

➤ Outlook: Barren Bundelkhand

➤ Elegy on the End of the Coconut Palm

# FARMERS' FORUM

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Issues and Ideas for Indian Agriculture

## BUDGET 2016-17

# Walk the Farm Sector Talk

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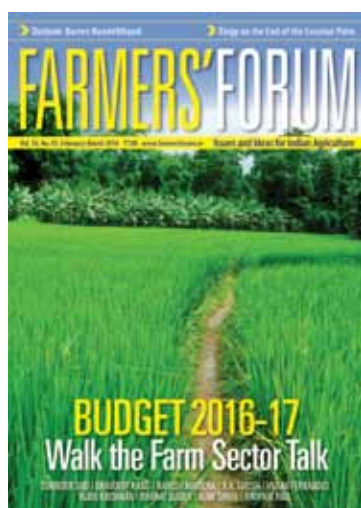


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# Consult for Change; Not to Validate Errors

*“Man’s capacity for self-deception is immeasurably greater than that for deceiving others”.*

— MAHATMA GANDHI, 1945

The Father of the Nation seems to have clearly identified the one disease that inflicts those in power and in bureaucracy alike. Having inherited a dwindling farm economy, the government is grappling with the problem of demonstrating progress. Bad monsoons and low international commodity prices have aggravated the farm sector distress and the electoral backlash from the fields of Gujarat and Bihar is expected to spiral out of control.

To its credit, in its response, the government is consulting farmers to present a budget that addresses the concerns of the farming community. The debit side, however, shows that there is no clear mechanism to assimilate and translate the accumulated observations into concrete action. Ministers have not been able to win the confidence of their officers and the pervasive fear in the corridors of power is hampering work and efficiency.

In the pre-budget 2016 consultations with the finance minister on agriculture, Bharat Krishak Samaj made some concrete suggestions (page 26) and strongly opposed those made by some that India import cheap grain to build a stockpile for food security. Cheap imports artificially drive down commodity prices, setting off a chain reaction of farmers being pushed into a cycle of perpetual poverty. They also induce rural-urban migrations as a consequence. Since such migrations today will not spare even India’s big smart city programme; it would have been wiser to invest in developing 5,000 smart census towns instead.

More to the point, the conversation in the farm space needs to radically shift from insufficient production fears to food nutrition and safety. Decades of the food shortage continue to hound policy makers, embedded as they are in India’s policy psyche; never mind that India has long since moved on to greener pastures. Outdated fears are being reinforced with seemingly unsurmountable new challenges posed by increasing population, changing dietary patterns and climate change inhibiting food production.

Despite these underlying anxieties, farmers believe that India has entered into era of marketable surpluses with no buyers for their produce. The challenge India faces comes from price and

**WHY ARE WE  
STICKING OUR  
NECK OUT IN FACE  
OF WIDESPREAD  
PESSIMISM? FOR  
ONE, FARMERS  
ARE OPTIMISTS**



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## THERE ARE MANY DECISIONS THAT DO NOT FORM A PART OF THE BUDGET ANNOUNCEMENTS BUT HAVE A DEVASTATING EFFECT ON FARMERS

work done; the detailing holds the key to achieving the objectives. Better post-harvest value chain can stop food wastage. Better handling of food right from the time it is actually harvested and till it reaches the table would mean an extra 15 per cent produce available for consumption.

India is amongst the largest global producers of several crops, despite the lag in yield in most of them. Additionally, there is a difference in yield for the same crops within villages and between yields at the research centre and the farmer's output. These differences can be bridged with improved research and extension services. India is also the largest producer of milk in the world but co-operatives selling unbranded milk and milk products are collapsing under the sheer interest burden of unsold stocks. Preventive health care can also increase output dramatically. Issues such as these should be addressed.

There are many decisions that do not form a part of the budget announcements but have a devastating effect on farmers. Around 85 per cent of the maize is used by the poultry and the starch industries. Unlike Indian farmers, these are organized to influence government decision making in a manner that is directly detrimental to maize farmers, but is anyone listening? Only time will tell if the current consultations are seeking to validate existing ideas or accepting the new rationale. The farm crisis is not going away if the farmer is not involved in drafting the fine print of policies. ●



Ajay Vir Jakhar  
**Editor**

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*Ajay Vir Jakhar*

# To the Editor

## Fatal disbalance

Sir, Apropos of your editorial “Paying the Plutocrat; Impoverishing the Ploughman”, (*Farmers’ Forum*, December 2015-January 2016), the wide difference in the income of the farmer and salaried persons that you so clearly explain shows the utter disregard that those in government have for farmers. One would imagine that the present crop of bureaucrats has never understood what food insecurity is, which is why the growers of food are condemned to poverty while the makers of machines are being feted. Does anyone pause to think what will happen if the children of the farmers refuse to farming and there is no one to keep India’s farming fields green and its granary full?

**Kapil Saini,**  
New Delhi

## The right way forward

Bharat Krishak Samaj’s consultation on “Agriculture Credit” with the Governor, Reserve Bank of India (*Farmers’ Forum*, December 2015-January 2016), details of which you published under “Indian Agriculture: Assessing Credit, Credibility and Creditworthiness”, was a very good step. Such meetings/consultations are a much better way to bring people on the same page and get an understanding of each other’s perspectives. It was good that you picked delegation from across the farming spectrum to provide those dealing with agriculture credit an



## Raising dairying standards

Pratap S. Birthal’s “Dairying for Sustainable and Inclusive Growth” (*Farmers’ Forum*, October-November 2015) is right in emphasizing that the livestock sector is the saving grace for the dwindling farming sector and is extremely important to prioritize investment for this space. Government policies must facilitate investment and research in dairying to ensure yield improvement, genetic enhancements and build capacities to help India raise its dairying standards to global levels.

**Anupam Kulkarni,**  
Mumbai

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Log in to check out all  
the earlier issues.**

opportunity to get first hand knowledge. I hope Bharat Krishak Samaj will conduct such meetings/consultations in future too.

**Ravi Jain,**  
Gurgaon, Haryana

## Saving saffron from red ink

How remarkably well you capture the many nuances of growing and selling saffron in picturesque Kashmir in “Saffron Times in Srinagar”, ‘Greenfingers’ (*Farmers’ Forum*, December 2015-January 2016). How fortunate India is to be growing the best saffron in the world. We should ensure that the saffron farmers of Kashmir regain their days of past glory and can stand up to competition from Spain. Hopefully, you will be able to secure import duties to safeguard them because they certainly deserve the best.

**Rajinder Soni,**  
Kangra, Himachal Pradesh

## Malignant myopia

In a world and at a time when everyone is seeking knowledge, India is curiously trying to lose its knowledge base. Bharat Dogra’s article “Indian Farming: The Loss of Traditional Farming Wisdom” (*Farmers’ Forum*, December 2015-January 2016) is a must for everyone, especially those who are making policy and those at the Niti Aayog. Indian heritage farming knowledge has been hailed by experts from all over the world and documented by many. Why have we allowed ourselves to become so myopic?

**Pushpak Tripathy,**  
Patna, Bihar

BUDGET 2016-17

# Time to Walk the Farm Sector Talk

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**A**wish-list for Indian agriculture must take into account its main problems: low productivity; water stress and degeneration of soils; a food economy severely distorted by regulation and subsidies; skewed credit flow; lack of insurance cover; layers of middlemen who add costs and not value; misdirected R&D; a failing agricultural extension, lack of post-harvest infrastructure and market linkage. These are hardly new issues and discussions around them have taken place in public domain and in the more rarefied policy-making chambers for decades. Yet the state of Indian farmers has progressively declined, leading to thousands of suicides driven by the parlous state of the farmer's pocket.

Every budget promises to break out of the vicious cycle of farm poverty with apparently new policies that seem to fizzle out into nothingness and envelope the world of the Indian farmer with a greater sense of desperation. For the past two years, the monsoons have lived up to their notoriety of making Indian agriculture a gamble in the rains and, with the threat of climate change and its unknown dangers looming large, all the green in

**EVERY BUDGET PROMISES TO BREAK OUT OF THE VICIOUS CYCLE OF FARM POVERTY WITH APPARENTLY NEW POLICIES THAT SEEM TO FIZZLE OUT INTO NOTHINGNESS...**

the farm sector has been shrouded in grey.

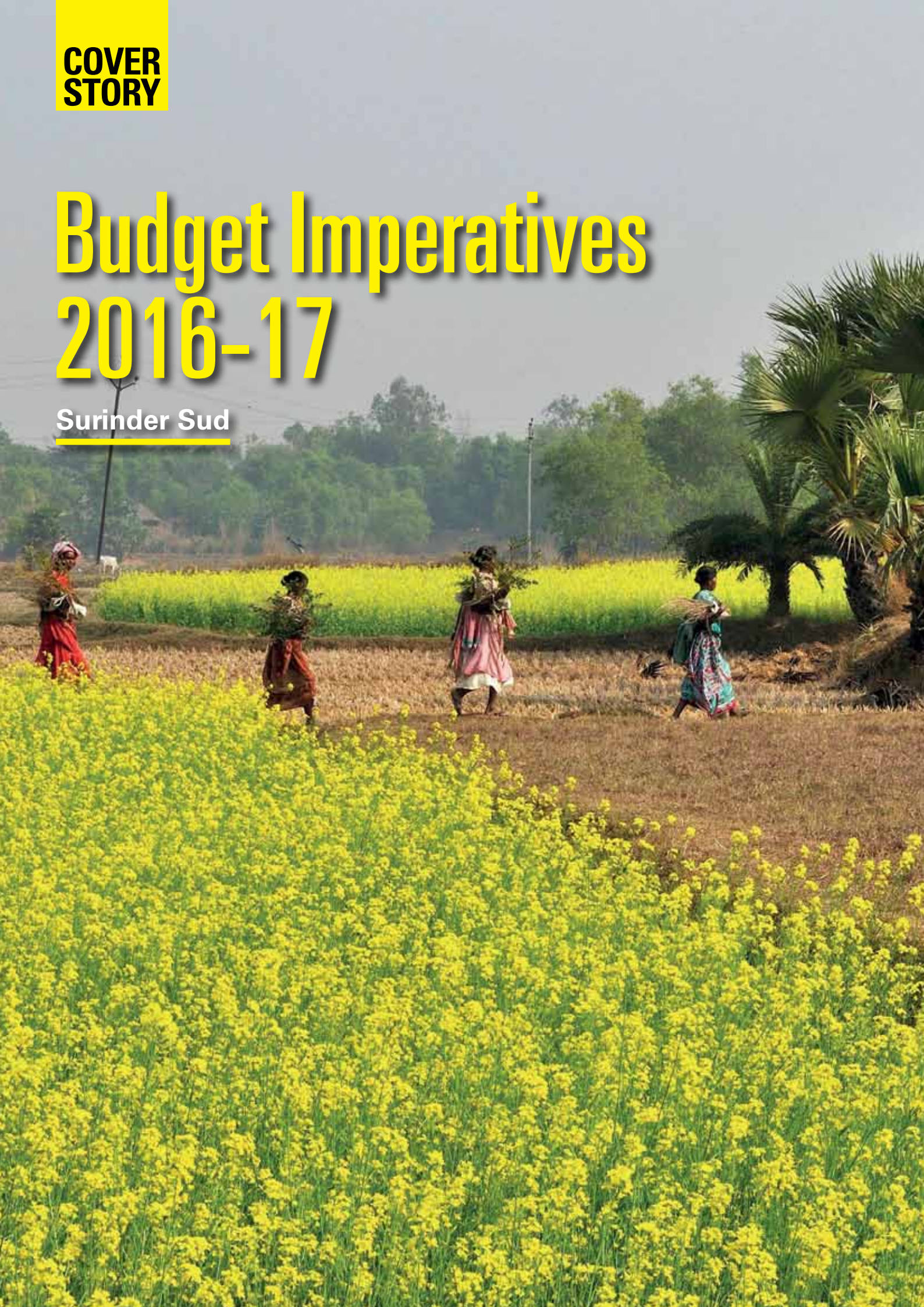
Three of India's leading commentators on the farm sector analyse the issues afresh and suggest ideas to break the stranglehold of despair over the most vital sector of the Indian economy. Surinder Sud leads the discussion with Budget Imperatives 2016-17; Bhavdeep Kang talks about converting the wish-list into an agenda for action and Naresh Minocha focuses on the innovative ways of making agriculture the driving force for an inclusive Indian society. Their views do not necessarily converge, which is the purpose of the cover story: presenting diverse perspectives on the farm sector. ●



**COVER  
STORY**

# Budget Imperatives 2016-17

Surinder Sud





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**T**he dismal state of Indian agriculture on account of two consecutive droughts, steady decline in farming profitability and other adverse factors makes it imperative for the union budget for 2016-17 to come up with an elaborate package of well-conceived measures to restore it to good health. It is customary for every finance minister to declare agriculture the government's top priority but Arun Jaitley, finance minister, will actually need to walk the talk.



**SURINDER SUD**  
Veteran  
agricultural  
journalist;  
Consulting Editor,  
*Business Standard*

Significantly, the finance minister has made the first reassuring move by beginning this year's pre-budget consultation process with a meeting involving representatives of the farm sector, including leaders of farmers' organizations. In the past, such deliberations would mainly be held with farm economists, whose advice normally tended to be more theoretical than practical.

This year's meeting generated ideas that reflected the genuine needs of cultivators. The finance minister candidly conceded that the farm sector was facing grave challenges that required more investment and a revamping of the incentives structure to boost agricultural productivity by leveraging technology and efficient use of water. The overwhelming focus of this year's budgetary proposals for the farm sector has to be on enhancing earnings of the farmers to alleviate widespread distress in rural areas.

This requires action on several fronts to collectively boost productivity, reduce costs, ease the farmer's access to cheap credit and make agricultural marketing more efficient. Besides, attention will need to be paid to several critical areas, ranging from natural resources like land and water; to policies governing agricultural pricing; domestic and external trade of farm goods; and rerouting agricultural subsidies to ensure that they reach the targeted beneficiaries.

Equally important are measures to encourage technology generation, its dissemination and actual adoption by farmers. So also are result-oriented steps to promote farm mechanization essential to improve precision of agricultural operations for more efficient use of inputs, including seeds, fertilizer and water. With climate change making extreme weather events more frequent, the



vulnerability of agriculture to risks is bound to get aggravated. Agriculture must be enabled to adapt to changed climate and withstand adverse weather conditions with minimum output loss.

A boost to post-harvest technology and value-addition of farm produce is deemed vital to reduce huge post-harvest losses that, in some cases, are as high as 20 per cent to 30 per cent and enhance the farmer's income. One way of doing so is to encourage the food processing industry with greater backward linkages with farmers. There are, besides, several simple techniques available for on-farm value-addition that need to be promoted. These can enable the farmers to cut down wastage, extend shelf life of perishable products and improve the overall marketability of farm produce.

Measures like on-farm cleaning, drying and grading can help farmers get better returns for their produce. All this will, obviously, need higher investment in this sector whether through ongoing programmes like the Rashtriya Krishi Vikas Yojana and the Pradhan Mantri Krishi Sinchayee Yojana or by launching new schemes to cover the other critical areas that have been left unaddressed so far.

Since this year's budget-making exercise is taking place amidst widespread drought and distress in rural areas, hardships caused by the moisture stress and its down-the-line consequences for crop production and farm incomes have to be uppermost in the finance minister's mind. The monsoon rainfall was 12 per cent below normal in 2014 and, still worse, 14 per cent subnormal in 2015. This had caused drought in nearly 33 per cent of the total geographical area in 2014 and over 40 per cent area in the current year.

Such back-to-back droughts are very rare in India, being only the fourth in around 115 years. Making things worse is last season's failed rabi crop because of highly abnormal weather, causing unseasonal rains and hailstorms in many tracts that inflicted heavy damage to crops. Consequently, output has been on the decline in both these years even though the overall farm sector gross domestic product (agricultural GDP) did not turn negative. The meagre growth in both years was mainly sustained by agriculture's allied sectors like animal husbandry, poultry and fisheries.

Predictably, therefore, the representatives of the farm sector pitched for greater investment in irrigation to enhance Indian agriculture's resilience against droughts when they met the finance minister. They wanted higher budgetary allocations



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for the Pradhan Mantri Krishi Sinchayee Yojana that seeks to make irrigation water available in every field. Farmer leaders also laid stress on providing more incentives for micro-irrigation systems like drip and sprinkler irrigation.

The heavy initial investment required for purchasing equipment and laying down the infrastructure for such systems renders them unaffordable for most farmers without the government's liberal help. Subsidies available in many states for such micro-irrigation methods are generally inadequate. Since micro-irrigation is critical for improving water-use efficiency to achieve the coveted goal of "more crop per drop", the demand for increasing subsidy on drip irrigation needs to be viewed favourably by the finance minister.

To mitigate the distress caused by erosion of farm income as a result of prolonged dry spell and low commodity prices, the farm leaders



## The effectiveness of the latest insurance scheme would depend on how well it is implemented. Many such schemes have failed for want of proper implementation of processing of claims

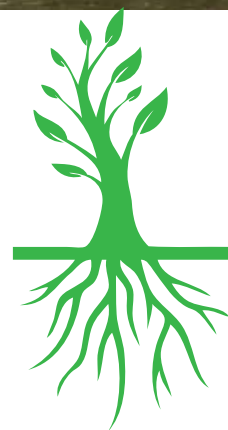
also pressed for more institutional finance to the farmers at low interest rates. They suggested that the interest subvention of three per cent, now available only on small crop loans of up to ₹3 lakh and only for farmers repaying their loans regularly and in time, be given loans of up to ₹5 lakh and for all farmers, regardless of whether they are land owners or tenants.

The government has done well to come out with a new crop insurance scheme to cover more crops, including horticulture crops, at a minimal, heavily subsidized premium of two per cent for kharif crops, 1.5 per cent for rabi crops and five per cent for horticulture crops. It covers many hazards, including the localized risks caused by

landslides, hailstorms and inundation, which were not covered under the National Agriculture Insurance Scheme (NAIS) though the modified NAIS covered hailstorms and landslides.

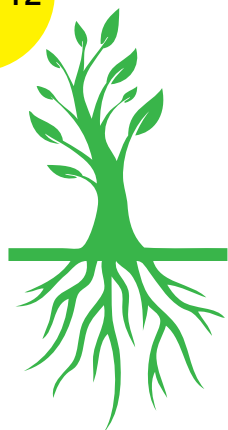
Significantly, the new scheme, to be operated from the kharif 2016 season, also provides insurance cover to post-harvest losses inflicted by cyclones and unseasonal rains within two weeks of harvest. However, the effectiveness of the scheme would depend on how well it is implemented. Many farm insurance schemes have failed for want of proper implementation and speedier processing of claims.

With both short and long term economic interests of farmers in mind, the farm sector representatives have urged the finance minister to





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## Despite India having one of the world's largest farm research networks, expenditure is a little over 1 per cent of agricultural GDP and lower than official target of 2 per cent

augment the corpus of the price stabilization fund and to ensure consistent export policies to link Indian farmers with the international market. If the price stabilization fund is used efficiently, it can mitigate price risks not generally covered by the insurance instruments.

The finance minister will also do well to keep in mind the demand by several sections, including farmers' organizations and farm economists, to increase spending on farm research and agricultural extension. This needs to be viewed against the backdrop of the negligible private investment in agricultural research and development (R&D) while even public investment on R&D is insufficient. This despite India having one of the world's largest farm research networks. The expenditure on farm research currently is just a little over one per cent of the agricultural GDP and is far lower than the official target of two per cent. This must be enhanced to provide much needed

technical support to agriculture to ensure sustained growth even under adverse circumstances.

The emphasis on revamping agricultural extension is also well placed given that the state extension services are in a bad shape and the capacity of the farm research institutes and Krishi Vigyan Kendras (agricultural science centres) to undertake extension work is limited. According to the 70th round of survey of the National Sample Survey Organization (NSSO), about 59 per cent of farmers do not get much technical assistance and know-how from government-funded research institutes or extension services. They have to rely on progressive farmers, media and private commercial agents, such as seed, fertilizer and pesticides dealers, for technical information that may be biased towards their own products.

Larger public investment on extension services is essential to modernize agriculture, reduce volatility in farm production and prices and ensure steady



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growth of both farm output and farmers' income. Besides, the use of modern means of information and communication technology must be encouraged to reach out to the maximum number of farmers with minimum expenditure.

Apart from the inputs provided by the farmers' groups, the finance minister also has at his disposal some significant observations and recommendations made in the reports of the experts committees of two of the country's topmost think tanks. One of these is the report of the Reserve Bank of India (RBI) committee on financial inclusion that has dwelt in detail, among other issues, on agricultural credit. The other is the paper prepared by the Niti Aayog's task force on agriculture, headed by its vice-chairman, Arvind Panagariya, on raising agricultural productivity and making farming remunerative for farmers. Though many points raised in these reports are not entirely new, some new thoughts merit notice.

The RBI committee's report has minced no words in pointing out that the agricultural production is not commensurate with the credit flow that rose to a whopping ₹8.4 lakh crore, in 2014-15. A sizeable part of it, obviously, does not reach where it is

needed the most. This has been fairly well known and the government cannot be unaware of it but with the RBI committee confirming it, some action to address it should ensue.

The institutional credit mechanism suffers from various flaws that make it inaccessible to the needy farmers. The most significant ones are the tenant farmer being ineligible for bank loans and the diversion of funds to non-farm purposes. The banks prefer to disburse funds as indirect credit to agriculture – which is easier to process and carry low risk of non-repayment – rather than direct credit to farmers that involves dealing with large number of people and greater risk of default.

Even in the case of direct farm credit, a sizeable chunk goes to the asset-owning farmers. The small and marginal land owners, as well as the tenant farmers must perforce rely on usurious moneylenders. There is, therefore, need to specify separate targets for direct and indirect credit and to make subsidized loans to farmers easy and hassle-free.

An important point made by the RBI panel is that much of the subsidized credit is issued in the form of short-term crop loans to meet the immediate cash requirement of farmers. The need for long-term credit for investment on productivity boosting measures remains largely unmet. This issue needs to be suitably addressed so that the institutional credit leads to productivity enhancement that will also have a bearing on the farmer's income.

Considering the growing shortage of farm labour and steady rise in labour wages, especially in the areas where intensive agriculture is in vogue, there is urgent need for greater mechanization of farm operations. The use of machines results in saving time and better precision of farm operations that lead to higher yields. It also allows multiple cropping and diversification of farming, raising farm incomes. The budget should abolish the import duty on farm equipment to bring down the cost of imported machines.

Local enterprise should also be encouraged to acquire farm machines for leasing out to farmers or for providing custom services on the fields. Such service providers have come up in large numbers but their activities are largely confined to highly labour-intensive operations like harvesting, sowing and, in some cases, land levelling with laser levelling machines. This needs to be extended to other farm chores and more areas.

The issue of labour paucity, attributed to the

**Table: Ground Water Scenario in 9 Critical States (as on 2011)**

Sl. No.	Name of States	Stage of Ground Water Development (%)	No. of Over-exploited Assessment Units (Dark Blocks)	No. of Blocks Notified by CGWA
1.	Punjab	172	110	45
2.	Rajasthan	137	172	35
3.	Haryana	133	71	17
4.	Delhi	137	18	3
5.	Karnataka	64	63	22
6.	Tamil Nadu	77	374	18
7.	Uttar Pradesh	74	111	1
8.	Andhra Pradesh	37	41	7
9.	Telangana	54.8	42	

**Notes:** CGWA is Central Ground Water Authority; Stage of ground water development in percentage indicates the extent to which water is extracted from the ground. Extraction above 100% means more water is extracted than available under the ground, resulting in decline in water table.

*Source: Report of Parliamentary Standing Committee for Ministry of Water Resources 22 December 2015*



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Mahatma Gandhi National Rural Employment Guarantee programme (MGNREGA), can be addressed by tweaking the scheme and addressing some of its ill-effects by either confining the implementation of MGNREGA to periods when the demand for farm labour is minimal (non-peak farm operations period) or by allowing the MGNREGA labour to be deployed for work on the farmer's field.

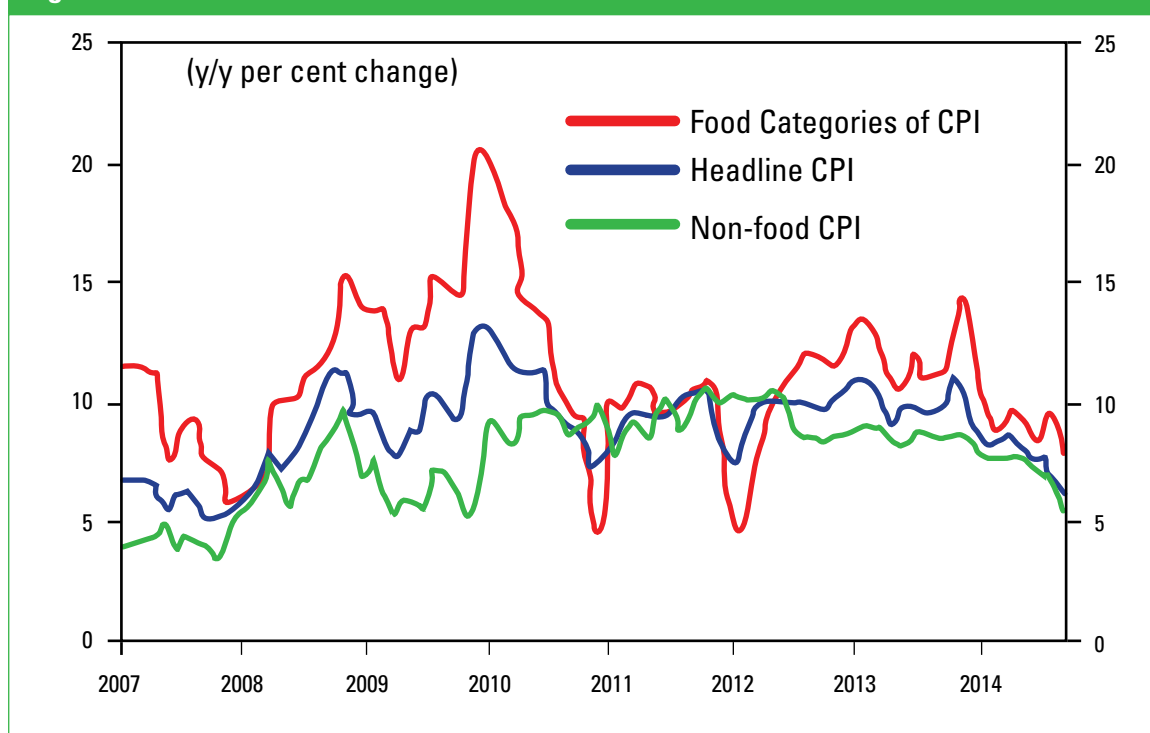
The country's vast plantations sector, worth

an estimated ₹43,000 crore, feels neglected as its interests are usually overlooked in the budget-making exercise, probably because it is considered more a commercial than agricultural activity. This is a misconception that needs to be corrected. This sector has been facing problems on account of labour shortage and price fluctuations. There is, therefore, need to treat plantations output as agricultural produce for the purpose of price support and taxation. Also, the outmoded Plantations Labour Act, 1951 needs to be revisited and amended suitably.

Niti Aayog's task force on agriculture has mooted many well thought-out suggestions to raise agricultural productivity and make farming lucrative for farmers. These include use of genetic modification technology in pulses and oilseeds with necessary safeguards; helping farmers to frequently upgrade their seeds; and de-canalizing urea imports with the subsidy going directly to farmers.

Though genetic modification of plants and the use of the genetically modified (GM) seeds are controversial issue, this technology is urgently required to enable plant breeders to evolve crop varieties and hybrids that can withstand the various kinds of stresses, including droughts, diseases and pests. Even in the case of non-GM seeds, their frequent replacement by the farmers is essential to realize their inherent yield potential. The farmers cannot be unaware of this but often do not do so because of the high cost of seeds. Some financial assistance to farmers on this count is necessary.

**Figure 1: India: Headline and Food Inflation**



(Source: IMF's working paper 'Understanding India's Food Inflation: The Role of Demand and Supply Factors', 5 January 2016)

## Niti Aayog is encouraging collection of vegetables and fruits from villages, on the lines of milk procurement by co-operatives and dairy companies

Another interesting proposal from the Niti Aayog panel is to encourage collection of vegetables and fruits from villages, on the lines of the procurement of milk by co-operatives and dairy companies, to supply them directly to retailers in cities. This will ensure better prices to producers and make the produce available to consumers at reasonable rates. This will also help tame the stubbornly high food inflation.

The most noteworthy out-of-the-box suggestion mooted by Niti Aayog's task force – that the finance minister must consider favourably – relates to a novel system of ensuring remunerative prices to the farmers without physically procuring the stuff. Called 'price deficiency payment mechanism', the new system involves fixing floor prices for different crops, based on their average market prices in previous three years, and compensating growers for any shortfall in realizing these rates.

The compensation amount is to be transferred directly into farmers' bank accounts. Since the present procurement-based system of providing

the minimum support prices (MSP) to farmers (followed since the early days of the green revolution) has remained confined to a handful of crops in a few states, the new system can get over this shortcoming by covering all the major crops all across the country.

This system will obviate the need for direct market intervention by mopping up the farmers' produce at the MSP that results in needless accumulation of stocks with the government agencies. The government, of course, will be free to undertake need-based procurement of staple cereals at the MSP to meet the needs of the public distribution system.

There is also need, as also expectation, for increasing outlays for the ongoing marquee programmes, such as Rashtriya Krishi Vikas Yojana, Pradhan Mantri Gram Sadak Yojana, soil health card scheme and various others. These are important schemes that, despite some leakages and lapses in implementation, have the potential to serve as catalysts for speedier agri-rural development. ●



# Converting Wish-list to Agenda for Action

**Bhavdeep Kang**

**I**t is hard to come up with a general wish-list for Indian agriculture because the ground realities change from taluka to taluka, village to village, with agro-climatic and socio-economic conditions. The big-picture effort should, however, go along these lines: rationalize subsidies; increase insurance cover; redirect credit; revitalize the agricultural extension; decentralize storage infrastructure; move towards a common agriculture market; synchronize research with field-level needs; aggressively promote sustainable agriculture technologies; formulate a workable land-lease policy and address water-stress through micro-irrigation.

Increasing agriculture subsidy is clearly not having the desired effect. Can one then stop throwing good money after bad? Input subsidies are on account of fertilizer, irrigation, power, seeds and credit. Output subsidies are provided in the form of MSP or minimum support price to farmers. Subsidies on inputs have had a negative effect in the long-term, encouraging over-use of fertilizer and water,



**BHAVDEEP KANG**  
Senior Journalist  
specializing in land  
and farm issues

yielding seeds – is a concern but one has to place one's faith in people.

One item on the wish-list has already been ticked. Insurance cover is being extended massively to mitigate the increasing risks in climate-change-affected agriculture. There are two ways of making it more effective. First, ensure that insurance companies do not get away with technicalities. Second, timely payment of benefits, directly into the farmer's bank account to obviate the need to have to chase it. The first cannot be emphasized enough. For example, if a frost destroys the coriander crop but the designated monitoring station, several kilometres away, does not record frost-level temperatures, rather than going by the evidence on the field, the insurance company will hide behind the data.

By attending the Sikkim Organic Festival, the Prime Minister has indicated support for sustainable agriculture. This is a positive sign and hopefully, a precursor to a major rejigging of agriculture policy towards sustainability. In these times of water stress and soil degradation,

## Subsidies on inputs have had a negative effect in the long-term, encouraging over-use of fertilizer and water, damaging soil quality and falling water tables

damaging soil quality and falling water tables (not to mention debt-ridden state electricity boards!). That these subsidies are concentrated in a few states also raises questions about their rationale.

Doing away with input subsidies may, however, push up operational costs to the point of non-viability for the farmer. Such a scheme would be contingent on guaranteed returns to the farmers through increased price support (as the Prime Minister had promised, 50 per cent over the cost of production) and export subsidy. There is also the inflationary impact to keep in mind!

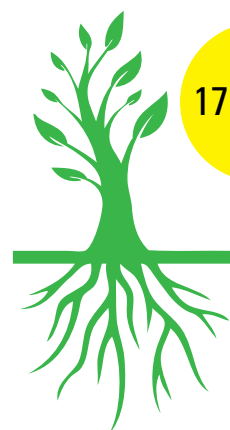
A beginning has been made on direct benefit transfer to farmers on the premise that subsidies meant for farmers are not actually reaching them. This makes sense only if it allows the beneficiary a choice of inputs. The farmer may, for instance, prefer to invest in bio-manures rather than urea; or a field pond rather than a tube-well. The answer is direct subsidies, with bulls-eye targeting of beneficiaries, timely delivery, zero tolerance for corruption and flexibility in utilization. Yes, diversion of the monies by the beneficiary – to booze rather than high-

low external input sustainable agriculture system (LEISA), non-pesticidal management (NPM), System of Rice Intensification (SRI) and such others are not just utopian catchphrases – they are the most practical way forward.

R&D needs to get realistic and stop chasing the chimera of genetic engineering that, currently, is all castles in the air. Policy-makers need to understand that Jack and the Beanstalk is a fairytale; there are no 'magic beans' that grow overnight without bankrupting the soil. Focus instead on workable technologies like SRI – already tried with spectacular results in Bihar, Odisha and elsewhere – and NPM that achieved dramatic success in Andhra Pradesh.

What is the problem? Why is this technology not being upscaled? No answers are forthcoming because it is so much easier to get funding for research into GM rather than SRI or NPM! The government would do well to incentivize the Indian Council of Agriculture Research (ICAR) and agriculture universities to gear research funding towards the field and not the factory.

This research could be dovetailed with increased



emphasis on sustainable agriculture inputs like bio-manures and bio-pesticides that naturally mean a large allocation for animal husbandry. Today, a farmer searching for ecologically-safe microbial cultures, for fertilization or plant protection, cannot get them or may find something that is most likely expired and ineffective. A big allocation for laboratories producing such cultures – say, at the local Krishi Vigyan Kendra (KVK) – will help in cutting down use of agro-chemicals. These labs can not only make an entire range of inputs available, they can also conduct research.

Since sustainable farming is knowledge rather than capital based, budgetary support for reviving the agricultural extension and training the scientists/support staff/gram sevaks in these technologies would be welcome. The agriculture extension is best placed to assess field-level problems and address them. For instance, it is hard for a bureaucrat to understand why farmers acknowledge the benefits of vermicompost but do not produce it themselves; the gram sevak will know that lack of water is the reason.

The single biggest problem in these times of



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## As sustainable farming is knowledge rather than capital based, budgetary support to revive agricultural extension and training relevant people is welcome

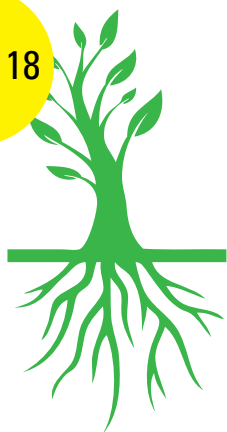
climate change is water. After decades of irrigation geared towards harnessing surface and ground water rather than conserving it, water harvesting needs a big boost. This means encouragement for micro-irrigation projects like field bunding, conservation furrows, field ponds, percolation tanks, check dams, chaal-and-khaal systems, beris, khadins and virdis and such others rather than mega-projects. They also need more than a token allocation. Also, a big investment in drip irrigation dovetailed with a push towards horticulture crops is called for. This will allow farmers to make use of even small plots for producing vegetables and fruits, without a heavy outgo on irrigation.

Next comes the question of credit. Why do farmers borrow? They generally take short-term credit for social reasons, to purchase inputs and maintain agricultural operations, rather than long-term credit geared towards fixed capital formation. Institutions extending this kind of credit are reluctant to do so because of low collaterals, high level of risk, steep transaction costs due to low

volumes and problems in credit delivery.

Studies, notably by agricultural economists, Pallavi Chavan and R. Ramkumar, have shown that a substantial part of the credit allocated in the name of farmers actually goes towards commercial entities engaged in supplying irrigation equipment and other inputs and non-banking financial institutions. Thus more agricultural credit from commercial banks is provided by urban rather than rural branches. Also, they found that the share of large loans of ₹1 crore or more, increased sharply; showing a preference for big farmers.

“Agricultural credit was increasingly diverted away from rural areas, particularly from the marginal and small farmers, and towards large business interests based in urban areas”, they observed. The fact that much of the credit was disbursed from January to March, not a time when farmers usually borrow, also points to this trend. Increasing volumes of credit are thus not being used optimally and must be rejigged accordingly, to ensure that small farmers benefit rather than big business. Given the persistence of





informal credit, perhaps one way forward would be to announce a one-time moratorium for all private moneylenders to declare their outstanding – come clean, as it were. Government institutions could then buy off that credit and charge the debtor-farmer appropriate rates of interest.

On the sticky question of land leasing, both producer and consumer interests have to be taken into account. Fragmentation of holdings has reduced plots to non-viable sizes. Land-pooling by big corporates too is clearly fraught with danger. First, it may alienate the farmer from his land holding for good and second, where the corporate assumes control of massive areas of land, it may wind up creating food monopolies. Enabling co-operative farmer companies where each member is a shareholder (his equity depending on the size of his holding) and is entitled to employment, can address these concerns.

Land-leasing by self-help groups (SHGs), too, has proved successful. Pilot projects across the country to assess the viability of both models will help in formulating a sound land-lease policy. Tenancy laws can be reworked accordingly. SHGs – of women or youth – should also be drafted into running bio-gas plants as commercial operations that produce not only energy but fertilizers too and

provide employment and/or additional income.

Post-harvest management is generally the last priority for policy-makers though getting food from field to fork is as big a challenge as growing it. The need to cut down on food miles is now an environmental and economic imperative. Decentralized storage infrastructure, at the taluka level, shortens the food chain by ensuring minimal distance between procurement and distribution centres.

A suggestion has also been made that state governments, instead of relying on the inefficient and leakage-prone Food Corporation of India (FCI), can tender their monthly requirements for the public distribution system. Traders can procure rice from Andhra Pradesh and deliver to Mizoram, for example. The state will, of course, claim its subsidy from the centre. A pilot project to study the viability of this scheme – before restructuring the FCI – may be a good idea.

Agriculture offers tremendous scope for innovation but very little for knee-jerk policy-making. Every new idea needs to be tested at the field level because farming can have no one-size-fits-all solution. What applies to one side of the hill, will not apply to the other side. Lastly, none of the policies listed here can work in isolation; holistic transformation calls for comprehensive effort. ●

# Building Agriculture for Truly Inclusive Growth

**Naresh Minocha**

**A**griculture is India's perennial conundrum with successive governments failing to overcome the country's agrarian crisis and prevent farmer suicides. The ever-rising import of oilseeds and pulses, persistently skewed use of fertilizers, farmers deprived of genetic engineered seeds of food crops and such other ticklish issues are all manifestations of policy paralysis.

Successive finance ministers under different political regimes have failed to push the farm sector to a robust, long-term four per cent plus annual growth, the minimum required for society to have inclusive growth. For want of buoyant and sustained growth, agriculture's share in gross domestic product (GDP) keeps shrinking despite its tremendous untapped potential.



**NARESH MINOCHA**  
Business and  
Political Writer

The agricultural policies of the Modi government has kindled some hope on the farm front by unveiling a new crop insurance scheme. It has also encouraged Niti Aayog to suggest a package for agricultural renaissance. All eyes are thus now on what kind of road map Arun Jaitley unveils for short-term, medium and long-term growth of agriculture in February 2016.

He can do so by restructuring existing schemes, recasting subsidies and by unveiling a few innovative ones. If he combines pragmatism with the quest for synergetic growth of the economy and society, the finance minister will find irresistible opportunities to unleash growth for all through the agricultural route. There are innovative and realistic ideas to get going.

Consider first the farm challenges that



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Niti Aayog has encapsulated in an occasional paper, 'Raising Agricultural Productivity and Making Farming Remunerative for Farmers' on December 18, 2015. It is based on the work of the Task Force on Agricultural Development (TFAD) constituted by Niti Aayog in March 2015. The TFAD has either not yet submitted or made public its report but the paper has underscored the urgency to meet the challenges faced by agriculture head on.

The sector has grown at just 1.7 per cent per annum in the first three years of the 12th Plan, as compared to four per cent in the 11th Plan and about three per cent in the 10th Plan. The paper focuses on five major issues: agricultural productivity, remunerative prices for farmers, land policy, agrarian distress and eastern states that have lagged behind the rest of the country in

*"We must not lose sight of the fact that relief to farmers will remain incomplete without the creation of job opportunities for them in non-agricultural sectors. With industry and services able to grow much faster than agriculture – the fastest that agriculture has grown over a continuous 10-year period in the post-Independence era is 4.7 per cent during the 1980s – the share of agriculture in the GDP will continue to decline. Already, this share is down to approximately 15 per cent while it supports 49 per cent of the workforce. In order that today's farmer families can share in the faster growth occurring in industry and services, it is essential that some of them be able to find good jobs in these sectors."*

**– NITI AAYOG PAPER**



farming. It has listed a slew of initiatives to resolve each of these five issues but also observed that these initiatives alone cannot ameliorate the lot of farmers. The government would have to do some additional work too.

While India's area under cultivation has virtually stagnated, the absolute number of persons engaged in farming has increased. The latest available census data compiled by the Registrar General of India shows that the total number of agricultural workers (cultivators and agricultural labourers) increased from 234.1 million (127.3 million cultivators and 106.8 million agricultural labourers) in 2001 to 263.1 million (118.8 million cultivators and 144.3 million agricultural labourers) in 2011.

Faced with competing demands for funds from all stakeholders, the finance minister must constantly keep in mind that he would be killing not one or two birds but many birds with one stone; the stone being enhanced outlay on agriculture and its judicious allocation among all segments.

### The Niti Paper on GM technologies

"The Supreme Court decision to implement a moratorium on field trials for 10 years on all GM research has had a chilling effect on the study of biotechnology. This too needs to be rectified."

"Objections to GM technologies are based on the twin fears that they may harm humans consuming the resulting produce and they may have adverse effects on biodiversity. But no compelling evidence supporting either of these fears has emerged more than two decades after the original introduction of GM foods in 1994. On the contrary, GM technology has proven useful in curtailing the use of pesticide and insecticide in combating pests and diseases."

"In the Indian context, it also offers the prospects of making crops tolerant to drought, salinity and other abiotic stresses. The fortification of grains and edible oils with vitamin A and modified fatty acid profile are some examples of upstream benefits to consumers. The United States has reaped these benefits for at least one and half decades. Recently, even India has been importing and consuming canola oil made from GM rapeseed with no adverse health effects reported to date."

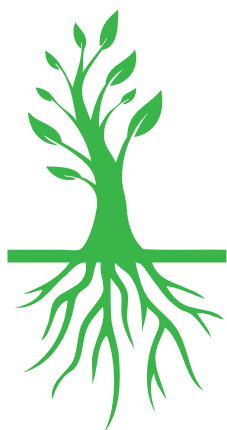
## Prospects for farm pulled growth seem brighter if one reckons that a buoyant agri sector serves as a platform for progress of agri input and agri processing industries

The first obvious benefit accruing from a credible budgetary focus on agriculture would be increased farm production and the resultant higher income for both growers and farm workers. The minister should prepare a package to pave the way for a minimum, sustained annual four per cent increase in the agricultural GDP on the one hand and facilitate enhanced and diversified supply of farm produce on the other. This would reign in food inflation, thereby keeping all consumers in good humour.

The increase in farm productivity and moderation of food prices would help the government strengthen national food security. It would also create a favourable ecosystem to cope with issues emanating from the World Trade Organization's recent agreement on agriculture, referred to as the Nairobi Package. Agricultural buoyancy can also give a leg-up to the 'Make in India' initiative as higher farm income will enable farmers to buy manufactured goods of all types; from soap to SUVs. The prospects for farm-pulled growth appear brighter when one reckons that a buoyant agriculture sector serves as the platform for progress of both agri-input industries and agro-processing industries.

On the fiscal front, the finance minister should consider speeding up direct benefits transfer (DBT) to farmers under all schemes and extend it fertilizer subsidy too. He might like to refer to the progress in implementation of DBT under Bringing Green revolution to Eastern India (BGREI) scheme for which a relevant order was issued in July 2015. DBT is applicable to providing such assets to farmers as farm implements, irrigation infrastructure, marketing support components and any activity in the nature of acquiring assets at specific sites. The centre had also advised the eastern states to consider bringing other components of the scheme under DBT cover.

Apart from extending the reach of the DBT innovation to other farm subsidies, the budget should provide for the launch of a scheme for





A working paper titled 'Understanding India's Food Inflation: The Role of Demand and Supply Factors' released by the International Monetary Fund in January 2016 provides irrefutable rationale for catalyzing agricultural production. "In the absence of a stronger food supply growth response, relative food inflation can contribute about 1½ percentage points to headline inflation annually. Indian food inflation is likely to exceed non-food inflation by 2½–3 percentage points per year, assuming private consumption growth picks up to seven per cent per year and food supply grows at historic rates. Therefore, the sustainability of a long-term inflation target of four per cent, under the recently adopted flexible inflation targeting framework, will depend on enhancing food supply, agricultural market-based pricing, and reducing price distortions."

promotion of composite farming and marketing. The scheme should encourage farmers to supplement their crop income with livestock and allied activities and food processing. The centre should financially support the state milk co-operative federations (SMCFs) to transform their milk collection vans into multi-utility ones. The vehicle should be redesigned for transporting eggs, honey, fruits and vegetables to retail outlets.

The rationale for the suggested scheme is that the cost and gestation would be far less than required for creating a parallel marketing and logistics chains for poultry and other farm produce. The scheme could later be extended to cottage cheese, pickles

and sweets for which recipes and food safety norms could be standardized. Relevant skills could be taught to members of farmer producers companies (FPCs) or local co-operatives through Skill India and Digital India initiatives. The budget should provide for agricultural and rural outlays under the twin initiatives to make optimum use of Bharat Broadband network.

Mother Dairy's Safal vegetable and fruits marketing could also be replicated by state level marketing co-operatives. Similarly, the Punjab State Cooperative Supply and Marketing Federation's (Markfed's) success story, Sohna Sarson Ka Saag, can to be emulated for other vegetables such as dried onions from Nasik, litchees from Bihar and other such processed food. Agra's petha, Hansi's and Mathura's pedas, Bengal's rosogolla and other similar products can be produced by the FPCs and marketed through co-operatives. The Bihar State Milk Co-operative Federation Ltd (Comfed) has tried marketing sweets under the brand 'Sudha', produced by contracted entities in cities.

The budget should also unveil a scheme that encourages marketing co-operatives and private marketing giants such as ITC, Hindustan Unilever and such corporations to enter into contract farming and value-addition with FPCs. Arun Jaitley should consider earmarking part of Stand-up India and Start-up India budgets for promoting the FPCs.

Besides, it is high time that the finance minister

bites the fertilizer reforms bullet. The fertilizer subsidy should be restructured to ensure balanced use of all major and micro nutrients. The easiest way to do this is to extend nutrient-based subsidy to all nutrients. As regards medium to long-term investments in agriculture, he should provide for massive outlay on inter-linking of rivers, canals and reservoirs and setting up of new multi-purpose hydro electric projects.

This initiative must be in addition to existing schemes for minor irrigation schemes envisaging water harvesting and use efficiency through watersheds, drip irrigation and such others. The tardy progress in capture and storage of rain water through multi-purpose projects has resulted in alarming decline in ground water, which is primarily tapped for irrigation.

### Crop pricing and marketing reforms

The government has started a debate on minimum support prices (MSP) without indicating whether it will honour the BJP's Lok Sabha poll promise to ensure a "minimum of 50 per cent profits over the cost of production" of crops. Nor has it indicated if and when it will accept the recommendations of two committees set up by the UPA to revisit the computation of MSP and the terms of trade (ToT) between agriculture and rest of the economy.

Unfavourable ToT implies that farmers are not getting reasonable returns for their produce and necessitates suitable price and market interventions by the government. The finance minister might like to shed light on this issue in his budget speech for 2016-17.

The BJP-led NDA lapped up the 50 per cent profit idea – originally recommended by the National Commission on Farmers headed by Prof. M.S. Swaminathan, renowned agricultural scientist-cum-policy maker – after the UPA government declined to implement it.

In its mid-year economic analysis (MYEA) 2015-16, the finance ministry has referred to certain recommendations made by an experts' committee, set up by the UPA in April 2013, on reviewing the methodology for MSP computation. The NDA has not yet made public the report submitted in March 2015 by the committee under the chairmanship of farm economist, Ramesh Chand, currently member of Niti Aayog.

The recently released MYEA (Mid-Year Economic Analysis) says: "The committee has suggested changes

A recent report of the Parliamentary Standing Committee (PSC) on "Review of Ground Water Scenario, need for a comprehensive policy and measures to address problems in the country with particular reference to (i) Dark blocks (areas where ground water is over-exploited); and (ii) Contamination of underground water by certain industries" is noteworthy.

It says: "Over the last four decades, around 84 per cent of the total addition to the net irrigated area has come from ground water. India is by far the largest and fastest growing consumer of ground water in the world. But ground water is being exploited beyond sustainable levels and with an estimated 30 million ground water structures in play, India may be hurtling towards a serious crisis of ground water over-extraction and quality deterioration situation".

in methodology on sample design and coverage, computation of interest and rental value, inclusion of post-harvest costs, marketing and transportation for inclusion in the cost of cultivation to fix the MSP by CACP. ... However, it is important that the cost of cultivation should reflect the 'social' costs of production along with estimates of 'private' costs of production".

Social costs can be assessed using the method of Natural Resource Valuation (NRV) of cultivation of each specific crop. Net returns based on NRV need to be accounted for while fixing MSP of crops to indicate the actual costs and benefits to the natural resource system and to incentivize farmers to cultivate environment-friendly crops for sustainable agriculture. A Niti Aayog occasional paper, 'Raising Agricultural Productivity and Making Farming Remunerative for Farmers', has also referred to a recommendation made by Ramesh Chand Committee without naming it.

The paper says: "There is a need for reorientation of price policy if it is to serve the basic goal of remunerative prices for farmers. This goal cannot be achieved through procurement backed MSP since it is neither feasible nor desirable for the government to buy each commodity in each market in all regions. One possible way to keep a check on prices falling below threshold level is to adopt system of 'Price Deficiency Payment'. While MSP may still be used for need-based procurement, the remainder of the produce may be covered under 'price deficiency payment'. This approach would help prevent unwanted stocks and spread price incentives to producers in all the regions and all crops.

According to the Ministry of Water Resources, River Development & Ganga Rejuvenation, “Based on the categorization of 6,607 assessment units (blocks/mandals/talukas/districts/firkas) in the country, 1,071 units falling in 16 states and two union territories have been categorized as ‘over-exploited’, where the annual ground water extraction exceeds the net annual ground water availability, i.e., stage of ground water development is more than 100 per cent. Significant decline in long term ground water level trend has also been observed either in pre-monsoon or post-monsoon or both in these assessment units”.

Allocation of funds for large to medium hydel projects would itself not meet the challenge of providing irrigation water to each and every farm. The Modi government needs to educate NGOs who

oppose river-based water projects but also religion-obsessed elements in BJP in national interest.

The government might also like to enlighten activist judiciary that river-based projects including dams are required to prevent alarming environmental damage caused by over-exploitation of groundwater, apart from providing food security and jobs to the masses. Alongside, it must face the acid test of addressing NGOs-inspired phobia over genetically -modified (GM) food and thus vacate the policy turf in this area.

The multi-faceted opportunity to unleash second green revolution and ease, if not end, the agrarian crisis is at doorstep of the government. The budget would show whether NDA has the courage of conviction or opts to remain hooked to policy paralysis that it inherited from the UPA. ●



The paper has called for a “paradigm shift from price centric direct intervention to non-price policy instruments”. It explains: “The aim should be to create enabling market environment for produce for higher price realization for farmers. Many of the steps necessary to achieve this are related to the reform of the Agricultural Produce Marketing Committees (APMC) Acts in the states”.

The ambit of backlog of APMC reforms as well as new marketing initiatives will become clear when the government makes public the report of a group of experts constituted in January 2015 under the chairmanship of Ashok Gulati, well-known economist. The group was asked to suggest an action plan for implementation of market reforms mooted by the committee of state ministers in-charge of agricultural marketing in 2013.

The government also has to take a stand on the report of Working Group (WG) on review of methodology for computation of ToT between agriculture and other sectors of the economy. The agriculture ministry made public the executive summary of WG report public in February 2015. The group, headed by Prof. S. Mahendra Dev, has recommended a new methodology.

The report says: “The Working Group has undertaken a detailed exercise to examine the existing methodologies and sorted out few of the inconsistencies in them, updated the whole exercise to a recent and representative base, identified many more items that are traded between agriculture and non-agriculture, selected the appropriate and representative prices and improved

the weighting diagrams. The index of terms of trade so calculated reflects the reality of improving terms of trade in the last decade. The new methodology can serve as a guide to calculation of terms of trade indices on annual basis for price policy formulation and related interventions of the government”.

Whatever the decision of the government on providing a fair deal to the farmers by ensuring remunerative prices for farm produce, the fact remains that MSP is the key to national food security. A Planning Commission-sponsored study, ‘Extension



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of MSP: Fiscal and Welfare Implications’, published in October 2007, said: “Bringing more districts under MSP by opening up procurement centre in remote areas provides an alternate option to the farmers for selling their produce to the procurement agencies at a pre-determined price. This can ultimately reduce the vulnerability of farmers to the volatility of prices... This is all the more necessary with the rising input cost of cultivation”.

# Ideas for the Finance Minister

## A Bharat Krishak Samaj Submission

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**B**harat Krishak Samaj is a non-partisan association of farmers advocating the crucial need for India to focus on farmer prosperity.

A bad monsoon and low international commodity prices have aggravated the misery of the farmers. Many measures are required to revive the rural economy. Considering the prevalent political acrimony, it would be prudent to avoid contentious issues.

Creating capacity and self-sustainability of family farms and the nation to withstand inconsistencies of nature and trade must be a priority. Suggestions for the pre-budget 2016 consultation:

- Outlays for agriculture should be higher than 2014-15.
- Target two per cent of agriculture GDP as agriculture R&D expenditure over the next few years.
- Revive agriculture extension. Announce a five year plan to appoint one agriculture graduate as extension worker for every 10 villages; create 60,000 jobs.
- 10 times increased funding for data collection and assessment.
- Fund repair and maintenance of all existing irrigation projects. Provide drainage for existing irrigated areas. Do not fund new flood irrigation projects.
- Increase outlay for watershed management subsumed under Pradhan Mantri Krishi Sinchai Yojana by 10 times for drought prone rain-fed area development.
- Fund one million small water storage reservoirs and distribution of soil moisture measuring sensors to all farmers.
- Increase outlay for micro irrigation systems subsumed under Pradhan Mantri Krishi Sinchai Yojana by 10 times and give it infrastructure lending status.
- Incentivize balanced use of fertilizers; increase urea price and simultaneously decrease price of P&K fertilizers to obviate added burden on the farmers or the government.
- Decanalize import of fertilizers.
- Crude oil prices will not remain low for long. To reduce fertilizer subsidies fund to contract for long-term gas supplies in countries like Iran or Qatar to manufacture urea. Farmer co-operatives like Iffco and Kribhco have successfully installed urea manufacturing facilities in Oman and must be asked to set up such new units.

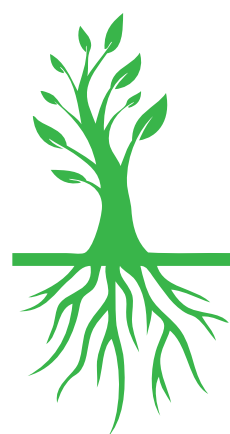


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- Start a 'Sugarcane Development Board' like the National Horticulture Board.
- Emphasize "Agro Forestry" for income generation.
- Prioritize for funding preventive measures in the animal husbandry sector (as is being delivered by NDDB and Amul) rather than targetting curing disease.
- Fund gaushalas on condition that 40 per cent of their animals are male cattle.
- Increase incentives for biogas units without restricting incentives for electricity generation.
- Incentivise solar water pumps irrespective of capacity.
- Allow unrestricted import of agriculture machinery (excluding tractors) at zero per cent duty.
- Incentivize leasing of farm machinery through collective ownership. Give interest free loans to co-operative societies/farmer producer organizations to purchase farm machinery repayable over three years.
- Increase outlay for Paramparagat Krishi Vikas Yojana, which promotes organic farming, 10 times with specific incentives to increase crop diversity in individual farms.
- Initially, target replacing chemical use in farms by 10 per cent.

- Fund laboratories to test for sub-standard and spurious pesticides. Additionally, fund laboratories to check fresh and processed food imports.
- Stop restrictions on export of agriculture produce. Work on long-term agriculture exim policy. Charge maximum permissible import duties on fresh farm produce.
- Deliver remunerative prices to farmers mandatorily and implement 'Price Deficiency Payment Mechanism' as envisaged by "An Occasional Paper of NITI Aayog".
- Increase outlay for 'Market Intervention Scheme' and 'Price Stabilization Fund'.
- Fund increase in the number of agriculture market yards 'mandi' by 50 per cent and provide full infrastructure in all existing agriculture market yards.
- When funding urban renewal or smart cities, make it mandatory for cities to allocate space for farmer markets in residential areas based on population density.
- Double investments on Farmer Producer Organizations.
- Double number of farmers receiving loans of up to ₹2,50,000 at no more than one per cent interest. Link Aadhar to such loans accounts to avoid duplication. Subvention is not helping, do away with it.
- Announce corrective measures for institutional credit not reaching small farmers. Order CAG audit of agriculture credit lending portfolio of public sector banks.
- Land leasing through mechanisms like the "Licensed Cultivators' Act" in Andhra Pradesh and Telangana is working as is Bhoomiheen Kisan Credit scheme. Set up a Guarantee Fund to increase the bankers' confidence in lending to non-land owning "licensed" cultivators, both as individual farmers and in Joint Liability Groups. Set aside ₹5,000 crore for the purpose.
- Increase funds for Indian metrological department specifically for improving medium term weather forecasts for agriculture.
- Move to a regime of risk mitigation measures where government pays 75 per cent premium for weather and price insurance for all crops.
- Natural disasters affecting farmers are now annual events though occurring in different locations. Substantially increase funding for SDRF/NDRE.

Transforming the farm sector will require more than a niyat. It requires a niti where the fine print has the farmer's consensus. ●





# Will Budget 2016-17 Guide India Towards Sustainable Agriculture

A.K. Ghosh



While the concept of 'sustainable development' put forward in the now famous Brundtland Commission report, 'Our Common Future', has gained ground since 1988, its offshoot at the national level, vis-à-vis India's National Action Plan on Climate Change, a National Mission on Sustainable Agriculture, seems to be floundering. It would be interesting to see if the 2016-17 budget addresses the issue.



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The National Mission on Sustainable Agriculture is amongst the eight missions taken up by India in 2008. It is legitimate to ask if one knows what it is all about because of the seemingly reverse gear that Indian agriculture seems to be moving in. In simple terms, sustainable agriculture, refers to practices that provide enough produce to feed the current generation but leave resources to ensure food security for future generations.

These include land, water for irrigation, seeds for better production, pesticides and fungicides to protect the crop from pest and diseases, technology to enhance nutrient level in the soil and, of course, the skills of the farmer. Post the green revolution,



## Climate resilient traditional seeds – more salt tolerant, drought resistant and protectable using natural pesticides and fertilizers – are getting lost to the country

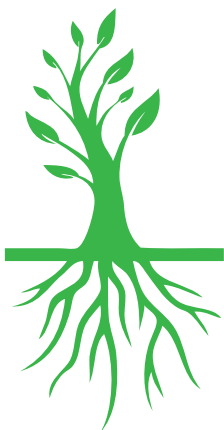
India's dependence on 'High Yielding Variety (HYV) Seeds' for better production has meant greater water use and continuous use of chemical pesticides and fertilizers, which today have yielded declining soil fertility and stoppage of the national mineralization process. What is the country's position vis-à-vis this in terms of the second green revolution being brought into eastern India?

One would do well to bear in mind that products with high pesticide residue that are dangerous for public health continue to flood the market and a train full of farmers suffering from cancer makes a trip to Rajasthan from Punjab for to avail of low-cost treatment. Meanwhile, traditional seeds, developed by farmers over hundreds of years, provenly much more climate resilient – more salt tolerant, drought resistant and protectable using natural pesticides and

fertilizers – are getting lost to the country. Policy makers in the country continue to choose to remain unconcerned about this loss of traditional seeds.

India has lost nearly 90 per cent of its traditional seeds of such staple food crops like rice over the last 50 years even as the governments at the central and state level continue to promote HYV. Farmers using traditional seeds are rarely recognized nationally or given incentives. Only four of the 29 Indian states have officially adopted 'organic farming' as a part of state policy. All this while the country faces extreme uncertainties of climate change challenging food security of more than 1.21 billion people. The budget driven green revolution of eastern India seems to be totally oblivious of the lessons taught by the Punjab experience.

In February 2011, a National Initiative on Climate





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Resilient Agriculture (NICRA) was started by the Indian Council of Agricultural Research (<http://www.nicra-icar.in/nicrarevised/>) under which several sponsored research projects were taken up in the agriculture, animal and fishery space to help overcome future uncertainties. NICRA's major objectives are (i) strategic research, (ii) technology demonstration, (iii) capacity building. It has four modules: natural resource management, improving soil health, crop production and livestock.

One of the major promises is selection of promising genotypes and livestock breeds with

greater tolerance to climate stress. NICRA has seven institutes to deal with agriculture, fishery, dairy and agricultural engineering and 14 institutes have been identified for thematic research. In 100 districts, 100 Krishi Vikas Kendras are being used for demonstration. During the 12th Five Year Plan, ₹600 crore was put under "Demand" to the Parliamentary Committee.

The National Action Plan on Climate Change (NAPCC), under whose aegis the 'National Mission on Sustainable Agriculture' operates, supports adaptation to climate change in agriculture through the development of climate resilient crops and adaptive agricultural practices along with support for expanding weather 'insurance' mechanisms.

Yet, when it came to doing work on the ground, much of these guidelines seem to have been given the go by. Crop insurance is a distant dream and the more sinister move seems to be around bringing green revolution of the Punjab brand to eastern India. The last budget allocated ₹1,000 crore to this mission without even spelling out how it would be different from the Punjab experience. Obviously, the goals of NICRA and those of the green revolution differ (<http://indiatoday.intoday.in/story/modi-green-revolution-eastern-india/1/437253.html>).

Some questions stand out. What exactly is the strategy of the government for the second green revolution for the east? If the Punjab formula is being contemplated how does the government address the contradictions between Sustainable Agriculture under NAPCC 2008, NICRA in 2011 and its current move? Why have only four state governments officially declared policies on organic farming? Why is there no massive nationwide hunt to collect farmer's varieties of seeds of rice or other food crops that may have climate resilient properties? Why do individuals like Debal Deb have to set up seed banks with their own efforts and funds to make 600 varieties of seeds of rice available at the ground level? ●

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# Return of the Pink Bollworm

**Vivian Fernandes**

Governments in India have tended not to do what is required of them but to insinuate themselves where their presence is not required. An example is the agriculture ministry's notification early last December that it will fix prices of Bt cottonseed nationally, including the technology fee payable to developers for the genetically-engineered insecticidal trait that the seeds contain, in place of the patchwork of state-level price orders.

The intervention was not necessary because acute competition among seed suppliers has resulted in Bt cottonseed being sold below printed prices. Predictably, the matter has reached the courts.

States have, however, failed to enforce refuge areas around Bt cotton crops, which is one of the reasons, though not the only one, for the emergence of pink bollworms resistant to Bt



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cotton in some districts of Gujarat and in Telangana, Andhra Pradesh and Maharashtra.

A team of Nagpur's Central Institute of Cotton Research (CICR), which visited Gujarat last November, reported that the state "may have lost 7-8 per cent of its cotton to the pink bollworm this year". The institute's director, Keshav R. Kranthi, said that he saw the worms 'happily chewing' on cotton that was supposed to be toxic to them.

There is a constant battle for survival in nature and if cornered preys are not allowed an escape chute chances are that they will strike back. American, spotted and pink bollworms were the scourge of the cotton crop requiring huge doses of pesticide applications till Bt cotton, with one insecticidal gene, was approved in 2002.

Cases of the pink bollworm developing resistance to the single-gene version in four districts of Gujarat – Amreli, Bhavnagar, Junagadh and Rajkot – surfaced



of farmers to chase profits at any cost with scant regard for rules and state governments' reluctance to enforce them has led to this a development fraught with anxiety. The CICR team had detected live pink bollworm larvae in cotton bolls in 2012, 2013 and 2014 as well.

Gurjeet Singh Mann, a progressive farmer from Punjab asked at a seminar in Delhi last December: "Do we really need refuge areas in India?" It was needed in the United States where vast swathes were planted with a single crop, he said. In India, varied crops provided bollworms a choice of feed. He felt the rule makers had gone overboard in prescribing a fifth of the field as refuge area, when five per cent would suffice.

There is no alternative to Bt genes at the moment to fight the pink bollworm as it has developed resistance to a class of pesticides called synthetic pyrethroids that was previously used. C.D. Mayee, the former director of CICR, says resistance to the



**States have failed to enforce refuge areas around Bt cotton crops, one of the reasons, for the emergence of pink bollworms resistant to Bt cotton in some regions**

33

in 2009 when the technology supplier, Monsanto, detected live larvae in cotton bolls. It attributed this to inadequate planting of non-Bt cotton plants around the Bt cotton crop for the bollworm to feed on so that they did not develop resistance to ones with the insecticidal proteins through natural selection or evolution. The planting of pirated Bt cotton before 2002 was also cited as a reason.

History has repeated itself six years later. Gujarat's deputy director of agriculture, P.B. Khistariya, said at a meeting of the agriculture ministry last September that five per cent to 10 per cent of the state's cotton crop was infested with the pink bollworm. The pest had re-emerged in the districts of Amreli, Bhavnagar, Junagadh, Rajkot, Baroda and Ahmedabad he said.

Consequently, the cotton area in the state had declined to 25 lakh hectares (ha) this year against 30.10 lakh ha last year. However, the shrinkage cannot be entirely attributed to the infestation. Last year, cotton prices were soft as well. The tendency



Cotton flower

pesticides developed in less than 10 years.

Kranthi says that the pink bollworm was a major problem 30 years ago because of the cultivation of long duration varieties and the absence of potent control measures. It was brought under control subsequently by intensive use of synthetic pyrethroids and other insecticides, an expert at Mahyco or Maharashtra Hybrid Seeds Company said.

Mahyco-Monsanto Biotech (MMBL) was the first to get approval for Bt cotton. Its technology, which is under attack from the pest, is the largest selling in India. With every 450 gram packet of Bt cottonseed, farmers are provided a 120-gram pouch of non-Bt cottonseed that they are supposed to sow around the perimeter of the fields.

Farmers, however, consider this a waste or have taken to planting the more-paying pigeon pea (tur). Pigeon pea hosts bollworms but not the pink variety. Hibiscus, ladyfinger (okra) and jute are the other hosts of the pink bollworm. Seed companies also cut corners, supplying inferior non-Bt seed that, in many cases, does not germinate at all.

“More than insect resistance, I am worried about best practices”, says S.R. Rao, advisor in the department of biotechnology, referring to the lack of scruple among many seed companies.

The extension of the crop with supplementary



Cotton plant with boll

## Extending the crop to 8-10 months with supplementary irrigation gives pink bollworms a longer breeding period. Terminating the crop by December would disrupt this cycle

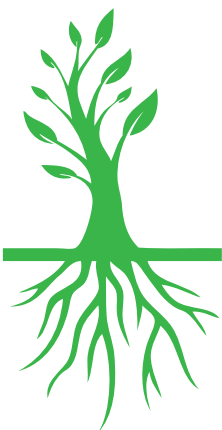
irrigation to 8-10 months to enable more pickings has also played a role. Pink bollworms now have a longer breeding period. Termination of the crop by December would interrupt the breeding cycle, Kranthi says.

At the meeting called by the agriculture ministry to find solutions, it was decided that blending of Bt cottonseed with five per cent non-Bt seeds should be allowed so that farmers are not denied an option. This method, called refugia-in-bag might be permitted before the coming planting season. It would, however, require the law to be amended as cottonseed is under the Essential Commodities Act. The quality of non-Bt cottonseed used for blending will have to be assured.

Kranthi suggested other measures for control of the pest including:

- Growing shorter duration 150-160 day cotton varieties or hybrids;
- The use of a parasite that destroys the pink bollworm by laying eggs within its eggs;
- Installation of devices with sex hormones to trap male bollworms near fields, ginning mills and cotton yards;
- The destruction of cotton waste and stalks soon after harvest to kill residual pupae and larvae;
- Spraying the crop with specific pesticides mid-October or in November when the population of the pest crosses the economic threshold level (ETL).

Seeds in bolls of hybrids with two Bt genes should have both the insecticidal proteins – called homozygous expression – as bollworms are hidden feeders; they reside inside bolls, Kranthi said.





Currently, some seeds have no Bt toxin at all, while a few others have one or the other Bt gene. Only a few seeds have both. This allows the bollworm to develop resistance.

K.S. Kapoor, deputy director in the plant protection division of the agriculture ministry, has suggested a few other measures:

- Development of Bt cotton varieties with additional genes for robust plant resistance;
- Formulation of standard operating procedures for disposal of crop residues harbouring the pink bollworm in various stages of growth at ginning factories;
- Deep ploughing of fields in summer and keeping them free of cotton plants or stalks during the off-season;
- Avoiding storing of cotton stalks by households for fuel over long periods;
- Sowing non-Bt cotton along with Bt cotton.

The National Seeds Association of India (NSAI) has endorsed the reduction in refuge requirement from 20 per cent to five per cent but has sought a relaxation. It says the development of non-Bt seeds that are similar to Bt seeds for blending would take two to three years. Till then, Bt cottonseeds of any hybrid that have agronomic compatibility with Bt cotton hybrids should be allowed to be mixed. ●



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# Towards Wholistic Crop Insurance

Alok Sinha

Indian agriculture has suffered for far too long from having been tackled in bits and pieces. The wholistic approach (by way of farmers' income, to be based on farmers' interest, farmers' input costs and farmers' strength et al) has always been lacking. The historically lingering ideology has been to romanticize the farmer as the one blessed to feed us all, with no thought whatsoever of whether the farmers are at all able to feed and clothe and generally fend for themselves.

A decade back, the Farmers Commission recommended that state procurement prices (or MSP) should be fixed at 50 per cent higher than total input costs. Leave alone accepting it or rejecting this, successive governments have not even engaged with the crucial issue of farmers' income, leaving it to dusty neglect between the covers of the 10-volume report. This is only one example.

The green revolution of the sixties is rightly celebrated as what enabled India to feed itself adequately, rescuing it from the vagaries of PL



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Former Chairman  
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of India

sensitivities. If onion and sugar prices are shooting up, the reaction is to ban their exports, flood the market with imports and kill whatever chances the farmer had of making a seasonal extra rupee! If arhar dal prices are sky-rocketing, import more dal but never plan a substantial and subsidized help to farmers to grow more dal.

India would rather and willy-nilly encourage dal cultivation in foreign lands,

which would calm urban consumer sensitivities, while helping the food trader make a killing. Does the country ban the export of manufactured goods or ban the out-migration of nurses and doctors even though they are a scarce commodity in the Indian context? Yet, India must cold-bloodedly ban export of agri crops to curb market prices, a sentiment fuelled entirely by an urban-biased media and a host of development specialists for whom cutting farm produce's selling prices is fine if it quells the urban fury of rising buying prices.

Seemingly, rural populace and urban consumers are two sides of the same coin but

## Does India ban the export of manufactured goods or the out-migration of nurses and doctors even though they are a scarce commodity in the country?

480 imports of American wheat by increasing the country's farm output more than four times, from an annual crop of 50 million tonnes (mt) to now comfortably crossing 250 million tonnes. The annual farm output seems to have climbed a peak and then become stable on a plateau at between 275 mt and 300 mt. India yearns for a second green revolution but mainly to protect the consumer's future.

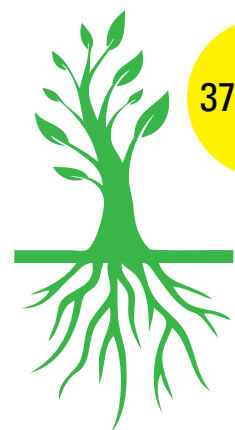
Truth to tell, the political economy of Indian agriculture continues to be heavily biased in favour of the urban consumer that gets egged on by a shrill noise in the media over "rising prices". Witness the hysterical TV debates when prices of onions, sugar and dal shoot up seasonally, only to be soothed by sucking in more imports without a thought (leave alone a debate) on how they would impact domestic farm prices.

Hence, apart from wheat and paddy getting "above-market-price" favours, courtesy the Food Corporation of India (FCI) procurement at a government-fixed MSP, every other crop price is ruled by market mechanisms and non-rural

their twains are not destined to meet at present. Hence, for the farmer, who looks to the skies for an assurance of a favourable weather not spoiling his harvest, crops other than wheat and paddy are more vulnerable to the vagaries of an unpredictable weather and most farmer suicides are because of failures of such crops. A broad-based crop insurance scheme has been a crying need for decades, especially because two-thirds of India's cultivated areas are not irrigated are thus dependant on the rain gods.

This is all the more a felt need because while wheat and paddy sale are guaranteed by state procurement, these crops hardly ever fail, being assured of both irrigation before the harvest and MSP prices after their harvest. It is really a surprise that whatever crop insurance India has had till now has been in bits and starts, inspite of a strong ideological lineage of rural poverty alleviation schemes packaged in electorally-fired sentiments.

Historically, crop insurance schemes were initiated more than four decades back, in 1972 with the Life Insurance Corporation (LIC) covering





## Low interest rates payable by farmers will be supplemented by the government. There is no upper limit on government subsidy; nor any capping on the sum assured

cotton in, believe it or not, Gujarat. This small step has led to some more but faltering steps, expanding beyond Gujarat, to the Pilot Crop Insurance Scheme (PCIS) of 1979, to the Comprehensive Crop Insurance Scheme (CCIS) that covered kharif of 1985 and continued till kharif of 1999. The National Agricultural Insurance Scheme (NAIS) got going in 2000, with some subsidy to small and marginal farmers. These measures did not have uniform or national coverage though, being more in the nature of “project-driven” tests!

The Pradhan Mantri Fasal Bima Yojana (PMFBY) sanctioned by the centre in the first month of 2016 has caught widespread attention, being seemingly

poised for a truly big leap forward due to its claimed arithmetic. There will be a uniform premium of only two per cent for all kharif crops and a lower 1.5 per cent for all rabi crops. For commercial and horticultural crops, the premium would be still be a low five per cent. These low rates to be paid by farmers will be supplemented by the balance to be paid by the government. Significantly, there is no upper limit on government subsidy and nor will there be any capping on the sum assured.

The PMFBY is thus a massive step forward. Prime Minister Modi, in his latest Mann Ki Baat, has set the daunting target of this latest scheme to cover, in the very first instance, at least one-half of





India's farmers. It has now been announced that the PM will address four farmer rallies in February 2016 to carry the message forward. Like all progressive moves though, this must be carefully examined for loop-holes that, in the aggregate, may make it unintentionally imperfect. That is, in its approach and sweep, does it promise a wholistic achievement?

While the premium to be paid by the farmer is unquestionably low, how will the quantum of compensation be measured? Crop cutting experiments of yore are mathematically low and woefully tardy, the new scheme does provide for modern technology that ought to increase accuracy and reduce the timelags. This will be tested by time. Again, is the insurance package linked up with incentives for better agri practices? One does not know yet, though this is a welcome chance to motivate the farmer to modernize his methods.

What would be the spatial coverage of the new



scheme? The landed farmer will get protection in case of crop damages or failure but what of the agri labourer, who will lose his harvesting wages, which will further accentuate existing rural inequalities? Also, since most insurance schemes are linked to bank accounts, the praiseworthy Jan Dhan Yojana must be given one more national fillip so that non-loanee farmers are also covered.

Inspite of the government publicity blitzkrieg (with full page newspaper advertisements et al), the PMFBY is not going to start right away. The plan is to implement it after the next crop is being sowed, which means the current drought ravages will remain unprotected. This could be due to fiscal discipline but surely the government could well have decided to squeeze savings here and there to put this expanded crop insurance scheme into action right away.

As for also helping out the rural landless poor and agri labourers (who constitute two-thirds of the rural populace) so that the PMFBY, by helping the landed farmer, does not make rural inequalities more acute, existing schemes like the NFSA, mid-day meals, rural health missions must be expanded. The merits of PMFBY are many. The premia is really low and there is no cap on either the government subsidy of premia or on the sum assured. If one can hear the "liberal-minded" specialist decrying this subsidy, one will do well to point out that even in the USA (the land of holy capitalism and even holier liberal reforms), 65 per cent of the premia paid by the farmer is subsidized! ●

A woman wearing a blue sari and a red blouse is bent over, harvesting golden wheat in a vast field. The background shows a line of trees and a small white building under a clear sky.

**INSIGHT**

# Insuring the Farmer Against State Policies

Vijoo Krishnan



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The Prime Minister's Crop Insurance Scheme (PM-CIS) was announced with much fanfare as the panacea for all risks faced by the farmers. Ironically, on the same day there was news that in 2015 more than 3,228 farmers had committed suicide in BJP-ruled Maharashtra. The phenomenon of farmers' suicides has continued unabated for over the two decades that the neo-liberal economic policies have been in operation in India. The ruling classes, in a denial mode, have sought to underplay the unprecedented human tragedy and linked farmers' misfortunes to the weather gods. What the Prime Minister is proposing is to insure the farmers from vagaries of nature. What is actually required is to insure farmers against the adversities created by deliberate government policies.



**VIJOO KRISHNAN**  
Joint Secretary,  
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Sabha

Under a neo-liberal regime, the risks involved in agriculture, including in yield and income, have only been increasing. Trade liberalization and Free Trade Agreements have exposed farmers to volatile world market prices. Uncontrolled increase in input prices coupled with fall in prices of agricultural commodities is a regular phenomenon. Minimum support prices (MSPs) are unremunerative and far below actual costs of production. Farmers do not even get this price in the absence of effective procurement, a situation made worse by the absence of an effective support system to address such risks. This has acted as a disincentive to farmers and there is need for immediate confidence-building measures to overcome the current state of affairs. The efficacy of the PM-CIS to address risks of farmers also needs to be analysed as effective insurance has the potential to build confidence among the cultivating peasantry.

In the run-up to the policy making exercise, the government had undertaken a consultation with farmers' groups and experts. There was near unanimity among different organizations of the peasantry on certain significant issues. First and foremost was the need for a universal comprehensive crop and income insurance scheme covering both income and yield risk for all farmers including tenant farmers and sharecroppers as well as for all crops. The PM-CIS continues with the system of covering loanee farmers only on a mandatory basis. Non-



loanee farmers as well as tenant farmers and sharecroppers are likely to remain excluded from its ambit as at present.

The socially and economically oppressed dalit and adivasis will largely be excluded from the scheme too. Most of them live in precarious conditions with meagre incomes from cultivation and will find it difficult to pay the premium. To be truly inclusive the central and state governments must subsidize the entire premium for the poor, small and marginal farmers, tenant farmers, sharecroppers as well as all adivasis and dalits farmers. Compulsory insurance must be done with the government fully bearing the expenses even among non-loanee farmers in this category. The centre and state should share these expenses in 70:30 ratio because many states are unable to bear this huge expense. The north-eastern states and those like Odisha, Jharkhand, Chhattisgarh and Bihar must be fully subsidized by the central government. Only such decisive moves will help to incentivize farmers and make agriculture viable.

What is required is an "All-Risk Agricultural Insurance" that can absorb the shock of crop failure

inclusive and ensure the most vulnerable sections like jute farmers, silk farmers, cultivators of food grains, millets, pulses, farmers in arid and semi-arid zones are adequately compensated. Income losses to agricultural workers must also be covered.

The underlining principle should have been that even in case there is crop loss in a farm the farmer should be able to get compensation. At present, assessment is being done at the block, taluk or mandal level. This is leading to denial of reimbursement of losses to genuine farmers who have lost their crops. The unit for insurance should be provided on the basis of data on yield and weather collected at the level of the village with the losses on individual farms taken into account. Only then will the calculation of the threshold yield and indemnity levels be sensitive to local conditions and address losses suffered by individual farmers.

The government should immediately establish systems of village-level collection of data on crop yields, weather conditions and price situation to ensure this. It is also notable that even in such a situation and undervaluation of losses as well as undue delays in settlement of claims the coverage

## An "All-Risk Agricultural Insurance" is required to absorb the shock of crop failure – a cushion assuring farmers protection against crop losses and fall in incomes

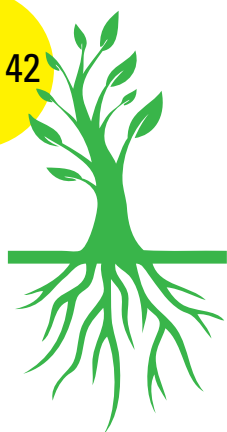
by providing a cushion that assures the farmers of adequate protection against crop losses as well as fall in incomes due to market volatilities. This is indispensable in the context of climate change and other exigencies as well as volatile prices of farm produce under a trade liberalized economy. A separate price stabilization fund to address the issue of fall in prices of agricultural commodities due to trade liberalization must be instituted with adequate funds. The PMICIS fails to come up with a comprehensive resolution of these issues.

At present there are restrictions on crops that can be insured in a district though the crop has been traditionally grown in the district for the last several years. Any new scheme for being effective should be applicable to all districts and expanded to cover all crops (including food crops, horticultural and plantation crops) and all farmers including tenant farmers/share-croppers. It should also cover all stages of cultivation, from sowing to harvest and also the risks involved including post-harvest risks. Special provision should be made to make it

and indemnity payments are biased towards a few regions and crops. According to the Situation Assessment Survey and National Sample Survey Organization, the share of households not insuring their crop are sometimes up to 100 per cent and in most crops more than 95 per cent of households do not insure their crops.

The major reason cited for this is that they are not aware of such a facility. Hence, there is need for a major awareness campaign and dissemination of information to make these schemes accessible. A wide network for extension of these services is also required for which personnel has to be recruited. Scientific collection of crop-cutting data and deployment of effective technology to reach benefits to every farmer requires thousands of dedicated trained personnel. This requires political will that goes against the grain of thought that drives the economic policies of the BJP government.

The extension of risk period under crop insurance till the produce reaches a storage facility within reasonable time after crop harvest must be ensured.





At present the cover is extended only up to crop-cutting and possibilities of later risks in the interim period between the harvest and transport to storage facilities are not effectively taken into account. In case of post-harvest losses, the harvested crop bundled and heaped at a place outside the field before threshing will not be covered in the scheme. Coverage is available only up to a maximum period of 14 days from harvesting for those crops that are kept in “cut and spread” condition to dry in the field after harvesting, against specific perils of cyclone/cyclonic rains, unseasonal rains throughout the country. This could be the loophole to deny farmers their genuine claims from damages caused post-harvest by rains or other causes.

In calculating the threshold yield for purpose of settling insurance claims the present scheme proposes to take the rolling averages of past seven years, rather than the potential yield in a normal year. Semi-arid and dry-land agriculture as well as flood-prone areas and drought-prone areas will show a low average leading to gross undervaluation of losses and thereby denying farmers their due.

In areas that are frequented by drought and floods, yields of the affected years should be eliminated and only yield for normal years should be taken into consideration to fix the threshold

level for loss assessment. Removal of two calamity years alone will not suffice as erratic climate in many regions leads to losses and low yields every season. Since actuarial premia is likely to be high for regions with low and erratic rainfall, a special budgetary subsidy must be ensured to address the problems of these regions.

Indemnity levels, threshold yields and other yardsticks must be amended to safeguard the interests of peasants in arid and semi-arid zones. The calculation of actual yields as well as costs must be done in a transparent manner; calculations of scale of finance must be based on latest information and arrived at scientifically by also involving experts and farmers’ representatives. Minimum support prices must also be calculated according to the Swaminathan Commission recommendation of at least 50 per cent above the cost of production (C2+50 per cent). This may be particularly useful to ensure farmers are given correct insurance in years registering fall in yields.

The PMICIS excludes the damages caused by stray cattle and wild animals. This has emerged as a major problem in recent years and farmers suffer huge losses that remain unaddressed. Farmers are facing considerable risk while digging borewells for irrigation even when the site is certified by

the geologist as suitable for digging. They are also facing the risk of wells failing during the crop growth period. Failure of irrigation facilities and bore-wells are one of the important reasons for the farmers' distress and suicides. The PMICIS fails to address these kinds of risks.

Notably, in the section on "Prevented Sowing" the PMICIS says that majority of the insured farmers of a notified area, having intent to sow/plant and incurring expenditure for the purpose, are prevented from sowing/planting the insured crop due to adverse weather conditions, shall be eligible for indemnity claims up to a maximum of 25 per cent of the sum-insured only. This is unjust on farmers as the costs are incurred and they also suffer the loss of yield.

The government has also failed to use the opportunity for fixing liability of agribusinesses and input providers for crop losses due to spurious seeds and under performance. The methodology of using crop-cutting experiments coupled with the use of smart phones, drones and satellite imagery are being suggested to assess crop growth or damage. However, the limitations of crop-cutting experiments to arrive at actual damages on individual farms have not been addressed. How the government intends to make precise calculations of losses without a mechanism in place with enough personnel also remains unanswered.

Farmers' groups were of the considered opinion that public sector insurance companies must be engaged in the task with substantial support by the central and state governments. Complaints that the private companies are defaulting in making payment to farmers (although they are collecting high premium and the government is also paying them) and also defrauding farmers have been common. The empanelled private insurance companies include the ICICI-Lombard General Insurance Company Ltd, HDFC-ERGO General Insurance Company Ltd, IFFCO-Tokio General Insurance Company Ltd, Cholamandalam MS General Insurance Company Ltd, Bajaj Allianz General Insurance Company Ltd, Reliance General Insurance Company Ltd, Future General India Insurance Company Ltd, Tata-AIG General Insurance Company Ltd, SBI General Insurance Company Ltd and Universal Sompo General Insurance Company Ltd. The industry thinks that the move is likely to more than double the agriculture insurance business within the very first year of implementation of the scheme.



The 11 general insurance companies, which offer agricultural insurance, have business of around ₹5,000 crore and it is likely to cross ₹13,000 crore by the end of the next fiscal year as new players are entering the fray in an aggressive manner. Clearly there seems to be urgency in opening up the agricultural insurance sector totally to private players, including multinational companies with dubious credentials. There must be no inclusion of private companies and foreign insurance companies for implementation of the scheme. A white paper on the functioning of private insurance providers and their implementation of the different insurance schemes must be brought out and defaulting companies must be black-listed.

The BJP government claims that the PMICIS will have the "lowest premium for farmers in the history of independent India". Under the existing National Agricultural Insurance Scheme (NAIS) that has been in operation in 14 states the premium rates range from 1.5 per cent to 3.5 per cent for foodgrain and oilseeds and for horticultural and cash crops. Under the PMICIS, farmers will have



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repayment of loans also will be scrapped. Scrapping of the interest subsidy will only push those farmers who have taken loans from institutional sources into further distress because they will have to pay more.

Coming after consecutive droughts and unseasonal rains, it leads to further burden. For instance if ₹3 lakh is the loan, the rate of interest is seven per cent and on prompt repayment only four per cent that is ₹21,000 or ₹12,000/annum. Now it will remain ₹21,000 (that is ₹9,000 more). In addition to this, the insurance premium to be paid will also be added. Another notable point is that the post-harvest storage loans are at commercial rates. It will also forever put at rest the Swaminathan Commission recommendation of providing crop loans at four per cent or less. The implementation of these proposals will have adverse impact on farmers' livelihoods.

The government has informed the Supreme Court that it is unable to keep its promise of meeting its promise of fixing MSP at least 50 per cent above cost of production as recommended by the Swaminathan Commission. It has earlier issued an order banning procurement of paddy and wheat from states that give bonus to farmers over and above the MSP, has decontrolled agricultural inputs leading to high costs of cultivation, dismantled the extension and procurement mechanism, has not

## Scrapping the interest subsidy will only push the farmers who have taken loans from institutional sources into further distress because they will have to pay more

to pay a uniform premium of two per cent for all kharif crops and 1.5 per cent for all rabi crops. For annual commercial and horticultural crops, farmers will have to pay a premium of five per cent. In the name of Unified Package Insurance Scheme (UPIS) the policy contains seven sections. Crop insurance is mandatory. However, it mentions that farmers "have to choose at least two other sections also to avail the applicable subsidy under crop insurance section".

Before coming up with the insurance scheme a RBI committee headed by Deepak Mohanty had suggested that the interest subsidy scheme be scrapped on the pretext that it leads to "distortion" of the agricultural credit system and impedes long-term investment. Interest subvention at two per cent for short-term crop loans of up to ₹3 lakh and additional three per cent incentive for prompt

built any new irrigational infrastructure or storage facilities and has scaled down the MGNREGA.

The surrender of India's interests at the World Trade Organisation, trade liberalization leading to dumping of cheap agricultural products, cuts in agricultural subsidies, exposure to volatile world market prices without any efforts at price stabilization and income guarantee have all rendered agriculture unviable and broken the confidence of the farmers. The government has also failed to control the prices of essential commodities, health and education. Any insurance policy to be successful should also reverse these policies. The PMICIS will not lead to improved coverage or resolution of farm distress unless it is followed up with reversal of the policies that lead to agrarian distress. It is only seeking to address few symptoms rather than the disease. ●





OUTLOOK

BARREN BUNDELKHAND

# Immediate Intervention or Disaster

Bharat Dogra

**T**he greenery by the roadside in the Bundelkhand region – a vast stretch of 13 districts in central India – is quite deceptive. As we travel into the interior and remote villages, all signs of the green fields disappear and vast dusty stretches of ploughed up but empty, barren fields dominate the landscape. Normally, they should have been smiling with wheat, gram and mustard plants by now.

Bundelkhand is in the grip of a serious drought. Its 13 districts include seven in Uttar Pradesh (Chitrakoot, Banda, Jhansi, Jalaun, Hamirpur, Mahoba and Lalitpur) and six in Madhya Pradesh (Chhatarpur, Tikamgarh, Damoh, Sagar, Datia and Panna). Upwards of 250 districts are reportedly drought affected in India this year. What makes the situation in Bundelkhand especially worrisome is that this severe drought was preceded by adverse weather conditions for several years, peaking in 2015.



**BHARAT DOGRA**  
Senior Journalist

These women – Mithilesh, Sulekha, Meena, Urmila and others – said in one voice that home grown foodgrain from previous stocks is exhausted and there is serious food shortage even in the households of the relatively better placed farmers.

In the Brahman hamlet, a relatively better off neighbourhood in the village, I ask: “How many families in your village are able to get proper nutrition of at least two full meals, including cereals with dal and vegetables?” They say: “Hardly any family can afford this these days. Dal has almost disappeared from our diet after the crops failed. We cannot buy dal from market”.

I prod further: “When there is a food shortage, women who eat last in the family, may sometimes sleep hungry”. Some women sighed and others smiled sadly: “Yes, this happens quite frequently now. We have to feed the children first. When there is not even enough for them, we go to bed without eating”. There are dalits and tribals living here too. When the better off members of the community

**Vast, dusty stretches of ploughed up but empty, barren fields dominate the Bundelkhand landscape. Normally, they should have been smiling with wheat, gram and mustard plants...**

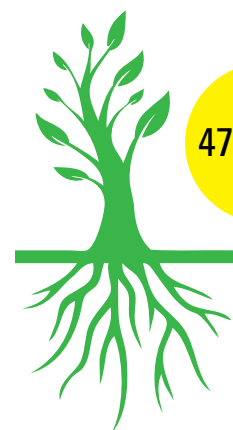
Vijay Dube (Charhara village, Mau block, Chitrakoot district) describes the farm distress in his village in 2015. “The rabi (winter) crop at the beginning of 2015 was shaping up fine but at the time of ripening came a wave of untimely heavy rains and hailstorms that destroyed 75 per cent of the wheat, gram, mustard and barley crop, as we stood by helplessly. Then early rains at the time of kharif sowing prompted farmers to borrow heavily to sow paddy, arhar (pulse) and other kharif (monsoon) crops but the rain disappeared suddenly and whatever we had planted with borrowed money was ruined. Even so the farmers did not give up hope and borrowed afresh to get tractors and diesel to plough the fields for the rabi crop but the drought was so prolonged that no rabi crop could be sowed. We have been borrowing to plant but getting no return. How long can we survive like this? Today our purses are empty as are our granaries. If we do not find daily wage labour, we will not eat.”

I meet Vijay’s mother and other women of this remote village that does not have electricity and people travel about four kilometres to charge their phones!

go to bed hungry, one can imagine the plight and predicament of the weaker sections.

Satyanarayan Kol, an articulate and educated tribal youth from Arvari Naudiya village, says: “We are completely at our wits end about how we will survive the next few months. As things stand, we cannot survive if we stay in our village. So people are migrating in search of work but not all get work. Some return distressed and penniless because they have not been given their due wages. There is also a shortage of drinking water, which means the animals suffer. With animals are hungry and thirsty here, there is an abnormally high rate of animal death now. How does one find food and water for them when people are struggling for survival?”

Manjula, from Pateri village, is anxiously awaiting the return of seriously ill members of her family who went out as migrant workers. They are ill and being denied their pending wages. Ramjeeai faces the daunting prospects of bringing up five grand children on an uncertain income as a mid-day meal cook in the local school. Her daughter-in-law has died young and her son has migrated in search of work. Chottan, a village elder who has



seen many droughts, says with deep concern: “Go tell the government that we will not survive the coming months unless large scale relief work starts in our villages”.

These interviews with villagers from the Mau block of Chitrakoot district reveal deep distress that will get aggravated in the coming months as no rabi crop will be harvested in March-April this year by an overwhelming majority of these villagers. The same story was repeated in most of the interior villages of Bundelkhand that I visit. One can only imagine the tragedy that hit the region when croplands ready for harvesting were suddenly laid bare by untimely heavy rains and hailstorms in February-April 2015 and the drought destroyed the next kharif crop too.

Farmers did not lose hope even then and borrowed money to plough the land for the next rabi crop in November and early December. When I had visited the region at that time, farmers were looking heavenwards and hoping: “Let us see if it rains in the next few days. We will still sow the crop somehow”. Even when wiser people advised that it was too late to sow for the season, several farmers that I met were eager to see some crop in their fields and were prepared to take the risk and plant at least a part of the rabi (winter) crop. I checked later on phone, their hopes were belied and the



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## Imagine the tragedy that hit the region when croplands ready for harvesting were suddenly laid bare by untimely heavy rains and hailstorms in February-April 2015 followed by drought

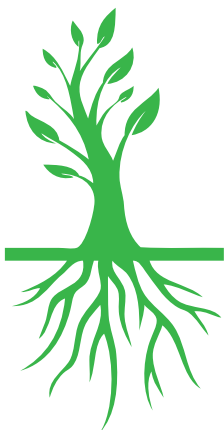
fields remained barren.

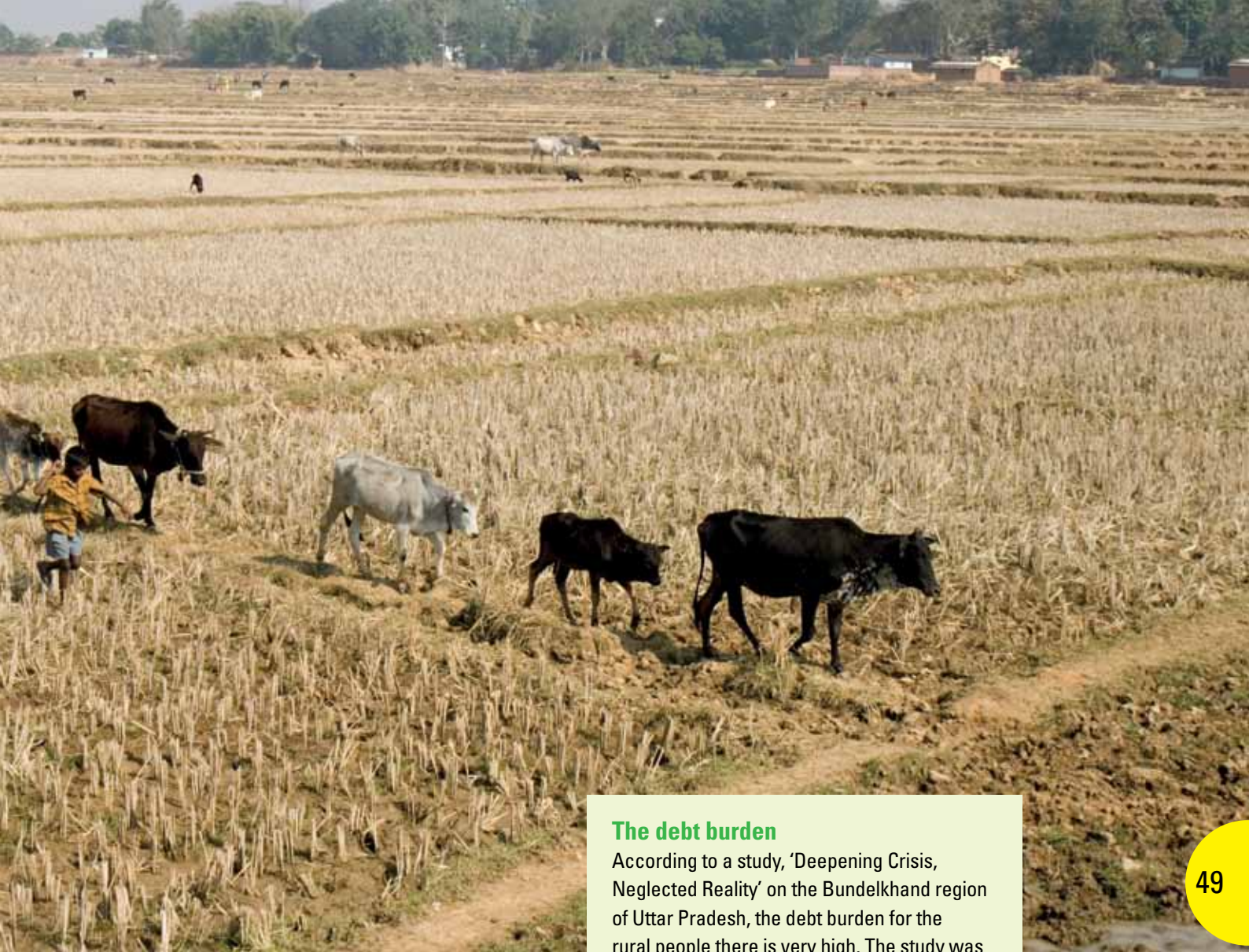
As the *annadata* (provider of food to the nation) farmer faces food shortages and the family's grain silos is empty, he is increasingly becoming a migrant worker. The trains leaving for Delhi, Mumbai and Surat from the railway stations in Bundelkhand have been so crowded that it is impossible to board the general unreserved bogies. People wait for the next train. Once inside, many travel standing for 12-18 hours or more, managing to keep even nature's call at bay because they cannot reach the toilets through the crowded corridors. Sometimes even women and children travel thus. Others leave in large groups in long distance buses especially arranged by labour contractors, sometimes even carrying the odd goat or poultry with them.

There is absolutely no guarantee that satisfactory employment will be available in the distant lands.

After some time, many return ill to their villages, suffering from tuberculosis, silicosis, malaria or other undiagnosed illness. Many fall victim to accidents while others are robbed or swindled on their way back to their home with their meagre savings. In the midst of all this distress there are growing pockets of enormous affluence; tell tale signs of illegal activity. These people control or are linked to the various mining mafia, including the notorious sand mining mafia.

Others have made their riches from money lending or striking corrupt deals that “development” begets. Development has become a major focus of corrupt officials and contractors who plunder projects to fill their coffers. The illegal wealth was squandered during the 3-tier panchayat elections at the time of my visit. The elections may well pave the way for even more





corrupt deals, depriving the farmers and other villagers of development initiatives.

At a higher level of the political spectrum, the illegal wealth is used to buy political support and respectability as corruption and plunder become grouted in the soil and lead to further societal inequalities and exploitative tendencies that have always existed in the region. New development initiatives provide new opportunities to the dominant persons to strengthen their vice-like grip on the region. They set the agenda that only pays lip service to the most pressing needs of farmers, farm workers and village artisans.

Anyone familiar with the fast unfolding situation in Bundelkhand knows about the vast human distress rooted in injustice and inequality that has been greatly aggravated by the erratic behaviour of the weather. People say that rainfall has decreased, the number of rainy days has decreased and that the rain tends to be concentrated in a smaller number of days, with untimely rain becoming more common (frequently harming farmers instead of helping them). The damage caused by hailstorms,

### The debt burden

According to a study, 'Deepening Crisis, Neglected Reality' on the Bundelkhand region of Uttar Pradesh, the debt burden for the rural people there is very high. The study was compiled by Sanjay Vijayvargiya and Manisha Bhatia for the Lucknow regional office of Action Aid with the help of various partners of Action Aid in Bundelkhand. Continued crop loss has meant a continuing state of indebtedness. Farmers are compelled to take loans to meet even their basic needs. As much as 75.5 per cent families survive under the burden of loans. Bank/credit card (37.9 per cent) and moneylenders (41.3 per cent) are the main sources of loans.

frost and storms has increased. Even if normal (total) rainfall is recorded, its uneven and untimely distribution over the year plays havoc with farmers and farming.

Bhagwat Prasad, director of the Akhil Bhartiya Samaj Sewa Sansthan (ABSSS) says, "The government rainfall data may show that rainfall in a particular year is close to the average but does not show how erratic it has been. Farming operations are tailored to certain expectations of rainfall at particular periods in a year, based on past experience.



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### Helping the Vulnerable

The Bundelkhand region has several vulnerable groups such as Kol tribals, Sahariya tribals, Kabutras, Bansors, Bedni and Saperas. Special efforts are needed to strengthen their rights and improve their socio-economic position. A glaring anomaly is that Kols are recognized as scheduled tribes in neighbouring states like Rajasthan and Madhya Pradesh but not in Uttar Pradesh because of which they are deprived of many benefits and protection. In Mahoba district (Jaitpur), innocent Kabutra people are frequently implicated in false criminal cases due to the stigma of crime unfairly attached to them. This is now changing to some extent but much remains to be done.

In the case of such communities, traditional livelihood can be improved by providing new opportunities and avenues for old skills and by upgradation of skills. Bansors, for instance, skilled makers of brooms and sieves and other items of household use, could be trained to make bamboo products that can fetch a better price in the urban market. Saperas can be linked to snake parks or other such initiatives where various species of snakes can be protected

and, additionally, snake venom can be obtained (without killing snakes) for various medicinal uses. In the case of Bedinis the song-dance and acrobatics can be linked to tourism circuits in addition to traditional fairs.

Communities traditionally associated with rivers and tanks and water sources should be encouraged to protect their livelihoods related to water sources.

Nomadic groups need especially sympathetic minds to understand their real needs so that suitable action can be taken. This is also true of groups or tribes stigmatized as being "criminal". Child workers also need timely help and proper rehabilitation.

Organizations like the Bundelkhand Seva Sansthan and Akhil Bhartiya Samaj Sewa Sansthan have been active in protecting the legal status of vulnerable communities like the Sahariyas and the Kols, empowering them to access the benefits to which they are entitled. Another partner, Arunodhya Sansthan has been very active in helping the community of handloom weavers, that has suffered large scale loss of livelihood in recent times.

When rainfall departs significantly from this pattern, even if the overall average is maintained, farming operations are badly disrupted and farmers suffer heavily. Government statistics show near average rainfall, yet a farmer might face damage that is equivalent to what is seen in a serious drought year”.

This situation calls for very comprehensive, well thought out and sensitive intervention on the part of the governments to protect and help farmers. Unfortunately, governments have a business-as-usual mind set, unaware of the formidable new challenges brought by the grim reality of climate change and erratic weather. Necessary preventive work has not been taken up in time and the immense distress suffered by the farmers has been unmitigated.

Even when distress and migration were at their peak, I found that no work was being provided under the employment guarantee scheme. Compensation for the loss of kharif (summer) crop had not been paid till December. Nutrition programmes like the ICDS and mid-day-meals were functioning much below the prescribed norms. Proper implementation of the existing schemes could have considerably reduced the distress of people but even that was in evidence at

engaged with local officials to improve the existing government projects by controlling seepage. When sensitive officials listened, the performance of these projects also improved. In other cases where corrupt elements were dominant, huge funds were simply wasted”.

In the Naraini block of Banda district, for example, I saw several tanks constructed under MGNREGA where absolutely no water had been collected. Here the only aim was to make some quick money and so elementary questions such as proper location with adequate catchment area were ignored. In numerous places the same place is being dug up again and again so that money meant for tank deepening, soil and water conservation can be grabbed. Large scale corruption has ensured that substantial funds allocated under well-intentioned initiatives like the Bundelkhand package have failed to protect farmers and other villagers.

Worse, instead of taking protective steps, several governments have allowed ecologically destructive activities to increase in rural areas and this has also brought increasing threats to the already precarious agro-ecology and food security of this region. A report by the Centre for Rural Development and Technology, IIT, Delhi and Vigyan Shiksha Kendra,

## Providing immediate relief through employment guarantee schemes and special drought relief to people who will suffer greater distress in the months ahead must be emphasised

the time of my visits in November-December.

Where preventive measures had been taken up by a few voluntary organizations, one did find some water available in small tanks despite the severe drought. This ensured drinking water for animals at least and possibly some water for irrigation as well. It also enhanced overall moisture levels. In the Patha region of Manikpur block (Chitrakoot district), for example, at places where the ABSSS has taken up significant watershed projects with the help of the Nabard and Dorabji Tata Trust, considerable water was still available in tanks created as a part of watershed projects. In Mangawan village, Kodu Kol, a tribal farmer, said with a bright smile: “I am confident that even in this drought year I will be able to grow my family’s requirements of foodgrain.”

Gaya Prasad Gopal, founder of the ABSSS says: “Apart from taking up water conservation projects on our own, we also carried out a campaign and

Uttar Pradesh (the CRDT-VSK Report) says:

- “The greatest event of far-reaching consequences in Bundelkhand was the destruction of forests. It changed the climate, the rainfall patterns, the perennial character of the rivers, the groundwater recharge pattern, soil productivity, people’s life pattern, social mores and ethics... The loss of forest cover gave rise to the flash floods in the streams and the rivers eroding the surface soils gave rise to ravines”.
- “The situation as it stands today is extremely precarious. The forests have been thinned to near extinction and the undergrowth has stopped due to lack of moisture and shade.”
- “The present study has shown that there is no multi-canopy forest now in existence in this once heavily forested region, except in the few hills which are considered sacred and centres of pilgrimage”.

The CRDT-VSK Report adds: “Mining contractors contributed further to this destruction



## Key solution: Water and soil-conservation

Water and soil conservation, critical for Bundelkhand, are marred by large-scale corruption. There is huge scope for improving the quality of the work and its benefits. Watershed projects should be integrated with egalitarian objectives, land reforms and need to help the poor on a priority basis. Cropping-patterns should be compatible with water availability. Construction of new projects and expensive structures should be avoided for some years with better use of existing irrigation sources focused on. Controversial ones like the massive Ken-Betwa river project should be avoided. Water needs of agriculture and animal husbandry should get priority over water needs of industry.

Special attention has been drawn to destructive sand-mining on river banks. In several river-banks, these extremely porous sand deposits have been a rich source for huge natural storage of excess rainwater and river water in the form of groundwater. Due to the excessive removal of sand the natural ability of the river bank to store ground-water has been lost. In addition, the gullies and paths created by heavy vehicles carrying sand sometimes rapidly channel the flood waters towards human habitations, accentuating the drought-flood cycle.

There has been glaring neglect of traditional water conservation as the government as well as aid agencies had more confidence in the modern technology of hand pumps and tubewells. However, these wells encounter granites at short depths in many places, making it difficult to rely on ground water except where substantial ground water was trapped in joints and fissures of granites and rocks. Given the limited supply of ground water, hand pumps and tubewells either failed or caused a rapid drying up of ordinary wells used by other people, mostly the poor.

The CRDT-VSK Report says: "Overall neglect of the tanks and the ponds continued; and slowly the culture of ponds prevalent in Bundelkhand was overpowered by the commercial culture. In the villages, these common resources have been privatized in the name of development of the fisheries. Many tanks were flattened to raise paddy crops or for expansion of the village bustee. In urban areas, several posh colonies rose in the catchment area and even on the beds of tanks. Large-scale shopping complexes were raised while the tanks got filled up with filth and drain/sewer disposal. The



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beautification of the tanks, wherever undertaken, were limited to fixing light-posts, repairing the boundaries and/or sometimes removing the water hyacinth and other weeds. The encroachments on tank-beds or the catchment area were never removed and the natural fresh input of water to these tanks or lakes was never restored.

The flows through artesian wells have mostly been allowed to overflow and drain out. No effort at creation of community-facility has been made to use artesian flows in an organized way, whether for supplying drinking water to village homes or for the purpose of irrigation".

Bundelkhand has a very rich and highly skilled tradition of constructing tanks. Examples can be seen in Mahoba and Charkhari and other places. Unfortunately, many of these have been badly damaged by encroachment and lack of maintenance. Many dam projects created in recent decades (such as Maro and Bardaha in Chitrakoot district) have failed. Today, there is a real need for assessing priorities properly so that scarce funds can be used to the best advantage of people. Evidence suggests that the first priority should be accorded to the proper maintenance and repair (including clearing encroachments) of all existing tanks and related structures that can still be salvaged. This should be done with the involvement of local people as a people's movement.

by their indiscriminate practices including large-scale blasting at several places. This destructive mining ravaged both ground water and the surface water, fields and forests, apart from exposing many people to dust related diseases. Workers who toiled at mining sites or in forests got less than the legal minimum wages despite being exposed to severe risks of disease and injury.

“Granite quarrying and other forms of stone quarrying in Bundelkhand has been flattening the hills and ruining the chances of their afforestation, which is basic to the interception of clouds and infiltration of rainwater into the soil. Quarrying of granite has, moreover, been causing large-scale deliberate destruction of precious groundwater. Since granite formations run hundreds of meters deep”.

“Varieties of minerals like limestones, granites, gneisses, basalt, sand stones, limestones, diamond, pyrophyllite and diaspore and different kinds of ochres, river sands, silica sand are the major materials being mined in Bundelkhand. Mining consumes huge amounts of water and depletes the water table. The lure of commercial profits includes foreign exchange earnings and ruins the chances of agriculture”.

In addition, the lure of big cuts and commissions entices officialdom towards big water projects of dubious merit, even though it is widely realized that if the same funds are distributed for small water shed projects taken up with the close involvement of people, much better water conservation can be achieved. The Ken-Betwa link project has been promoted by the government despite much resistance from local people and activists.

At a ‘Water Parliament’ (at Orchha, district Tikamgarh) for the Bundelkhand region, many speakers including social/environment activists and independent experts, expressed concern that this

project could worsen the water scarcity in some areas and cause floods/waterlogging in others. A resolution passed at the end of this ‘Water Parliament’ said that lakhs of people in both Ken and Betwa river basins would be exposed to unprecedented tragic consequences as a result of this project and asked the government of India to abandon it.

If at all change is to be brought to the region, critical aspects of development priorities have to be corrected.

- The emphasis right now must be on providing immediate relief to people who will suffer greater distress in the months to come. Large scale work under employment guarantee schemes and special drought relief works (including food for work) are immediate imperatives.
- These should be linked to genuine soil and water conservation work including field ponds.
- The existing nutrition schemes and public distribution system need to be improved and the food security legislation should be implemented in letter and spirit.
- Adequate compensation for crop loss should be paid.
- Timely help should be provided so that farmers are in a position to take up the sowing of the next kharif crop. •

**The emphasis must be on providing immediate relief to people who will suffer greater distress in the months ahead. Employment guarantee schemes and special drought relief are the imperatives**

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## SAVING THE HEIRLOOM

## Folk Rice Magic and Low Yield Myths

Anupam Paul

**E**dapho-climatological factors have made rice the staple food of eastern India since times immemorial. There were more than 5,000 region specific indigenous rice varieties (folk rice) in West Bengal and a 1930 survey report showed that undivided Bengal had 15,000 rice varieties; the majority of them belonging to what is now Bangladesh. These had been selected and developed from a single crop species of rice – *Oryza sativa* – by visionary farmers of times past to meet the food security of future generations. Both their contribution and their vision remain



**ANUPAM PAUL**  
Agriculture Expert  
from West Bengal

unacknowledged.

Each variety is unique with specific characters: disease resistance, flood tolerance, flood and drought tolerance, high grain yielder, aroma and such others. Farmer-selected crop varieties are not only adapted to local soil and climatic conditions but are also fine-tuned to diverse local ecological conditions and cultural preferences (Deb 2009). *Kalonunia* and

*Chamarmani* are blast resistant, for instance. Low-lying areas in West Bengal are replete with flood tolerant varieties. A wide genetic base provides “built-in insurance” (Harlan 1992) against crop



pests, pathogens and climatic vagaries.

More than 82,000 (NBPGR, 2007-08) rice varieties were selected and cultivated by the farmers of the Indian subcontinent. Nearly 600 high yielding varieties (HYV) were developed by crossing indica and japonica or a selection from the cross. Of those, only four or five HYVs are popular in each state. HYVs, however, do not give high grain yield at all locations, especially in marginal lands like flood, drought and salinity prone areas. The abbreviation HYV is thus quite inappropriate. They are, at best, modern varieties (MV). The average grain yield of most popular HYV-MTU 7029 has plummeted from 5.5 tons to 4.5 tons an hectare despite heavy

The Biodiversity Conservation Farm under the Agricultural Training Centre, Fulia, West Bengal has been conducting relevant studies for the last couple of years. All the Folk Rice Varieties (FRVs) were grown through Single Plant Transplanting (SPT) at the Farm though FRVs are not inferior to HYVs (See Table 1). Apart from grain yield, folk rice gives substantial amount of palatable straw needed for fodder and roof thatching. These are ignored in mainstream agriculture and the farmers have never been encouraged to grow high-yielding FRVs known to exist in few government farms or in farmers' fields. Crop diversity as a distinctive characteristic of organic farming is adequately emphasized at the centre making it polyculture. Legumes, vegetables and oilseeds are grown particularly for supporting and proliferation of beneficial organisms that ultimately add to the soil health.

Soil management has been manoeuvred relying on the sustained release of organic matter. Green manuring and composting are the basic techniques for this purpose.

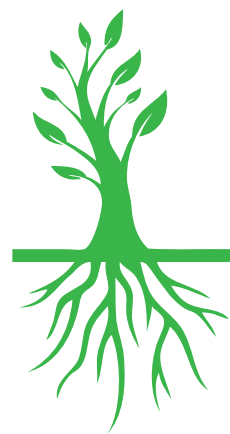
Payra cropping with Lathyrus is practiced.

Studies on soil micro flora in addition to NPK content has been undertaken over the years in collaboration with State Soil Testing Laboratory, Tollygunj and, Bidhan Chandra Krishi Viswavidyalaya (BCKV) State Agricultural University (SAU).

Bio-fertilizers and use of Azolla are prioritized aiming at providing plant nutrition and making the soil biologically active one.

application of fertilizers, pesticides and certified seeds from the market while the grain yield of any indigenous variety remains same over the years.

British text books on agriculture and economic policies described these cultivated crop varieties as indigenous or native crops investing them with a negative connotation that continued in post-Raj writings, with media coverage too favouring mainstream agriculture and suggesting that native crops did not have the potential to feed India's teeming millions. Truth to tell, even 10 per cent of this indigenous wealth has not been evaluated in terms of nutrition, grain yield vis-à-vis their suitability in marginal lands like drought prone,



flood prone areas and such others. The work of a leading rice scientist like Dr Radhelal Harelal Richharia of the Central Rice Research Institute, Cuttack, India, during 1960s remains obfuscated.

Apart from its untapped yield potentialities and nutrition, traditional crop varieties go with regional culture, food habits and rituals. Loss of these varieties relates to loss of folk lore. These are often called land races or native varieties or heirloom varieties and are quite synonymous to livelihood, culture and rituals of Indian farmers. The terms native/indigenous/land race crop (with their derogatory connotations) are far better replaced by folk crops and such rice may be called Folk Rice Varieties (FRVs).

In West Bengal, at a policy level, there is concern that the region's vast treasure of folk rice having amazing range of adaptive potential to different abiotic and biotic environmental conditions is getting depleted due to their gradual disappearance on account of either replacement with modern varieties or disuse. However, even today, there are thousands of farmers who stick to folk rice only

for their livelihood. After the devastation caused by hurricane Aila on May 25, 2009, farmers of the Sundarbans were searching desperately for true salt-tolerant indigenous rice varieties to withstand salt water that engulfed their crop fields; something that they earlier grew. With the introduction of the modern varieties, supported by the erection of high embankments around the saline rivers, farmers started increasing the area of MVs, replacing the region specific salt-tolerant rice varieties over the past 25 years or so because they were led to believe that these would produce miracles. With the passage of time, they have realized the severe drawbacks of the miracle seeds and it has been established that the modern varieties cannot survive in marginal environmental conditions.

Traditional crop varieties are often recorded to have out-yielded modern varieties in marginal environmental conditions (Cleveland et al. 2000). Neither the farmers nor the relevant institutes felt likely conserving those diverse salt-tolerant rice varieties because the modern varieties were doing

**Farmers were lured into growing MV along with subsidized fertilizers, pesticides and pump sets. They were made to believe that it was the only option to increase grain yield**

**Table 1: Folk Rice Varieties Are Not Inferior to HYVs**

Varieties	Yield (ton/ha)	Duration (Days)	Remarks
<i>Kerala Sundari</i>	5-6	132	All the FRVs are being grown with organic input only. The yield can be achieved in biologically active soil. Fifteen-day old seedlings were transplanted singly (Single Plant Transplanting). However, the yield is depended on many factors. Weights of some single panicles of <i>Kerala Sundari</i> , <i>Meghana Dambaru</i> were 14 g. <i>Kerala Sundari</i> is a selection from Purulia district of West Bengal and <i>Meghana Dambaru</i> is from Jharkhand. <i>Adansilpa</i> being a scented rice gives highest grain yield and <i>Kalabhat</i> also gives good yield.
<i>Bahurupi</i>	4.5-5.5	138	
<i>Kabirajsal</i>	4	140	
<i>Asit Kalma</i>	4	140	
<i>Rabansal</i>	5	142	
<i>Agniban</i>	4	138	
<i>Shatia</i>	3.5	85	
<i>Kesabsal</i>	4.5	140	
<i>Meghna Dambaru</i>	4.5	145	
<i>Radhatilak (Scented)</i>	3		
<i>Adnalsilpa (Scented)</i>	4	142	
<i>Kalabhat (Scented)</i>	3.5	142	
<i>Dudheswar (Fine small grain)</i>	3.2	142	
MV MTU-7029	4.5-5	132	Grown with chemical inputs. Grain yield data collected from farmers' fields of Odisha and West Bengal
Hybrid KRH-2	3-5.5	128	



well in the fields. Aila came as an eye opener, showing that local varieties, depending on the availability of seeds of folk varieties, are best suited if so called MVs are wiped out by any natural disaster or failed in marginal conditions. Salt tolerant varieties like Matla, Hamilton and American Mota have vanished from the farmers' fields while nearly 150 FRVs are extant in the fields of West Bengal.

Farmers were lured into growing MV along with subsidized fertilizers, pesticides and pump sets. They were made to believe that it was the only option to increase grain yield in order to combat the perceived threat of famine. They were never told about the potential of region specific indigenous high-yielding varieties vis-à-vis possible damage caused by the agro chemicals and their long-term effect, depletion of ground water and such others. Nor they were told about the rising cost of cultivation for growing MVs.

After the initial years of good yields the MVs

experienced declining yields despite heavy application of agrochemicals and use of costly MV seeds. Meanwhile, some 5,000 or more FRVs became extinct from the farming fields. Thus chemical intensive agriculture not only expunged the local crop genetic diversities but also their wild relatives, the only source of unique of genes for disease and pest resistance (Deb 2005).

The fundamental question is whether FRVs are low yielders. There should have been comparative yield studies between folk rice and modern varieties in the same land situation, which are conspicuous in their sparsity. There were comparisons of grain yield but not of the total productivity of the rice fields and the collateral advantages of growing the folk varieties.

Low-lying areas with deep water paddy spawn fish naturally along with grain and straw while the dwarf paddy straw of MVs is of little value. Of course, there is no question of growing fish and

**Table 2: Requirement of Organic Inputs per Bigha (33 decimal)**

Inputs	1st Year	2nd Year	3rd Year	4th Year	5th Year
Cattle Manure	1,000 kg	1,000 kg	1,000 kg	500-600 kg	0 kg
Biofertilizers	500 g	500 g	500 g	0 kg	0 kg
Rock Phosphate/Dolomite	25 kg	25 kg	15 kg	0 kg	0 kg
Rice Mill Ash	50 kg	50 kg	25 kg	0 kg	0 kg
Neemcake (if possible)	50 kg	50 kg	25 kg	0 kg	0 kg
Rice Flour + Molasses	4+4 kg	4+4 kg	4+4 kg	2+2 kg	2+2 kg
Liquid Manure	4 times	4 times	3 times	Once	Once
Azolla	2 kg	2 kg	2 kg	2 kg	2 kg

**Table 3: Average in West Bengal**

Season	Normal Area (Lakh ha)	Remarks
AUS (Pre-kharif)	2 (approx)	Earlier with FRVs, now mostly with MVs. The area is declining because of inadequate pre monsoon shower, use of maize etc.
Aman (Kharif)	40-42 (approx)	More than 90 per cent area covered by MVs in all the districts. Owing to heavy rain in 2015, many blocks suffered initially.
FRV (Non aromatic fine and bold)	0.37 ha (approx)	Major areas – South and North 24 Parganas, Purba Medinipur, Howrah, Jalpaiguri, Cooch Behar, Uttar and Dakshin Dinajpur.
FRV (aromatic)	0.88250 ha (approx)	Major areas – Burdwan, Birbhum, Bankura, South and North 24 Parganas, Uttar Dinajpur, Jalpaiguri, Cooch Behar, Paschim Medinipur.
Boro (Summer)	To be covered 14	The Department is not encouraging Boro.

Primary Source: Department of Agriculture, Government of West Bengal

snail in fertilizer and pesticide laden rice fields of MVs. There is, besides, the question of comparing oranges and lemons. For example, mainstream agriculturists consider the grain yield of folk variety Asanliya in the undulating drought-prone area of Purulia district (marginal lands) poor in comparison to grain yield of MV in the plain lands of Burdwan district with all chemical fertilizers, pesticides and irrigation.

The sandy loam farm soil has low phosphate (48 kg) and potassium (90 kg/ha) but the soil microbes (colony-forming units) and saprozoic nematodes are very high, a key to organic farming, gives good growth and disease-pest free yield. Soil microbial population studies of the demonstration plots have been undertaken in collaboration with Soil

Test Crop Response (STCR) of the BCKV and the findings are encouraging and supportive of biologically active one.

The Agricultural Training Centre at Fulia, West Bengal used cattle manure, biofertilizers, oil cake, ash of rice mill, molasses and rice flour during the initial years of organic farming. Based on the soil organic carbon percentage and colony forming units of fungus and bacteria, it started reducing organic inputs in a phased manner. The centre could have stopped using organic inputs much earlier but since 2012 it has stopped using cattle manure, liquid manure and such other and introduced floating azolla in the rice fields with spectacular results. There was profuse growth with tillering as a result of Single Plant Transplanting (SPT).

**Table 4: Some FRVs So Far Extant in Farmers' Fields of West Bengal**

Varieties	Districts	Area (in ha) (Approx)	Remarks
<i>Kaltura, SM, Jirasari, Sanu-ad-dhee</i>	Hill regions of Darjeeling	100	Scented rice
<i>Kalonunia, Kalojira</i>	Jalpaiguri, Cooch Behar	7,000	Scented rice
<i>Tulaippanji, Kataribhog</i>	Uttar and Dakshin Dinajpur	6,000	Scented rice
<i>Gobindobhog, Badshabhog (Khas dhan) and Sitabhog</i>	Burdwan, Birbhum, Bankura, South and N 24 Pgs, Hoogly and other districts	75,000	Popular scented rice, <i>Gobindobhog</i> and <i>Badshabhog</i> are usually called as KHAS, Burdwan district has major coverage
<i>Asanliya, Bhutmuri,</i>	Purulia, Bankura	50	Non-scented, bold rice, <i>Bhutmuri</i> is a red rice
<i>Kerala Sundari,</i>	Purulia, Burdwan N 24 Pgs, Hoogly	400	Non-scented, bold rice, good yielder-5-6t/ha, Sagar Island of S 24 Pgs has good coverage
<i>Bahurupi</i>	N 24 Parganas, Burdwan, Hoogly, Howrah, Nadia	100	Non-scented, bold rice, good yielder-5t/ha, Hingalgunj Block of N 24 Pgs and Burdwan has good coverage.
<i>Kabirajsal, Chamarmani</i>	Medinipur, Nadia	50	Good for daily cooking
<i>Dudheswar</i>	S 24 Pgs and N 24 Pgs	35,000	Small grain fine rice
<i>Moulo, Jamainaru</i>	Howrah	35	Daily cooking
<i>Kaminibhog, Kankchur</i>	Sundarban area of N 24 Pgs	100	Bold scented, used as parboiled rice
<i>Koijhuri, Gheus, Khejurchari, Marichsal</i>	N and S 24 Pgs	550	Daily cooking, Muri (rice bubble), Panta (water soaked rice) etc
<i>Radhatilak</i>	N 24 Pgs, Hoogly, Nadia, Bankura, Purba Medinipur and Burdwan	50	Scented, gives more yield than <i>Gobindobhog</i> , good adaptability
Total		1,24,435	

**Table 5: Cost of Cultivation of Different Rice Varieties in Blocks of Sundarbans (2014)**

Variety	Yd t/ha	Cost/ha (Rs)	Sale (Rs)	Profit (Rs)	Cost Benefit ratio	Block	Remarks
<i>Bahurupi</i>	3.9	27570/	43432/	15862/	0.57	Sagar	FRV After flood
<i>Kerala Sundari</i>	5.78	23700/	57983/	34283/	1.44	Sagar	FRV After flood
<i>Dudheswar</i>	2.78	19840/	55147/	35307/	1.77	Patharpratima	FRV
<i>Gobindobhog</i>	2.0	23850/	50925/	27075/	1.13	Patharpratima	FRV
<i>Kejhurchari</i>	4.0	18750/	40000/	21250/	1.13	Hingalgunj	FRV
CR 1010	4.2	19500	42000/	22500	1.13	Hingalgunj	MV
IET 4786	4.5	50200/	60925/	10725/	0.21	Falta	MV -Boro
PAC 835	7.56	65112/	108037/	42925	0.65	Mathurapur	Hybrid
Arise 6444	7.5	83175/	105750/	22575/	0.27	Falta	Hybrid

The soil organic carbon in some plots are in the range of 0.65-0.8 per cent. The year-wise input reduction for farmers has been given here. What are the inputs needed to grow folk rice? Farmers need to convert fields from chemically active to biologically active. Gradually chemical fertilizers are to be withdrawn and the amount of organic matter is to be increased. At the same time, good FRVs are to be cultivated as these varieties give good grain and straw (and fish in some cases) yield without applying chemical fertilizers and pesticides. However, application of organic matter is only a part of organic farming. After about three or four years farmers may get substantial yield. A farmer may convert some areas in his plots.

ATC Fulia grows FRVs using only floating azolla; it gives 8 kg N and 100 kg of biomass/bigha in four and half months. One to two kilograms of azolla are allowed to float 25 days after transplanting the FRVs. It covers the field for seven days in half inch of water and controls weed too. The year-wise application of inputs for a bigha of land (one bigha is equal to 1/7.5th of an hectare) is shown in Table 2.

In the 5th year of folk rice cultivation, the farmer has to incur minimal expenses for supplying and thus organic farming makes some profit. The quantity of organic inputs may be adjusted depending on the availability of the inputs. This system would break if the farmer applies chemical fertilizer in his fields. However, in many pockets of the Sundarbans, farmers do not need to use any external input; chemical fertilizers or organic manure. It is by default organic with zero input. This particular agro-ecosystem gives sustainable yields for years. The centre is the state's only the organic farm giving the advisory that folk rice has

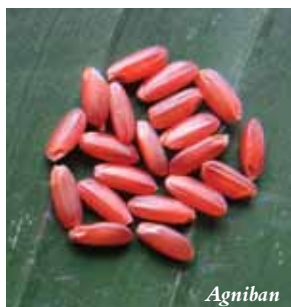
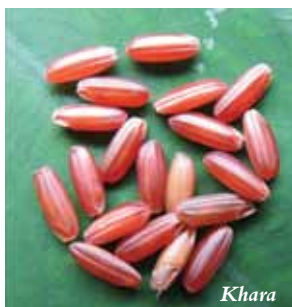
lower nutrient requirement than modern input responsive varieties.

The approach to weed management is suppression rather than controlling by integrating cultural, biological, mechanical, physical means without any synthetic herbicides. The use of azolla as cover crops to suppress weed growth has been made obligatory with amazing result. The centre also uses liquid manure to control disease and insect pest. However, FRVs are resistant to pest and disease attack. The main problems of FRVs are rice bugs, red breasted munia bird and rats. Liquid manure, citronella oil and such others are effective in controlling rice bugs.

There is no specific published data on the coverage of FRVs. The figures were collected from various sources. The data indicates that modern varieties have already replaced most FRVs from farmers' fields. Farmers have no choice; they have to cultivate modern varieties along with purchased seeds, fertilizers and pesticides. Many of them have, however, started to raise questions about the efficacy of modern varieties with regard to the consistence of grain yield and the cost of production.

Besides the aforementioned areas, other FRVs are still sporadically cultivated in West Bengal. *Kaloboro* in Fulia of Santipur Block in Nadia; *Dorangi*, *Sabita*, *Patnai* in South 24 Parganas and North 24 Parganas; *Dharial*, *Malsira*, *Pakri* in Jalpaiguri; *Talmugur*, *Hogla*, *Hamai*, *Malabati*, *Katarangi*, *Kumragore*, *Lilabati*, *Moulo*, *Lalgetu*, *Getu*, *Sadagetu* and such like in the Sundarbans area; *Kalabhat* in Burdwan, Howrah, Bankura, South 24 Parganas, Uttar Dinajpur and others; *Kalma*, *Raniakanda* in Howrah; *Laghu* in Murshidabad; *Sungibaran* in Birbhum, *Bhasamanik*,





The Department of Agriculture has sanctioned a new scheme in 2015 under Production & Growth under RKVY X11th Plan titled "Folk Rice – Collection, Conservation, Multiplication Through Distribution and on Farm Trial for Popularization among the Farming Community West Bengal". The scheme is a first of its kind in India. The Agricultural Research Centre in Fulia, West Bengal is actively engaged in successful completion of this initiative by generating awareness on farm trial, collection of germplasm, in situ conservation and participatory research in 11 districts of the state. The Directorate of Agriculture has issued a notice to grow folk rice in organic mode in an acre of land in every government farm.

in Murshidabad, Paschim and Purba Medinipur; *Sada Chenga*, *Nagra Patnai* and *Salkele* in Nadia; *Kankhri* and *Kankhuria* in Purba Medinipur; *Tulsimanjari*, *Radhunipagal* and *Laghusal* in Birbhum.

Prior to the green revolution, farmers were used to exchanging seed amongst themselves and thus conserved thousands of region specific varieties through cultivation. Since the green revolution, seeds became a commodity, like any other marketable product being sold from the agro input dealers. Farmers never considered exchanging poor quality seed with the neighbouring farmers. A section of seed dealers, however, sells non-seeds or spurious seeds to its customers; the farmers.

There was no dearth of seed during the pre-green revolution period as farmers knew seed production and preservation techniques. Moreover, earlier crop seeds were not a marketable commodity to be sold in the market. With the onset of externalization of agricultural inputs in the name of green revolution, farmers do not feel like taking the burden of seed production and preservation as everything is available in the market. Thereby capitalistic mode agricultural production set in quashing all the natural principles of crop and seed production.

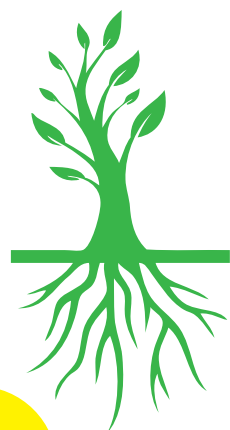
West Bengal's rice seed requirement for *Aus*, *Aman* and *Boro* in West Bengal is around 98,000 tons and the state produces nearly 70,000 tons per year. The remaining 28,000 tons come from other states. The total cost of seed would be around ₹245 crore (98,000 tons x ₹25,000 tons). Now there could be a savings of ₹122.5 crore (half of ₹245 crore) if the

area under folk rice is increased by 50 per cent of the total rice area. Moreover, one does not need to replace the seed every three year like the MVs for it can be continued over thousands of years, provided seed production and conservation techniques are properly maintained. It is worth mentioning that the scented varieties like *Kalanamak* and *Basmati* are more than 2,500 years old and still in vogue.

Cost reduction is a major challenge to agriculture especially for those who resort to chemical farming. Organic farming gives opportunity to reduce the cost of cultivation thereby enhancing the farmer's income.

The data for Table 4 was collected in 2014 from farmers of the blocks by Development Research Communication and Services Centre, Kolkata. The cost of cultivation in the southern part of Bengal is cheaper than in Nadia. On an average, the cost of cultivation in Hingalgunj (Sundarbans) area is around ₹18,750 per ha as the farmers need not go for interculture or use any input (organic or chemical), thereby getting economic and biological profit (soil is enriched) as the cost of production is minimized.

The leading rice conservation initiatives in West Bengal under the state Department of Agriculture include those under the Rice Research Station, Chuchura and the Agriculture Training Centre, Fulia, while the leading private enterprise is Vrihi led by Debal Deb. The Rice Research Station, Chuchura (Chinsurah) of West Bengal started rice conservation in the 1930s and in the 1960s had more than 3,500 folk rice varieties that were donated to the IRRI, Philippines. However, the centre had selected many improved rice varieties out of folk



rice and has more than 300 FRVs. It also distributes folk rice varieties among the farmers.

The station published a book on 60 folk rice varieties in 1962 (*Recommended Varieties of Paddy for West Bengal*, Directorate of Agriculture, Government of West Bengal) and, after about 46 years, the centre has also published a book on 467 folk rice varieties in 2008 giving some major characteristics of the varieties (*The Rice Biodiversity in West Bengal*, Directorate of Agriculture, Government of West Bengal, 2008). There are repetitions for some varieties because they are known by different names in different places DNA finger printing and other morphological studies can sort out the problem of duplication and this has been done for nearly 150 varieties in the state.

Inspired by the work of Vrihi in Bankura, the Agriculture Training Centre, Fulia has started conservation of folk rice since 2001 at its demonstration farm and the centre now has 325 FRVs. The centre was declared a Biodiversity Conservation Farm by the Directorate of Agriculture in 2006. Initially, it collected 22 varieties from Vrihi and other folk rice varieties from the Development Research Communication and Services Centre, Kolkata, Swanirvar of Baduria, North 24 Parganas, different farmers across the state, Sambhab of Odisha, Thanal of Kerala, Sahaja Samrudha of Bangalore, Nagaland, Assam and Maharashtra.

More than 350 farmers have received folk rice varieties from the centre and it accesses more than 500 farmers indirectly. Different universities take the folk varieties for various studies like morphological studies, DNA finger printing, estimation of vitamin B complex, protein and minerals. Agricultural universities like Bidhan Chandra Krishi Viswavidyalaya State Agricultural University, Viswa Bharati of Santiniketan have taken more than 30 and 55 varieties respectively from the centre. Six state governments farms have also started conserving FRVs with folk rice seeds from the centre.

The centre has set a record in Indian agriculture in folk seed distribution in a year. The centre also reevaluates the varietal characters and shares its experience of crop growth and has documented results, showing the potential, with farmers and renders advisory services for the organic route to 26 FRV conservation units across the state. The traditional or indigenous rice varieties being related to folk culture associated with rice is the cynosure

of the organic farming at this centre.

As one has seen, many folk rice varieties (FRVs) are suitable for marginal land and compete with modern varieties with low cost of cultivation and minimum organic input only apart from inherent nutraceutical properties. Out of 320 FRVs transplanted during 2015 kharif, 51 varieties were scented, 21 deep water, 25 short duration, 23 high yielding (4-6 tons/ha) and 24 were medium to fine grained varieties. Additionally, there were some special rice – red and black – tolerant varieties of rice such as *Kalabhat*, double grained (*Jugal*), seeds with an extension of empty glumes (*Ramigelli*), deep water and salt tolerant varieties. The centre has published leaflets and booklets on folk rice. The Science Monitor programme of Rajya Sabha Television has documented FRV conservation work of the centre and broadcast it ([http://www.youtube.com/playlist?list=PLVOgwa\\_DIG2PD3\\_1z7j](http://www.youtube.com/playlist?list=PLVOgwa_DIG2PD3_1z7j)).

The growing practice of organic farming bears testimony to the conservation of 325 FRVs and the

**Many folk rice varieties are suitable for marginal land. Cultivation is lower in cost than modern varieties and needs minimum organic input**



advisory and participatory research at the centre. Their wide adaptability to diverse edaphological and heterogeneous stress situation; special agronomic traits; diverse nutraceutical properties such as fragrance; ensuring long-term yield stability of crops, resilience of agro-ecosystems as well as superiority over modern varieties in marginal lands have enthused the centre to reinvigorate efforts to conserve, nurture and use heirloom agro-diversity for insulating the production system from the threat of climatic change disaster and enhance the practice and excellence in organic agriculture adhering to its broad policy framework of the principles of soil health, resilience of agro-eco system, fairness and care. There are several non-government organizations too, leading with Vrihi (see box).

Kolkata's Bose Institute maintains 150 folk rice varieties at its Madhyamgram farm for DNA fingerprinting and other research purposes. DNA fingerprinting and other biochemical studies have been done for 100 varieties. The faculty of agriculture, University of Kolkata has 150 folk rice varieties and DNA finger printing was done for 47 varieties. It does not grow all varieties every year as it preserves the seeds in low temperature.

There are other notable organizations and individual farmer's efforts too. Farmers or farmers' organizations who realize the intrinsic value of FRVs and started cultivating them have generated awareness among neighbouring farmers.

Some prominent organizations and farmers who have engaged in serious folk rice conservation include:

- The Development Research Communication and Services Centre (DRCSC) Kolkata that has been practicing sustainable agriculture for the last 15 years through farmers associated with its various sister organizations in West Bengal and other states. It maintains 135 folk rice varieties
- The Vivekananda Institute of Biotechnology, Nimpith, South 24 Parganas has started conservation work in 2012 with 20 deep water

Vrihi (means rice in Sanskrit, [www.basudha.org](http://www.basudha.org)), a farmers' organization in its true sense, was established in 1998 by ecologist Debal Deb with Navdanya of New Delhi; at Basudha of Bankura district with Arun Ram, Amalendu Mukherjee and Nirmal Mahata initially joining the work that was later supported by Debudulal Bhattacharaya. Debal Deb started folk rice conservation in 1992-93 while serving with WWF in Kolkata and Vrihi has collected folk varieties from the farmers' fields giving due acknowledgement. It has characterized 416 folk rice varieties in detail vide *Seeds of Tradition, Seeds of Future* (Navdanya, New Delhi 2005).

This book is the first of its kind with detailed characterization on folk rice in West Bengal and in India. The Protection of Plant varieties Rights Authority, New Delhi (PPVRA) has rewarded Vrihi for characterization of *Jugal* (means double seeded rice) and *Sateen* (means triple seeded rice) in 2009. It established the largest non-government seed exchange centre in eastern India. At present, it conserves 900 folk rice varieties at Kerandiguda Village, Bissamcuttack block of Rayagada district of Odisha because it has changed its base from Basudha to Rayagada in 2011.

rice varieties from ATC, Fulia

- KVK Nimpith has taken 30 varieties from the centre
- The Paschim Sridhar Kati Jana Kalyan Sangha, Hingalgunj, North 24 Parganas has been conserving folk rice varieties for the past five years and has 350 varieties including 12 salt tolerant varieties. It has been distributing the folk seeds in Aila affected areas
- Avra Chakraborty of the Richharia Conservation Centre and Jionkathi Burdwan have 298

**Table 6: Folk Rice Seed Distribution from ATC Fulia in the last three years**

Year of Production	Year of Distribution	No of Varieties Distributed	No of Recipients Farmers
2009	2010	50	56
2010	2011	Year of severe drought	Only panicles were collected
2011	2012	74	121
2012	2013	126	80
2013	2014	100	40
2014	2015	80	66

varieties being conserved for the last six years after receiving seeds from Vrihi, ATC Fulia and some local farmers

- Kartick Chatterjee of Ausgram II block of Burdwan is conserving and distributing 50 FRVs
- The Satmile Farmers Club and some farmers of Cooch Behar I Block maintain 44 varieties taken from the ATC Fulia
- The FIAM of Raigunj maintains 44 varieties and distributes FRVs
- Bhairab Saini of Panchal, Bankura maintains 124 FRVs
- Tapan Adhikari has 22 FRVs
- Debashish Ghorai of Patharpratima, South 24 Parganas has 50 folk rice varieties
- Sudhansu Dey of Patharpratima maintains 40 FRVs
- Naryan Chandra Bachar, Bajitpur of North 24 Parganas has 20 folk rice varieties.

All of them exchange varieties with other farmers.

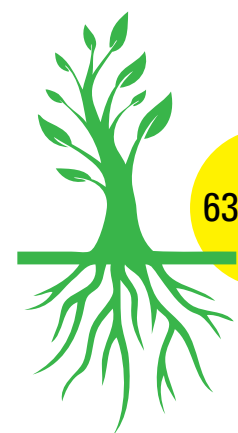
Such conservation activities have drawn attention of the authorities in recent times but there are roadblocks and it is important for the local government to be in sync with such conservation efforts and with safeguarding farmer interests. These could be in terms of driving proactive policies or opposing hurtful ones like the promulgations at the WTO meets and Indo-American Knowledge Initiative. Millions of farmers' interests have been hit by lucrative advertisements by MNCs. There are also those who have stood up to the onslaught of corporate agriculture and endeavour to do something for conserving bio-resources and safeguarding the interest of millions of resource poor peasants.

There are conflicts; conflicts of interest and the rapid spread of MVs or hybrids that have underpinned corporate/MNC interest. This



is where public authorities can play a role in conserving India's rich agro-diversity and how they address the growing influence of the MNCs will determine the future of India's agri resource security. A synergy of these two pro farmers' forces can bolster the movement as a movement of the common people.

The Ministry of Law and Justice, Government of India has enacted the Biodiversity Act 2002. Most states have biodiversity boards to monitor, document and promote biodiversity conservation for India's food security. Even farmers have come forward to conserve the folk crop varieties. Different seed festivals are being organized all over India to promote folk crops in terms of the critical role they play with regard to crop-biodiversity, food security, taste and aroma, nutritional qualities, medicinal values, region specificity and eco-friendliness. ●



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# Elegy on the End of the Coconut Palm

Ajay Vir Jakhar

64



“...On that warm afternoon of October 24, 1579, a Jesuit priest from Bushton, Wiltshire, England, Father Thomas Stephens, 29 years, lying in his sickbed after completing a tedious voyage from Lisbon lasting for 203 days on turbulent seas... Through the large windows which filtered sunlight but permitted a gentle breeze, he could see an ocean of swaying coconut palms. As he soaked in the Goan landscape he was feeling very weak due to a bout of dysentery.

The maid in Royal hospital..handed him a mug of tender coconut water – “father, drink this, you would feel better”. Father Thomas rose from his bed and took the glass from her and emptied it slowly in few gulps. .. He felt better after the drink, “What is it”, he asked the maid – “it is water from coconut tree, good for your recovery”, she said, “You should have more of it”. At that moment perhaps, the invigorating drink established an instant ecological communion with the Jesuit scholar.

– ‘Coconut in Thomas Stephens’ Kristapurana – I’, Nandkumar M Kamat

**I**t was a conference on ‘Difficult Dialogues’ organized in collaboration with the London School of Economics but one held in the most easy-going of places, Goa. It was a privilege to get invited to attend the programme in the august company of such luminaries as Pratap Bhanu Mehta and in the enthralling presence of the celebrated writer, Amitav Ghosh.

Amitav mesmerized us with his talk on the opium trade that at a time provided 50 per cent of the British empire’s revenues. Opium processed in factories in Ghazipur in eastern Uttar Pradesh or in Patna (such operations continue to this day) was the cause of the opium wars. Even when profits were extremely high, farmers producing the opium were paid a pittance that did not even cover the cost of cultivation.

That was amongst the first instance of a corporate structure influencing cropping mono-culture, something that Indian farmers suffer to this day. It all began with the Portuguese who established Goa and Macau in a manner of speaking. Macau became the gateway to China. Goa today is a tourist paradise where farming is not the mainstay of the economy.

Indeed, farmers are fleeing farming and abandoning farms, the subject of my speech at the programme. Smart cities are a pipe-dream and farmers continue to flock cities by millions every year. These are particularly perplexing times for Goa. The state government has notified that coconut trees will not be classified as trees. Before environment laws got tough a few years ago, a farmer could easily get permission to cut two trees a year on his own premises. That changed and

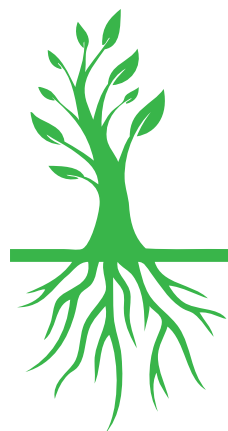
farmers suffered, at least that is what 53-year old Caetan Vaz tells me. He explains that no part of the tree gets wasted; every part is used.

One of 10 siblings, Caetan bought his land after the tenancy act was enacted in the early 1970s. Only another sibling works on the farm now. He purchased the land for ₹35 per square metre. Now, the land price is inflated by arrivals from other states. Goans themselves cannot afford to buy the land anymore. Obviously, Caetan excludes the crony capitalists Goans, who have made truckloads of money from the extractive economy.

In Goa, the land is measured in meters and Caetan Vaz owns 10,000 square metres; about two acres. He is a proud owner of three cows that yield 12 litres a day. His family also owns a 35-year old male buffalo from the days of his father. Vets are available on call and Vaz has the option of accessing a vet and medication at half the cost from the co-operative. It provides him milk and he uses the manure for his farm.

Is he an organic farmer, I ask. He replies in the negative. He uses no fertilizer nor pesticide but does not care to classify himself as an organic farmer. I think of the many who use chemicals but classify

**Vaz uses no fertilizer nor pesticide but does not classify himself as organic. Many use chemicals but call themselves as organic**





themselves as organic, bringing a bad name to the rest. I ask him about his produce. He has planted jackfruit, cashew and supari now. His main crop is paddy and the variety is 'Jyoti'. He prepares his land by removing the weeds and hand-spreading seeds on to the land and waits for the rains to do the rest. He sows in June and harvests in October.

Vaz' biggest expense is weeding that begins 15 days after sowing and the cost of harvesting. Agriculture labour charges are ₹600 to ₹700 a day. If sowing, weeding and harvesting machinery do not become affordable and common, many will have to leave farming. There is one sowing and weeding machinery available on rent for ₹6,000 per acre. Demand is generating supply.

Monkeys and pigs are another major problem and sometimes compel farmers to leave land fallow at times other than when they grow paddy. What happily is not a problem is electricity supply or the public transport system in Goa. While public buses run on the state highways, private transporters ply the interior roads. Health care is satisfactory even though free medicines are not as easily available as before. However, expectations of a better system are missing; people have given up hoping because the hope has been belied. "Who runs the government is irrelevant. They are all the same", is the common refrain across India.

Goans are allowed to migrate to Portugal. They

## Hope has been belied. "Who runs the government is irrelevant. They are all the same", is the common refrain across India

can get a Portuguese passport if they can prove their ancestry to pre police-action times. This happened after many imposters forged documents to attain Portuguese passports to get to Europe. The Portuguese embassy has become strict and a church registered birth certificate probably does the trick now. Portugal is in the midst of a major recession but the grass seems to be greener on the other side and people are still leaving.

Goa is probably the first state to enact the price deficiency crop payment programme for multiple crops. Farmers can sell their crops to designated agents at the registered market yards and are entitled to receive a payment from the government for any shortfall from the minimum support price. A wonderful programme, only if the payments came in real time. Despite the technology to ensure timely payments being available most farmers usually receive payments a year late. This negates the scheme.

This is also one of the fears that haunt us when the government talks of direct transfer of fertilizer subsidy to the farmer's account. Subsidies like those for water pump sets, digging wells or fencing are given after the work has completed. Usually payments take months to arrive if not more than a year. This actually means that the most deserving farmers, who are unable to make the initial investment, are denied the benefit of the programme. This is why designing policies better is important.

Caetan Vaz studied till Class 5. His only child is now in school. I ask him if he would want the son to farm after him. Caetan give me a blank look. I do not pursue the question. Additional income comes from cutting trees for others; probably one tree a month. In Goa probably 90 per cent of farmer families sustain themselves on additional non-farm tourism related income.

The eternal fear is that Goa is a tourist paradise that will lose its sheen if coconut trees are allowed to be cut indiscriminately. The natural beauty of the landscape will certainly suffer, leading to loss of livelihood and no farm income to fall back upon. Small decisions can have a devastating impact. Only if the policy makers understood this. ●



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