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FARMERS' FORUM

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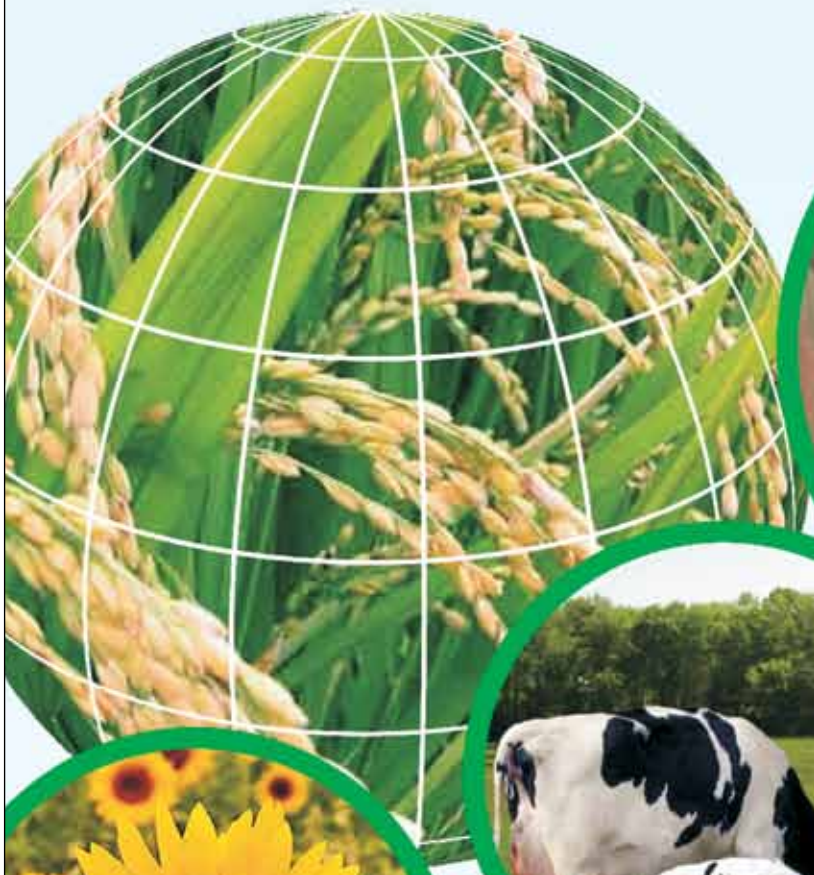

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FARMERS' PLEA 'Lend Me Your Ears'

The weather has lived up to its reputation of unpredictability. Winters have extended much beyond the end of March. Maharashtra and much of India were at the receiving end of heavy rainfall, storms and unprecedented hailstorms in March this year. At the time of writing, in eastern India, West Bengal is in the throes of an agonising heat wave. Even though such uncertainty is a regular feature for the farmers, politicians and opinion makers have made little headway in terms of dealing with the problem of mitigating the impact of changing weather patterns. While one cannot change the length of winter or stop the hailstorm, one can do much more to predict the weather correctly and make that information available to the farmers in advance. It would help farmers tremendously to decide what to do or not to do; reduce losses and risks and increase prosperity and productivity.

The solutions can be simple and affordable. Three things are required for a correct weather advisory: data, processing, converting data into credible information and making that information available to individual farmers in time. Cell phone towers exist across the length and breadth of India and have instant connectivity. It has been suggested that small devices that record and collect weather parameters such as humidity, temperature, air pressure and wind direction and such others be installed in cell phone towers, which would automatically gather and relay information in real time to a central processing nerve centre. This nerve centre would receive information in real time from hundreds of thousands of locations evenly distributed across India that could be processed in conjunction with data from satellites in space and international collaborations. Location specific weather advisory and information could be automatically relayed to each farmer's cell phone, depending on where they reside and the location of the particular cell phone tower that their cell phone connects to.

Something similar can be done for soil testing, such as using the 'Soil Doc' concept. This is a new soil testing kit designed at the University of Maryland and Columbia University to enable researchers to assist farmers. It is being tested for commercial viability in Africa and USA. It can be carried in a backpack from field to field and each farmer's soil from his plot of land analysed individually on the site itself. India could collaborate, manufacture or buy such equipment. Availability is not an issue.

ONE CANNOT CHANGE THE LENGTH OF WINTER OR STOP THE HAILSTORM BUT ONE CAN DO MUCH MORE TO PREDICT THE WEATHER CORRECTLY

EDITORIAL

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HOPEFULLY THE NEXT GOVERNMENT WILL BE DIFFERENT; NOT JUST IN WORDS BUT IN ACTION TOO

These two ideas do not require elaborate infrastructure or financing or systems to be created. That is where they score. Governments love to create elaborate systems that are difficult, costly to roll out and have a tendency to fail at delivering services. Technology helps resolve exactly that. It helps simplify and offers opportunities that can be harnessed for the greater good. What is needed is understanding, vision and a commitment. Prime Minister Dr Manmohan Singh has been at the receiving end of much criticism from the media and many academics. As a farmers' organisation, the Bharat Krishak Samaj (BKS) has consistently highlighted the neglect of the farming community, resulting not from ill intent but simple indifference and faulty policies.

Why things have come to such a pass can be judged from the fact that in the 10 years of being India's prime minister, Dr Singh has met numerous delegations representing various communities or interest groups. Has one ever wondered how many of them were farmers? Probably less than one per cent; even though 50 per cent of India is engaged in agriculture. Hopefully the next government will be different; not just in words but in action too.

To record just this apathy and the farmer's perceptions, BKS commissioned the Centre for the Study of Developing Societies to conduct a survey on the State of the Indian Farmers – 2014. One hopes that the findings will provide indicators for policy formulation and reduce suffering and unhappiness of the farmers by articulating the real issues. BKS believes that the study is a legitimate tool to strengthen democracy by providing leaders with first hand feedback on what people actually feel and perceive. The BKS can make a difference but cannot do so alone. This is an invitation to join hands with the BKS to be the "change" that everyone seeks. ●

Ajay Vir Jakhar
Editor
twitter: *@ajayvirjakhar*

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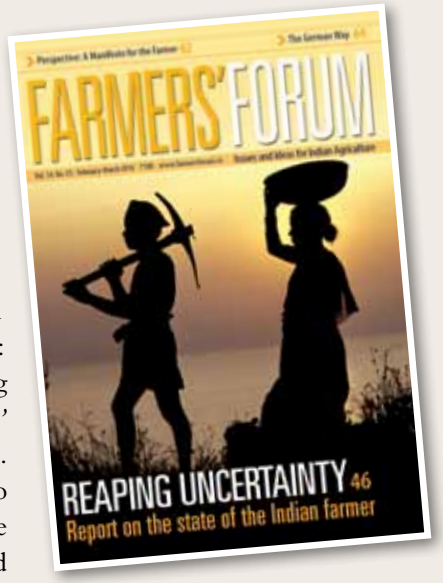

Learning from Germany

It was fascinating to read Green Fingers, "The German Way: Enriching Farmers; Embracing the Environment" (*Farmers' Forum*, February-March 2014). The story of Peter Kaim who showed such remarkable foresight in taking over land in East Germany at the time of reunification is a lesson in farming entrepreneurship. The details of Peter's integrated farm are a source of inspiration and a lesson for the government in terms of the policy initiatives that make farmlands come alive. One can only hope that other governments help farmers like Germany does.

Trilok Singh,
New Delhi

Commendable report

"Reaping uncertainty: a report on the state of the Indian farmer" (*Farmers' Forum*, February-March 2014) has been amongst the most important articles published by *Farmers' Forum*. It is fairly comprehensive with regard to farming concerns and has its footprints virtually across the country. I hope the new government respects the valuable work done and takes note of the various issues highlighted when it works out its agriculture agenda.

Badri Narayan,
Solan, Himachal Pradesh

Understanding the challenge

I was particularly pleased to read your editorial "Building a Climate for Change" (*Farmers' Forum*, February-March 2014) because you ask the very pertinent question – where does the farmer fit in all this? I entirely agree that environmentally sustainable interventions have to be economically viable in the immediate term for farmers to adopt and make scalable. How can poor Indian farmers adopt environmentally sustainable practices even if they want to? This is where the government's role becomes critically important. It has to understand the problem in all its dimensions.

Ramesh Patel,
Durg, Chhattisgarh

Out-of-the-box thinking

The article, "Live from the farm: making technology work" (*Farmers' Forum*, February-March 2014), provides a fine lesson on the art of organisation in the farm sector. I appreciate your focus on the young and innovative farmers who are capable of out-of-the-box thinking to inject viability into Indian agriculture, instead of focusing on politicians and corporates.

Jivan Patel,
Ahmedabad, Gujarat

***Farmers' Forum* website www.farmersforum.in is now up and running. Log in to check out all earlier numbers.**

Whither political neutrality?

Apropos of the "State of Indian Farmer: A Survey" commissioned by the Bharat Krishak Samaj (BKS) and telecast on IBN-7 and CNN-IBN, you have projected that farmers will vote for the Bharatiya Janata Party (BJP). You have in the past been continuously critical of the United Progressive Alliance (UPA) government for many years. I am ashamed of you for propagating a survey projecting a BJP victory. BKS is supposed to be a non-political organisation. Please try to remain so.

Dilip Kumar,
Bhopal, Madhya Pradesh

Editor, *Farmers' Forum* writes:
BKS is a non-partisan farmers' organisation and will remain so. It commissioned a survey that was conducted by the Centre for the Study of Developing Societies (CSDS). It is an independent survey recording perceptions of farmers, covering many aspects of their lives. The question regarding political leanings was a very small part of the survey. The findings were released by CSDS and not BKS.

BKS has been critical of bad policies of the government of the day, which happened to be that of UPA. It will continue to do what it believes is required to ensure farmer prosperity.

Giving Farmers A Voice

A *Farmers' Forum* Report

Five pressing reasons prompted the Bharat Krishak Samaj (BKS) to have a survey conducted on the State of the Indian Farmers – 2014. Primarily, the survey was driven by the knowledge that while the Indian farmer is the subject of a lot of lip service, they do not actually have a voice. This is reflected in the manner policies are structured devoid of any form of consultation with the farming community even though the evidence is quite clear that there is a major problem facing the Indian farmer.

What then are the main issues troubling the Indian farmer, whose plight seems to have become increasingly pathetic with time even as Indian agriculture touches record heights in production? Second, how does one determine the character of farm practices vis-à-vis their impact on the overall state of well-being or otherwise of the farming community? Third, what were their points of views – opinions and perception – on prevailing farming practices? Fourth, how effective were government policies and schemes? Finally, what could be the mechanism to actually help this cross-section of Indian farmers? After all, the survey indicated that one in every 10 farmers had gone without food on several occasions and that could hardly bode well for India.

The survey was conducted by Lokniti and the Centre for the Study of Developing Societies (CSDS) and received wide national coverage. BKS followed up the release of the report with a discussion chaired by Ajay Vir Jakhar, chairman BKS and Sanjay Kumar, director, CSDS with three eminent panelists – Ashish Bahuguna, secretary, Ministry of Agriculture and Co-operation, Government of India; Rajendra Singh Paroda, chairman, Haryana Kisan Ayog and former director-general, Indian Council of Agricultural Research and Ramesh Chand, director, National Centre for Agricultural Economics and Policy Research – on March 11, 2014 at the India International Centre Annexe, New Delhi.

This is an edited version of the proceedings and is accompanied by an explanatory note on the survey and its main findings. ●

Time to Focus on Farm Income

Ashish Bahuguna

The government of India conducts a survey of farmers every 10 years, called the Situational Assessment Survey (SAS), the latest round completed recently in 2013 with the results expected towards the end of 2014. It will be interesting to match the findings of the SAS with the Bharat Krishak Samaj-Centre for the Study of Developing Societies (BKS-CSDS) survey. However, some findings in the CSDS survey seem to be substantially different from the last SAS in 2003, especially with reference to sources of household income. The recent SAS suggests that most of the income of farmers is from farming while the 2003 survey had suggested that household income was equally divided between farming and non-farming incomes. One suspects that, in the last 10 years, income from non-farm sources would have increased. However, since this is the first cut of the CSDS survey, there can be more data that might reveal a lot more.

ASHISH BAHUGUNA
Secretary, Ministry of Agriculture and Co-operation, Government of India

I have not been surprised by any of the findings. Some results may appear surprising because of the way the questions were framed: if you talk of minimum support price (MSP) or *sarkaari khareed* (government buying) the responses might be different. The MSP regime is operational only for wheat and rice in a very limited number of states while it remains largely on paper with respect to other crops. As I have said, the situation in the agriculture sector has been grim for a while. As per the latest available data, the average income of a farmer is one tenth

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that of a non-farmer. So, why would any sane, right-thinking person want to carry on an activity that does not yield the right kind of returns?

The fact that between 70 per cent and 75 per cent of the farmers were interviewed by the BKS-CSDS survey want to stay on in farming can be attributed to the way we are rooted in our thinking. We are rooted to our land, there are sentimental factors and money or income is obviously not the factor that is making them suggest that they are interested in farming.

The surprising part, according to survey figures, around 85 per cent of farmers had heard of the Kisan Call Centre (KCC). Since 13 per cent had not heard of them, presumably, the others had. That means our KCC scheme is doing extremely well even though farmers are not calling the call centres. I find it difficult to absorb different kinds of information from the same source that some schemes are well known while others are not known at all. Once the full report is out, there will be a lot of takeaways and we will recognise the limitations of the government machinery in the context of reaching out to the farming community.

We have to look at ways of increasing the farmer's income because, for a very long time, we have been focused on production and productivity and have not been looking at incomes in the way we should. We are not looking at how the markets are exploiting the farmers.

DR DHIRUBHAI SETH: Regarding the surprises in the findings, we only have simple frequencies and no cross tabulations. It includes a variety of farmers such as landless labour and very small farmers and if you look at the numbers, there will be 80 per cent information among what you call call-centre relevant farmers because they relate to it. So, we must wait for more analysis, not just cross tabulations but also other aspects since the identification of farmers is truly broad spectrum – as it ought to have been, this population being identified.

In the last 20 years, many farmers have become landless labour though they continue farming. So, it is too early to get a proper analysis and it is good to have surprises because it will enable us to probe more into the issue.

VIPUL MUDGAL: At one place, the report says that 60 per cent people like farming and on another page it says that, given a choice, 61 per cent talks of doing another job. So, the finding is not very different; basically, it says the same thing in the negative. It is the reverse of what you said in the beginning. Depending on the interpretation it can go in any direction.

SANJAY KUMAR: Basically, these are two different questions. The first question, whether the farmer would be willing to leave agriculture and go and settle down in an urban area with better job prospects is a hypothetical one. A lot of people are trying to say that yes, if they get a better job opportunity, they would prefer to go for that. The second question is, overall, whether or not farmers are happy with their farming. If this question is put to a labourer who does not earn sufficient money, I am sure that we will get this kind of response. The level of satisfaction among Indians, generally, working in any sector, is slightly higher. So, if you put the two data together, one could say that there is a problem of interpretation.

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How much is the trend response and how much is the occupational response? While many of us are dissatisfied with life, that does not make us worse off

AJAY VIR JAKHAR: As a farmer, we have reconciled to our fate and that is what the 60 per cent is about. The difference is, given a choice, we do not want to do it. The richer you get, the more unsatisfied with life, you are.

ASHISH BAHUGUNA: If you ask the same question to all farmers, you might get a similar kind of response. So, how much is the trend response and how much is actually an occupational response? Many of us are dissatisfied with life that does not make us worse off.

AJAY VIR JAKHAR: If you are in Delhi, you have things like health insurance but on the farm, if you have sown your crop and it rains, you do not blame anyone as you feel that it was destiny. You are satisfied and you are not upset about it. This has gone on for generations and we reconcile to our fate very easily. However, as a farmers' organisation, BKS does not want farmers to reconcile to their fate and that is why this survey was undertaken. Hopefully there will be many takeaways. Only 10 per cent of the farmers are members of any farmers' organisation; 67 per cent of the farmers approved of demonstrations and strikes for what they wanted to achieve but only 18 per cent took part.

Essentially, farmers have been so disorganised that the government has taken the community for granted and accepted its consent without giving them the right to object to government policies. Hopefully, BKS can help to change this over the next five years. Hopefully, the next elections will be different than the exercise just undertaken.

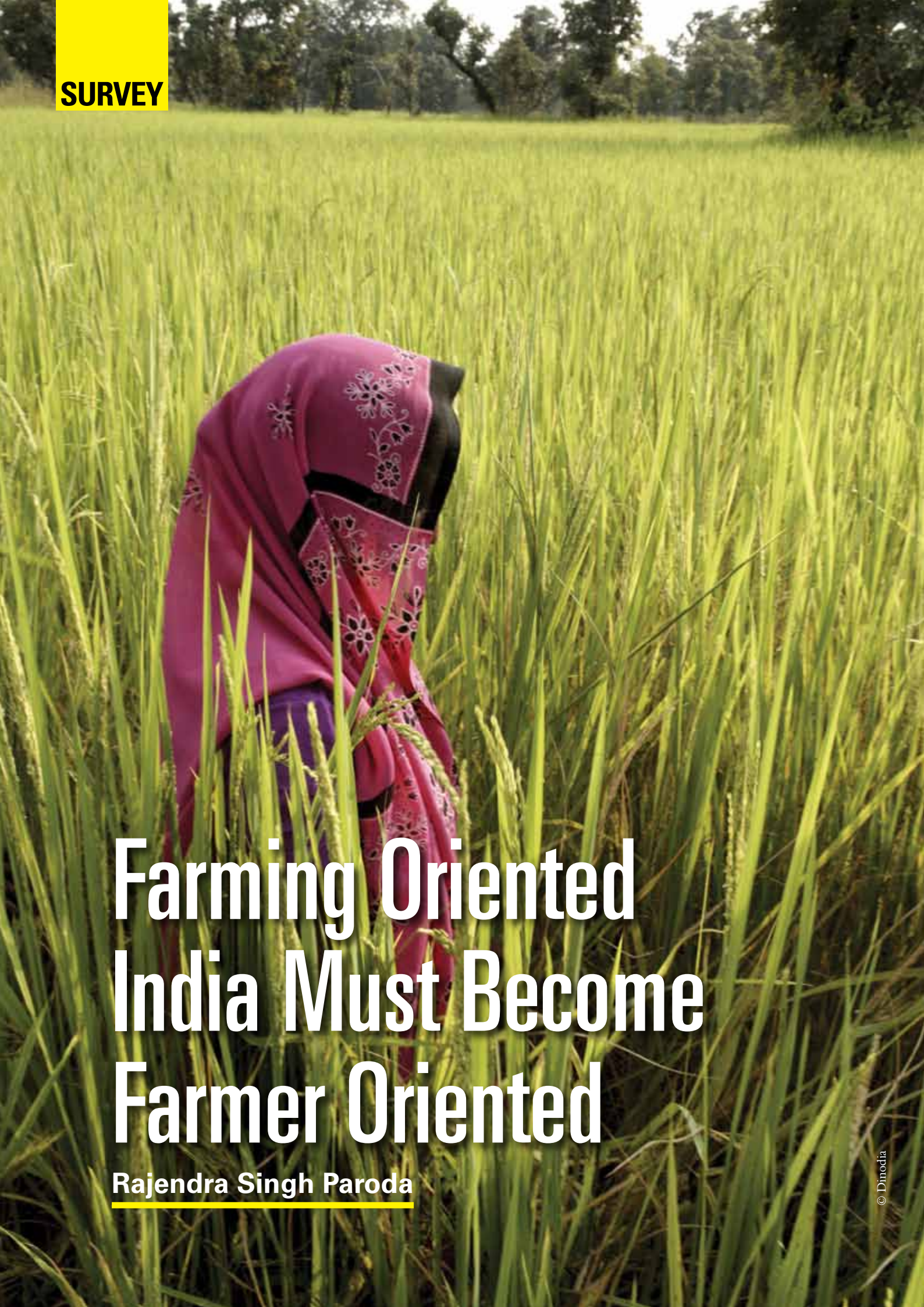
RAVINDER SINGH: If a farmer's child wants to buy a bottle of coke, he has to sell the equivalent of 40 *rotis* and it is equal to one kilogramme of sugarcane. So, there is a huge difference in what the farmer gets and what the farmer has to pay.

ASHISH BAHUGUNA: If the survey reveals that the farmers believe that they do not have a voice, one has to accept it. All of us say we speak on behalf of farmers but how many of us actually do so is unknown. It could be open to debate. Development is actually best left to the judgment of the people who are in the positions they are in. We do not have an active consultative machinery and one of the reasons is the lack of organisation within the farming community. Farmers' groups are very few and far between and where they do exist, many have very strong political affiliations due to which we, in the government/ bureaucracy, are a bit hesitant to reach out to these groups. So, the consolidation of these farmers' groups into voices that can help and guide policy is extremely important.

Everyone will agree that a large number of policies in this country are actually guided more by consideration for the consumer who has a very strong voice. The media is partly responsible for that. There is nobody in the media today talking about the prices of onion. It is less than Rs 3 in the Nasik market today and there are no tears anywhere. The electronic media is so powerful today that the government and policymakers are forced to pay more attention to it than it probably deserves. Unless the voice of the farming community is heard, governments, bureaucracy or anybody will not respond. The response is only to some kind of collectivisation of action, deeds or voices.

The media is only looking at the good news on behalf of the urban consumers. What is the good news on behalf of the rural producers? They are not in the zone of consideration in terms of what is good or bad for them. Farmers may be beneficiaries of price rise but they are also affected by price rise and fall. ●

SURVEY



Farming Oriented India Must Become Farmer Oriented

Rajendra Singh Paroda

RAJENDRA SINGH PARODA
Chairman, Haryana Kisan Ayog and former Director-General, Indian Council of Agricultural Research

This survey has reinforced some assumptions that many of us have had for quite a while. India is known to be a farming-oriented country but has not made it to being a farmer-oriented country. There is talk of food security but not of farmer security and while this report is indicative, it highlights that much more needs to be done.

Since the number of states, districts and farmers per district covered may be small, it is difficult to conclude that the results are true at the national level though some are reflective of national trends. One of them is what I, as chairman of the Haryana State Farmers' Commission, experienced during my interactions with farmers and that is that farmers need knowledge. Farmers need relevant knowledge and information that is not reaching them even today. How does one set this right?

There is not a single dedicated news channel for agriculture. The release of the Bharat Krishak Samaj-Centre for the Study of Developing Societies (BKS-CSDS) report is not accompanied by any television coverage though for any other kind of news there are hundreds of channels present. One hears the rhetoric about Kisan Call Centres and mobile phones which are being touted as life-changing technological tools. However, these tools are not being utilised fully in a way that it benefits farmers. While mobile phone usage has expanded in rural areas, much more needs to be done and farmers need to be educated about how to capture full benefits from these initiatives and inventions.

Another important finding is related to the percentage of people dependent on farming. When I was young, more than 70 per cent of the people were dependent on agriculture in one way or the other. Now, that figure stands at 60 per cent. The situation has not changed much. In order to improve the lives of these 60 per cent though, one observation made by this survey is important. It talks about farmers facing a problem of water availability due to climate change, drought and floods.

It is critical to focus on water management and one of the solutions promoted a lot lately is that farm water should be maintained in the farm. Low crop price is the biggest problem faced by 11 per cent of the farmers in the survey. I feel the number might be higher. There is still a major technology gap in case of yields that needs to be bridged. Technology and innovations are there but they have not reached the farmer or even captured his imagination. Also, these technologies are not miracle technologies like the dwarf wheat and rice to which every farmer can get attracted.

When one goes for water management, soil management and integrated nutrient management, the risk factor is greater and this needs to be addressed. Thus, farmers' participatory approach is important and should be given high priority.

Another important point is that farmers need to move out from rural areas even for basic amenities like education and employment, which means that the biggest challenge is to retain youth in agriculture. When one talks to a farmer, a typical request from him is help to get his son a job. Yet the youth involved in specialised agriculture earn on an average, between Rs 4 lakh and Rs 6 lakh per annum from a land holding of half to one acre. So, despite the numerous success stories of youth in agriculture, farmers would rather not send their children out of their homes or deploy innovative practices.

Now, although the survey does not say so, apart from youth, the role of women have been found to be critical. There was a global conference in Delhi two years ago on women and agriculture that sent a clear message: if you empower women, it will ensure household food and nutrition security. One of the major challenges today is to ensure household nutritional security for children. There is also need for technology to empower women to reduce their drudgery. Thus, there is need to quantify through these surveys how women can play a more important role whether by legal measures, education or technology transfer.

Kisan Call Centres and mobile phones are touted as life-changing technological tools for farmers. Their potential has not been fully expolited to bring benefit to farmers

One can manage floods, drought and low productivity and reduce cost on inputs but there is need for better technology dissemination without any loss of information. The dissemination is very weak today. Extension services have become weaker than during the time of the Green Revolution. Today, there is not even a village level worker. There is a village level worker who has been made a panchayat secretary and issues birth and death certificates because agriculture is not at all important there. Thus, the way technology is provided to the farmers becomes very important.

Similarly, it is essential that farmers get organsed. This survey has revealed that only 10 per cent of farmers belong to farmers' organisations. The biggest problem at the village level is that if the farmers do not form co-operatives in the form of self help groups (SHGs) or producer companies, one single farmer cannot take the risk and move forward. The Gujarat model has clearly shown what co-operative initiatives can do but this has not spread to other states.

For example, in Haryana, every Chaudhary (upper caste) is a Chaudhary, who never listens to anyone else. So, we need to create awareness for farmers to get organised and that is where organisations like BKS have a bigger role to

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play, not to make the farmers a part of the bigger organisation but to help them form their own local or regional organisations.

Ensuring the availability of these inputs to the farmers, be it subsidies, credit or linkages to the markets. This is high priority in the present context since the availability of inputs at the right time, especially of innovations that impact small-holder farmers or on those going in for a crop or commodity approach to farming systems ensures household security.

The lack of technological inputs is often considered to be one of the main causes behind

Socio-economic conditions like debt, floods, drought, crop damage or children to be married are the real causes of farmer suicides

farmer suicides. Rather, their socio-economic conditions like debt, floods, drought, crop damage and children to be married are the real causes. We often say that a farmer is forced to buy expensive seeds but if we take the example of Rajasthan, in the deserts, the farmer is only interested in a bag of hybrid *bajra*. He does not want anything else and he pays for technology because he knows it is beneficial. So, it is not true that the farmer is not willing to adopt new technologies and approaches; what he needs is confidence building.

As far as subsidy is concerned, there is no doubt that it only reaches the big farmers. The small farmers are at the receiving end. It took me six months to get a pocket booklet highlighting various schemes for farmers at the centre and in the states. Imagine the farmer's plight if he tries to get it.

The important thing is that knowledge be made available whenever the farmer wants it. Generally, he is told that there is a scheme but funds are all exhausted. Many a time, those schemes are not appropriate. There is need for a closer study on the subsidy issue. The farmers simply ask about the way forward, which includes knowledge, subsidy, technology and such others. They say that they have reached a state where they cannot run after the government. However, they still need to be educated on the need to go for diversification and secondary agriculture. There is a need to increase their farm incomes and to make use of all possible resources to do so.

Take water, for example. India receives the highest amount of rainfall in the world but is not able to manage it. In flood prone areas, where the water tables are just at six feet below, one is not able to transfer the water and grow other crops there. In Assam, West Bengal, Odisha and Bihar, there is only one *kharif* crop because of a dearth of diesel pumps, poor power connectivity or power shortages.

In essence, farmers need to be supported and given their due status in society but they too need to come forward on their own to address these concerns instead of relying solely on government and outside support. ●

Information is the Key

Ramesh Chand

RAMESH CHAND
Director, National Centre for Agricultural Economics and Policy Research

Bharat Krishak Samaj (BKS) should be complimented for bringing out various documents and reports on farmer-related issues since their approach is different from those taken by many non-governmental organisations and civil society organisations. Many of these organisations tend to take certain statements or published information as the gospel truth that cannot be questioned or challenged. If they feel that growing genetically modified organisms (GMOs) is incorrect, and that too without any basis, they demand support. If one does not accept their contention, one is branded to have been wrong.

BKS' approach has been different in that sense – whether it is the state of farmers, use of Bt cotton or farmers' suicides. It has employed professionals to study farmer-related problems, a credible third party such as the Centre for the Study of Developing Societies (CSDS) being chosen for this project. The CSDS is extremely professional and known to conduct different types of surveys. For other types of studies, BKS has approached organisations such as the National Centre for Agricultural Economics and Policy Research (NCAP), which I head.

Agricultural issues are becoming increasingly complex and addressing and finding settled answers to any issue is very difficult. This survey and the related report is only one of the many tools and collections of information that can help one arrive at some sort of conclusion related to a particular farming problem. One often says that farmers are very conservative about any new technology but the results of

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numerous surveys reveal that they are game to taking risk. They did rather take risks than let their children live or die in poverty. Thus, instead of growing crops with stable yield, they may grow vegetables or commercial crops, and earn more.

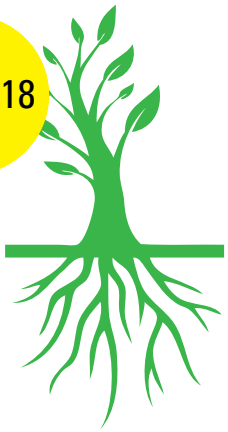
A farmer might start growing tomatoes that might fetch him Rs 5 per kg in the market because he saw his neighbour growing tomatoes the previous year on an acre of land fetching that farmer Rs 3 lakh in all; something he would not earn by growing cereal on 20 acres or in 20 years. The next year, lured by high prices of tomato, the farmer may grow potatoes in expectation of high prices but if they sold only at 50 paise per kg, just like onion sold this year the farmer could face a debt crisis. Instead of earning Rs 3 lakh, he would incur a debt of Rs 3 lakh because he had taken a loan on inputs and even purchased things in advance for his house, anticipating a higher income.

One observes and notes the farmer's circumstances even for such a simple thing it will be difficult to understand why the farmer acts in a particular way. These issues require a lot of sensitivity on the part of those who try to analyse such issues and one should not be superficially looking at what this report is saying.

The contribution of any survey is judged on the basis of four criteria. How representative is it? Does it represent Indian farmers? I will give it 9.5 points out of 10 on this because the samples have been taken from the entire country except Jammu and Kashmir and the Northeast. Though the sample is small, it is representative. The second criterion is reliability of the representative sample. A study like this should not have been completed in two months. It should have been done over a year and the actions of the farmers tracked. The third criterion is about new revelations and the report is quite revealing in terms of the information. The final criterion is issues and concerns that the survey raises. For that, we need to wait for the second cut after the second survey is complete. The two can then be combined and collated and there will be more interesting revelations.

Whenever a conclusion is drawn about an issue, it is based either on perceptions or on certain indicators. A person earning Rs 1.5 lakh per month might not perceive his income to be enough because he cannot afford to buy his favourite luxury car. Perceptions are highly subjective. The aspirations of a farmer who has seen modern urban India will be different from those of a farmer living in a remote area, who has not seen modern urban lifestyles. So, a farmer earning Rs 30,000 per annum in a remote area might be happier than his counterpart living near Delhi or in Punjab or Haryana who may earn Rs 3 lakh per annum. Thus it is extremely difficult to judge perceptions.

The alternative is to frame criteria like poverty thresholds, the minimum icome considered adequate. It may be wrong but if a five-member household earns Rs 100 per head per day in a family of five, the household's condition is not considered to be bad. If the household earns more than Rs 1,000 per month, the condition is defined as good. A survey based on perceptions and a survey based on indicators throws up a lot of differences. This survey is generally based on perceptions but in some cases, it has gone for indicators too.



Only two per cent of the farmers gain from technology. But, most use modern seeds. Either they have not understood technology, or the question has been wrongly framed

There is a point in the survey that 40 per cent farmers live in *kuchha* (mud or non-brick) houses. Unless there is a benchmark around how many non-farming people live in *pucca* (brick and mortar) houses, with which to compare the survey figure, one cannot ascertain whether farmers have a poorer living standard than others or vice-versa. So benchmarking is extremely important.

This survey presents absolute figures. A politician or policymaker might want to see everyone in a *pucca* house but whether society can afford it or not is the critical issue. Some economists state that satisfaction depends on relative income. Someone residing in a colony of rich people will feel poor despite an income of Rs 1 lakh per month but the same person residing in a poor neighbourhood will feel much better off. How and where the farmers are located in India is very important.

Some of the results reveal that the state of farmers is really bad in the country. Even considering that some of the results may be wrong and there is allowance for correction, in certain aspects, the condition of the farmers is really bad. According to the survey, only two per cent of the farmers benefit from technology. However, most farmers have used modern seed varieties – so either the farmer has not understood what technology means or there is something wrong with this question. It is hardly possible that only two per cent of the farmers have benefitted from technology but even if the number is five times more and 10 per cent farmers have benefitted from technology, this number is very small. So, even a 10 per cent figure speaks of the poor state of technology reach of the farmers.

There is a larger issue, we do not have a clear definition of farmers in India. I have countered Dr MS Swaminathan's definition that a labourer is also a farmer, a fisherman is also a farmer, an artisan is also a farmer and a carpenter is also a farmer. Such definitions create greater confusion than clarity. Though I have inherited a farm, and I do some farming, my primary income does not come from it. While the samples taken for this survey do cover genuine farmers the larger issue is that there is a need for a clear definition of farmers so as to be able to articulate their interests in a proper manner.

Much of the information in the survey is related to crops and livestock has not been considered in the results. Livestock should be covered in the subsequent survey. There is also a disconnect between the state of the farmers and some of the indicators. For example, in western India, only 12 per cent of farmers know about suicides while it is universally known how many farmers have committed suicides in western India. Extending this conclusion further, if 88 per cent of the farmers are not aware about suicides taking place, they are certainly not aware of technology. Farmer suicides are such a common rural phenomenon in villages that 100 per cent farmers must be aware of it. Why are only 12 per cent farmers aware of it? Do they not listen to radio and other means of communication? I have to make a provocative point so as to improve the quality of research because this is a disturbing result.

Then, as per the results, in the state where maximum farmer suicides have taken place, the satisfaction of farmers from farming is highest while in West Bengal, where hardly any cases of farmer

suicides are known, 78 per cent farmers are not satisfied with farming. So, what kind of connect do we establish between the conditions of the farmers and the findings which have come out from this survey? The quality of the report must be considered once the two parts are combined.

Now, the issues must be put in two categories even for this kind of survey. There are some issues that are better understood through the opinion of the person. For example, the diagnosis of a disease begins begins from the symptoms that a patient experiences. Then comes the expert opinion. The expert opinion and the individual's opinion cannot be substituted for each other. In case of GMO crops, Dr Paroda is a better person to give an opinion on desirability of GMO than even a host of farmers because this requires understanding of the nuances of science. Now, there must be differentiation between the issues that can be taken to the streets and those that should be left to experts.

It has been asked if the survey questioned the farmers on issues like GMO. This report has actually succeeded in not mixing up the issues that cannot be answered effectively by farmers; issues like GMO. An individual's perception on issues like GMO is influenced by many factors. Even a scientist like me is not sure and I need to discuss with it with fellow scientists; understand their opinions and views and study scientific literature, on GMO before arriving at any opinion. Hence, most of the results presented in this report are related to those issues that can be understood by the farmers covered.

Farming issues are complex and need sophisticated articulation, using supportive evidence, which is what BKS is doing. Also take the way industry articulates their interests. During the Union budget, for example, industry organisations such as FICCI and CII provide their inputs and opinions on various aspects of budget and various schemes. There is no such institutional mechanism in agriculture. While there are numerous farmers' bodies, there is an absence of a strong institution which has a voice.

To consider an example, most farmers will demand a minimum support price (MSP) if asked. If tariff on imported edible oil is increased or reduced by five per cent, it has a much greater impact on farmers as compared to an MSP increase of even 100 per cent for edible oil. The reason is that Indian farmers never get the MSP for edible oil in reality as it is only announced but never implemented. Thus the effect of policies is extremely important.

These are limitations of these kind of surveys that must be highlighted before the government so that the policymakers create an institutionalised mechanism to conduct larger and better surveys.

The government of India's Situational Assessment Survey is conducted once every decade though its report takes another three years to arrive. Instead, a survey must be conducted every two to three years to measure the response to any policy decision in the budget or otherwise. There should be a government agency that articulates the concern of the farmers, taking help of such surveys.

This is not to undermine the value of this survey but to highlight ways to improve it. It is difficult to conduct surveys of even 300 farmers but BKS and CSDS have covered 11,000 farmers and have put up information on so many things. I am sure they would welcome such constructive criticism for the sake of even better surveys in the future.

PARANJOY GUHA THAKURTA: Truth is relative and there is Gandhiji's saying about putting a blindfolded person's hand in hot water, then lukewarm water and secondly, putting it in ice cold water followed by lukewarm water and eventually putting his one hand in hot water and the other in cold water…

DR RAMESH CHAND: When I mentioned relative effect, it was in the context of a farmer's income being one fifth of that of a non-farmer's income in India…

AJAY VIR JHAKAR: We have received many comments on the survey being limited to 5,000 odd households or 11,000 individual interviews. We approached a lot of private companies for raising funds for the survey but every company wanted to know not only the questions that we would be asking but also what the answers would be. Obviously, we did not have the questions and we did not want to share the answers nor did we have them. So, none of the private companies funded us. This survey has been entirely funded by the members of BKS and this is the limitation on the size of the survey. Hopefully, we should be able to generate enough heat so that in future, we have private companies or trusts and foundations to fund us.

PROF. VB SINGH: The survey did not include a question on awareness about suicides. The question was "Has anybody in your village committed suicide in the last five years?" This is a very specific question but there was no general question on whether the respondent knew that farmers were committing suicides.

PARANJOY GUHA THAKURTA: One mediaperson raised the question – why do the answers only involve Bharatiya Janata Party, Congress and such other. Why did they not ask the

question on the Aam Aadmi Party or the Bahujan Samaj Party or any other? The question was an open ended question. The results depend on the way the questions are structured and framed.

GEETA PATEL: I have seen surveys where people have a hard time answering questions in certain ways. So, if you ask somebody whether they know somebody who has committed suicide, they may respond not factually but in a sort of emotional way because it might be a question of honour. So, for a certain set of questions, especially those that are really important, one cannot get typical factual responses and that should be a really important consideration while framing questions.

S DUDEJA: Dr Paroda, what is your scientific and personal opinion on GMO? Why not give freedom to farmers the choice to go for GMO or not? Why do we impose on them as in the case of cotton, brinjal and such others?

DR BRAJESH JHA: Dr Chand mentioned four criteria for good sampling method and one of them was representativeness of sample. From the data, large and medium farmers are almost 35 per cent while small farmers are 60 per cent. So, I do not believe that it is representative of the land holdings. As far as farmers being risk lovers is concerned, off farm income and asset size are closely related to risk preferences. As off farm incomes have increased, the risk preferences of farmers have increased.

DR RAMESH CHAND: Earlier perceptions that farmers are risk averse and will refuse to adopt new technology and commercial crops has now been proved wrong. With increasing off farm income, farmers are not averse to taking risk.

AJAY VIR JAKHAR: The very act of sowing and farming and voting for any political party is a risk.

DR RAJENDRA SINGH PARODA: When the ICAR decided to test and release Bt cotton 15 years ago, there were similar reservations around adoption of GMOs. People who were not farmers were speaking on their behalf and burning fields of Bt cotton. The test of the pudding is in the eating. In 10 years, even the smallest farmer is using Bt cotton and 95 per cent of cotton area is under Bt cotton with the majority of farmers in cotton being small farmers. If the technology had not been good, would the farmers have gone for it even in the next year? India used to import cotton but now exports $2 billion worth of cotton, its yield having doubled. Of all the pesticide used in India, 50 per cent was in cotton on account of the American bollworm, which has been reduced by almost 55 per cent.

Thus, informed knowledge should drive farming practices instead of perception and the farmer is the best judge. If a technology saves the farmer's inputs, increases incomes, is environment-friendly and bio-safe for consumption, why should there be such reservations. Globally, there have been no reports so far against GMOs and I had submitted a report to the Supreme Court, which is still to be debated. The need is to analyse and identify the areas where technologies are needed, the exact uses for them, the safety issues and whether regulatory systems are in place similar to those around pesticide use when testing is done and then there is conviction that a technology is going to be of some specific benefit.

We should be better informed and constantly look for any new technology that can benefit farmers. There were similar reservations when the dwarf wheat and rice were introduced during the Green Revolution. Could we have produced so much wheat without those varieties? Thus, farmers should be provided the best solutions through any technology that is available be it biotechnology, nanotechnology or any other credible technology.

Anti-GMO activists have tried to attribute farmer suicides to this technology. If the question is articulated in that context, one gets the response that one wants. In that context, there is more harm than benefit. Where there are other options like hybrid technology or good variety, one should go for those options. Where options are not available, one should look for newer innovations.

Most farmers in the country are small-holders. Even in the debates at the Global Forum on

Ten years since its introduction, the smallest farmer is using Bt cotton with 95 per cent of cotton acreage under Bt cotton cultivation. The majority of cotton growers are small farmers

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In the debates at the Global Forum on Agricultural Research, the conclusion was clear: reorient the research agenda in order to address the concerns of small-holder farmers

Agricultural Research, the conclusion was clear: reorient the research agenda in order to address the concerns of small-holder farmers. If assured income from their limited land, they can then go for diversified agriculture, which means that farming systems should be our model for research rather than the trend that I work on rice and you work on wheat and I can only give you this technology.

The survey shows that 72 per cent of farmers like farming but 60 per cent like it because it has been their traditional occupation. Only 15 per cent who liked farming said that they were proud of it. These results are credible and justified but the critical point is that farmers need to have a good income. Low incomes from farming is the main reason cited by respondents who dislike farming.

In many cases farmers do not utilise the full potential of the land and resources at their disposal. Only two crops occupy 46 per cent of the total agricultural area in the country. This means that there are a lot of options of going vertical and increasing the cropping intensity and productivity and thus there are hopes in those areas.

There are certain states where good things have happened in agriculture and lessons must be drawn. Television talks about the poor state of agriculture in states like Rajasthan, Chhattisgarh and Gujarat but the figures in this survey point to the opposite. Thus, the policies of the state governments must be appraised and policy reorientation must be an important aspect to consider.

SANJAY KUMAR: This is the first cut of the report and the detailed report will be prepared soon. BKS will share that report with policymakers. For many of the questions, these were just the marginals. One could agree or disagree with many of the findings. One slice of the answers has been presented and there may be three other categories of answers that may have created some confusion. During the preparation of the detailed report, this confusion will be addressed. The current presentation has been limited and all the data was not available and that may have caused some confusion.

About the sample being representative or not, there is no data to compare with and while the survey had 60 per cent of respondents from amongst small farmers, there is the question whether 60 per cent of Indian farmers are small farmers or not. This question will be addressed when the final report is compiled. The first cut gives the basic sense that the sample is representative and all sections of the farmers and all five regions of the country have been covered and it is not biased in favour of the Hindi heartland or southern India. There are farmers belonging to all socio-economic sections, castes and categories including dalit and tribal communities. There can definitely be a better representative sample. We will work on that and present it in a more detailed form before presenting the final report.

The survey was conducted within two months because the farmers were interviewed only once. It was physically impossible to conduct interviews over one year. The entire work took more than a year and there were a lot of deliberations on how to sample, how to design the questionnaire and such other issues. There was a pilot in almost all the 18 states in order to pre-test the questionnaire. ●

A Taste of India's Farmlands

The State of the Indian Farmers – 2014 survey was conducted over 11,000 farmer interviews and covered more than 5,000 farmer households in December 2013 and January 2014. Apart from some 5,000 males, who were the heads of those households, it also interviewed more than 4,000 women and more 2,000 youth in those households. This survey was conducted in 18 major states and over 137 districts of India. The sample profile of the survey was 20 per cent scheduled castes, 12 per cent scheduled tribes, 40 per cent other backward classes and 14 per cent non-Hindus. The sample profile was representative of the farmer population in India.

The survey followed a multi-stage sampling procedure. It focused exclusively on rural India and selected a certain number of districts in every state (except Jammu and Kashmir and the Northeast) and, within each district, selected blocks and tehsils and then villages and farmer households. The social classes of farmers in the survey included large farmers with more than 10 acres who formed seven per cent of the survey sample; medium farmers who had between four acres and 9.9 acres land comprised 19.9 per cent; small farmers with less than four acres comprised 60 per cent of the survey; and landless farmers constituted the remaining 14 per cent.

The survey found that:

- More than 50 per cent farmers believe that their condition is really bad
- Only 15 per cent considered their condition to be good
- 36 per cent live in a hut or a *kuchha* house
- Only 18 per cent have a *pucca* or independent house
- 28 per cent farmers are non-literate
- 14 per cent are matriculates (class 10)
- Only six per cent had joined college
- 83 per cent consider agriculture to be their main source of income
- 72 per cent liked farming; 22 per cent did not like farming
- Of the 72 per cent that liked farming, 60 per cent said it was the traditional occupation while only 15 per cent was proud of being farmers
- 36 per cent said that farming did not yield a good income as the reason for disliking it and 16 per cent saw no future in it.
- 61 per cent farmers want to leave farming and want to move to the cities

One of the most important findings was that in the past year, one in every 10 farmers had to remain without food on a few occasions. The other interesting revelation was about asset ownership. Around three-fourths of the population have mobile phones, a little over half have TV sets and 59 per cent at least one livestock. However, other important assets like water pumps, two wheelers, LPG gas connections, tractors and refrigerators have low penetration.

The states threw up interesting numbers too:

- More than 70 per cent farmers in West Bengal and Kerala and more than 65 per cent in Andhra Pradesh and Himachal Pradesh said that their condition was bad or very bad.

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- In Gujarat, Maharashtra and Madhya Pradesh, less than 25 per cent farmers complained of such poor conditions.
- Of those saying that their condition was bad, 21 per cent had no opinion while 26 per cent had multiple smaller issues.
- Low crop price was the biggest reason given by 11 per cent of the farmers and nine per cent cited declining income and crop failure.

There have been clear regional variations on this question in the survey data collected. In the north, labour issues dominated. In eastern and central India, irrigation was the dominant problem while in the south and the west it was low productivity. Other issues worrying them are education of their children; employment of their children; health; and marriage in the household. Contrary to general perception,

Which political party cared for them the most? As high as 57 per cent did not choose any party and this is the largest democracy in the world.

– Rahul Verma, CSDS

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repayment of loan has low traction in the data.

Only 26 per cent of the farmers said that they would not be lured into leaving their village while a massive 61 per cent of farmers would quit farming and move to cities even if they get employment opportunities. By and large, farmers do not want their children to continue farming and 60 per cent of them wanted their children to settle in cities, citing education for their children as the biggest reason. Only 18 per cent wanted their children to continue in farming. Only 19 per cent farmers considered village life to be better than urban life with a majority believing that city life is much more comfortable. Of the rural youth, 63 per cent helped their families in farming but only 24 per cent are interested in continuing farming and 76 per cent does not want to be engaged in farming. The reasons are varied: 36 per cent are interested in other jobs while 22 per cent said that earnings were not good in farming and eight per cent felt that they were too well educated to be involved in farming.

Women have a different perspective since they run the households and 67 per cent feels that the income from agriculture is not sufficient to meet family expenses. Only 20 per cent found farming income to be sufficient; 21 per cent said that price rise was the household's biggest problem while 13 per cent cited poverty as the biggest problem. Around 43 per cent believes that if the main earner in the family had been doing something other than farming, lives would have been much better.

Amongst the most significant findings, 55 per cent of farmers will distribute wealth equally between sons and daughters; 68 per cent farmers in South India favour equal distribution while only 45 per cent in North India do so. People with larger land holdings are more in favour of equal distribution of their land holdings.

With regard to government schemes, except for the Mahatma Gandhi National Rural Employment Guarantee scheme, about which 85 per cent of farmers have heard, less than half of farmers have heard about schemes like minimum support price (MSP), Direct Cash Transfer, Land Acquisition Bill and Foreign Direct Investment. Only 53 per cent have heard of the loan waiver schemes, while less than one in 10 farmers has benefitted from it. Only 52 per cent have heard of the Kisan Credit Card scheme but only 15 per cent have benefitted from it. For most other schemes, less than one third have heard of them while less than 10 per cent have benefitted from them.

Information on farming-related assistance from government agricultural departments was not available to 74 per cent of the farmers while only 15 per cent received assistance from government agricultural departments. Out of this 15 per cent, only three per cent got regular help while eight per cent got occasional help. Around 70 per cent farmers have not contacted any Kisan Call Centres (KCC) while 19 per cent have not heard of them.

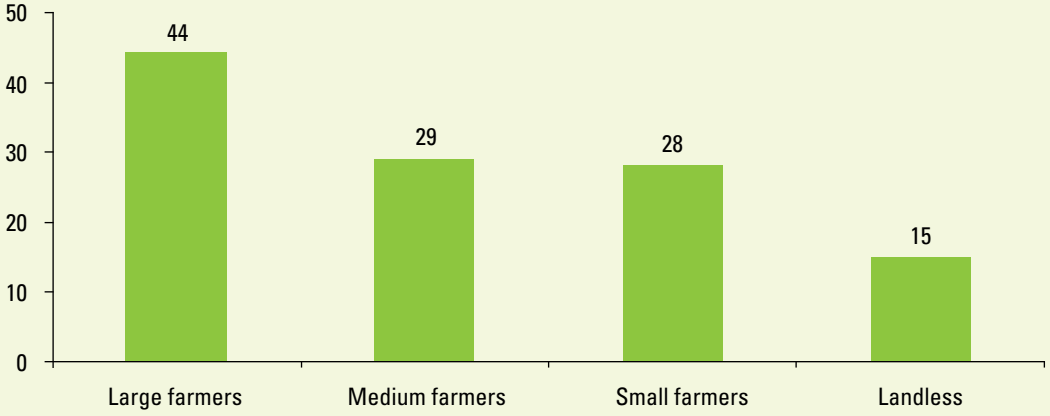
Most farmers think that almost all government schemes help only the wealthy and prosperous farmers. On the open ended question (without any options) about the most important issue for the farmers in the elections, 30 per cent did not express any opinion while 24 per cent mentioned certain very small issues. Price rise (16 per cent), employment (six per cent) and irrigation (six per cent) were more important issues than corruption.

Survey Snippets

Section 1: Opinion on land acquisition

Only one in every four farmer has heard about the land acquisition bill and around two-thirds has not heard about it. The awareness about this law is more amongst the large farmers – 44 per cent of the big farmers had heard about the land acquisition law (*Figure 1*). There is also regional pattern to the awareness. A large proportion of farmers from South India had heard about the law. The farmers in western and northern India are less aware about the law (*Figure 2*).

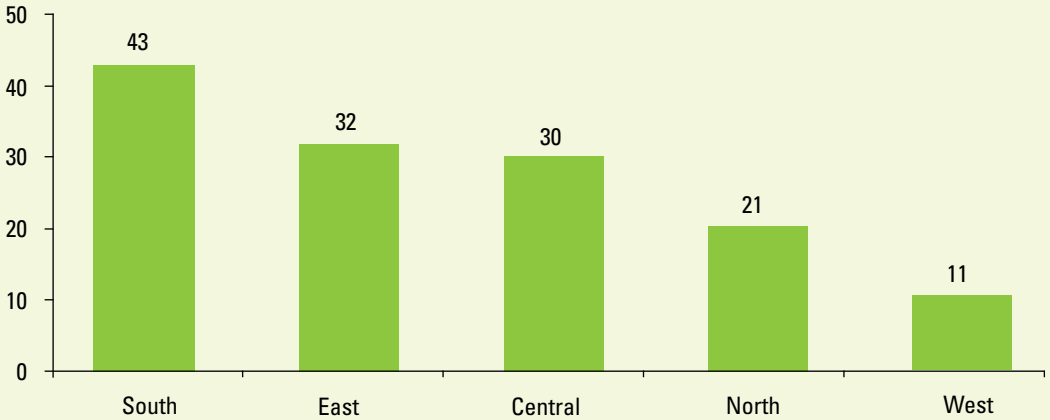
Figure 1: Large farmers are more aware about the land acquisition law



Note: All figures are in percentage

Question asked: ***Have you heard about the land acquisition law?***

Figure 2: Regional pattern in awareness about the land acquisition law



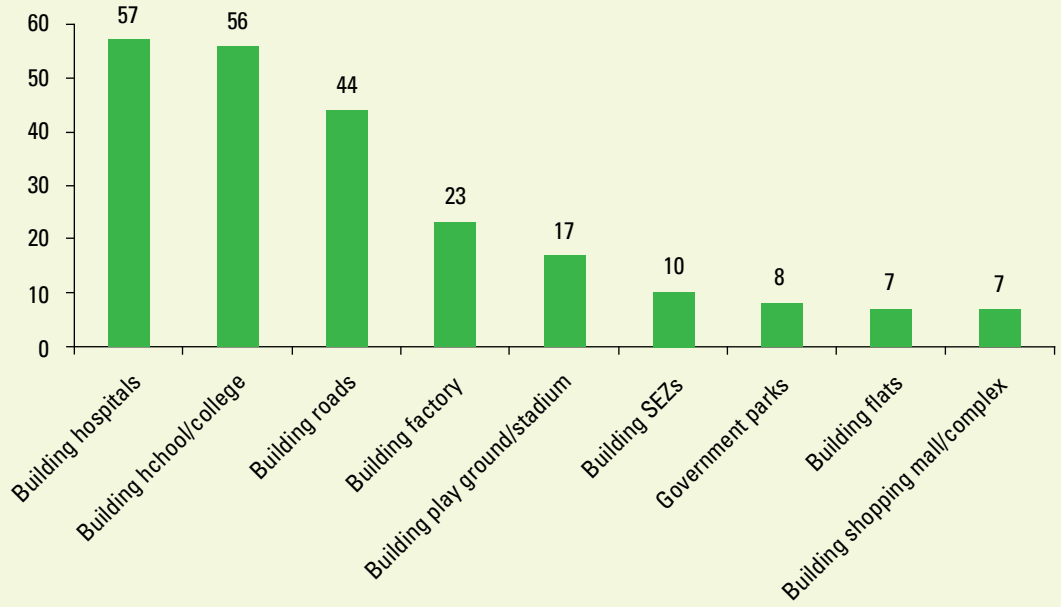
Note: All figures are in percentage

Question asked: ***Have you heard about the land acquisition law?***

The law stipulates that the government can acquire agricultural land from farmers through fair compensation for government or private work but most farmers are hardly aware about the provisions of this law. More than half of those familiar with the law does not know the details. However, a majority (57 per cent) of those aware of this law feels that the farmers stand to lose from it. Only two out of 10 farmers believe that this law is beneficial for the farmers.

According to the law, the government can acquire cultivable land from farmers for various development works. Farmers were asked what would be an acceptable reason for government action acquiring land. The data suggests that farmers believe that land acquisition by government is correct for development works such as building hospitals, school, colleges and roads, which help the public at large. The support for acquiring land for building shopping malls, complexes, flats, government parks and special economic zones was not acceptable (*Figure 3*).

Figure 3: Land acquisition for public infrastructure is acceptable



Note: All figures are in percentage

Question asked: ***People have different opinions on the need for the government to acquire cultivable land from farmers for various developmental works. Now I will read out some important areas of development. You tell me whether for each of the works, is it correct or incorrect on part of the government to acquire cultivable land from farmers.***

Section 2: Use of various facilities

2.1 Crops: Selling it to government purchase centre and cold storage facility

More than three-fourths of farmers does not sell their crops to government purchase centre. Farmers cited many reasons such as good prices in open market. Bad behaviour of government officials, delay in payment, corruption and such others among the reasons that dissuaded farmers from selling their crops to these purchase centres.

Similarly, only 11 per cent farmers had cold storage facility in their area. Only 30 per cent among those who had cold storage facility in their area availed of it for storage.

Table 1: Reasons for not selling the crop to government purchase centre

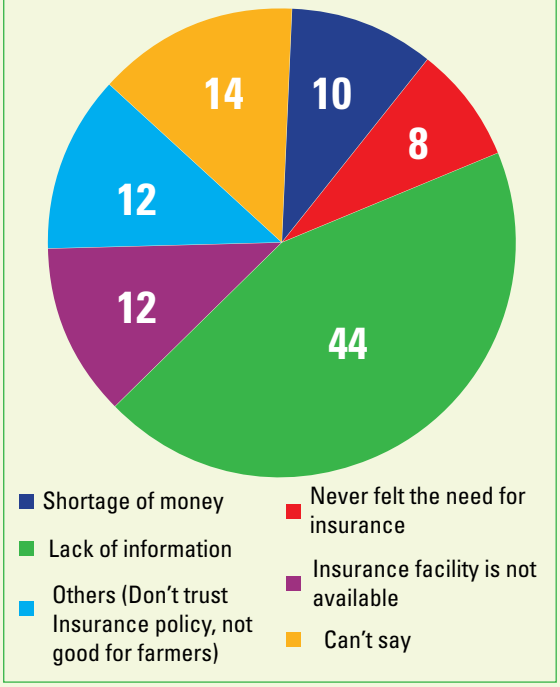
	Per cent
Low profit/ Good prices in the open market	16
Bad behaviour of government officials	3
Corruption in trading	7
No information about government centre	8
Have to wait for days to sell a crop	5
Lack of storage facility at the centre	3
Delay in getting payment	4
Government agency does not have facility to buy my crops	3
No government purchase centre nearby	11
Others	18
Can't say	22

Question asked: ***Do you sell your crops to the government purchase centre? (If no) then, what is the reason for not selling it to them?***

Table 2: Crop insurance	
	Per cent
Always insure crops	5
Sometimes insure crops	13
Never insure crops	67
Cannot say	15

Question asked: ***How often do you insure your crops – always, sometimes, never?***

Figure 4: Reasons for not insuring crops



Note: All figures are in percentage. Only among those who said that they never insured their crops.

Question asked: ***(If 'never') what is the main reason for not opting for crop insurance?***

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2.3 Advice on farming related activities

For advice on most activities like purchasing seeds, fertilisers, farming equipment and pesticides and such others farmers depend on friends and relatives or depend on their own judgment. They also seek advice of the shopkeepers. Very few seek advice from an institutional set-up like Kisan Call Centres or other government agencies. Most farmers get their information mainly from shopkeepers (*Table 3*).

Table 3: Whose Advice Farmers Seek? Farming Related Activity

	Self	Friends/ relatives	Shop-keeper	Farming expert	Government agency	Kisan Call Centre	Others
Seeds	33	26	16	9	2	0	6
Fertilisers	29	19	25	9	2	1	7
Pesticides	22	16	36	8	2	1	7
Loan	24	20	6	4	7	1	9
Farming equipment	23	20	10	6	4	1	11

Note: All figures are in per cent. Rest expressed no opinion on this question.

Question asked: ***People take suggestions from different quarters to gather information about seeds, fertilisers etc. in order to increase their production. Generally from whom do you take suggestions on the following issues?***

The Agri Agenda

New Government; Unattended Tasks

Surinder Sud

The foremost task before the new government, particularly its agriculture minister, is to restore viability of farming, which has been severely eroded. This requires result-oriented action on several fronts, which together constitutes the agricultural agenda that the new government should ideally follow.

SURINDER SUD
Consulting Editor (Agriculture), *Business Standard*

Key areas that require urgent attention in this regard range from natural resources like land, water and climate-related concerns to policies governing agricultural pricing, marketing, domestic and external trade, farm inputs, credit, mechanisation, technology, risk management and a host of others.

Even areas like management of wild animals, which cause heavy losses to farmers by ravaging their standing crops, and social security for farmers and farm labour should form part of the revised agricultural policy framework. Ensuring economic security for farmers needs to be the underlying objective of all farm policies.

That income from farming is too low to allow a farmer to support his family has been corroborated by several studies and surveys conducted in recent past. The survey carried out by the Centre for the Study of Developing Societies (CSDS) and sponsored by the Bharat Krishak Samaj (BKS) as recently as December 2013 and January 2014 has been the latest one to endorse that agricultural incomes generally fall short of livelihood needs of the farm households.

As many as 67 per cent women included in the survey categorically stated that agricultural income was insufficient to cover household expenditure. Nearly one-thirds of the surveyed farmers needed to supplement their earnings by doing non-farm work.

Earlier, the National Commission on Farmers (NCF), headed by the noted farm expert, Dr MS Swaminathan, had observed in a series of reports

submitted in the mid-2000s that the average income of a farmer was less than the salary of a peon in government office. Quoting the National Sample Survey Organisation (NSSO) data for 2002-2003, the Commission had pointed out that the average monthly income of farm households is Rs 2,115 – varying from around Rs 5,000 in Jammu and Kashmir and Rs 4,000 in Punjab to as low as Rs 1,000 in Bihar. This, evidently, fell woefully short of the estimated average per capita monthly consumption expenditure of Rs 2,770.

Regrettably, the situation worsened over time rather than show any improvement. That was clear from a subsequent report presented to the Planning Commission by one of its sub-groups on "adoption and generation of relevant technologies and their dissemination to the farmers" in 2007. It reckoned that while the per-worker income in the non-agriculture sector spurted by more than 200 per cent in the 1980s and 1990s, the rise in agricultural workers' income was a mere 12 per cent. This report had estimated the average annual income of a worker (including land owning farmers) in the agriculture sector at just around Rs 19,546 (at the prices prevailing in the late 2000s), against around Rs 87,364 in the non-agriculture sector.

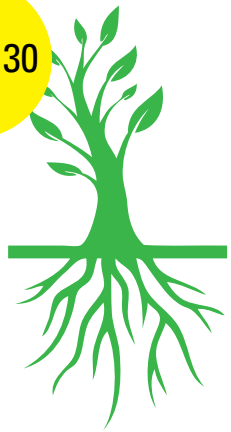
Such gaping disparity, obviously, should not be allowed to endure if widely prevalent discontent among farm community is to be done away with. The NCF had suggested that the growth in agriculture should be measured in terms of rise in farm income rather than in quantitative increase in output. This counsel makes sense and, therefore, merits consideration, especially because in years of bumper harvests the prices normally drop sharply, denying the farmers to reap the benefit of higher output.

On viability of farming, the Commission had observed that only those farm holdings, which measured four hectares or more were economically viable. By that standard only a small fraction of farmers, about 5.8 per cent, were operating farms that allowed them to make a reasonably

comfortable living with agricultural income alone. Going by the last agricultural census (2005), only 4.9 per cent of the country's total 129.2 million landholdings fell in the medium category (4 to 10 hectares) and just 0.9 per cent in large category (above 10 hectares). The remaining over 94 per cent holdings were either small or marginal and, thus, economically unviable.

Data gathered through agricultural census indicates that the average size of operational farm holdings in the country has steadily shrunk from 2.28 hectares in 1970-71 to 1.55 hectares in 1990-91, 1.33 hectares in 2001-02 and mere 1.23 hectares in 2005-06. Consequently, the proportion of small and marginal farmers is steadily increasing and that of medium and large farmers declining. Clearly, the large farmers are gradually becoming medium farmers and the medium ones are becoming small (one to two hectares) or marginal (less than one hectare) landholders.

There are also indications that a large number of marginal farmers, who are unable to subsist on farm income, are giving up farming and turning to other occupations. This is reflected in the



Over 2,000 cultivators are quitting farming every day. This speaks volumes about the plight of Indian agriculture and its farmers, who are unable to subsist on farm income

population census data that shows that the total count of farmers in the country has slumped from 110 million in 1991 to 103 million in 2001 and 95.8 million in 2011. Thus, over 2,000 cultivators are quitting farming every day. This speaks volumes about the plight of Indian agriculture and more so of Indian farmers.

Apart from diminishing size, the on-going rapid fragmentation of these farm holdings into tiny pieces of land is a matter of grave concern. Many land pieces have become so small that even the plough, leave alone farm machines like tractors, cannot operate there. While conceding that the trend of diminishing size of operational holdings is hard to stem unless the inheritance laws are drastically modified, there seems little reason why tiny fragments cannot be merged into single units through land consolidation drives. Land ceilings laws which stipulated caps on land that an individual farmer can legally own, have indeed lost their relevance today and need to be scrapped.

Two most critical land reforms that are relevant in the current situation are land consolidation and legalisation of the land lease system. Remember, a successful exercise in land consolidation undertaken in the 1950s and 1960s in Punjab (which included the present Haryana then) had played a significant role in paving the way for the green revolution to take shape in that region. Without land consolidation, the farmers would have had little incentive to invest in irrigation – notably on installing tube wells, which was essential for high-yielding crop varieties to perform to their true potential and bring about the green revolution.

In the absence of a legal land lease system, many absentee farmers tend to leave their land vacant rather than lease it out to tenants for fear of losing ownership rights. The tenants, too, feel insecure in the absence of legally valid lease contracts and, therefore, refrain from investing in land improvement measures. A proper land lease system that protects the rights of both tenants and land owners will help bring more area under crop cover and also incentivise tenants to undertake measures to upkeep and, in some cases, improve land fertility and crop productivity. The new government would, therefore, do well to impress upon the states to revisit their land reform statutes and suitably amend them on desired lines.

Unabated degradation of land in terms of both its chemical and physical health is another issue that needs to be tackled urgently. This is the result of extraction of more nutrients from the soil, especially in the areas under intensive agriculture, than are being added to it through fertilisers and organic manures. Thanks to vast differential in the prices of urea vis-à-vis phosphatic and potassic fertilisers – that indeed is the consequence of ill-advised policy of keeping urea out of the purview of nutrient-based subsidy system – the nutrient use has become highly skewed, tilted in favour of urea. Inadequate application of farm yard manure, moreover, is causing deficiency of several micro nutrients in the soil. This has impaired soil fertility in some key farm belts, adversely affecting crop yields.

This imbalance needs to be corrected by revisiting the fertiliser policy. Also, more incentives

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are needed for farmers to spur them to add the required quantity of micronutrients to the soil to get higher crop yields. For this, the network of soil testing laboratories needs to be expanded to enable farmers to apply need-based doses of different plant nutrients to the soil.

Besides land, water is another natural resource that is under threat. Not only is its net per capita availability on the decline, its quality is also deteriorating. This indeed can be attributed as much to its indiscriminate exploitation as to unabated pollution of surface and underground water sources due to discharge of urban sewage and industrial effluents into water bodies and improper disposal of pesticide containers. The most worrisome part is the stagnation of area under canal irrigation and rapid decline in the groundwater table in tube well – irrigated areas. Official estimates indicate that the gross canal irrigated area, which reached the peak of 77.99 million hectares in 1999-2000, stopped expanding after that.

In fact, it has tended to shrink after 2000 from lack of upkeep of the network of canals and their distribution channels. Regrettably, no new medium or large irrigation project has been launched for a long time. Even those irrigation projects that have been under construction have been languishing for want of adequate funds or other reasons.

Shockingly, nearly 370 irrigation projects have remained in various stages of implementation since the 1980s. The centrally-sponsored Accelerated Irrigation Benefit Programme has obviously failed to speed up the completion of these projects.

The new government will need to look into the reasons behind this failure and do the needful to revive the canal irrigation sector. In the groundwater irrigated belts, however, there is an urgent need to regulate water use and encourage its efficient utilisation. For this, the systems of micro irrigation, such as drip and sprinkler irrigation, need to be encouraged.

Climate change is posing a formidable challenge to Indian agriculture. The projected increase in the frequency of weather-driven natural disasters, such as droughts, floods, cloud bursts, unseasonal spells of rainfall and wide temperature fluctuations,

are set to affect crop productivity. Studies have shown that wheat output will dwindle by four to six million tonnes with every 1° Celsius rise in the mean temperature. Even the livestock and fisheries sectors are unlikely to remain unscathed.

Fortunately, agricultural scientists are fully aware of this peril and have begun working on strategies to mitigate its impact by evolving new crop varieties capable of withstanding various kinds of stress and working out new agronomic practices to escape or minimise the damage due to global warming. The gainful utilisation of the outcome of their research and development efforts would rely largely on government policies. Mechanisms will need to be put in place to help farmers adapt to the altered climate and take up other measures to mitigate its deleterious effects on farming and its allied activities.

One of the ways to enhance farmers' income is to enable them to get remunerative prices for their produce. This will require well-conceived reforms in agricultural pricing and marketing systems. The present system of fixing minimum support prices (MSP) has not fully served the intended purpose of ensuring good returns to farmers for their produce.

This is because it is applicable, for all practical purposes, to only two crops – rice and wheat – and in a handful of states where the grain procurement agencies operate. Elsewhere, the farmers are forced to sell their crops at below the MSP in the post-harvest peak marketing seasons. Even distress sales are fairly common as has even been acknowledged by senior government functionaries.

Besides, the present system has caused a grave distortion in the cropping pattern, encouraging the farmers to grow more rice and wheat, which is further bloating the already overflowing government foodgrain coffers, and less of other crops that are in short supply. Moreover, the way MSPs are fixed now by averaging the production costs in different states leaves many farmers in the high-cost areas dissatisfied.

Little wonder that the recent BKS-financed farmers' survey by the CSDS has shown that 62 per cent of farmers are not even aware of MSPs and 64 per cent of those who have heard about them are dissatisfied with the mooted rates, finding them too low to cover their production costs.

The NCF, which had gone into this issue in great detail had suggested that the MSPs be at least 50 per cent more than the weighted average cost of production. It had also observed that the government should make a distinction between the MSP – which should be the bare minimum price that a farmer must get to avert distress sales – and procurement price which should be market-driven, guided chiefly by the prices the private trade was willing to pay. The new government will do well to study this recommendation and rework the farm pricing and procurement systems to ensure fair prices for both farmers and consumers.

In the field of agricultural marketing, the need for reforms is even greater. Most states have yet to adequately open up agricultural marketing to bring in the necessary transparency and competition. Most of the states which have amended their Agricultural Produce Marketing Committee (APMC) legislations have not done so strictly according to the model farm marketing law circulated to them way back in the early 2000s.

The system of fixing minimum support prices has not brought good returns to farmers for their produce. It is applicable to only rice and wheat and only in a few states

The new government will need to not only woo more private investment in agricultural marketing to expand the marketing network but also motivate the state governments to bring their APMC laws at par with the draft model Act. The new regime will need to reduce the number of intermediaries in the marketing of farm commodities by allowing direct marketing and establishing backward and forward linkages between farmers and end-users or consumers of these commodities.

Marketing levies, including middlemen's commission and *mandi* charges, too, need to be reviewed as these tend to needlessly swell transaction costs and push up consumer prices without benefitting the producers. Foreign direct investment (FDI) in agricultural marketing – not retail alone – should be encouraged as the domestic investment alone may not suffice to expand and modernise marketing infrastructure. The FDI in retail would become meaningful for farmers only if the stores set up with exotic funding are closer to villages. For that, the rider in the present policy that

When prices plummet to the disadvantage of growers, very little is done in support. A stable external and internal trade regime for farm goods has to be evolved by the government

the FDI will be allowed only in big cities needs to be reviewed. Such stores in smaller towns, including *mandi* towns, will make greater sense as they will be in a better position to source their supplies from local farmers.

This apart, there is an inherent pro-consumer bias in the present policies governing domestic agricultural pricing and external trade of farm products. When local prices tend to spike – to the benefit of farmers – measures are immediately taken to bring them down by curbing exports and imposing various kinds of restrictions, including storage limits and movement curbs. However, when the prices plummet to the disadvantage of the growers, precious little is done to support them. Such policies need to be shunned. The new government should in fact evolve a stable external and internal trade regime for the farm goods so that the production can adjust to domestic and internal demand. This policy would benefit both producers and consumers.

Labour is rapidly becoming scarce, especially in the agriculturally progressive zones. This has necessitated greater use of farm machines to perform farm operations which have traditionally be done manually. There is also another reason for greater mechanisation of farm chores. The use of machines ensures greater precision in farm operations like seed planting or transplanting and inter-tillage. This, in turn, enhances efficiency and saves time to facilitate growing of more crops in the same land. Some of the modern farm practices like conservation agriculture involving zero or minimum tillage and planting of crops on raised

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or sunken beds require the use of costly farm machines. The new government should, therefore, consider enhancing fiscal and other sops on the purchase of farm machinery. Also, given the high cost of several essential machines, such as laser land levellers, harvester and transplanters, setting up of farm machinery service centres should be encouraged. These centres can either provide the implements and machines to farmers on hire or do the job-work on their fields on fixed charges, obviating the need for individual farmers to invest in farm equipment.

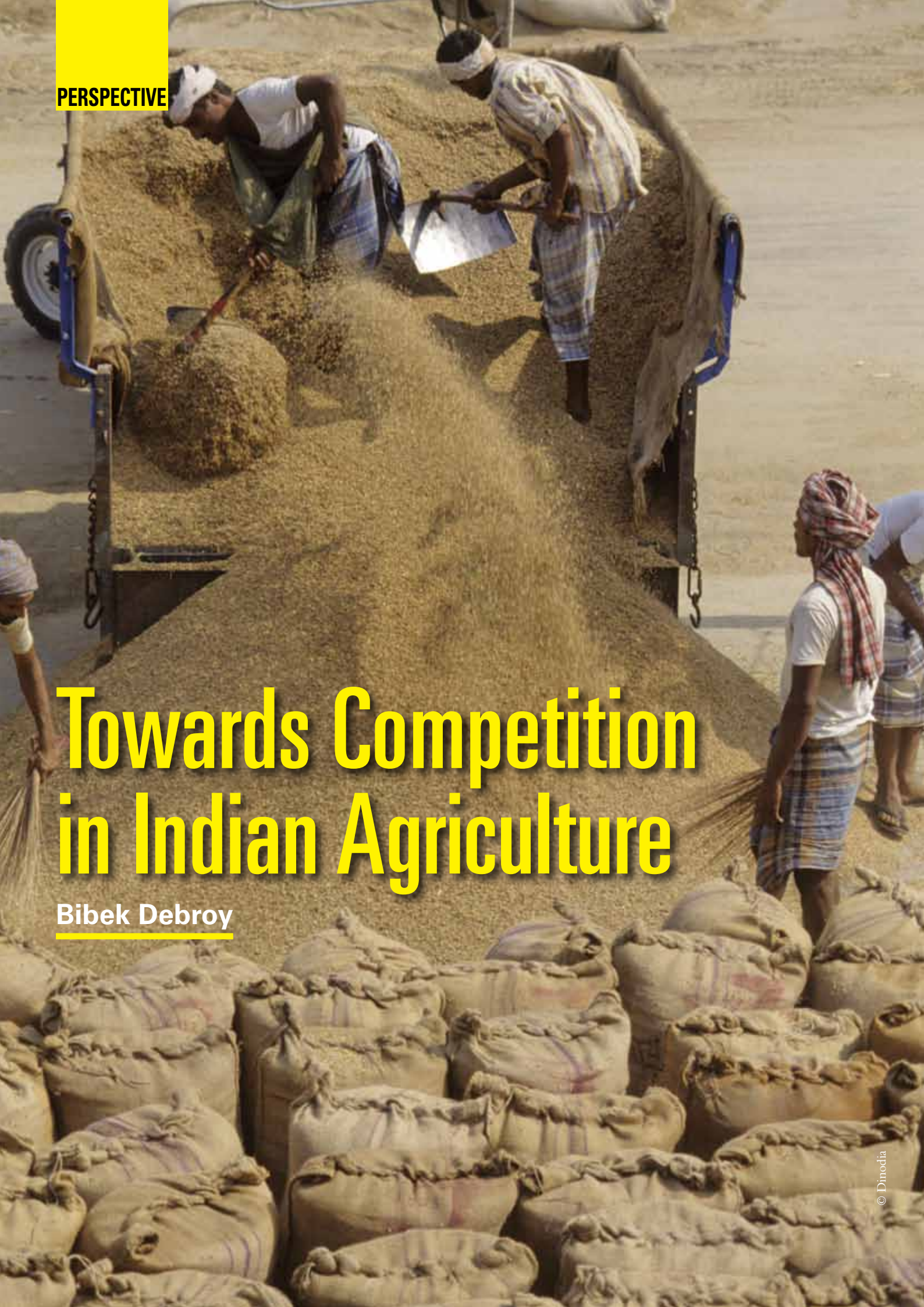
Lack of mechanisms to hedge risks in farming is a big concern for the farmers. Though nearly half a dozen different models of crop insurance have been tried out in the past 15 years or so, none of them has really worked satisfactorily. Assessment of crop losses due to natural or man-made disasters, fixation of premium and payment of compensation are the main problematic areas. There is no consensus yet on the ideal unit for assessment of crop losses – be it the entire area of a panchayat, or a village or an individual farm. The premiums, too, are deemed rather high despite hefty government subsidies. The compensation often comes too late and also happens to be too little. These aspects need to be re-examined to craft a farmer-friendly insurance model that is economically viable and are practically feasible.

Given that the use of sophisticated technologies like biotechnology and nanotechnology is becoming indispensable to enable Indian agriculture to withstand the challenges before it, the new government will need to expedite reforms in the biotech regulatory system. The present regulatory arrangement in the form of the toothless Genetic Engineering Appraisal (formerly Approval) Committee (GEAC) under the administrative control of the environment ministry has proved incompetent to handle the task. In any case, the powers of final approval of genetically modified (GM) crops have now been usurped by the environment ministry (read environment minister), allowing the decisions to be taken on political and populist considerations rather than on scientific basis. The Biotechnology Regulatory Authority of India (BRAI) bill has been languishing for several years despite having been introduced in parliament for consideration and passing. Since even this bill is not free of controversies, the new government should revisit it and amend it suitably to allay fears about GM crops and encourage research and development on genetic modification technology.

Yet another field where the new government will need to focus is the prevention of crop losses due to wild animals, such as Neelgai (blue bulls), monkeys, pigs, elephants and the like. Their control is a problem because killing of many of them is prohibited either under the wildlife protection laws or on social or religious considerations. A way out needs to be found to keep them away from farm fields to avert heavy crop losses.

That said, the truth that cannot be overlooked is that, agriculture being a state subject under the Constitution, the implementation of many of the needed reforms and other measures suggested above falls in the states' domain. At the same time, however, the centre is not totally helpless either. There are multiple ways of enlisting states' co-operation through skillfully crafted schemes or by linking central funding to the progress in implementation of these reforms or other measures. What is needed is the political will on the part of both centre and the states. ●

PERSPECTIVE



Towards Competition in Indian Agriculture

Bibek Debroy

In national income accounts, there is a simple classification of sectors into primary, secondary and tertiary.[1] We will interpret primary products and agriculture both in a narrow sense and in a wide sense; in a narrow sense because we will exclude forestry and fishing; and widely because we will include not only agriculture, as defined for purposes of national accounts but also inputs (seeds, fertilisers, agro-chemicals, bio-technology), processing, storage, trade and distribution.

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It is necessary to make this point because general equilibrium theory has a definition of competitive markets and assumptions on competition. In looking for a sector where those assumptions might be somewhat true, one often points to the agricultural sector. This is simply not true. Apart from other elements in the supply chain, with domestic and foreign investments and corporate entry into agriculture, it is not even true of the production process.

Trade negotiations, multilateral, regional or even bilateral, can at best provide triggers for pro-competitive reform in agricultural markets. However, this has been compounded by a food security issue. At one level, food security is posed as a balance of payments problem, that is, a country's ability to pay for its required imports of food. More commonly though, food security is defined as an individual household's access to food, or its lack, falling short of chronic instances of famine.

Food security has become a pressing issue due to conversion of farmlands to biofuel plantations, escalation in global oil prices, relentless rise in population, loss of agricultural land to urbanisation and industrial development, the ever growing impact of climate change, soil degradation and increasing growth-related consumption demand from India and China.There is also a trade-off, because higher food prices raise incomes of those who sell food, such as those in rural areas. However, they hurt net food consumers, such as the urban poor. Logically, the phenomenon of food price inflation should trigger and stimulate pro-competitive agricultural reform, so that supply-side changes can occur. In practice though, it often leads to greater distortions and state intervention, at least in the short-term. This is perverse. The underlying reasons behind higher food prices are not going to go away. Therefore, the supply-side responses require pro-competitive agricultural reform.

In a sector like agriculture, anti-competitive policies are fundamentally internal and are often a function of government policies that prevent competition

Both agriculture and competition policy have figured in international trade negotiations, multilateral, regional and bilateral. Since these negotiations involve countries, the focus has been on cross-border measures. However, barriers to competition are not invariably cross-border. Indeed, in a sector like agriculture, anti-competitive policies are fundamentally internal and are often a function of government policies that prevent competition.

This paper documents government intervention in output and input markets that prevent competition in Indian agriculture and these have parallels in many other developing countries too. With some liberalisation, competition policy instruments have begun to focus on some aspects of the agro distribution chain that involves the private sector. While this is important, complete competition also requires elimination of government intervention that prevents competition.

Development is correlated with a reduction in the number of people who are employed in agriculture. In relatively richer parts of the world, people have been pulled out of agriculture and into more productive activities. Indeed, there are several different types of movement. People who remain in agriculture move away from producing foodgrain to other forms of crop output such as horticulture. There is commercialisation and

1 It is worth bearing this in mind when one considers figures like shares of agriculture in GDP or shares of population employed in agriculture, which may be declining, even in developing countries. However, interpreted in the broad sense of an agricultural supply chain that extends from the farm to the fork, the importance of food and agriculture does not decline commensurately.

diversification. Others move away to allied activities like aquaculture, dairy-farming, floriculture and poultry. Still others move away from farm activities entirely to non-farm activities, such as rural industry and services. Some comments are in order about such figures on employment in agriculture.

- First, these refer to usual principal and subsidiary status, implying that there may be a secondary occupation outside agriculture. Indeed, with the seasonal nature of the bulk of India's agriculture, that is invariably the case.
- Second, there are wide variations across states and the pace of decline also varies across states.
- Third, there are gender differences. The farm to non-farm transition happens first for males and a feminization of the agricultural work force occurs.
- Fourth, out of those who are in agriculture, roughly two-thirds (64 per cent) describe themselves as self-employed, that is, they are farmers. The remaining roughly one-third (36 per cent) are wage workers, almost invariably on casual basis.
- Fifth, 13.1 per cent of rural households are landless and only 11.2 per cent have medium or large holdings, defined as those that are more than two hectares. Also, 44.8 per cent of land-holdings are sub-marginal (0.01-0.40 hectares), 18.7 per cent are marginal (0.41 to 1 hectare) and 12.2 per cent are small (between a hectare and two).

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Small-holder agriculture cannot exploit economies of scale and scope. For development to happen, there must be a movement up the value chain of productivity

This kind of small-holder agriculture cannot exploit economies of scale and scope and is at subsistence-level, inefficient and relatively unproductive. For development to happen, there must be a graduating out and a movement up the value chain of productivity.

Since people always want to better their lives, there must be a reason why this farm to non-farm transition does not happen and there are several distortions that are policy-induced. All these tend to prevent competition.In output markets, these policies segment markets, or lead to perverse price signals.

First, there are physical government-imposed restrictions on production, marketing and distribution. These are usually through the Essential Commodities Act (ECA) and the Agricultural Produce Marketing and Control (APMC) Acts. The ECA was originally enacted in 1955 and traces its origins to scarcities created by World War II. This is legislation, "to provide, in the interest of the general public, for the control of the production, supply and distribution of, and trade and commerce, in certain commodities."[2] In 1981, more teeth were added to ECA through the Essential Commodities (Special Provisions) Act, to permit action against black-marketing and hoarding. While ECA covers several products, most of these tend to be agricultural and orders under ECA can be issued to control production, supply and distribution, with the purview extending to price control. The statute itself defines some commodities as "essential". This is not comprehensive though, in the sense that the central government and state governments can declare other commodities to be "essential".[3] In particular, the

2 http://chdfood.gov.in/Word%20Documents/EssentialAct1955.pdf

foodgrain trade is distorted because of ECA, since limits are imposed on stocking foodgrain. Private traders need to obtain permits before foodgrains can be transported out of a state, or even a district. There are also zonal restrictions, so that private trade in foodgrain is prohibited across broad zones.

Second, there are minimum support prices and procurement policies in favour of foodgrains. This means procurement of foodgrain through the Food Corporation of India (FCI), not only to maintain buffer stocks, but also for distribution to consumers through the inefficient public distribution system (PDS). Other than crowding out the private grain trade, this also creates perverse price signals for producers.

Third, there are the APMC Acts. Stated simply, APMC Acts require buying and selling of agricultural products to be done through regulated markets, with mandated fees to be paid to Market Committees.[4] Marketing Boards are meant to use these fees for developing infrastructure in rural markets. Though the fee collection does happen, the extent to which fees collected have been used for developing infrastructure is debatable. Cold storage and grading facilities exist in few of the markets. In addition, a regulated market can be quite far away and a requirement that a farmer should only transact through a regulated market does no particular service to the farmer. Unless amended, the APMC Acts prevent direct marketing or contract farming and work against corporate sector involvement.[5] Fiscal constraints have meant reductions in public expenditure on research and development and extension services. It is by no means obvious that a market failure exists in either.

Fourth, there is a lack of harmonisation of indirect taxes on agricultural products across states. Not only does this exist for VAT (value added

3 Some of these restrictions were eased in 2002 and 2003. But they were imposed again in 2006.
4 Throughout the country, there are around 8,000 regulated markets. While there is a range, an average market fee is around 10 per cent.
5 States like Andhra Pradesh, Tamil Nadu and Odisha have permitted direct marketing outside APMC.

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tax) and GST (goods and services tax), but there are also specific entry taxes for specific locations, such as when entering cities or the boundaries of municipal corporations.

Fifth, because of ECA, APMC and fiscal anomalies, there are physical check-posts, which are particularly serious for perishable agricultural produce. In addition to these, there are physical checks on trucks thanks to environment-related laws. Some of these are the Indian Forests Act, the Forest (Conservation) Act and Rules, the Air (Prevention and Control of Pollution) Act and Rules, the Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms/ Genetically Engineered Organisms or Cells Rules, the Wildlife Protection Act and Rules and the Biomedical Waste (Management and Handling Rules) and lack of uniformity under the Motor Vehicles Act and its assorted rules. The problem is with multiplicity, rather than clearances.[6]

Suffice to say that there has not been sufficient movement on any of these. Distrust of competition and the private sector also spills over into credit, insurance and land markets. For example, fears about alienation of land are understandable. That does not, however, explain why markets for leasing of land should not be opened up, or why there should be resistance to futures markets, or opening up retail trade to competition.[7]

A commission on centre-state relations was set up and submitted a report in 2010.[8] One of the sub-reports focused on the lack of a harmonised domestic market in agricultural products. This highlights the high compliance costs because of the factors mentioned earlier and the fragmentation of markets, leading to lack of economies of scale and cartels and monopolies. The sub-report has the following kind of numbers from unification and harmonisation of agricultural markets.

- Reduction of post-harvest losses by five per cent to seven per cent for foodgrain and 25 per cent to 30 per cent for fruits and vegetables.

6 For instance, the national permit system does not work for trucks and it takes a truck two hours to cross an inter-state border. The average distance covered by a truck is 200 km per day.

7 Foreign Direct Investment in retail is a limited issue, though it has been a contentious issue in India. A 2009 study by ICRIER (Indian Council for Research on International Economic Relations) discusses the issues connected with this, http://www.icrier.org/page.asp?MenuId=24&SubCatID=25

8 http://interstatecouncil.nic.in/ccsr_report_2010.htm

- Static gains of 10 per cent through harmonizing standards of agricultural products across states.
- Static efficiency gains of up to 20 per cent because of disintermediation of distribution chains, resulting in higher prices for farmers and lower prices paid by consumers. The welfare gains are roughly distributed in a ratio of 40 per cent for farmers (producers) and 60 per cent for consumers.
- Savings in compliance costs by five per cent consequent to fiscal unification. Savings of up to 20 per cent if there is a transition to a complete and unified GST (Goods and Services Tax) and revenue gains of 25 per cent. The tax/GDP ratio will increase by one per cent.
- Reduction in transportation costs by 30 per cent.
- Incremental growth in agriculture and allied activities by two per cent because of static gains alone.
- Static increment to GDP growth by one per cent because of removal of inter-state barriers alone. Increment by two per cent if broader agricultural cum rural sector reforms are undertaken.
- Increase in export volume (not value) of agricultural products by 20 per cent.
- Additional direct employment generation by five million a year. If one includes indirect employment, additional employment generation by 12 million a year.

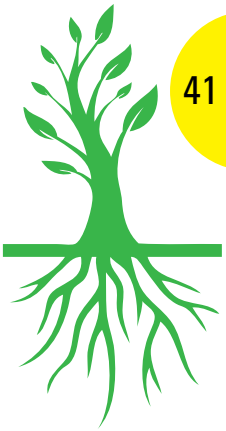
One can quibble about the modeling used or the specific numbers in this sub-report. The broad thrust of anti-competitive policies in domestic output markets, however, remains. A Draft National Competition Policy has now been prepared for India.[9] This also states, "It has been observed that certain policies and laws at the state level sometimes tend to artificially segment markets in India. Policies and/or laws, which interface with a large section of the country's population such as agriculture, power and such may erode substantial benefits potentially emanating from a national market and the presence of competition across all sectors."

Let us take the key question. This is one of investing in agriculture and the rural sector and injecting competition into market access by farmers, reducing intermediation. At this level, producer price controls exist in several developing countries. Triggered by food price increases, across a range of countries, there have been interventions on the consumption side, including price controls, consumption subsidies, food aid, food for work, cash transfers and the elimination of taxes on consumption. Are these fiscally sustainable? Do they lead to additional distortions? Do they lead to supply-side adjustments or are they knee-jerk reactions?

To take but one example, in several countries, minimum support prices (MSPs) for agricultural commodities have been increased. Apart from contributing to food price inflation, this increases the spread between prices paid to producers and subsidised prices charged to consumers, increasing the fiscal burden. Since MSPs need not always extend to all agricultural commodities and public procurement need not cover all commodities either, this creates perverse price signals and distorts resource allocation. To add to the policy-induced distortions, do government policies encourage intermediation between the prices farmers receive and the prices consumers pay? To the extent that monopolies and cartels are not *de jure* mandated by government policy, but exist *de facto*, do competition policy instruments address these?

Competition in agriculture is not only about the farm to fork supply chain. It is also about input markets. Seeds, pesticides, herbicides, agro-chemicals and fertilisers are obvious examples. Power and water belong to a slightly different category. On the face of it, the issue is simple enough. Agricultural inputs are resource intensive and are increasingly produced by the private sector. Because they are resource and research intensive, there are barriers to entry and concentrated market structures are understandable. To ensure research and development does take place and high fixed costs of research and development are recouped, in the trade-off between static efficiency and dynamic efficiency, intellectual property rights (IPRs) are granted, creating the potential for abuse of dominance. Therefore, the competition policy must address such issues.

Increase in MSP leads to food price inflation, increases the spread between prices paid to producers and subsidised prices charged to consumers, increasing the fiscal burden



9 http://www.mca.gov.in/Ministry/pdf/Draft_National_Competition_Policy.pdf.

While this is a fair point, there are several problems that complicate the India story. In general, distortions are created by input subsidies on power, water, seeds and fertilisers. In the case of fertilisers, this works through a Fertiliser Control Order of 1985, that controls pricing, distribution and imports. Potash-based fertilisers are entirely imported. Feedstock and raw material requirements for potassic and phosphate fertilisers are imported. Natural gas and LNG are imported for urea. Therefore, there are government controls on imports (other than gas, urea, ammonia, phosphoric acid, rock phosphate, sulphur, diammonium phosphate or DAP, muriate of potash or MOP) and prices of imported inputs. Through a complicated pricing scheme, the difference between the maximum retail price (MRP) paid by farmers and the cost of fertilisers at the farm-gate is paid as a subsidy to fertiliser companies.[10]

A straightforward analysis of market shares of different fertiliser companies in segments like urea, DAP, single super phosphate (SSP) or MOP, therefore, misses the core issue, one of distortions created by government policy. In addition, the channel of distribution to farmers is not direct sales by fertiliser companies but through dealers and distributors. This point of distribution also extends to seeds. As with fertilisers, seeds were historically controlled through the Seed Act of 1966, the Seeds Control Order of 1983 and the Seeds Policy of 1988. This was liberalised through a National Seeds Policy of 2002 and restrictions through industrial licensing and foreign direct investment (FDI) caps have also been removed.

While the public sector exists, private sector presence in seeds has increased significantly and within the private sector, there have also been mergers and acquisitions. While the debate about intellectual property rights and yields of better-variety seeds is a valid one, the core issue remains that of distribution channels between seed companies and farmers. As in the case of output markets, that link in the distribution chain is one on which there has been limited research and is the one that should be the focus of competition policy intervention.

Development in India requires a movement away from agriculture to non-agriculture sectors and within agriculture, a movement away from foodgrain output. This involves commercialisation and diversification of agriculture, as well as the creation of off-farm employment opportunities. Hence, there is an agricultural reform agenda and there is a rural reform agenda that goes beyond agriculture. Within the agriculture set, there are issues like allowing corporate sector involvement in agriculture, removal of government imposed restrictions on production, marketing and distribution[11], refocus of public expenditure away from input subsidies to infrastructure[12] and extension services[13], disintermediation of distribution chains, forward markets, contract farming, revamping credit and insurance and freeing up of land markets[14]. All these are linked to encouraging commercialisation and diversification. There is also an issue of encouraging off-farm employment and this is where rural sector reforms kick in, through provision of physical and social infrastructure.

Across sectors, since 1991, there have been successes because of competition. The problem with agriculture is that there has been little competition in agriculture. Consequently, those who earn a living

Development in India requires a movement away from agriculture to non-agriculture sectors and, within agriculture, a movement away from foodgrain output

10 There are valid arguments that this subsidy benefits fertiliser companies rather than farmers and within farmers, it benefits only larger farmers. Therefore, one should switch away from a system of public expenditure on input subsidies. There have been recent (2010) attempts to switch some fertiliser subsidies directly to farmers. That is irrelevant for the present purposes though.

11 For instance, the Agricultural Produce Marketing and Control (APMC) Acts and orders under the Essential Commodities Act.

12 Plus decentralisation in the management of rural infrastructure.

13 There is also a research and development agenda, but it is not necessarily obvious why this has to be public sector driven. Extension services will have to be largely public sector driven.

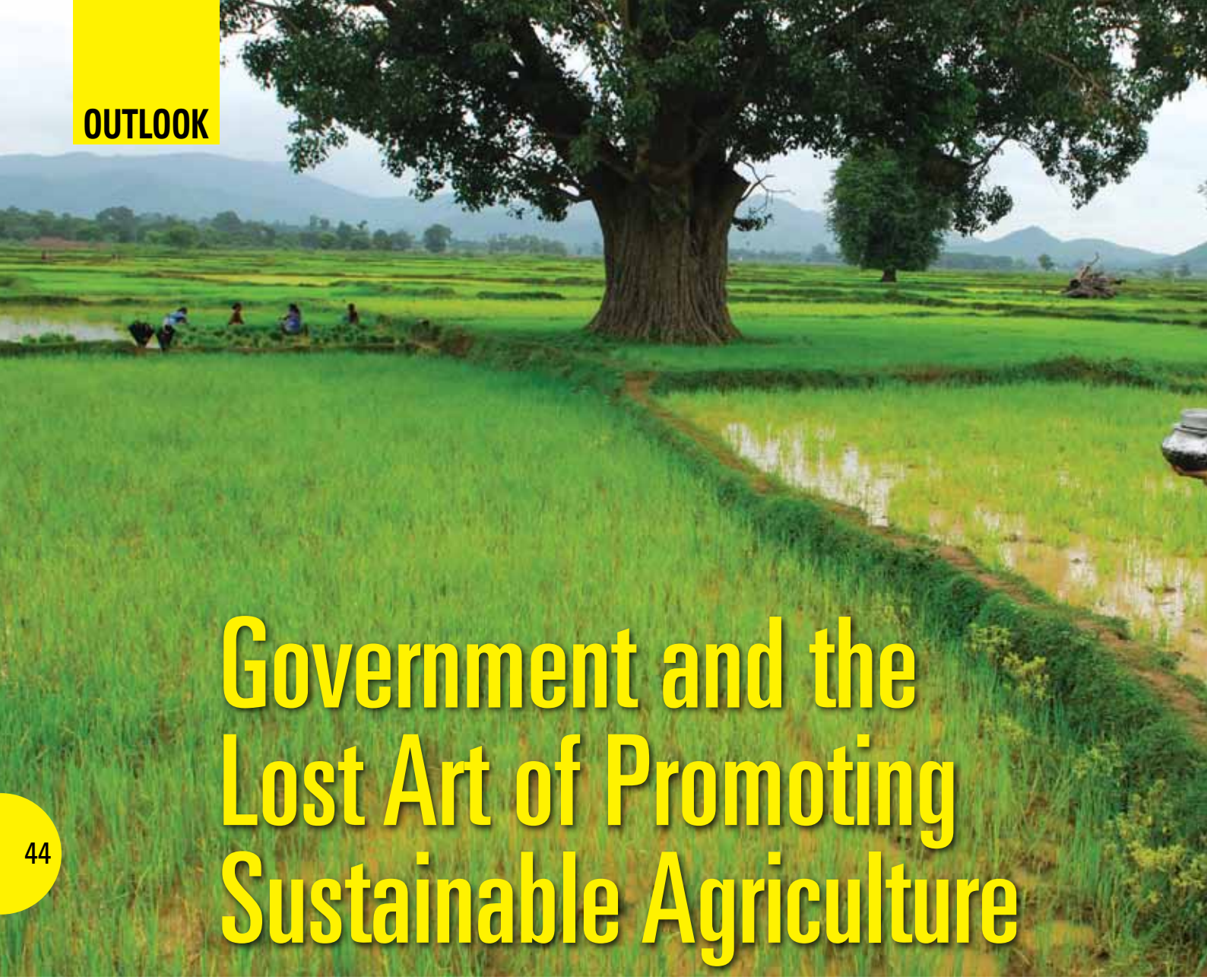
14 There are two distinct issues of ownership laws and tenancy laws here. The former is contentious, the latter less so.

from agriculture have also not benefited. We should no longer be debating MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act), though there are legitimate concerns about leakages, corruption and its non-creation of productive assets. Instead, we should ask why, so many decades after Independence, we need something like MGNREGA. The answer is that policy-induced distortions have stifled growth in agriculture.

Here is a quote. "The facts cited above may seem to suggest that the rural economy has been largely static. Some notable developments have, however, occurred over the past few decades. Large areas which suffered from repeated failures of rainfall have received irrigation; new crops have come to occupy a significant position in the country's production and trade; the agricultural and the industrial economies in the country now exert a powerful influence on one another; problems of rural indebtedness and the village moneylender exercise the administration and the people much less than they did fifteen or twenty years ago; and finally, in the countryside an awakening and a desire for raising standards of living. The Five Year Plan envisages substantial increases in agricultural production for foodgrains as well as for commercial crops. The targets proposed in the Plan are to be realised through development programmes relating to major and minor irrigation works, extension of cultivation, reclamation and intensive farming based upon the application of the results of research. Considerable stress has been laid on the conservation of existing resources, in particular, of forests and the soil. Diversification and expansion of the rural economy is sought through emphasis on the development of dairying and horticulture and through the growth of village industries, wherever possible, with the aid of power and improved tools. Land resources are to be supplemented by the resources of sea and river and, therefore, the Plan provides for a new and extensive programme for the development of fisheries. As the rural economy has been largely starved of financial resources, a substantial programme for providing finance for agriculture has, therefore, been proposed."

No, this isn't a quote from the 12th Five Year Plan (2012-17) document. It is a quote from the 1st Five Year Plan (1951-56) document.[15] That we can still relate to most of the quote is a telling commentary. ●

15 http://planningcommission.nic.in/plans/planrel/fiveyr/welcome.html



Government and the Lost Art of Promoting Sustainable Agriculture

Asish K Ghosh

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The Right to Food Bill has been passed and millions of poor are assured of rice and wheat at the cheapest rate, with promise of a heavy subsidy from the government of India. This subsidy, which was once considered a nightmarish proposition by Pranab Mukherjee, former finance minister and now President of India has now been accommodated in the budget. It is to be seen whether the new government incentivises action in support of farmers helping to ameliorate their living conditions while supporting sustainable agriculture.

Certain grim realities remain even though India has had a bumper production of foodgrain for three consecutive years and is expected to support farmers with minimum support price (MSP) for several commodities. Procuring foodgrain for the public distribution system (PDS) and its safe-keeping are the principal activities of the Food Corporation of India (FCI). Reports over a long period confirm that FCI has a dearth of adequate storage facilities. Thus foodgrain rots or are sold abroad for cattle feed at half its price.

Meanwhile, frustrated Indian farmers commit suicide and the starving millions jostle for BPL (below poverty line) cards for cheap rice and wheat. A handful launch outstanding sustainable agriculture initiatives with little support or encouragement. The government should take note of these initiatives.

A recent report on the foodgrain scenario available in the public domain is revealing. Prepared by the National Informatics Centre for the Ministry of

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Agriculture, it shows that West Bengal – the highest rice producing state in the country – has a record of lowest procurement (1.24-1.45 per cent) for consecutive years. No explanations offered; only cold figures stare at the reader.

The 'Economic Survey' indicates that when net production of foodgrain was 145.88 million tonnes (mt) during 1991-1995, per capita availability was 444.5 gm. Surprisingly, as the net production increased to 160.58 mt (1996-2000) to 163.16 mt (2001-2005) reaching the peak at 183.22 mt (2006-2010), the per capita availability declined from 444.5 gm (1991-1995) to 434.92 gm (1996-2000), 414.24 gm (2001-2005) and finally landed 404.62 gm (2006-2010). (Sood, 2013)[1]

The government of India, in its desperate attempt to get rid of surplus stock, fixed the minimum price for export at $300 per tonne, while the prevailing global rate was $230-$260 per tonne. So the grain glut continues despite desperate attempts to sell the surplus abroad. By December 2013, India had a surplus of 34 million tonnes (mt) of rice and 36 mt of wheat. The surplus foodgrain, it should be noted, is in excess of 65 mt required to meet the demand under the Food Security Act.

By the end of January 2014 another bumper rice harvest of 100 mt should have been added to the stock pile. Interestingly, the domestic price offered by the food processing industry in the country may well be higher price at $240-$270 per tonne while export of processed food may provide higher revenue and employment opportunities in the newly emerging sector. (Sood, op.cit.)[2].

While bumper production may be reassuring for the country's food security, the great uncertainties of weather due to climate change continue to pose a serious threat to the proclaimed policy of sustainable agriculture. The new dispensation should initiate change in this space. While the government in the 1960s was very pro-active in expanding the Green Revolution concept to eastern India, it remains surprisingly silent about the strategy and dedicated budget allocation to promote its Mission on Sustainable Agriculture, under the National Action Plan on Climate Change (NAPCC).

It is not clear whether and how the efforts of the agriculture ministry are impacting traditional farmers' ability to cope with the vagaries of climate change, especially against the dangers of salinisation in coastal agricultural fields. There are no reports that indicate any efforts by the Indian Council of Agricultural Research (ICAR) or the ministry. It is largely civil society, the farming community or non-government organisations that are trying to revive, save and cultivate such varieties against all odds with some notable successes. These are the initiatives that must be supported by the new order which must demonstrate the ability for out-of-the-box thinking.

After 25 years, one can see the revival of Pokkali rice in the Ezhupunna village in coastal Kerala, which is known to be indigenous, saline and flood resistant. Local farmers, a media report states, "had to wage a long battle to be able to cultivate the crop once again." (Suchitra, 2013)[3] The 56 hectare (ha) plot of paddy field once used for the Pokkali variety was converted into prawn farming area by powerful lobby and it was only after the untiring efforts for over four years, the local community finally succeeded in bringing the plot back to Pokkali.

Once known across Alapuzaha, Ernakulam and Thrissur districts, this traditional variety was facing extinction. The success of the farmers motivated even the Protection of Plant Varieties & Farmers' Rights

Table 1: State-wise rice production and procurement[4]

	2009-2010			2010-2011			2011-2012		
	Production	procurement	%	Production	procurement	%	Production	procurement	%
Punjab	11.23	9.27	82.5	10.83	8.63	79.6	11.31	7.73	68.3
Haryana	3.62	1.81	5.00	3.47	1.68	48.4	3.96	1.98	50
Uttar Pradesh	10.78	2.9	26	12.01	2.55	21.2	12.89	3.30	25.6
Bihar	3.59	0.89	24.7	3.32	0.88	26.5	4.75	1.53	34.2
Andhra Pradesh	11.03	7.55	68.4	14.38	9.6	66.7	9.02	6.41	71
Odisha	6.96	2.49	35.7	6.55	2.46	37.5	6.01	2.13	35.4
Tamil Nadu	5.91	1.24	20.9	6.13	1.54	25.1	6.32	1.57	24.8
West Bengal	14.6	1.24	8	12.33	1.31	10.6	11.65	1.45	12.4

Authority of the central government to acknowledge the achievement by bestowing upon them the Plant Genome Saviour Award in 2011. The farmers have even managed to get the 'Geographical Indication' certificate under the Patents Act.

Past record shows that Pokkali rice used to be cultivated over 24,000 ha but declined to 5,000 ha over the years till it was about to become extinct. It were the farmers who fought valiantly to save it. They managed to get the seeds from women's co-operatives at Rs 25 per kg. Money was raised through Rs 1,000 bonds on the condition of refunding the amount after six months or equivalent amount of Pokkali rice in lieu of the money. As many as 120 people supported the venture.

Public enthusiasm prompted the Kerala government to allocate Rs 27 lakh for cultivating traditional varieties like Pokkali in organic agriculture. Farmers expect to sell the rice at Rs 50 per kg. Demand for a Pokkali seed bank has been raised urging the authorities to make it available along the Kerala coast. The Pokkali rice field, it may be noted, can still be used for prawn farming from November to April.

Elsewhere in coastal Karnataka, another battle to cultivate indigenous salt tolerant Kaggi rice has been won. Originally, it was cultivated over 2,000 ha in Uttara Kannada, district Karnataka which declined to 1,200 ha due to government apathy and ever-expanding prawn culture. A farmer's body called Kagga Bhatta Beliger Sangha is now spearheading the movement to save the rice variety; the rice is sold cheap at Rs 10 per kg but it is easily digestible and provides cheap source of nutrition for hard working people. (Pallavi, 2014)[5]

Most importantly, one can get as much as 2,000-2,200 kg per ha of yield. Besides, the variety is salt tolerant. Despite these attributes, the government of India has never thought of extending support to save *kagga*, even though the NAPCC proclaimed a 'Mission on Sustainable Agriculture'. Karnataka farmers say that in spite of repeated pleas, they had not received any response from the government.

The plight of the farmers in West Bengal in the critically vulnerable areas of the Sundarbans reflects the same apathy of the government. In the post-Aila situation, in 2009, half the agricultural fields of the island areas were salinised and no help was forthcoming to provide farmers with alternative seeds. It was again the local farmers, led by a civil society organisation, ENDEV-Society for Environment and Development, Kolkata that collected at least five indigenous varieties of salt-tolerant seeds and propagated the same in seven of the worst affected blocks of the region, linking community based organisations (Ghosh, 2012)[6].

The farmers have successfully reintroduced the salt tolerant seed varieties and set up seed banks to make the seeds available to other farmers. The initiative won global recognition as an outstanding example for adapting to climate change but neither the state nor the central government has shown any interest. The list of states affected keep growing. When will the government sit up and take note? ●

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India's cotton farmers' lives transform for the better

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Small Water Projects, Big Hopes

Bharat Dogra

Some small-scale, low-budget rainwater harvesting and water conservation projects have provided significant and long-term benefits owing to careful planning and implementation with close involvement of local people. In Korseena and neighbouring villages of the Dudu block (Jaipur district, Rajasthan), a sum of Rs 18 lakh is all that it took to create a structure that can improve water availability to 13,874 villagers and 79,850 farm animals (including sheep and goats).

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These areas, near the famous salt water lake of Sambhar had for long suffered acute water scarcity. Proximity to this lake meant that the villagers suffered on account of high salt content and brackish water and were desperate to find a solution. There appeared to be hilltop rainwater that was free from the impact of the lake's salt water. It was also apparent that, till some centuries ago, a traditional water collection structure had existed on the hilltop as its remains were still visible. However, over the years erosion led to damage and the area where water was collected silted up.

It was clear why the early residents had chosen this place to collect water. A good catchment area existed all around this spot from which water flowed into four *nullahs* (drains). A social worker, Lakshmi Narayan, led a campaign for building a people's dam to ensure that water could be collected at this place again. When Lakshmi Narayan died in a tragic road accident, the Barefoot College of Tilonia, Ajmer district decided to take up the task that Lakshmi Narayan cherished so much.

An organisation, based in the United Kingdom, Belu Water agreed to provide Rs 18.5 lakh for this project, which consisted of a small stone and cement dam and another structure to contain the overflow. This project was implemented with the help of 'Pryatna', a voluntary organisation.

Catchment treatment work was taken up to increase the green cover and provide bundings (bund wall) to reduce water pressure on the steep slopes. The soil and sand dug up from the main storage area was used to make bundings further down the water path so that the possibilities of recharge could increase. The main storage can store between 15 million and 20 million litres of water. If this water is not tapped at the hill point, it also turns brackish as it approaches the Sambhar lake.

At present there are several gaps in the stones because of which water remains in storage for a shorter time. As a result, its recharge capacity is higher. Later when the gaps are filled with silt, water will be stored for a longer time.

Within a year of the completion of the Korseena dam, its beneficial impact can be seen in the vicinity. Sonath Gurjar, an elderly villager from Korseena says, "This project has been very beneficial. It is well constructed. In the previous year at least 50 wells have experienced a rise in water table. Not only did people get drinking water, a lot of land could be irrigated as well. Farm animals and wild animals could also quench their thirst. Apart from Korseena village, benefits also reached Sarthala and Nangal villages."

According to estimates made by the Barefoot College, these benefits will eventually reach at least 20 villages. Directly or indirectly, it is hoped that the project benefits will reach 13,874 villagers and 79,850 farm animals. This dam will help to recharge an estimated 106 hand pumps, 36 open dug wells and 31 ponds. Project documents also reveal that most of the project funds (nearly Rs 10.5 lakh of the total budget of Rs 18.5 lakh) were used to provide wages to local workers employed in the project. Nearly 3,196 persons were employed.

The future benefits will depend on timely rains but the project is structured in such a way that given the large catchment area, even moderate rain can fill up the storage space. So people have high hopes from this project.

Sonath Gurjar took my pen and drew a neat diagram on my notebook to show how this work can be extended by a similar project lower down at Kankraya. He explained that a natural water storage existed in the area which could be reinforced at

very little expense. A few days later Ramkaran, a senior co-ordinator at Barefoot College, went back to Korseena and began further work with Sonath and others at the Kankraya site so that this water conservation work could soon be taken up.

Two other similar projects have been taken up in Mandavariya village (Kishangarh block) and Paluna village (Jawaja block) of Ajmer district by Tilonia Shodh Evam Vikas Sansthaan, an organisation closely associated with Barefoot College.

The Mandavariya project has benefitted 10 villages courtesy the Rs 42-lakh project with five villages enjoying extensive benefitts. Earlier the rainwater flowed rapidly down the Mandavariya hills causing heavy soil erosion. Now water has been stopped to irrigate many fields and soil erosion has also been checked significantly. Crops of wheat, mustard, barley and vegetables now adorn the fields where no *rabi* crop was taken earlier. With water and moisture conservation there is more greenery in pastures and these can support more animals.

The Paluna anicut project has been implemented in Barkochra panchayat of Jawaja block (Ajmer district). According to Hans Swaroop, co-ordinator of Jawaja centre of Barefoot College, which implemented this Rs 21-lakh project, it has benefited several villagers with a population of about 10,000 people. This anicut helped to raise the water table of about 150 to 200 wells as well as many hand-pumps. Earlier people were worried about the decline of water table, he says. Apart from quenching the thirst of thousands of farm animals, this project has also been a boon for the nilgais, peacocks and other animals and birds of these villages.

Bundelkhand in Uttar Pradesh is yet another drought-prone area in the country that has suffered from declining water tables in recent years. Relatively low-budget projects, designed in a way to ensure that the new irrigation benefits reach the poorest tribal farmers, have been encouraging.

This inspiring work can be seen today in two villages of the region: the Mangavaan village (Manikpur block of Chitrakoot district) and Neduva-Baraicha village (in Naraini block of Banda district). Here watershed projects implemented by the Akhil Bhartiya Samaj Seva Sansthaan (ABSSS) and supported by Sir Dorabji Tata Trust provide an example of good quality watershed development that was preceded by land distribution among the poorest adivasi and dalit households.

This entire experience was helped by the fact that the ABSSS, a leading voluntary organisation of the Bundelkhand region, had a firm base in land distribution work in Manikpur block before taking up this project. Its earlier years were devoted to the release and rehabilitation of bonded workers as well as land distribution. In many cases, land distribution work had already been done on paper but the more difficult work of field-level demarcation and measurement had been neglected. Hence many beneficiaries were not even aware of the exact site where land had been allotted to them, while others did not dare to cultivate the land as it had already been encroached upon.

The few who dared to actually cultivate the land also suffered. Once the land had been improved by very hard labour, powerful persons in the village colluded with revenue officials to get the land transferred in their name, while providing poor quality land to the allottees who had improved

Watershed development in the the Bundelkhand region was preceded by land distribution among the poorest adivasi and dalit households have boosted agriculture

the land. This was possible under the provision of *bata tarseem*, largely because land demarcation and measurement had not been carried out properly.

In Mangavaan, the ABSSS worked on ensuring proper land distribution for several years. As Gopalji, the founder of the ABSSS says, "Pressure had to be exerted again and again by mobilisation of the Kol tribals living here to ensure that the administration accorded priority to the task. Finally, special teams of *lekhpals* (revenue officials) were constituted to carry out the land demarcation and measurement work within a set time-frame. Finally the tribals had the confidence to cultivate their land. Their legal position was now more secure and also they were better united to resist any effort to evict them or deprive them of their land".

However in the Neduwa-Baraicha village, the ABSSS did not have the benefit of working for an extended period of time. Even so, the valuable experience, which they had gained in land distribution work elsewhere, helped them to ensure that the watershed project was accompanied and to some extent preceded by land measurement and demarcation work to ensure land rights to dalit and other households who had already been given land titles by the government. This made all the difference for the poorest households as they could now hope to benefit from the watershed project.

Of course, as the watershed development takes the ridge to valley approach it has to cover all farmers regardless of whether they are big or small. Ensuring land rights to the poorest households by itself does not remove all inequalities, as the bigger land owners still continue to occupy a larger share of the land.

However as Bhagwat Prasad, director of the ABSSS says, "Even within the existing reality of land-inequalities, we try our best to ensure more benefits to the weakest households by prioritising development work on their fields." This is also helped by the representation of weakers sections on committees, which play an important role in the planning as well as implementation of these watershed projects".

The prioritisation of poorest households (mainly Kol tribals in Mangavaan and several dalits/OBCs in Neduwa-Baraicha) also contributed greatly to the success of this project as these households are the ones who are willing to work the hardest for increasing the productive capacity and productivity of their fields.

The watershed development work included various soil and water conservation works, bunding, levelling, construction of check dams, wells, tanks and ponds, repair of existing wells and tanks, afforestation work and regeneration of pastures. In the ravines of Neduwa, making land productive was a challenge but careful planning and hard work did wonders. Today one sees smiling green fields in an area that hardly yielded anything. Apart from meeting their food needs, farmers here also cultivate groundnut and vegetables to earn some extra cash.

Kodo Kol is now a prosperous farmer of Mangavaan. "It is not that earlier my family did not have land. Among the tribals, our family was the one which had a bigger land holding. However, it was so unproductive that we had to incur debts to survive. I remember a time when I took a loan of Rs 100 from a big landowner. As I could not return it, I had to work on his field for a year at a daily wage of just Rs 5 or so. Only after I returned his loan, I could find time to work on my own field."

Today Kodo is able to grow enough wheat and rice for his family needs, while the til and mustard crops bring in cash to meet other needs.

Bhailal Kol who has also impressed with his management skills in watershed committee said: "This development work progressed well because we were completely involved in it. It was improving our fields and we were the ones implementing it at the field level. Wages were received in time, and there were no suspicions. Everyone was able to give his best contribution without any worries."

This is an area where several irrigation projects could not deliver the expected results due to heavy seepage. Special care was taken in the watershed project to avoid this risk. This meant that suitable soil had to be obtained from elsewhere (not just from the work-site) for core-walls. Workers stepped on it repeatedly or puddled it before forming balls to place in core-wall. All this was done to increase the seepage-resistant capacity of the works.

Villagers were actively consulted on site selection, proper catchment and selection of old damaged irrigation sources which could be given a new life with proper repairs. All this helped to achieve big gains at low budgets and reduce the risk of failure. The structures prepared or repaired in these projects provide a fine example of cost-effectiveness, even when land-conditions were very difficult to start with, as in Nedwa-Baraicha.

In these projects the knowledge of local conditions of the rural communities was respected. They were involved in planning, implementation and later in maintenance

In fact, in this village many small farmers and particularly the dalit allottees had more or less given up any hope of achieving anything significant from their land. Hence before this watershed project, their survival mechanism depended mainly on regular migration to cities like Delhi. "I do not have to suffer on Delhi's foothpaths now that my own fields give me enough food for my family and some cash as well", says Dhuniya, sitting in the middle of green arhar (a legume) fields in the village.

What is common to these projects is that the knowledge of local conditions of the rural communities was respected. They were closely involved in planning as well as in implementation (and later in maintenance). The creativity of the local people were harnessed. When problems emerged, solutions suggested by local people were valued and proved very useful.

The close co-operation of local people was forthcoming because they knew for sure that these projects were being implemented very honestly by sincere organisations. Committees comprising villagers were themselves handled most of the expenditure. Everything was transparent. Most of the costs were on labour and they were being paid proper wages. In the Korsina project, Rs 10 lakh out of the total budget of Rs 18 lakh were paid out as wages.

So this success has been achieved not just on the principles of 'small is beautiful' but also on the proper and honest implementation of small projects. In contrast to the experience of these projects, there are many stories of great corruption in the implementation of small projects. Only under conditions of honesty, transparency and close involvement of people can 'small', can actually become 'beautiful'. ●

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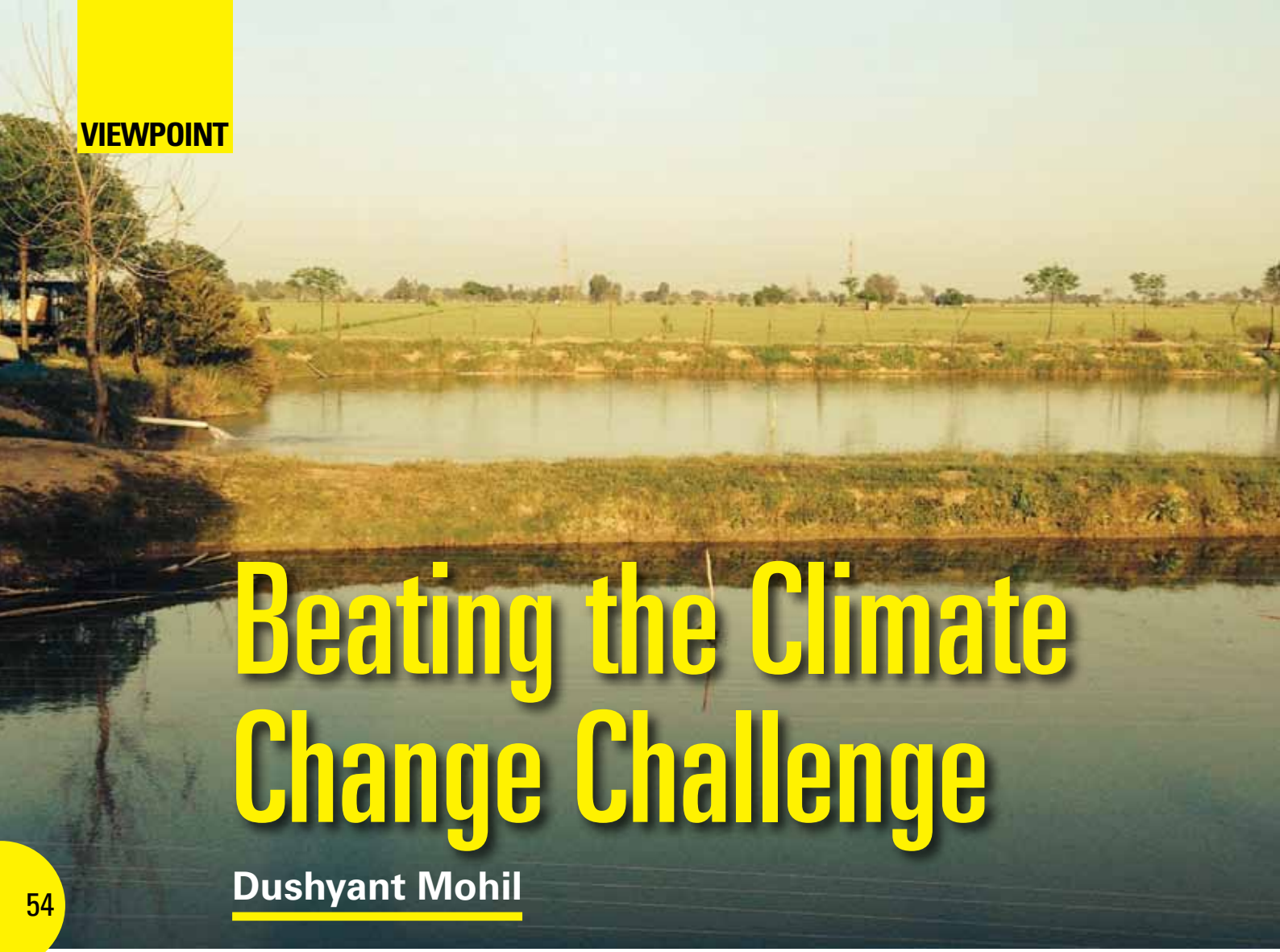

Beating the Climate Change Challenge

Dushyant Mohil

Consider the global food needs. The global population is set to increase to nine billion by 2050. Scientists say a 14 per cent increase in farm yields is needed to match the growing demand but given the impact of climate change we may not achieve these targets. Essentially then, climate change threatens the very essence of the food security globally and in India too.

What has changed over the past two decades are the push and pull factors in Indian society that has resulted in far more people living in greatly vulnerable places and have little resilience against the forces of nature. At a global level it is clear that the Kyoto protocol, the Rio summit and the Copenhagen climate talks have produced no meaningful emissions reductions.

The slow process of reducing carbon emissions, the uncertainties with climate sensitivity, the possibility of climate tipping points have, meanwhile, received increasingly vociferous support from voices ranging from those of respected scientists and environmentalists to former anthropogenic global warming deniers, who ask for amplified research into efforts to mitigate and arm society against climate change

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The past is the key to the future even though both the magnitude (due to climate change, for instance) and impact (due to floodplain development for example) might be different in the future. The problems of predicting the future course of agriculture in the changing world are compounded by the fundamental complexity of natural agricultural systems and socio-economic systems governing the world food supply and demand. It is reasonable to expect that farmers in developing countries may be less able to adapt to climate change because of credit constraints or poor access to adaptation technology.

The ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC) is stabilisation of greenhouse gas concentrations in the atmosphere at a level that ensures that food production is not threatened.

It must also enables economic development to proceed in a sustainable manner. At current trends the way forward is a difficult task.

Over time, the nature of risk has changed as has the idea of science as only a progressive tool as one enters into what Ulrich Beck calls the "risk society" where "dangers are being produced by industry, externalised by economics, individualised by the legal system, legitimised by natural science and made to appear harmless by politics". Further, the "transition from the industrial to the risk epoch of modernity occurs unintentionally, unseen, compulsively in the course of a dynamic of modernisation, which has made itself autonomous on the pattern of unintended consequences".

India is a large developing country with nearly 70 per cent population directly depending on climate-sensitive sectors (agriculture, forests and fisheries) and natural resources (such as water, biodiversity, mangroves, coastal zones, grasslands) for their subsistence and livelihoods. Further, the adaptive capacity of dry land farmers, forest dwellers, fisher folk and nomadic shepherds is extremely low.

Climate change is likely to impact all the natural ecosystems as well as socio-economic systems as shown by the National Communications Report of India to the UNFCCC but the impact of climate change on agriculture is far more compelling to India. The country has to rely on scientists' understanding of the processes through which greenhouse gases affect climate systems and for modelling of future changes and the monitoring and recording of global climate trends as they affect India across its vast agro-climatic regions.

The IPCC (Intergovernmental Panel on Climate Change) working group reports which have over the years, been analysing and interpreting global risks from climate change, provide an insight about possible future risks for India by modelling climate change regionally. In the case of PRECIS (Providing REgional Climates for Impacts Studies), the third generation Regional Climate Modelling System developed by the Hadley Centre (HadRM3) at the UK Met Office, when applied to India using IPCC scenarios A2 & B2, the following possible impacts of climate change point themselves out:

- Changes in precipitation: an extreme wet monsoon that currently has a chance of occurring only once in 100 years is projected to occur every 10 years by the end of the century. A 20 per cent rise in summer monsoon rainfall throughout India is projected over all states except Punjab, Rajasthan and Tamil Nadu, which show a slight decrease.
- Significant reduction in crop yields predicted, with a 1°C increase in temperature reducing crop yields by 10 per cent. An annual mean surface temperature rise by the end of the century, ranging from 3°C to 5°C under A2 scenario and 2.5°C to 4°C under B2 scenario, with warming more pronounced in the northern parts of India.
- Substantial reduction in perennial river streams.
- Sea Level Rise: All urban and rural coastal populations to be affected – with a coastline of 7,500 km and an average population density of 455 persons per sq km (Census 2011) in coastal areas – almost 1.4 times the national population density of 324 (Census 2001), sea level rise will pose a serious threat in the future, not just directly to coastal towns and cities but also by reducing the cultivable land in coastal areas.

Climate change is likely to impact all the natural ecosystems as well as socio-economic systems as shown by the National Communications Report of India to the UNFCCC

Extremes in maximum and minimum temperatures are also expected to increase. Similarly, extreme precipitation also shows substantial increase, particularly over the west coast of India and west central India. Since agricultural is one of the main sectors of the economy in India and agriculture lands occupy about over 60 per cent of India's land surface, these lands will be directly impacted and reduce with sea level rise of two metres. The models also show the critical impact on agriculture apart from the regional trends along with how agriculture will be impacted globally to impair food security.

With increase in global mean temperatures agricultural yields and productivity will be positively affected on one hand as the increase in atmospheric carbon dioxide has a fertilisation effect on crops with C3 photosynthetic pathway and thus, promotes their growth and productivity. On the other hand, an increase in temperature, depending upon the current ambient temperature, can reduce crop duration, increase crop respiration, alter photosynthetic

partitioning to economic products and affect the survival and distributions of pest populations.

Thus a new equilibrium develops between crops and pests (which is not a good sign), hastens nutrient mineralisation in soils, decreases fertiliser use efficiency and increases evapotranspiration. Indirectly, there may be considerable effects on land use pattern due to availability of irrigation water, frequency and intensity of inter and intra-seasonal droughts and floods and availability of energy. These can have tremendous impact on agricultural production and hence, food security of any region.

Adaptation of crops to gradual change in the climatic conditions needs to be better understood, included in the existing crop growth patterns. Moreover, suitable agronomic and resource management options may nullify the ill effects of climate change on growth and yield of crops if adopted and implemented by farmers.

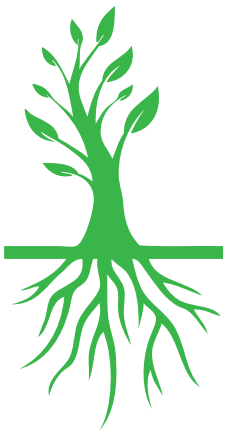
In general, Indian agricultural soils are low in organic carbon content and depend on fertiliser use for higher production. The hypothesis of increased organic carbon degradation with temperature rise has to be linked with the crop intensity factor, which is significantly higher for India given its high proportion of small and marginal holdings that is increasing due to rapid growth in population.

The foodgrain production data for the last few decades reveals a tremendous increase in yield due to technological advancement but it appears that impact of the vagaries of monsoon has been severe throughout the period. The annual food production showed an increasing trend and the deviations around the technology trend line were significantly related to seasonal rainfall. However, no definite trend is noticed during the rabi season food production with the winter season's rainfall, as majority of the food production in this season comes from the irrigated areas.

Changes in rainfall due to global climate change may affect the surface moisture availability, which becomes important for germination and crop stand establishment in the rainfed areas. Modifications in the surface and groundwater availabilities, with the rainfall change, are difficult to detect when the land use and land cover are so rapidly changing. It has also been suggested that climate change could increase rates of soil erosion.

Increase in rainfall will accelerate the rates of soil loss, reducing farm productivity even more. A further negative consequence of accelerated erosion will be increased sedimentation in streams and reservoirs. This will shorten the life span of dams, which help to prevent floods and provide both electricity and water for irrigation.

Another way, in which erosion could increase, is through a decrease in rainfall, which could lead to dry spells and increased risk of wind erosion. If erosion rates go unchecked, continued soil impoverishment would eventually force farmers to abandon their lands. Thus, erosion is among the major threats to food production in a warmer climate.



India's agricultural research systems must be oriented to monitor and evaluate climate change and recommend changes in agricultural practices accordingly

These qualitative assessments have not been studied in depth and the rapid changes in land use patterns may totally reverse current thinking. Other land degradation problems, such as water logging, soil salinity and sodicity, are emerging due to rapid land use pattern and land cover changes. The impact of climate change on these aspects needs to be looked into for sustaining agricultural production.

Global warming may affect growth and development of all organisms, including insect-pests themselves. Among all the abiotic factors, temperature is the most important one affecting insect distribution and abundance in time and space, since these are cold-blooded animals. The insects cannot regulate their body temperature and thereby, ambient temperature influences their survival, growth, development and reproduction. The Global warming may affect growth and development of all organisms including insect-pests themselves. With an increase in concentration of carbon dioxide, the nutritional status of crops will change and the net effect on agricultural production will depend upon interaction between pests and crops.

Gradual climate warming will lead to changes in the composition of pest fauna in different areas. The high population growth rate of many species will ensure changes in pest distribution. If the rise in winter temperature takes place, the duration of hibernation of pests may decrease, thus increasing their activity. Uncongenial areas for pests due to low temperature at present may become suitable due to rise in temperature.

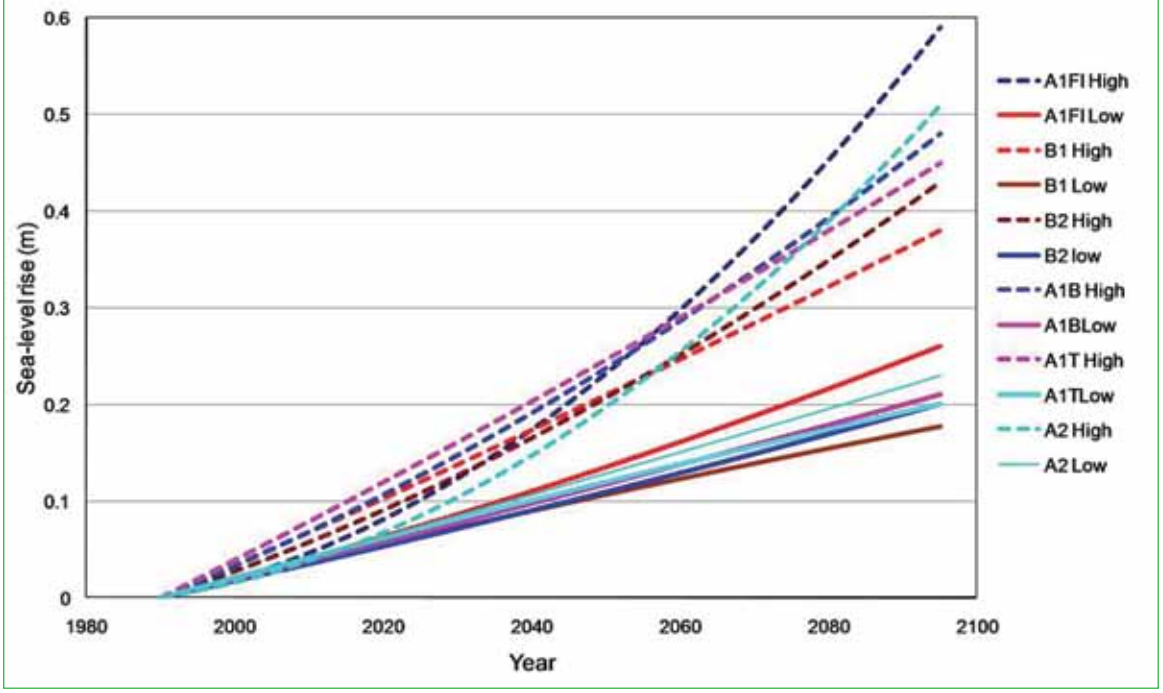
The future may be bleak for many areas around the world if climate change and sea level rise projections become a reality in the next century. There are many uncertainties in dealing with climate change and the ability of human urban systems – including infrastructure, planning policies and disaster preparedness – to adapt has come under serious doubt.

Moreover, professionals involved in design and planning professions, who are fundamentally and ethically responsible for the safety of residents, will need to understand how to develop strategies that will respond to a changing environment. Agriculture accounts for roughly 14 per cent of global GHG's (green house gases) every year. Most of these are accounted for in developing countries.

The question is how can mitigation be quantified and dealt with given uncertainty of climate change and food security, without increasing GHGs emitted from agriculture. Soil carbon sequestration, the new emerging carbon market and alternative sources of finance are some options to deal with the plight of the environment and the farmers.

To make Indian agriculture more resilient to climate change, it is necessary to identify and develop new varieties of crops especially thermal resistant crops and alternative cropping patterns, capable of withstanding extremes of weather, long dry

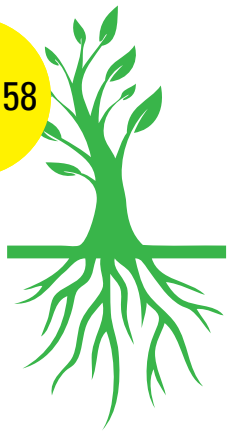
Figure 1: Projected ranges of global sea level rise (MEEHL et al, 2007)



spells, flooding, and variable moisture availability. Agriculture needs to be progressively adapted to projected climate change and India's agricultural research systems must be oriented to monitor and evaluate climate change and recommend changes in agricultural practices accordingly.

This will be supported by the convergence and integration of traditional knowledge and practice systems, information technology, geospatial technologies and biotechnology. New credit and insurance mechanisms have to be devised to facilitate adoption of desired practices. There would be more focus on improving productivity of rainfed agriculture. India should spearhead efforts at the international level to work towards an ecologically sustainable green revolution.

There are several special ecosystems in India that are ecologically and economically very important but how agriculture has been impacted in these regions has not received adequate attention. These regions include the Western Ghats, coastal areas, the Northeast and the Himalayan ranges. Agriculture in these areas is multi-dimensional, ranging from rice-based agriculture and horticultural crops to plantations, fisheries and dairy.



Increase in temperature, change in frost events and glacier melt are likely to influence mountain agriculture. Sea-level rise may have significant influence on coastal agriculture

The projected changes in climate such as increase in temperature, change in frost events and glacier melt are likely to influence mountain agriculture. Sea-level rise is another climate change related threat, which has the potential to have a significant influence on coastal agriculture.

India has launched new food security initiatives with the primary goal of eradicating poverty by subsidizing foodgrain and having good storage facilities in place so that the excess food supply does not rot. The desired target need not be difficult. The present- day yields can be increased to potential yields with the help of available technologies. What has not been considered is the impact of climate change and as agricultural activities release to the atmosphere significant amounts of CO_2, CH_4 and N_2O, and there is need to mitigate these effects while increasing yields. Therein lies the difficulty.

Even in agriculturally progressive areas, the production and productivity of rice and wheat have shown the tendency to stagnate primarily because of the fatigue factor in the soil. Excessive farming in the states of Punjab and Haryana, where the food crops are now regarded as cash crops, has taken a toll on the soil.

Resorting to allied activities such as fishery is seemingly beneficial in places with high water tables and where the productivity of soil is down. This enables the soil to rejuvenate over time and enables other profitable source of livelihoods, if run efficiently. A fish hatchery in the Hissar district on marginally salinised soil is now a solar run fish farm. The farm has made use of the high water tables, coupled with plenty of irrigation facilities, making optimal use of resources at hand that can be availed by every farmer in the state.

This is seemingly a practical approach as the water table is considerably controlled due to adequate use of water in the hatchery. After considerable time, the area under use for the hatchery can also be used as farmland, and is already producing good yields.

In many such areas, intensive farming, use of fertilisers, pesticide and extensive irrigation, without crop rotation and organic measures, has led to the deterioration of the soil, making it uncultivable. Also, lack of replenishment of depleted plant nutrients, including natural nutrients, especially the vital micronutrients, has impaired the fertility of the agricultural land. Taking the United Nations' MDG's rights-based approach, insurance and government incentives should be introduced to ensure that farmers receive remunerative returns.

The past has shown that the hazards cannot be studied in isolation but the whole interaction with the human species to the natural environment has to be determined. The major losses from the impending climate change are the result of the close interrelation of the three major systems: the environment, the constructed environment and the population that is affected by it.

There is need to adopt a multi-disciplinary approach to make India and its farmers resilient. Sustained interactions between decision makers, experts and citizens, starting at the upstream end of research and development, could yield significant dividends in exposing the distributive implications of innovation. ●

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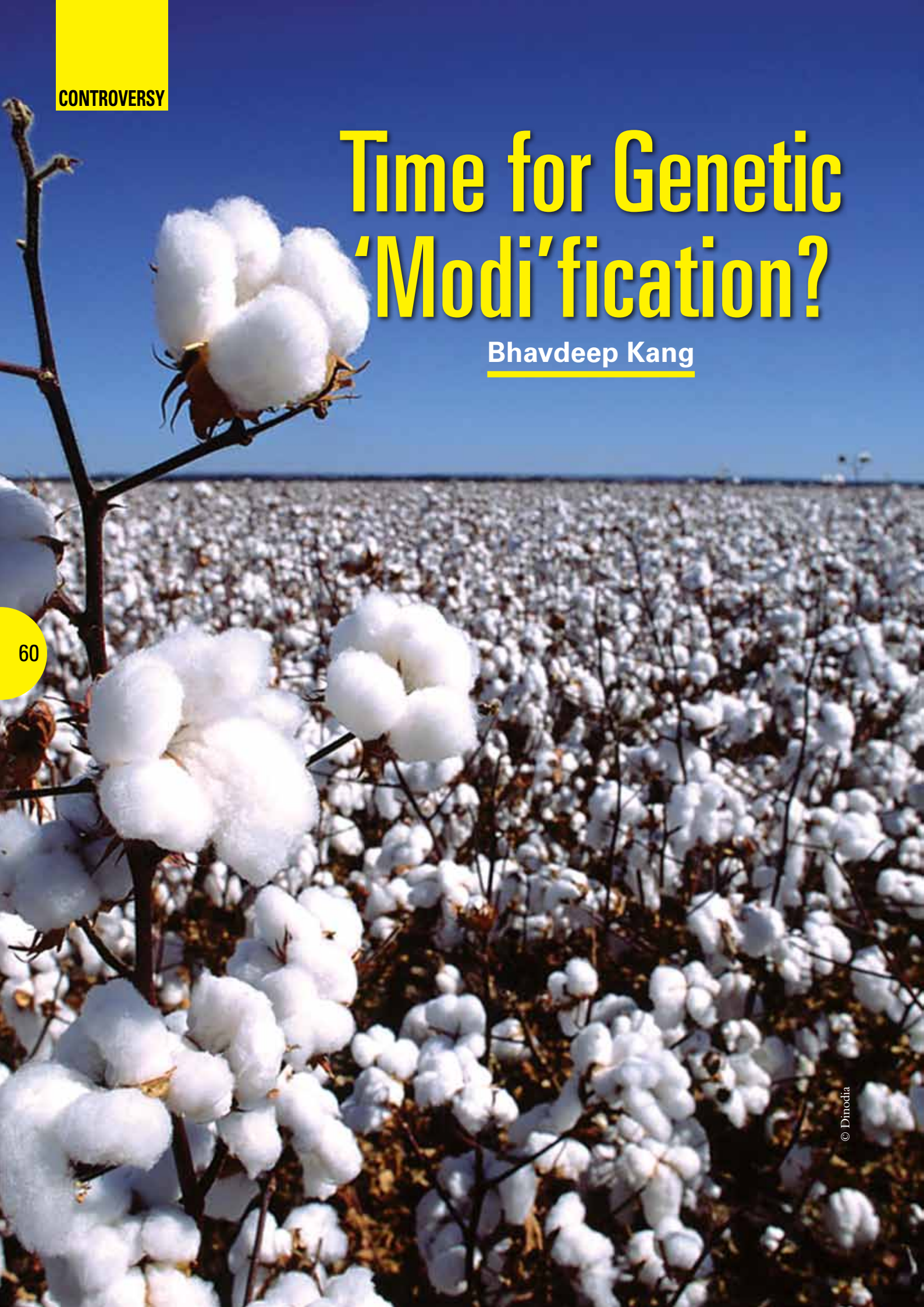
BRINGING SEEDS OF PROSPERITY

Time for Genetic 'Modi'fication?

Bhavdeep Kang



Veerappa Moily bequeathes to his successor in the Union ministry of environment and forests (MoEF) a bed (or chair) of nails. Moily's contentious decision, on February 28, 2014, to allow open-field trials of genetically modified (GM)crops, squarely puts the new government on the mat. When the Supreme Court (SC) convenes after vacations, the freshly minted MoEF will have to articulate its position on GM seeds.

BHAVDEEP KANG
Senior journalist specialising in land and farm issues

In April 2014, a two-judge bench of the SC issued notice to the central government, asking why an interim order banning open field trials of GM crops should not be passed given the poor biosafety measures in place. The government failed to respond at the next hearing and the matter was adjourned. The new dispensation now has to take a stand on whether or not open field trials should be allowed – in effect, spelling out its position on GMOs (genetically modified organisms).

This is easier said than done if an NDA regime is at the helm. The Rastriya Swayamsevak Sangh (RSS), the Bharatiya Janata Party (BJP) and Narendra Modi are not quite on the same page. Added to the mix is Tamil Nadu chief minister, J Jayalalitha, who has declared she will not allow GM seed trials in her state.

The GM issue may have the potential to spark tensions within the Sangh Parivar that will make the Jayanthi Natarajan-Sharad Pawar battle over transgenic crops appear like a lovefest by comparison. Back when Natarajan headed the MoEF (she was eventually sacked), she passed an order staying open field trials of GMOs. She went head to head with agriculture minister Sharad Pawar, saying that her ministry did not see eye to eye with him on the subject of GMOs.

She also wrote to Prime Minister Manmohan Singh explaining why she did not want to oblige Pawar (who had once written a 16-page letter to the PM defending Bt brinjal) by reversing that order. She rebutted the arguments trotted out in favour of GMOs by saying there was no hard scientific evidence linking food security with GMOs and that "serious questions have been raised about whether GM technology has raised yields and productivity of farms not only in countries with high biodiversity safety-related risks but also developed countries".

She might well have addressed the last sentence to Narendra Modi, who remains enamoured of Bt cotton and once proudly stated that Gujarat's cotton production had increased from 2.3 million bales to over 10 million bales since the introduction of transgenic cotton seeds in 2001. More recently, at a "chai pe charcha" programme in the run-up to the 2014 Lok Sabha elections, he told women farmers (or rather, farm widows) of Dabhadi in Yavatmal district that Bt cotton had immensely benefitted farmers in Gujarat and some parts of Maharashtra.

When a farmer asked if he would introduce Bt brinjal, Modi admitted that there were different opinions on GM technology but was quoted as saying, "We should not discard a technology that helps farmers; we must have faith in science…. We must put technology and science to use, with regulations and add value to produce". The recent and well-established trend of yields from Bt cotton fields declining – from a peak of 554 kg per hectare (ha) in 2006-07 to 488 kg per ha in 2012-13 – does not appear to have changed Modi's mind.

The new government will have to take a stand on whether or not open field trials should be allowed – in effect, spelling out its position on genetically modified organisms

On the other hand, Modi had opposed field trials of Bt brinjal back in 2009, inviting taunts from former minister of environment and forests Jairam Ramesh, who said he found Modi's opposition surprising given the success of Bt cotton in Gujarat. The BJP governments of Madhya Pradesh and Chhattisgarh had joined Kerala and Bihar in opposing Bt brinjal at that time, forcing Ramesh to declare a moratorium. A close aide of Modi's feels that while he may be opposed to GMOs in food, he will be open to trials of commerical transgenic crops.

So far, that has been BJP president

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Rajnath Singh's position as well, although his advisers have been pushing him to take a line closer to that of the RSS, which promotes indigenous seeds and organic agriculture. RSS Sarsanghchalak, Mohan Rao Bhagwat, once likened Bt brinjal to terrorist infiltration of the food chain. The central government's effort to introduce the GM crop, he said, would compromise the independence of the farmers and put India's bio-diversity at risk.

The BJP, in its election manifesto of 2014, says categorically: "GM foods will not be allowed without full scientific evaluation of its long-term effects on soil, production and biological impact on consumers". This is a subtle shift from its stance in the 2009 manifesto: "No genetically modified seed will be allowed for cultivation without full scientific data on long-term effects on soil, production and biological impact on consumers. All food and food products produced with genetically modified seeds will be branded as 'GM food'". Thus, a change in emphasis from GM seeds to foods.

His stand mirrors that of the Basudeb Acharia Parliamentary Committee on Agriculture. In a 500-page report prepared on the basis of wide-ranging consultations across the scientific, agriculture, business and policy communities, it suggested stopping all GM trials because of "the gross inadequacy of the regulatory mechanism, the total absence of post-release surveillance and monitoring".

The Left, the RSS and leading regional parties including AIADMK leader Jayalalitha – who asserted before the polls that the new government would cancel permission to field trials of GM crops – are on the same page. Bihar chief minister Nitish Kumar famously protested against field trials of Bt maize in Samastipur without the permission of the state government, forcing Jairam Ramesh to halt the trials in 2011.

Umendra Dutta, a leading anti-GM activist in Punjab who heads Kheti Virasat, is optimistic. "The new government may reverse the existing policy on GM crops", he says. "The BJP manifesto is in line with the RSS-Swadeshi view".

Dr GV Ramanjaneyulu of the Hyderabad-based Centre for Sustainable Agriculture takes a more cautious view. "Modi and the BJP are two very different entities. Modi is pro-GM". With reference to the BJP manifesto's emphasis on "scientific evaluation", he says, "It depends entirely on their definition of biosafety. Is it a holistic definition? Does it take into account all aspects, including socio-economic, ecology, health?"

It was in 2012 that the SC, presumably thoroughly perplexed by the views and counterviews on open field trials, appointed a Technical Experts Committee (TEC) to go into the matter in 2012. The TEC recommended an indefinite moratorium on field trials. The central government rubbished the TEC report. In fact, after Moily reversed Natarajan's stance and permitted field trials of GM crops, the Centre approached the court to let them go ahead with it in the interest of India's science and economy.

The Biotech Regulatory Authority Bill, which proposes a single window clearance for GM crops, has been tabled in Parliament. The new government will have to take a stand

Instead, the court observed "We have reports of responsible persons who occupy responsible positions. Don't you think there should be an interim order (against open field trials) till we hear this case?" Gene Campaign head, Dr Suman Sahai, whose petition against Moily's decision and application for implementation of the TEC order has been admitted and will be heard as soon as the court reconvenes, is not sure a change of government will translate into a change of stance.

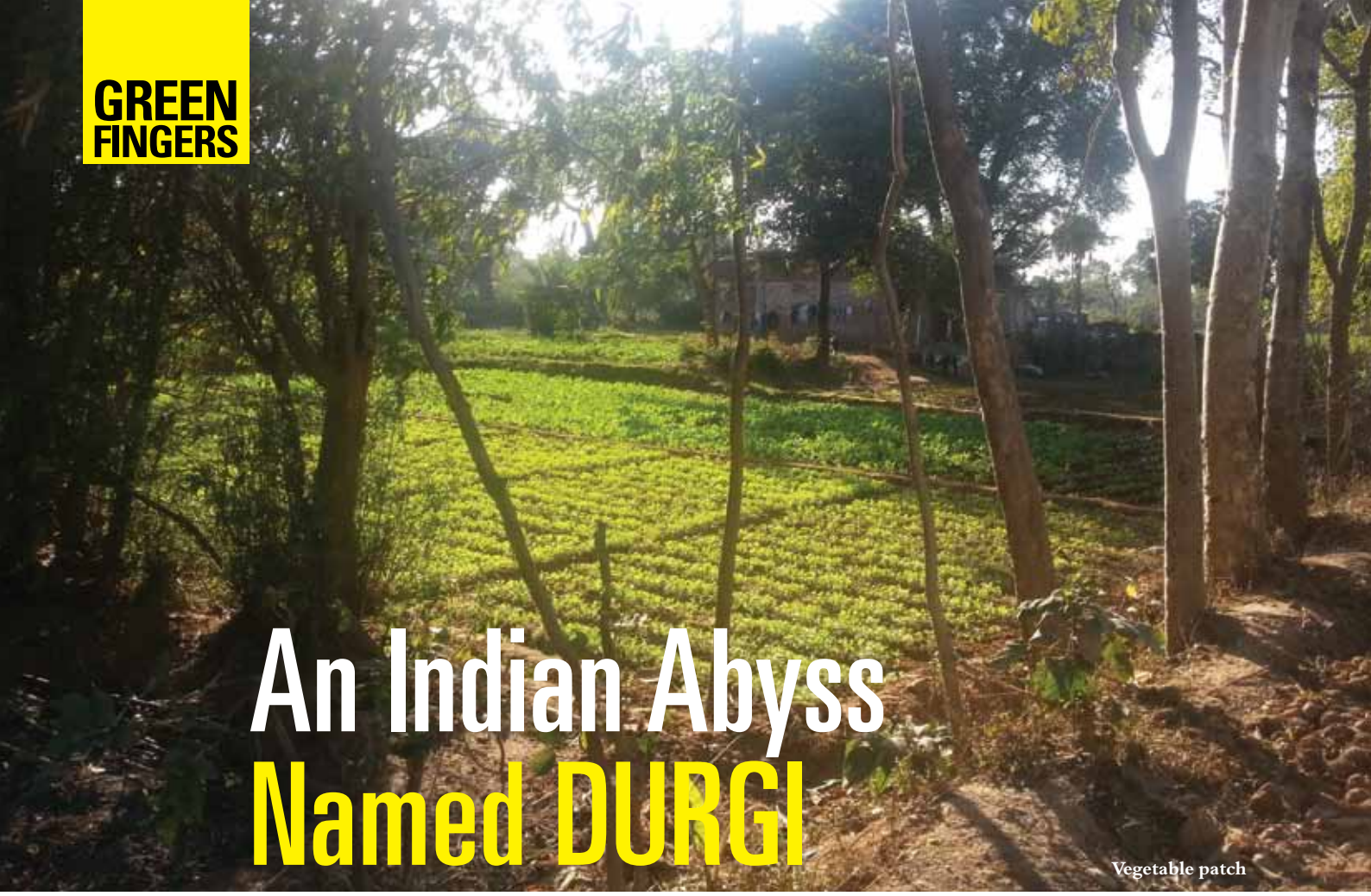
The new government will also have to take a stand on the BRAI or Biotech Regulatory Authority Bill, which proposes a single window clearance for GM crops. The Bill has already been tabled but is yet to be taken up for discussion. BJP sources indicate that the BRAI bill may be junked and a new one drafted from scratch, to allow for transparency and mandatory sharing of safety trial data with the public. If so, it is bad news for GM companies, which had filed a petition in the Delhi High Court, seeking exemption from revealing their crop trial results under the Right to Information Act.

Meanwhile, government-run academic and research establishments like the Indian Council of Agricultural Research. Indian Agriculture Research Institute and the National Bureau of Plant Genetic Resources have floated two committees to foster understanding of "science" among public and politicians and "tell people the benefit of transgenic crops and biotechnology".

At a conference "GM Crops for Nutritional Security" (chaired by Dr MS. Swaminathan) in Feburary 2014, they passed a resolution to the effect that the scientific establishment needed to counter "misinformation" on GM crops. "GM crop technology is a promising, relevant and efficient technology for low-input, high-output agriculture where conventional breeding tools have not been effective", they declared.

It may be recalled that in 2004, the Indo-US Knowledge Initiative on Agriculture facilitated a close interaction between Indian and U.S. agricultural scientists, overseen by a board that included a representative from GM seed giant Monsanto. It was after this conference that Moily lifted the moratorium on field trials.

It is this, perhaps, that impels Dr Ramanjaneyulu to say "The alignment is no longer along political lines; it is communities versus corporates, regardless of who is in power... One cannot look to political parties in this battle; it is to be fought – in the courts and the field – by bringing together farmer movements." ●



An Indian Abyss Named DURGI

Vegetable patch

Ajay Vir Jakhar

I am in the Chota Nagpur plateau in eastern India near Ranchi in Jharkhand. There are two famous centres of activity here. One is Ramgarh Coalfields owned and operated by the Central Coalfields Limited (CCL), a subsidiary of Coal India Limited. The other is the Hindu pilgrimage centre of Rajrappa, where the main attraction is the Chhinnamasta temple. It stands at the confluence of the Damodar and Bhairavi (locally called Bhera) rivers. Rajrappa also is a pilgrimage centre for the Santhals and other tribals who come to immerse the ashes of their loved ones in the Damodar. The sheer scale of the landscape and the beauty of the hills are breathtaking but everything fades into ignominy when one starts to discuss, debate and understand the livelihood issues of the local villagers.

While in Ranchi, I asked a colleague to take me on a farm visit. So off we went to village Durgi, block/tehsil Ramgarh, in Ramgarh district. This was earlier a part of the Hazaribagh district of Bihar, before the bifurcation of the state. I wonder what has changed since then. There I met Thakur Das Mahatav, a 60-year old farmer, with two children who owned 60 decimal of land (100 decimals=1 acre). The largest farm in the village is five acres and the average size is 2.5 acres. Thakur Das' life epitomises the living disaster that is the standard fare of farmers in many parts of the country.

Corruption is rampant and all-pervasive in this part of the country. Payments for work done under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) scheme come very late; sometimes as late as six months. Sometimes payments do not come at all. There is little doubt about payments being received by the authorities though and even disbursement of funds is recorded but the workers go without the promised wages. Villagers tell me that half the money is pilfered by the concerned officers and panchayat. Youngsters laugh when I want to discuss corruption; they are cynical and amused that one should want to discuss such a mundane topic. I am left aghast because corruption seems to be accepted as a matter of routine.

Even the co-operatives have failings here. When there is a fertiliser shortage, urea is sold at a premium and price goes up from Rs 320 to Rs 450 per kg. For diammonium phosphate (DAP), the price goes up from Rs 1,400 to Rs 1,800 for a 50 kg bag. Given the small size of their holdings, many farmers do not want a full pack. If a farmer purchases less than a full bag of fertiliser, he has to pay an extra 20 per cent. Such is the apathy with which even the co-operatives

treat the farmer and these are the institutions that are so trusted. I am shocked because I believed that the co-operatives treated farmers better than fleecing shopkeepers. I am disabused of the notion.

Those below poverty line (BPL) get one kg of rice a day, which I presume will make it 30 kg per month. Of the 20 houses that I surveyed, only one person had a BPL card, even though every one qualified for it. Grains under BPL are provided for only four months a year unlike in West-Bengal, where the supply is year round. Ration shops open for only three days in a week and the general feeling amongst those gathered around me was that the state government was responsible.

There is a network of drinking water pipes in the village but supply of potable, piped water is irregular. The solution is bribing the way into getting the water shortage addressed. The state of affairs of other departments of the administration is shameful too. The government gives free seeds but does so after the sowing season is over. The villagers feel that middlemen sell the seed in the market and pocket the profits. Farmers would like hybrid seeds to be distributed instead.

have to go to Chittarpur, three kms away. There is no public transport and private vans charge Rs 5 for travel up to Chittarpur, the centre of activity here. There are only five motorcycles in the village and no one owns a car. For post secondary education, children go to Ramgarh or Chittarpur everyday. Free schooling is available for children in the village up to Class V, after which they have to walk a kilometer, to village Badkipona, to attend classes up to Class X. All this is free, though.

No more than six or seven houses have television sets and, as is the story across rural India, there are no functioning radios in the village. People listen to music on the cell phone. There are no land lines in the village but lots of people own post-paid cell phones.

The potato crop has failed here because of a frost attack. Expectedly, there is no risk mitigation available. The potato yield is between 200 mand and 300 mand per acre. The common variety is "Siwan" that sells for Rs 240 for 40 kgs. The rice yield is 100 mand per acre; the common variety grown is "6444" or "Manisha". One kg of potato seed is used for planting 10 decimal of land and the cost of seed may

Youngsters laugh when I want to discuss corruption; they are cynical and amused that one should want to discuss such a mundane topic. I am left aghast by this cynicism

The story of their plight becomes even more pathetic. Even though electricity is as good as free, getting a transformer installed is a costly exercise. It is impossible to get one installed without paying a bribe. A one kw electricity motor, working for 20 hours a day, costs only Rs 71 a month. There are ½ kw connections available for homes too. There are electricity cuts for two hours in the morning and evening. The power scenario seems to be a little better than in other states; after all one is in the heart of India's coal belt.

Only one or two persons in the village are employed in government jobs and 75 per cent works as labour in the coal mines in the Rajrappa area, which seems to be the fiefdom of the coal mafia. The villagers have little idea of the swindles and scams around the precious coal reserves. Illegal underground tunnels have emptied the land of coal in a blatant display of crony capitalism and corruption. The resultant rise of Naxalism threatens to drown the Indian growth story.

There is no dispensary in the village and residents

Storing straw or "Parali"


Gathered villagers

The apathy with which even the co-operatives treat the farmer is shocking and these are the institutions that are so trusted. I am shocked by this state of affairs

vary from Rs 1,200 to Rs 1,400, depending on its purity. The corn yield is 60 mand per acre. One kg of seed gets the farmer a 10 mand crop; 600 grams of corn seeds are used for planting 10 decimal of land.

Vegetables are a favourite crop for they fetch higher profits. Ladyfingers sell for between Rs 19 and Rs 40; green chillies for between Rs 35 and Rs 45 per kg. This season the farmers' had problems selling cauliflower. Gota Sabzi Mandi, the largest *sabzi mandi* (vegetable market) in the area is 13 kms away. It is from there that vegetables are supplied to Tata Steel and to the Bokaro Steel City. Shockingly, the farmers do not even know the retail price of vegetables selling in the market in the nearest town. They are being cheated and have no remedy for the problem. The government seems to be non-existent vis-à-vis addressing the farmers' plight.

A goat sells for Rs 3,500 and it takes six months to rear a goat to a weight of 10 kgs for it to become saleable. The farmer sells chicken for between Rs 90 and Rs 100 per kg. in the market. Normally, the rate of a chicken is Rs 250 while eggs sell for Rs 5 each. Most villagers here, including the ladies, are non-vegetarian. Everybody drinks liquor, which is a source of revenue to the government coffers, the pockets of politicians and the bureaucracy.

Would it be fair to blame the political classes alone for this mess? What about the bureaucracy that is hand in glove with the politicians and are jointly looting the state. The abyss into which society here has sunk is demoralising because corruption has infiltrated every vein of society; no village is left untouched.

Memories are short and as I return to Delhi to read and watch bigger scams unfolding, they momentarily make me forget my sad journey to village Durgi. ●

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