gas or diesel will add enormously to the environment pollution too.

VAM Technology –An Alternative & GreenCHILL: A Viable Option: Alternate energy technologies based on Vapour Absorption Machines (VAM) provide a viable solution to overcome running of Cold Storages without Grid Power. Looking at the aforementioned impediments to use of existing refrigeration technologies, New Leaf developed GreenCHILL. A VAM refrigeration system that uses renewable farm waste like cow-dung cakes, rice husk, bio-mass briquettes and dried biomass to provide energy to run the refrigeration systems. These systems can be used in rural areas or farm sites where there is no grid power or its supply is too unreliable to run existing technology systems to cool the horticulture produce and reduce the spoilage before it is transported to the market.

Technology Overview: In GreenCHILL system, farm waste is used to heat water to 120°C, which is then fed through the VAM to compress the refrigerant R717. The compressed refrigerant is then condensed in a condenser and like in any other refrigeration system, it is expanded through an expansion valve to produce cooling. This technology can produce about 7 KW of cooling and can cool to 4°C, necessary to cool most horticultural produce and milk.

GreenCHILL uses the principle of vapour absorption for refrigeration. The system does not use a compressor; instead hot water compresses the refrigerant which is then condensed using water at ambient temperature. The system has two reactor vessels substituting the



Figure 1: GreenCHILL VAM refrigeration system

compressor. One reactor compresses the liquid refrigerant that causes cooling, the second reactor sucks the refrigerant gas after cooling until all the refrigerant is transferred from one reactor to the other. At

this point, the flow of hot water and cold water is reversed by the computer to repeat the cycle. This process continues uninterrupted and is fully automated and controlled by a computer.

Figure 2b: GreenCHILL

Fuel to run Refrigeration system	Cow-dung cakes	Biomass Pellets	Biogas	Municipal Waste	Diesel	Grid-power
	GreenCHILL					Conventional System
10 MT Produce (12 hrs/day)	120 Kg	50 Kg	60 m ³		20 litres	54 units
1,000L Milk (6 hrs/day)	60 Kg	25 Kg	30 m ³		8 litres	21 units
Fuel Costs (INR)	0 -1.5/Kg	4/Kg	-	~0	50/ liter	7/unit
Operating Cost/day (INR)	0 to 180	200	-	~0	1000	432

Table 3: Operating costs with various fuels and comparison with conventional systems

one alternative refrigerant for new and existing refrigerating and air-conditioning systems. Ammonia has a low boiling point (-28°F @ 0 psig), an ozone depletion potential (ODP) of 0.00 when released to atmosphere and a high latent heat of vaporisation (nine times greater than R-12). These characteristics result in a highly energy-efficient refrigerant with minimal environmental problems. The United Nations Environmental Programme (UNEP) has identified ammonia as an excellent refrigerant for replacement of many current CFC and HCFC applications as part of the reassessment of the Montreal



already produced oxygen while existing as a plant / vegetation using photosynthesis.

Applications in the Service of Farm Sector: GreenCHILL has the flexibility of being used in various parts of the cold chain. It can be used at farm head or village level to pre-cool the produce or cold store it until transport is available to take it to the market. GreenCHILL can be used to make ice which can be used to refrigerate insulated trucks that transport the produce. In towns and cities, GreenCHILL can be used in retail shops to store the produce until it is sold, powered by the municipal waste generated in the cities. Smokeless and ash less incinerators can be used to generate hot water to provide refrigeration.

The technology may be deployed in cooling applications to serve other sections of society too where cooling serves critical purposes, viz. milk and milk by-product preservation, storing of critical pharmaceuticals, production and manufacturing activities which require low temperature environments like white growing mushrooms, spawning and growing, hydroponics growing as well as for special application in the defence sector.

(The author is the Co-founder of new leaf).

Protocol. Other countries, notably Germany, have established policies to encourage and promote the use of ammonia, including the replacement of such HCFC refrigerants as R-22 for applications such as water chillers and commercial refrigeration systems for supermarkets.

Technology Uniqueness: GreenCHILL differs from other VAM technologies in terms of simplicity of its implementation. Other versions available in the market require an Ammonia solution pump which consumes power, requires maintenance and creates possibility of leakages and frequent breakdowns. GreenCHILL VAM system's refrigerant pressure is always above atmospheric pressure unlike other VAM systems based on Lithium Bromide or Silica gel which require that the system maintain vacuum conditions of

a higher order. Since vacuum is difficult to maintain, a vacuum pump is integrated with these systems. The vacuum pumps are required to be used frequently which consumes a lot of power and also, whenever the vacuum pump is used, the refrigerant has to be recharged. This leads to adopting tedious operating procedures and increased cost of operations. GreenCHILL has no such problems and can operate for many years without any attention.

Renewable Fuel Based System: All the types of fuel used by GreenCHILL VAM are renewable energy based. Although various kinds of biomass are burned in the boilers, these are considered renewable source since no new hydro-carbons are being taken from underground and burnt. Burning biomass is considered renewable because the biomass has



Krishi Kalyan Cess @ 0.5 per cent has been introduced on all taxable services effective from June 1, 2016 dedicated to improvement of agriculture systems and farmers' welfare. Even though Service Tax is amenable to input credit, the cess will increase the already high burden of Service Tax in case of services related to handling, storage and processing activities of food products.

There is a big push for the SME sector with the proposal to raise the threshold limit of turnover for calculating presumptive tax under Section 44AD of the Income Tax Act from Rs.1 crore to Rs.2 crore. The SME sector is recognised as a major employment provider across all skills and makes substantial contribution to exports. The budget also proposes to reduce



Union Budget 2016-17 Food Processing Sector-Reflections

The 2016-17 Union Budget focuses on the farm economy, welfare of farmers, rural development, infrastructure, housing and indigenous manufacturing. It has enunciated a strong road map for the future to take the economy to a new level, aiming at 8 per cent growth rate. There is also an attempt towards promoting fiscal discipline and rationalisation of tax administration. As far as food processing sector is concerned direct proposals are limited.

Dr. S. Jindal

An important proposal the Finance Minister has announced is providing 100% FDI in marketing of food, including processed foods, with the restriction that the product must be of Indian origin i.e., sourced from farmers or manufactured in the country. This proposal is in line with governments Make-in India programme and is likely to bring in a strong multiplier effect in the

longer perspective. It is aimed at developing backward linkages to sourcing points thereby enhancing value addition and connectivity from farm to markets. It will benefit the farmer, provide impetus to industry and at the same time give consumers larger variety at affordable prices. This also marks the beginning of multi-brand retail in the food sector.

There are no proposals on Central Excise Duty relating to the food sector other than raising CENVAT on sweetened aerated waters from 18 per cent to 21 per cent. To promote the use of refrigerated containers, Central Excise Duty has been reduced to 6 per cent and Basic Customs Duty to 5 per cent on the same.



Corporate Income Tax to 29 per cent for Companies with turnover not exceeding Rs. 5 crore and 100 per cent tax deduction has been provided for three years for start-

ups set up during April 2016 to March 2019. All these provisions are facilitators for future growth of the food processing sector which is widely spread throughout

the country mostly in small and medium enterprises.

As we come to the close of the financial year 2015-16, the suspense regarding adoption of GST still continues. In spite of various announcements by the government to this effect, the future of GST is not clear. It remains to be seen how much momentum the new Chairperson of the GST Council, Dr. Amit Mitra, Finance Minister of West Bengal can infuse to bring about an early consensus in the matter.

The food industry looks forward to meaningful result from the various initiatives taken by the government in strengthening agriculture performance at the one and market linkages on the other. The food processing industry has the responsibility to bridge the two.

(The author is Chairman, Taxation & Foreign Trade Committee of All India Food Processors' Association. Reproduced from Indian Food Packer journal, January-February 2016 issue.)

DIGITAL AGRICULTURE



information on agricultural production and market in developing countries.

ICT-based market information systems have a proven track record for improving rural livelihoods in middle income developing countries where they have been introduced. However, these systems are generally limited in scale and have not been effectively replicated beyond the local level.

Extension Communication: The Most Critical Gap

There is a Lack of feedback mechanism in the Research Extension Linkages identified as one of the weaknesses in existing Extension Systems. Communication is the most critical element in Research-Extension-Farmer-Marketing loop, for which Media and ICTs offer strong potential to improve this mechanism.

New ICTs

The new ICT includes digital devices such as computers, Email, internet, multimedia, video conference and mobiles, which have the potential of providing vast amount of relevant information to rural populations



in timely, comprehensive and cost effective manner.

The most frequently used kinds of information technologies include Electronic Database Access and Search Systems, Feedback Systems, Advisory Systems, Networks and Multimedia.

Role of Information and Communication Technology

ICTs play a catalytic role in developing the rural sector.

Decision-making process

Sound decision-making depends upon availability of comprehensive, timely and up to date information. Information is also needed to facilitate the development and implementation of development policies. Email and Internet can be used to transmit information to and from rural inaccessible areas.

Advisory services

The online services offered by the ICT provide information on education and training, monitoring and consultation, diagnosis, monitoring and finally, transaction and processing. It also helps in providing information services to the farmers on package of practices, disease/pest, early warning system, weather forecasting, input supply, credit availability, crop insurance, and post harvest technology at the earliest possible time.

Market outlook

It is cheaper and faster to trade online than on paper based medium, telephone or fax. Ecommerce enables the entrepreneurs to access global market information at their door step through websites and open up new regional and global market to promote their products that fetch better price and increase a farmer's earning.

Wired f@rmers, better agriculture

The limited introduction of information and communication technologies to help the farming community increase their output has so far been a resounding success, which means it's now time to roll it out with a big bang across India's farms and fields, if it wants to strengthen its food security for an ever-growing population

J.R.Mishra, Satyapriya and Premilata Singh

Ever since people have grown crops, raised livestock and caught fish, they have sought information from one another. Recent developments in the field of Information and Communication Technologies (ICT)

are indeed revolutionary in nature. ICT, when used as a broad tool for educating the communities especially entrepreneurs, business graduates and managers heralds the formation of a new class of society, the Knowledge

Society. Knowledge thereby becomes the fundamental resource for all economic and societal developmental activities in the highly competitive and pluralistic world. ICTs play a key role in improving the availability of





Empowering rural community

With the launching of new ICTs, rural communities can raise their voice and become motivated through training and dialogue with others, to express their views and opinions and become part of the decision making process in the execution of different rural development programmes for their benefit.

Multi-sectoral service

New ICTs have the potential to penetrate under serviced areas, facilitate development with relevant local contents and faster delivery of information on technical assistance and basic human needs such as food, Agriculture, health and social sectors. The Internet enables the remotest village to access regular and reliable information from a global library. At the same time, it also provides

opportunity to disseminate information about their community and the best output to the whole world.

Targeting marginal groups

ICTs can benefit all stakeholders including the civil society, in particular youth and women of the rural society, and other disadvantaged groups that can be targeted for any developmental projects.

Creating employment opportunities

Through the establishment of rural information centres, ICTs can create employment opportunities in rural areas by providing them engagements in ICT related different jobs. The centres can also provide training and those trained may become small scale entrepreneurs.



Maintenance of land holding records

ICT facilitates the maintenance of land holding records and provides online land registration services to the people in the rural sector thus avoiding the cumbersome process involved in it. Land records can also be made available online which helps in creating transparency.

Triggering knowledge revolution

Introduction of ICT encourages in establishing computer aided and Internet connected Rural Knowledge Centres which helps in triggering a knowledge revolution in agriculture and allied sectors and will lead to an efficient and eco-sensitive precision farming movement.

Detail of Some ICT enabled services in India

The unique "Wama Wired Village" pilot project, launched under the aegis of National Information Technology Task Force as the Wama Nagar Cooperative Complex in Kolhapur and Sangli district, Maharashtra, provided Internet access to all the cooperative societies in 70 villages, successfully demonstrating the acceptability and usage of modern information and communication technologies (ICTs) in agriculture, health and education.

The "Information Village" (1998) Project of M.S Swaminathan Research Foundation established a rural information network along a hub and spoke model aimed at bringing the benefits of high end information and communication technologies to

the rural families in Veerampattinam, Puducherry. A Value Addition Centre, which is the hub of the information network has been established in the project headquarter in Villianur village and is connected with 10 villages through its ICT network. Information on agriculture, health, government policies, educational opportunities and the weather are designed into a format, the makes it more accessible to rural communities with low level of literacy.

The "Gyandoot" Project is an intranet based Government to Citizen (G2C) service started in January 2000 in Dhar district of Madhya Pradesh with an aim to create a cost effective, replicable, economically self-reliant and financially viable model for passing the Information and Communication Technologies (ICTs) to the rural masses. The main aim of this project



is to access the services offered by the government departments through Gyandoot Kiosk (Soochanalay) by any citizen on payment of a nominal transaction fee.

Drishtee, an organizational platform, facilitates the creation of approximately 50,000 information Kiosks all over India within a span of six years and provides Information and Communication Technology services to vast rural and semi urban population of the country through the usage of state of the art software through access to government programmes, market information and private information exchanges.

e-Chaupal is an initiative of ITC's International Business Division as a cost effective alternative supply chain system to deal directly with the farmer to buy products for export. It is a unique web-based initiative in Central India and caters to soya growers, facilitating supply of high quality farm inputs and purchase of soya at the doorsteps of the villages.

SEWA (Self Employed Women's Association) Technology Information

Centres started in January, 2001 in 11 districts of Gujarat. SEWA is the largest primary women's trade union in India serving over 250,000 poor self-employed women members in Gujarat, which provides training to the women organisers to build up their capacity and strengthen the micro enterprises of their members through information and communication technology services. Further, through Internet access system the various cooperatives established

by the members are linked and new programmes are being developed to support economic empowerment of their members.

Intelligent Community is a joint venture project launched by Government of Andhra Pradesh and Hewlett-Packard to create browser based services for the rural population to access information on government run programmes, agriculture, educational facilities and health services on test run basis.



In addition to these ICT Projects, in National Dairy Development Board, ICT is being used at milk collection centers and in cooperatives to measure butter fat content of milk, test the quality of the milk and promptly make the payment to farmers. It has resulted in the removal of incentives to those who adulterate milk, reduced the time for payments from 10 days to less than 5 minutes and instilled the confidence in farmers on cooperative setup. All these factors have helped the milk market to expand to greater dimension.

Under Animal Health Project funded by Department for International Development (DFID), Rajiv Gandhi College of Veterinary and Animal

Sciences, Pondicherry in collaboration with University of Reading, UK, has installed a interactive touch screen information Kiosk in one of the peri-urban region of Puducherry on a trial basis. It has information on important cattle diseases in addition to management of cattle and methods of acquiring information with the touch of the screen which had text and pictures with sound back-up.

The ICAR through its Rice Knowledge Management Portal (RKMP) is another example of ICT, developed exclusively for rice. It serves as an information



highway for sharing rice knowledge through latest ICT tools including mobile telephony. It will also help agricultural departments' ongoing activities in reaching out to the farmers through extension advisory services, with the content available in a farmer's local language.

Conclusion

Provision of right type of information to right type of people at right time is very much the need of the hour for making farming more sustainable, economically viable and ecologically balanced. As there is a wide gap

in the rural areas due to rampant illiteracy, feasibility of usage of digital devices and information is at stake. Even the most well intended initiatives have failed to achieve their objectives. As education and information can greatly be improved through the use of the ICT, proper implementation of it should be made the primary goal of every village. To sum up, knowledge dissemination through appropriate ICT applications realistic opportunities in the field of development and social change, we need to think about bringing in combination of players from inside and outside agriculture system. ICTs give the potential of integrating information in a cross-sectorial way, e.g. through mobile databases. Participatory Information and Communication Technology Development (PCTD) can play an important role in this regard. With ICT, agri-business will become a boon for the lives of people in rural areas. If properly handled and implemented, rural agri-business India will shine with confidence. Till now, rural agri-business, which is supposed to be a liability, will become an asset for the country.

The authors are Senior scientist and Head and Principal Scientist, respectively, at IARI, New Delhi



India, Lithuania to cooperate in agriculture

The Union Cabinet, chaired by Prime Minister Narendra Modi, approved the signing of a Memorandum of Understanding between India and Lithuania for cooperation in the field of agriculture.

The MoU provides for cooperation in the fields of agriculture production including horticulture, post-harvest management, organic farming, cold chain development and agro processing industry, animal husbandry, dairy and aquaculture. The cooperation between the two countries shall be undertaken through a biennial work plan to be drawn up mutually to give effect to the objectives of the instant MoU.

In 2015, Lithuania exports to India grew by 311.4% and reached a record-high EUR 50.9m (₹385 crore).

Trade in green peas has been the largest contributor to this exceptional growth. Lithuania exports of green peas to India reached EUR 28.3m (₹214 crore and constituted 55.5% of the entire exports.

The MoU is expected to boost capacity building, knowledge exchange between scientists and technicians, exchange of genetic resources, development of appropriate technologies and farm practices for enhancing agriculture productivity at the field level.

India and Armenia Sign MoU on Agriculture Cooperation



An MoU for cooperation in agriculture between India and Armenia was signed by Radha Mohan Singh, Union Agriculture Minister and Sergio Karapetyan, Armenian Agriculture Minister in New Delhi.

The MoU will focus on priority sectors such as plant-breeding, including agricultural crop seed-breeding and plant protection; buffalo-breeding and poultry, including pedigree; exchange of experience on agricultural organisation in dry lands; milk production and processing; development of new forms of farming in agrofood complex; agrarian education, training for agricultural specialists; exchange of experience in irrigation and water management (rain water) progressive technology systems exchange of fruit-trees, germplasm (apricot, grapes, apples, pears etc.); exchange of technical expertise and research in fruit-tree disease management; exchange of information on technologies in mechanisation of agricultural farming (including research, design, production, installation of agricultural machinery/equipments); hi-tech horticulture including irrigation and water management technology; exchange of information on technologies in processing sector; phytosanitary measures during export and import of plant and plant materials; Animal husbandry including cattle identification; and cooperation in the field of Agricultural Census.

The MoU provides for establishment of Joint Working Group and preparation of Work Plans, and will be valid initially for a period of five years, and would be extendable by mutual agreement. The two Ministers further identified sectors such as cattle identification, cooperatives, agriculture machinery, plant breeding and exchange of agri scientist and students, as the priority areas and resolved to constitute the JWG at the earliest to move the agreement.



Food parks to run on solar power

Mega food parks and cold chains may soon be required to run on solar energy, according to Sadhvi Niranjani Joti, Minister of State, Ministry of Food Processing Industries, Government of India who was addressing an ASSOCHAM event in New Delhi.

According to Y S Chowdhary, Minister of State for Ministry of Science & Technology and Earth Sciences, due to increasing urbanisation, cities as major energy consumers, are contributing heavily to climate change. "Thus cities should essentially be partners of the solution to reduce carbon emissions, produce greener energy, promote sustainable lifestyles and also protect local communities from related environmental and social impacts such as natural disasters," he said.

It is also pertinent to note that individual nations have also launched new joint initiatives for mitigating climate change. India and France led nearly 120 countries in announcing an International Solar Alliance supporting solar energy initiatives in developing countries, said Chowdhary.

Currently, the total installed capacity in India is about 288,000 MW. India power sector is dominated by thermal which contributes about 70% of all electricity generation in country, followed by hydro which contributes about 15% and remaining 15% comes from the renewable sources and nuclear power.



Awareness Programme for J & K farmers

A training-cum-awareness programme on protection of plant varieties and Farmers' Rights Act (FPV&FRA) was organized by Krishi Vigyan Kendra (KVK) Baramulla at Chatoosa village in border area of Rafiabad in Baramulla district of Jammu and Kashmir.



Squeezing employment from oranges

A tripartite agreement between Hindustan Coca-Cola Beverages, Maharashtra government and Jain Irrigation Systems will see the setting up of a juice manufacturing facility in Morshi, Amravati. This facility will utilise the orange produce of the region and will also help farmers adopt the ultra high density plantation (UHDP) technique to increase yield.

Called Project Orange "Unnat", it intends to give higher value to orange growers and generate gainful employment. It will also unlock prospects of leveraging Noga (Nagpur Orange Grower Association), a subsidiary company of state government. This project is expected to benefit 10,000 farmers with an average landholding of two acres each. With an estimated investment of 685 crore, the project is expected to generate employment opportunities for over 500 people.

The project seeks to create a juice processing and juice bottling line for manufacturing orange/mosambi juice concentrates using crops grown locally in Maharashtra.

Bashir Ahmed Bhat, SDM, Sopore, Baramulla, stressed on the need for making optimum use of the latest technologies and creating awareness among the farmers enabling them to produce quality products in different crops. He also stressed for a coordinated approach between the department and farmers to achieve tangible results.

Farmers were also encouraged to register the plant varieties and species under FPV & FRA to get benefits of using these varieties and species.

About 300 Farmers, farm women and rural youths from different parts of the district attended the Programme.



Fisheries training for tribal women

The Directorate of Coldwater Fisheries Research (DCFR), Bhimtal and the Central Institute of Fisheries Technology (CIFT), Cochin, jointly organised a training programme on "Value Addition of Fresh Water Fish through Processing", with the objective of training tribal women and initiate them into small scale entrepreneurship.

The objective of the training was to demonstrate the protocol for post harvest handling and preparation of value added products from fish.

N.S. Napolchyal former Chief Secretary, Govt. of Uttarakhand and SF commission, Govt. of Uttarakhand, emphasised on collaboration with the state Government for intensifying efforts under Tribal Sub Plan. He urged for formation of self help groups for income generation through small scale entrepreneurship.

Earlier, Dr. A. K. Singh, Director, DCFR welcomed the dignitaries and briefed about the training programme.

About 73 tribal women belonging to Bhotia and Boksha community participated in the programme.



Buffer stock of pulses to stabilize prices

A buffer stock of 1.5 lakh tonnes of pulses through both domestic procurement and imports will be created to improve domestic availability and stabilise prices, according to a written reply given in the Lok Sabha by Ram Vilas Paswan, Minister of Consumer Affairs, Food and Public Distribution. The Minister said that there have been reports



FCI depots go online

An Online System to automate all the operations of FCI depots has been launched by Ram Vilas Paswan, Minister of Consumer Affairs, Food and Public Distribution. Capturing data online on a real time basis, the system will bring total transparency in the working of FCI by helping it monitor and reduce leakages and losses. The system will provide data regarding stock position, movement, quality and quantity online and will also generate SMS alerts to depot officials, area manager and other decision making authorities. All the data will be available for top management to monitor centrally and help in automatic reconciliation and generating of MIS reports about foodgrain management.

Launching the "Online Depot System", Paswan also disclosed that by July this year, operations of all the FCI depots will be online and by March, 2017 remaining Depots which include CWC, SVC and hired one will also go online. He added that the central government is coordinating with the State Governments to bring operations of their procurement agencies and distribution network online to track in real time the movement of food grains from procurement to delivery at the fair price shops.

that some private importers did attempt forming cartels and cornering stocks of certain pulses in producer countries with an objective of delaying their arrival in India, thereby increasing its prices. Domestic searches and surveys have been conducted on a number of importers, traders and financiers engaged in pulses trade. A Group of Officers has been set up for regular monitoring and exchange of information on hoarding and cartelisation to facilitate coordinated action.

for streamlining the supplies through timely placement of tenders for railway rakes through their state institutional agencies like Markfed. Any gaps between demand and production will be met through imports.



81 crore persons getting subsidised foodgrains under NFSA

To improve overall food security in the country and address the twin issues of hunger and malnutrition, the Central government, in conjunction with State Governments/UT Administrations, is focusing on Targeted Public Distribution System (TPDS) and Wheat Based Nutrition Programme (WBNP) for providing Supplementary Nutrition.

It is also boosting the Integrated Child Development Services (ICDS) Scheme for pre-school children and pregnant and lactating mothers through the Ministry of Women and Child Development, along side the already existing Mid-Day-Meal Scheme (MDM) for primary and upper primary children through Ministry of Human Resource Development, the Annapurna Scheme for the senior citizens, Nutritional Programme for Adolescent Girls and the Emergency Feeding Programme.

According to Ram Vilas Paswan, Minister of Consumer Affairs, Food and Public Distribution, the National Food Security Act, 2013 (NFSA) provides for coverage of up to 75 per cent of the rural population and up to 50 per cent of the urban population for receiving foodgrains (rice, wheat & coarse grains) at highly subsidised rates. Thus, 81.35 crore persons which constitute about two-thirds of the population is covered under NFSA. This coverage has been delinked from poverty estimates.



National Agriculture E-Market to be launched

A National Agriculture Market (NAM), with a budget of Rs.200 crore, will come up by the end of fiscal 2017-18, according to the Central government.

The scheme envisages implementation of the National Agriculture Market (NAM) by setting up of an appropriate common e-market platform that would be deployed in 585 regulated wholesale markets in States/Union Territories (UTs) desirous of joining the e-platform. Small Farmers Agribusiness Consortium (SFAC) has been selected as the lead agency to implement the national e-platform. Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW) will meet the cost on software and its customisation for the States. The DAC&FW will also provide a grant as one time fixed cost for related equipment and infrastructure, subject to a ceiling of Rs.30 lakh per Mandi.

As on date, proposals from 12 States and UTs namely Gujarat, Maharashtra, Telangana, Jharkhand, Chhattisgarh, Madhya Pradesh, Rajasthan, Chandigarh, Haryana, Himachal Pradesh, Uttar Pradesh and Andhra Pradesh for integration of 365 mandis with NAM have been given in principle approval. The Central government has released the grants for Gujarat, Telangana, Jharkhand and Rajasthan.



Soil testing need of the hour, says Minister

Reviewing the Soil Health Card Scheme, Union Agriculture & Farmers Welfare Minister, Radha Mohan Singh the target for the year 2015-16 is to collect 100 lakh soil samples and test these for issue of Soil Health Cards to farmers. During discussion with states, it was observed that States like Andhra Pradesh, Arunachal Pradesh, Nagaland, Sikkim, Gujarat, Bihar, Tripura, Tamil Nadu, Meghalaya, Maharashtra, Punjab, Himachal Pradesh, Kerala, Telangana, Rajasthan, and Jharkhand have shown good performance in soil sample collection. According to Singh, Gujarat, Andhra Pradesh, Tamil Nadu, Maharashtra, Goa and Sikkim have shown good performance in distribution of Soil Health Card and they are expected to achieve the target by March, 2016.

Against the target of 104 lakh soil samples, the States have reported collection of 81 lakh soil samples and tested 52 lakh soil samples. By now the States have distributed 1.12 crore soil health cards and 2 crore cards are under printing, which will be distributed before March, 2016.

The guidelines of the scheme have been amended to set up soil testing labs as well as mini labs through Capital Investment Subsidy Scheme (CISS) implemented through NABARD. The guidelines have been modified to involve science students of Agriculture and other science colleges in soil health card programme.



Make India world's food factor: Badal

Inaugurating the International Food and Hospitality Fair 2016, at Pragati Maidan, New Delhi, Harimrat Kaur Badal, Union Food Processing Industries Minister said that the Budget decision to allow 100% FDI in multi-brand retail for food products produced and processed in India will play a catalytic role in leapfrogging Indian economy. She underlined that the decision pertains to FDI in 100% swadeshi and home-grown food.

The average Indian spends 40 per cent of his income on eatables, and only 10 per cent of what we grow is processed in India, the minister revealed.

The Minister also informed that the e-marketing platform is slated to be launched in April 2016. This digital platform will integrate 585 regulated markets, providing farmers and traders with access to opportunities for purchase/sale of agri-commodities at optimal prices in a transparent manner. The government, she added, is also looking to tap into the organic farming potential in North East India.

Stating that 42 Mega Food Parks are coming up, the Minister said that foreign players can tie up with these parks in pursuing Make In India, even for specific nations of their choice. This would be facilitated by the plug-and-play model under which these parks would operate, wherein common infrastructural facilities would be provided.

Snapshots of Smart Horticulture 2016, Bhubaneswar

The event was inaugurated by Mohanbhai Kalyanji Bhai Kundariya, Union Minister of State for Agriculture & Farmer Welfare.



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