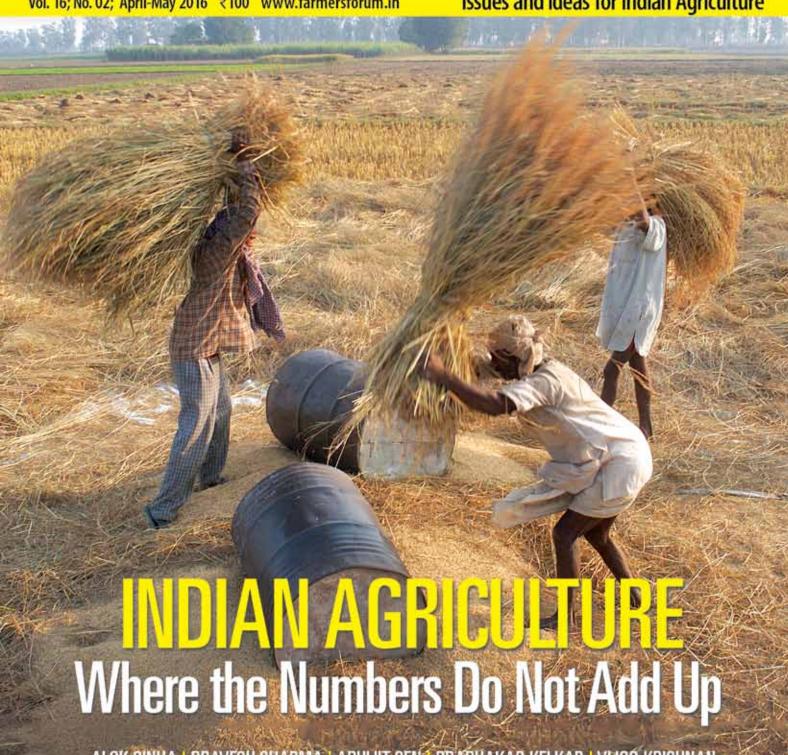
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Issues and Ideas for Indian Agriculture



ALOK SINHA I PRAVESH SHARMA I ABHIJIT SEN I PRABHAKAR KELKAR I VIJOÓ KRISHNAN BHARAT DOGRA I ASHISH KOTHARI I DHRUBA DAS GUPTA I G.V. RAMANJANEYULU

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Contradictions Around Doubling Farm Incomes

he Prime Minister has promised to double farm incomes in six years. Agriculture economists argue that this would be impossible because it would entail an annual 14 per cent growth in incomes; something that is unprecedented globally. One disagrees with the economists. Abysmally low farm incomes can be doubled in a five-year time frame but not in the manner visualized or proposed to be implemented by the government.

The recent Kisan Swaraj Sammelan organized by ASHA (Alliance for Sustainable and Holistic Agriculture), in Hyderabad bore testimony to the sense of anguish afflicting the various participating farmer organizations. The silver lining lies in the commitment to organize divided farmers and farmer organizations into a force that can bring about policy-level changes. The road ahead is steep and long though and one needs to begin by the addressing the scores of contradictions that farmers tend to ignore.

What are farmers demanding? Curiously, the most common demands from farmers or farmer unions, as reported by the media, revolve around farm loan waiver; no reduction in fertilizer subsidy; and higher minimum support price (MSP). Yet more than half of Indian farmers do not have access to institutional credit and cannot benefit from farm loan waivers. Nor will farmers who have repaid their loans. Where are the demands on behalf of farmers at the bottom of the economic pyramid?

Instead of demanding access for the farmers disenfranchised from the world of accessible and affordable loans, farmer organizations seek waivers for those who have access. This is akin to demanding caste reservations for the creamy layer.

The demand for higher MSP is even more perplexing. Less than 20 per cent of farm produce is regularly purchased under the MSP programme but farmer organizations vociferously demand MSP hikes without bothering to press for benefits for farmers producing the other 75 per cent of the produce that remains outside the MSP purview.

Yet again, farmer organizations are speaking about the need for organic farming, without speaking against fertilizer subsidies that should have been a natural corollary to going organic.

The demand for abolishing fertilizer subsidy, as a step towards reducing fertilizer use to achieve a higher objective, should have naturally followed but it has not.

Like Rasputin, those with political ambitions make farmers dance to their tunes and are the real nemeses with their double speak. Confused farmers are easily swayed by rhetoric and get divided. At a personal CONFUSED
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BY RHETORIC AND
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level one is against the removal of fertilizer support but in favour of delivering support such that farmers can choose the support for inputs they wish to purchase.

At the external end of the farm policy spectrum are the unhindered farm imports or farm produce restrictions that rarely get any traction in the media, which is more interested in catering to urban audiences demanding cheaper food or industries such as textiles demanding cheaper farm inputs. Organizations love to blame the WTO that did not get India into the mess to begin with. The mess has been created by contradictions in India's own policy.

It is equally fashionable to scream for the implementation of the M. S. Swaminathan Committee recommendations even without seeing the report; let alone reading it. Sloganeering gets instant support for sure but achieves little more; sometimes even blurring the lines between right and wrong.

Consider the case of the poultry industry that manipulated duty-free maize imports. Admittedly, the industry creates sizeable employment and supplements incomes for small farmers. As feed price rises, so does the price of chicken. As the chicken price rises the demand for chicken drops; or it is claimed to. The

organized large poultry industry, which manipulated duty free imports, gets far more adversely affected than the household poultry farmers. Maize imports for poultry feed, however, have adverse consequences for a larger section of society; the maize cultivators for starters.

The repercussions of duty free maize imports of 500,000 tonnes into India have been highlighted in these pages. India allowed these imports much to the glee of international commodity traders looking for markets. Once it was explained to the government that these imports would cause a massive loss to maize farmers — as high as ₹10,000 per acre, making the total loss to the country ₹20,000 crore (incidentally the allocation for the ministry of agriculture and farmer welfare in the budget 2016) — New Delhi stopped imports after contracting for 250,000 tonnes of maize.

There are other positive responses to genuine concerns of the farm sector too. It is now compulsory for every pesticide shop to have an agriculture graduate on its floor. This is something that the Bharat Krishak Samaj has been advocating. It is important to get the perspective right. India exports crops like rice that require a large quantity of water while it imports pulses that are a rain-fed crop. In effect, India has managed to change planting practices in other countries while failing miserably to do so to benefit domestic farms. With contradictions such as these, a doubling of farm incomes becomes difficult. •



Ajay Vir Jakhar **Editor**

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To the Editor

Power of dialogue

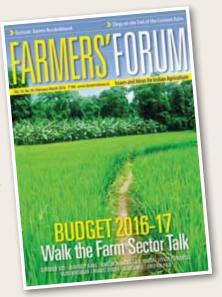
Apropos of your editorial: 'Consult for Change; Not to Validate Errors' (Farmers' Forum, February-March 2016), it is indeed a very positive development that the present government is consulting farmer organizations for the first time. I must also compliment you on the focused and clearly enunciated suggestions that you made in your pre-Budget meeting with the finance minister. I am sure that such meaningful dialogue will eventually make a dent in the policy-making mindset in the country and tilt the scales in favour of the farmer, who still accounts for the largest segment of the Indian population and is certainly the most distressed at the current point in time.

Bhupender Singh,

New Delhi

No room for insurance incompetency

Surinder Sud makes compelling point in his article 'Budget Imperatives 2016-17' (Farmers' Forum, February-March 2016) about insurance schemes failing to deliver because of implementation issues. The government has, indeed, done well to announce new crop insurance schemes to cover more crops, including horticulture crops, at heavily subsidized premium of two per cent for kharif crops, 1.5 per cent for rabi crops and five per cent for horticulture crops. Regrettably, many schemes have failed in the past for want of efficient processing of claims. There is a strict need for checking at every



Budgetspeak

Budgets never fail to promise the moon visà-vis the farm sector and every budget gets hailed as a path-breaking one. Yet, I do not recall a single instance of a specific budget proposal making a dent in farm sector poverty. Where are we going wrong? Monsoons have always been a gamble in India, so how long are we to blame them instead of blaming our own failures? Just as you give a set of suggestions before the budget, you must give another point by point assessment of what will not work. Take your time to make a professional analysis and put it out in public domain.

B.K. Sinha, Patna. Bihar

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

stage of such schemes.

Kuldeep Attri,

Ambala, Haryana

Sons of the soil

I was touched by your column under Green Fingers, 'Elegy on the End of the Coconut Palm' (Farmers' Forum, February-March 2016). The plight of the farmer is the same in every Indian state; pathetic. I was particularly moved by the account of the vacant look in Caetan Vaz' eyes when you asked him if he would want his son to farm after him. That is a sad question that is best left unasked of the Indian farmer. No farmer wants his child to pursue agriculture thanks to the perennially distressed conditions amidst policy-level indifference. I suspect that Goa farmers are a little better off given that they get some additional income from cutting coconut trees, even if it is one tree a month. One is also thankful that the Goa farmer can make some money non-farm/tourismthrough related work.

Sandeep Jain,

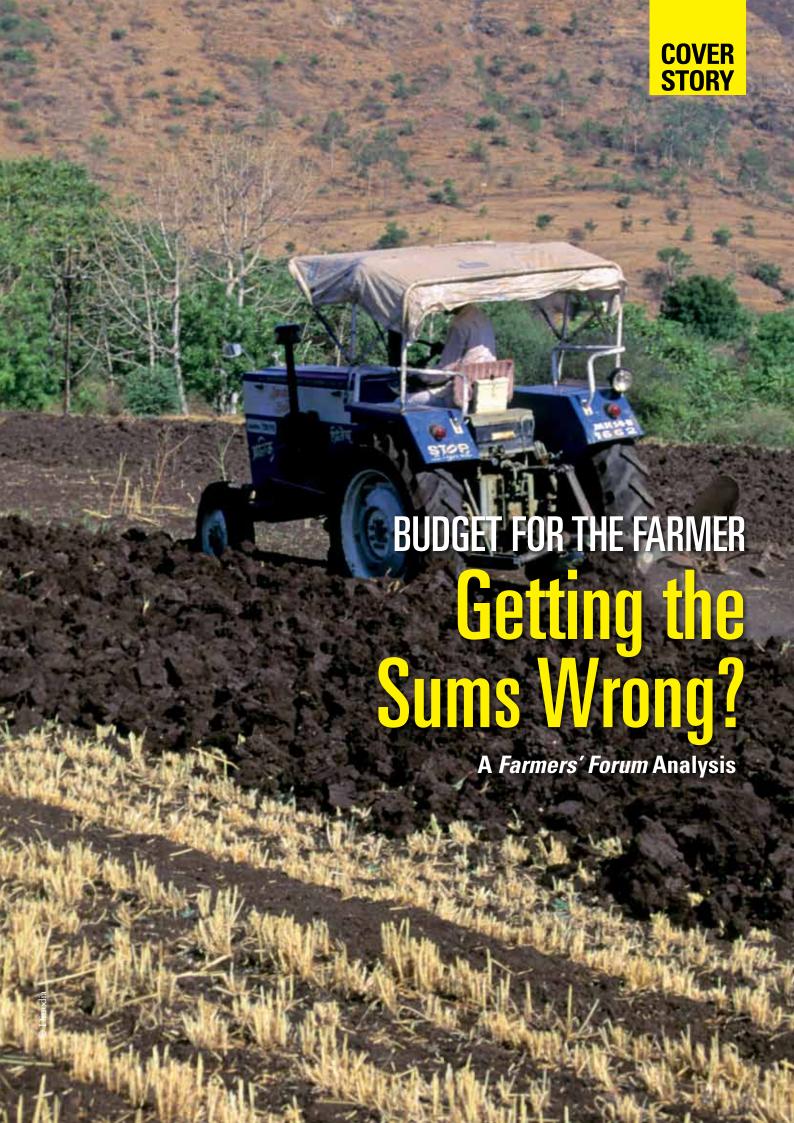
Bhopal, Madhya Pradesh

Make policy for Bt blend

Apropos of Vivian Fernandes' 'Return of the Pink Bollworm' (*Farmers' Forum*, February-March 2016), it is important that the government and people from the field get together and find the solutions to these problems. Technology is a difficult master. If blending Bt cottonseed with five per cent non-Bt seeds is a way out, it should be supported by necessary policy changes.

Bipin Vohra,

Rihikesh, Uttarakhand



inance Minister Arun Jaitley's third budget does convey the impression that the government is extremely concerned about the state of farmers in India, about rural India and about agriculture. That, in itself, is a very welcome development but are the actions initiated meaningful and the claims realistic or achievable?

Will the farmer's income double over the next six years? Does one even know what the income of a farmer is? Which category of farmer is the government talking about? There are studies showing that, in many states in India, the average monthly income of a farmer is barely between ₹1,500 and ₹1,600. Yet there are some wealthy farmers, who are relatively privileged within the farming community. The fundamental question is, in what way would the overall environment change to be conducive to the doubling of farmer incomes.

The finance minister has also given considerable stress to the new irrigation schemes, completing projects and on small and micro irrigation schemes, including building ponds and other minor and micro irrigation programmes. This too is welcome but is the outlay backing such intentions enough? Certain sums, earlier allocated as a part of the finance ministry's interest subvention scheme, have now been included in the overall outlay on agriculture and rural development to show a very significant rise in allocation.

"It is also one thing to announce a scheme and an outlay and a different thing altogether to ensure that it is implemented properly", pointed out Paranjoy Guha Thakurta, senior journalist and then editor-designate, *Economic and Political Weekly*, who moderated a Bharat Krishak Samaj discussion on "Budget 2016 – The Farm Sector", on March 1, 2016, at the India International Centre Annexe, New Delhi. The Bharat Krishak Samaj, a non-partisan platform brings experts from across the board to present their diverse perspectives on Indian agriculture.

"There are certain features of the budget that raise questions about whether the government will actually be able to create an environment that would be conducive not only

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to farmers doing better (to quote Arun Jaitley's own phrase) but to moving away from just merely food security to income security", said Paranjoy Guha Thakurta.

IN MANY STATES, THE AVERAGE MONTHLY INCOME OF A FARMER IS BETWEEN ₹1,500 AND ₹1,600. YET THERE ARE SOME WEALTHY FARMERS TOO

Raising certain other major concerns about income security; disquieting features in the budget about the overall outlay on fertilizer subsidies actually coming down in nominal terms and not just in real terms; about huge subsidies that remain unpaid; the efficacy of new schemes announced (the neem-coated urea scheme included); he voiced deep concerns around the two successive years of drought with at least half of the total cultivable area in the country facing very acute conditions of distress. As many as 52 farmers have died unnatural deaths every day in the calendar year 2015 by some estimates. "No Indian can really be proud of this", said Guha Thakurta.

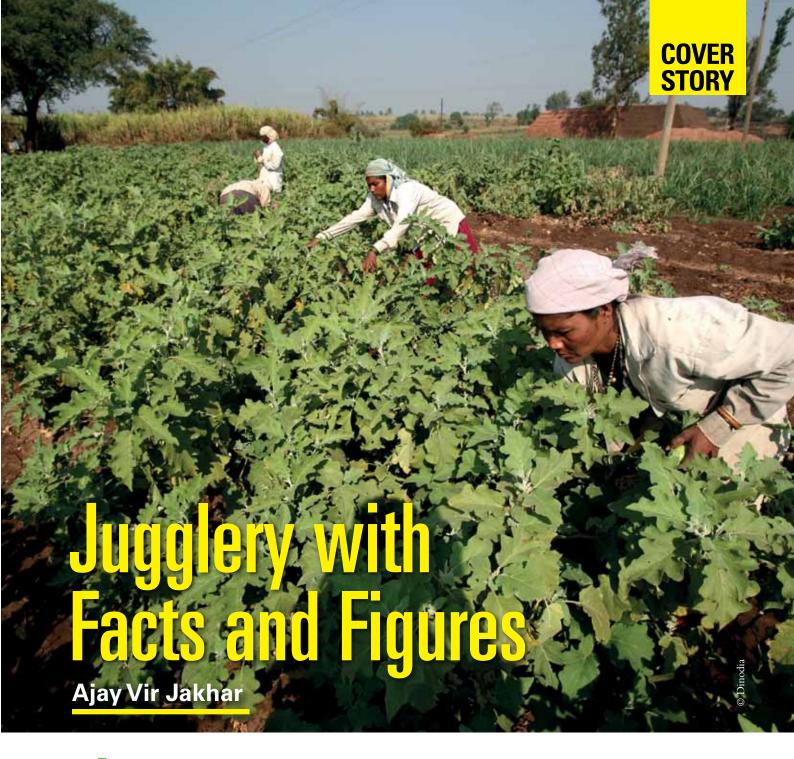
The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), once decried by the Prime Minister in the Lok Sabha as a living monument to the failure of the previous government, continues to be the centre's most intimate linkage to rural India. The programme will apparently see the highest ever expenditure this year, to go by the government but there are disagreements over the correctness of the claim. How meaningful are these figures is what the panelists were requested to discuss by the moderator.

The panelists included Abhijit Sen, member of the erstwhile Planning Commission, specifically looking at agriculture in India; K. C. Tyagi, Member of Parliament, secretary general and spokesperson of the Janata Dal (United); Prabhakar Kelkar, organizing secretary of the Bharatiya Kisan Sangh, a farmer organization affiliated to the Rashtriya Swayamsevak

Sangh; Vijoo Krishnan, all India joint

secretary of the All India Kisan
Sabha, affiliated to the Communist
Party of India (Marxist); Pravesh
Sharma, former chairman of
the Small Farmers' Agribusiness
Consortium; Alok Sinha, former
chairman and managing director, Food
Corporation of India and Ajay Jakhar,
chairman, Bharat Krishak Samaj and editor
Farmers' Forum, who initiated the dialogue.





non-political/non-partisan farmers' organization is a rare 'breed'. The Bharat Krishak Samaj (BKS) is one such and it believes in absolute freedom of expression that is endangered in the country today. People from different political organizations, different backgrounds are encouraged to express their thoughts that are presented in the BKS' magazine, Farmers' Forum. The BKS constitution,

written in 1955, enjoins it to be a platform for all those who want to raise their voices for farmer prosperity. It is not for the Samaj to decide who is right and who is wrong in their views.

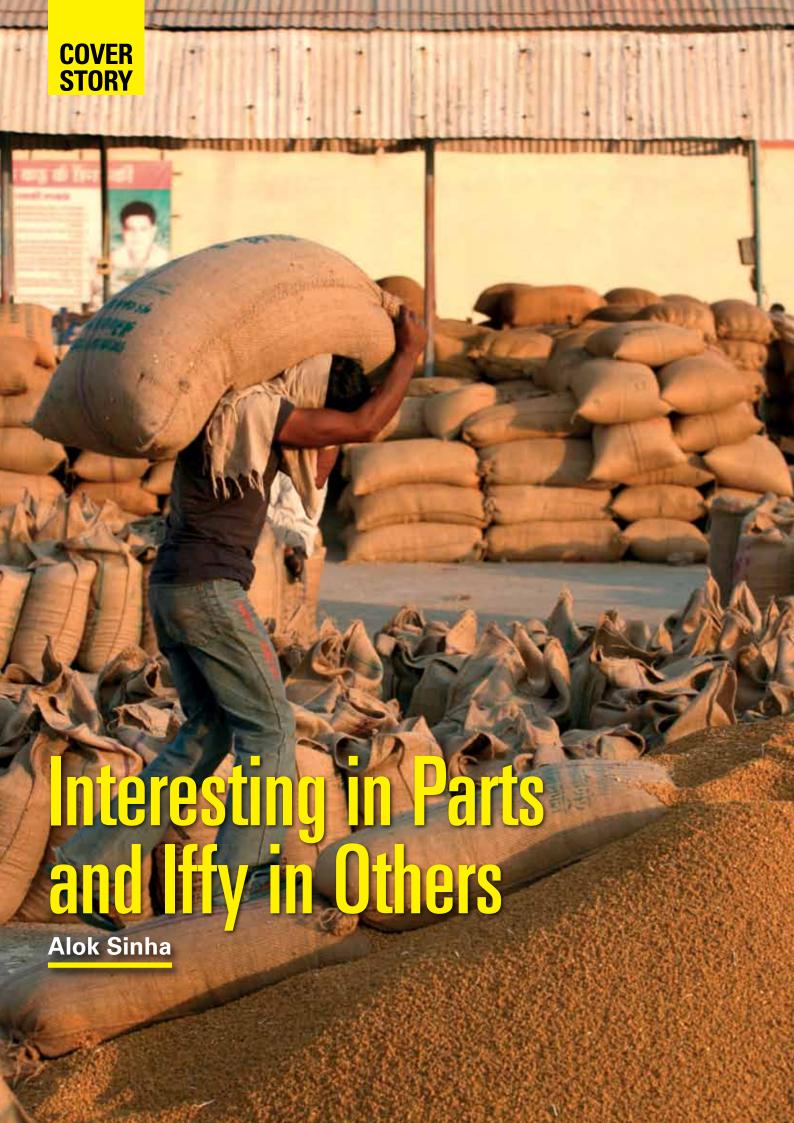
Many questions have been asked about



AJAY VIR JAKHAR Chairman, Bharat Krishak Samaj; Editor, Farmers' Forum

MGNREGA and about farmer suicides. Many people here do not like the present government but it must clearly be understood that the farmer suicide phenomenon has not been caused by this government. It owes itself to policies made over the decades. The MGNREGA and the Food Security Act represent an acknowledgment of the failure of the Indian bureaucracy, the Indian political system and Indian

democracy because only after 60 years it appears that the country realized that the poor ought to be given cheap food; that they need to be given jobs. Something needs to change and that is the change being sought. •





t is very difficult to understand the budget, not with standing discourses by experts that one listens to. To a layman like me, it appears like an accountant's table where, deliberately or otherwise, the pattern is either not spelt out or is impossible to decipher because there are at least 500



ALOK SINHAFormer Chairman,
Food Corporation
of India

items, saying ₹500 crore for this, ₹10,000 crore for that, ₹21 crore for this — but without comparing them with the corresponding numbers in the previous budgets or explaining how they would be spent vis-à-vis spends on the same accounts in the previous year.

The main message that the year 2016 budget conveys is that it will double farmer incomes in six years. Without meaning disrespect to anyone, that sounds like the casino approach. Come, spend some money and by the next morning you will get double the amount. There was one exception. The speech said that it would be done by reorganizing the agricultural policy without, however, explaining what that reorganization would be. Perhaps the government will do so in the course of the debates on the agricultural ministry's grants.

As of now, one knows that the income will be doubled through reorganization of the agriculture policy and that it will be doubled in six years. Why this sounds difficult is that currently agricultural growth is less than an annual 0.2 per cent. A great target would be two per cent and an even better target would be four per cent. Under these circumstances, claims that the income will double in just about six years seem a little curious. One looks forward to the budget debates for clarity.

There are other interesting bits and pieces in the budget speech. First, agricultural credit is to go up to ₹600,000 crore. Good though that may sound, merely giving credit is not enough. In fact, the large majority of farmer suicides have taken place amongst those farmers who have taken agricultural credit. In states like Uttar Pradesh and Bihar, there are not too many suicides because the farmers are so down and out that few attempt to fall any further. Thus merely getting ₹600,000 crore of credit. without doing anything by way of marketing or food processing, would not help ameliorate the problem.

In India, it is not the actual quantum of agriculture output that is a problem; it is



marketing. What does one do with the output once it leaves the fields. The simplest example is the potato. If one makes chips out of them, the farmer will earn more but one has not seen adequate progress with food processing. The budgetary announcement of 100 per cent FDI in food processing may help. A road map will probably show how it is to be done.

This budget has, however shown a whopping ₹35,000 crore allocation for the agriculture sector; a record breaking one that has captured the headlines. The media has been totally taken in by the impression conveyed that the 2016 budget is all about agriculture and the rural sector. This ₹35,000 crore includes ₹15,000 crore of credit subsidy that appeared under the banking ministry's budget at ₹13,000 crore of subsidy last year. Thus allocations under the banking ministry have now been transferred to agriculture to send the budget numbers for agriculture budget shooting up, as has been explained by Ashok Gulati.

The Pradhan Mantri Krishi Sinchai Yojana has also received ₹7,392 crore, a seemingly huge sum but which is actually less than ₹7,589 crore, the revised estimate (RE) for 2015-16. So ₹7,598 crore of the RE has gone down to ₹7,392 crore in this budget. Without good irrigation, agricultural output stagnates and, given that two-thirds of India's cultivated area is dependent on the rain gods, if this area is not supported by irrigation, things will remain the same. There will neither be a doubling of farm incomes nor a growth beyond the current sorry levels, which will mean a disaster.

Also, the two-thirds of India's farmland that does not have assured irrigation geographically coincides





Two-thirds of India's farmland without assured irrigation coincides with its tribal belt. If this area is tackled, India can even stem the tribal youth's engagement with the Maoists

with India's tribal belt. If this area is effectively tackled, the country will go a long way in stemming the tribal youth's engagement with the Maoists. It has been argued that the solution to many agricultural problems lies outside agriculture. Marketing has to be organized in a big way. The budget speaks of about 5,000 agricultural markets being connected online and such other things. Hopefully, something worthwhile will be done in terms of marketing for the farmers, especially for the smaller farmers.

One intriguing line in the speech is about online

procurement of foodgrain. One can procure online through Flipkart and Myntra if one knows the size, shape and colour of the product that one wishes to buy. How foodgrain can be procured online without the procurer knowing the quality of the foodgrain being offered and whether it would be acceptable or not is the intriguing question.

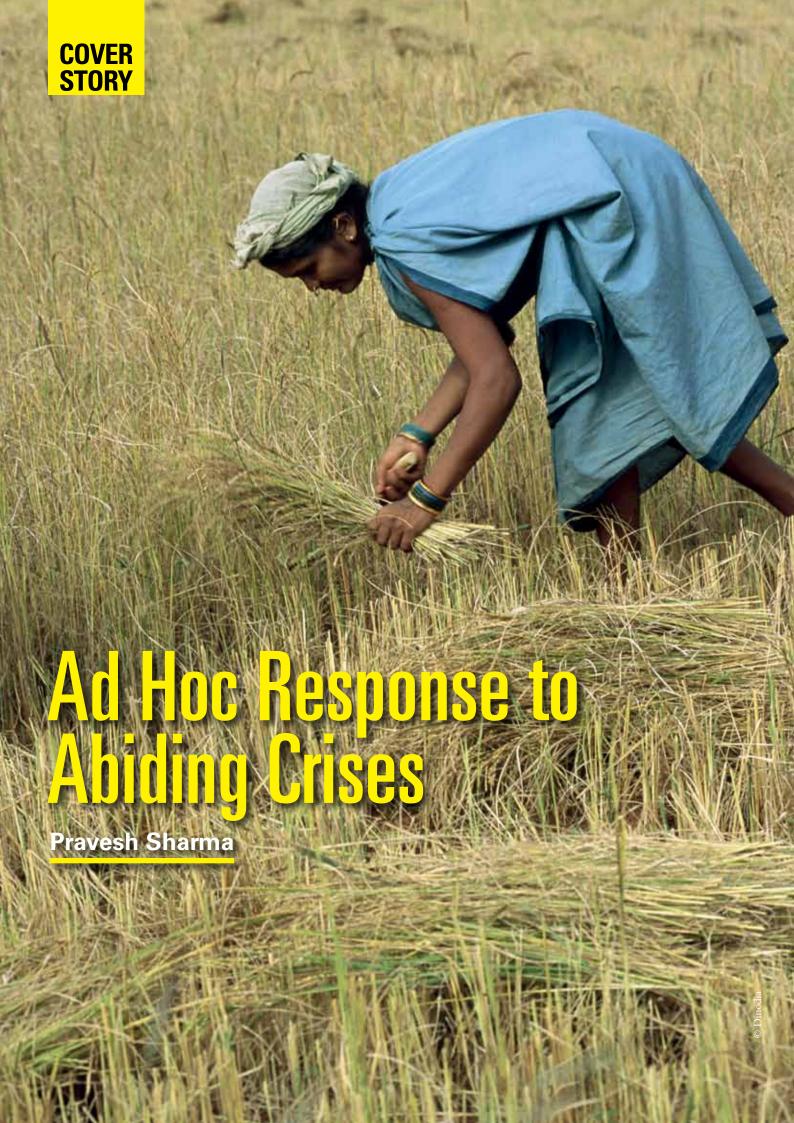
The welcome announcement is the increase in the budgeted amount for the Pradhan Mantri Gram Sadak Yojana to ₹19,000 crore from last year's ₹15,000 crore. There is no doubt that with



more pucca roads connecting villages, marketing of the agricultural produce will get a big help. Also welcome is the renewed boost to MGNREGA, especially since the farming sector is in distress and the farmer's income is actually falling.

The catch is that most farmers with a marketable surplus are from Punjab, Haryana, Western Uttar Pradesh, while the farming labour comes from eastern Uttar Pradesh, Chhattisgarh, Bihar and Jharkhand. The former will worry that the increased MGNREGA spend will artificially push up the wages in the rural areas and hit their incomes. That might well be so. The choice is between the budgetary impulses increasing the incomes of the big farmers or reducing the poverty of the landless and the marginal farmers.

In the final analysis, agriculture is not only about growing crops but also about feeding the people; what happens to the foodgrain when it leaves the field and how it gets distributed. One very welcome announcement that has not attracted much attention in this budget speech is that 300,000 fair price shops (FPS) would be automated. It is from the fair price shops that the leakage of subsidized foodgrain takes place. The annual food subsidy has crossed ₹100,000 crore and all accounts show that between 25 per cent and 30 per cent of the ration cards are bogus. With FPS automation, the leakage should be tackled at the source level and, to that extent, between 25 per cent and 30 per cent of public money, being spent on food subsidy, may be saved. •



s the erstwhile head of the Small Farmers' Agribusiness Consortium, an agency of the Ministry of Agriculture, one has seen the trickle-down effect of government policy and budget on the ground, vis-à-vis the producers, who are perhaps not represented here. The people who really ought to be impacted by budgets like this are not in this room.

What does this budget hold for what is now 86 per cent of the total cultivators of India, who are either small or marginal? This percentage should be appreciated because 65 per cent of all cultivators are marginal and hold less than a hectare. Another 20 per cent is comprised of the 'small holder', holding up to five acres. How do such people benefit from a budget like the one announced for 2016?

There is, of course, the welcome reorientation towards the rural sector. All citizens, irrespective of ideological persuasions, and the government recognize that this is a very important sector. The budget, however, is actually about expenditure and



PRAVESH SHARMA Ex-Chairman, Small Farmers' Agribusiness Consortium

credit figure is ₹9 lakh crore but of the total bank disbursements as agricultural credit, around 60 per cent is credit given to traders for warehouse receipts. It is not crop credit. The figure varies from state to state but around a third to a fourth of the total credit actually goes as crop credit to farmers and is overwhelmingly slanted in favour of crop husbandry.

in horticulture or poultry or dairy or livestock but not getting subsidized crop credit for them. These activities are still being financed by the informal credit market with interest rates starting at 36 per cent and going up to 120 per cent depending on the risk profile. Merely by pegging a certain figure and showing a significant jump of about 30 per cent for almost a decade does not do the job. The UPA 1 targeted doubling of the agriculture credit in three years and it actually happened but skewed ratio of allocation has continued as a 'policy overhang'.

To come back to the original point, commercialization is taking place without risk

The crop credit figure is ₹9 lakh crore but of the total disbursements as agricultural credit, 60 per cent is given as warehouse receipts, which is not crop credit

income of the government and the policy intent that it signals is very significant. How does this budget address what to my mind are the three interlinked crises of agriculture in India today?

The first crisis — many question whether it is correct to call it a crisis — is the crisis of 'commercialization of agriculture without risk mitigation'. Three-fourths of the agri-GDP is contributed by high-value agriculture comprising horticulture, livestock, poultry and fishery; the so-called non-crop husbandry sectors. Around 20 years ago, this ratio was reverse; three-fourths of the value came from staples like grains, pulses, oil seeds and only one-fourth came from high-value agriculture.

The changing nature of consumer demand has signalled a greater demand for milk, for poultry, for eggs, for meat and farmers have responded and three-fourths of the agri-GDP comes from this high value agriculture. This change has, however, happened without adequately addressing the risks that come with commercialization. Crop

mitigation. The worst outcomes are the suicides in the cotton or the commercial crop belts. Such human distress is not evident amongst subsistence farmers because their crops are not market linked. The collapse of cotton prices because of the collapse of the demand from China has been cause for distress and the general slump in the global commodity prices.

The second crisis is an 'investment crisis'. A Reserve Bank of India report says that only around 40 per cent of farmers are able to access institutional credit and 60 per cent, even if engaged in crop husbandry, is going to the money lender. The penetration of institutional credit is only 15 per cent among small and marginal farmers. If 85 per cent of this huge cohort is borrowing from the market, a budget or increased outlays on credit will not make much difference, irrespective of the level of subvention.

The third crisis that, in effect, breeds the two original crises, is the 'crisis of unstable policy'. Every government, unfortunately or fortunately, in a democratic context, has to address electoral cycles





and short-term targets and nobody is willing even to think three years; forget five years or 10 years. This means ad hoc responses; onion prices go up in Delhi, so import onions; onion prices crash, the Delhi press is happy and all is fine. Throwing money at a major issue may give temporary solutions and that is all.

These three interlinked crises are bubbling below the surface in agriculture. There are other issues of course but these are the most critical. How does the current budget address them? The first thing that is conveyed by the budget is that it is a partial response, an incomplete and ad hoc response; certainly not a holistic response that perceives the interlinked nature of agriculture, a vision of agriculture as a continuous, integrated value chain. The budget's approach is like addressing some part with a very bad sore by applying an antibiotic on it or putting a little band-aid on a scratch and hoping to get away with it. There are many such ground realities that the government has information about.

There was a huge pre-budget build up on issues like tenancy reform, and a high-profile paper from the Niti Aayog led one to expect that the budget would provide some incentive to the states to address this very critical issue. Almost 20 per cent of India's cultivable area is tenant farmed. Such tenants will not be helped by the higher outlays on credit because they will not be able to access credit as they have no documents.

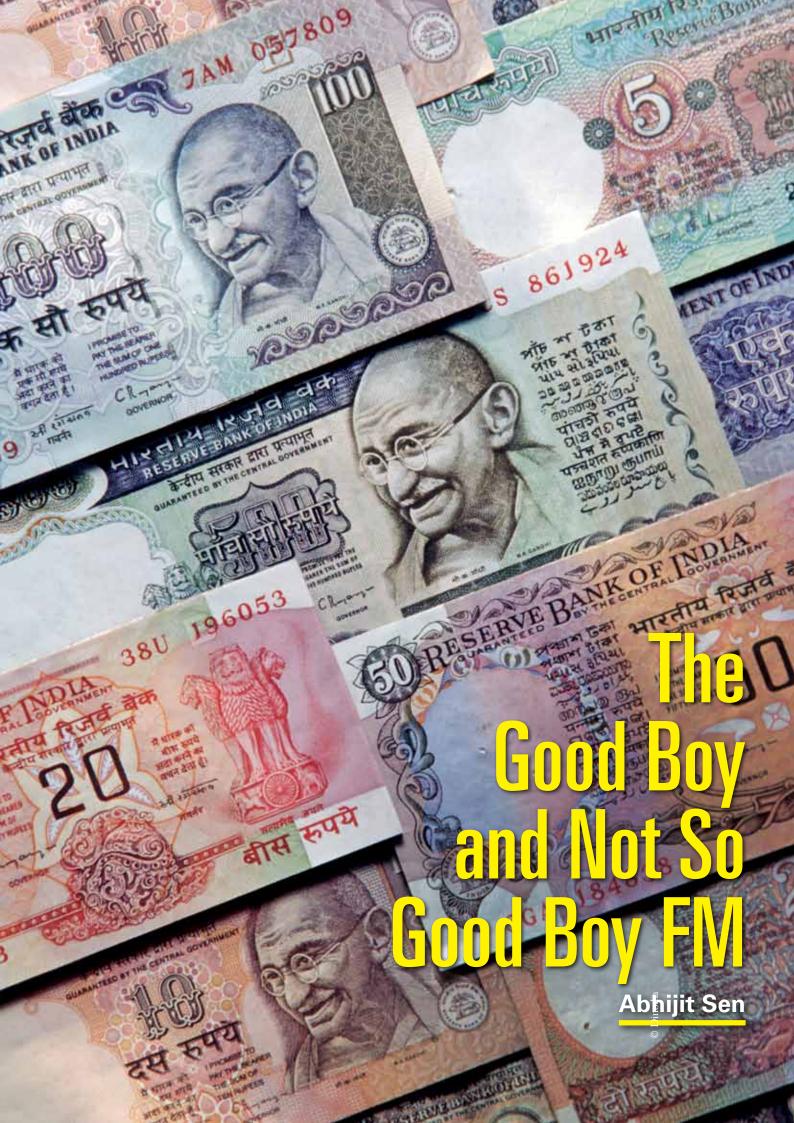
Unfortunately, along with the abolition of zamindari, India also abolished tenancy that nevertheless exists. The National Sample Survey data clearly shows that almost 80 per cent of the small and marginal farmers are leasing land but have no legal right. Except for 'Operation Bargadar' in West Bengal, no other state really tried to do something about tenancy.

The new crop insurance scheme is a great idea but how will it address the issues of tenant farmers and the landless farmer?

There are no real answers and one can conclude that the short term and ad hoc nature of policy making in agriculture is likely to be a phenomenon in the coming years. Pointers to some possible policy reform lie in the designing of the National Agriculture Market for farmers, which will not offer any immediate solution to farmers because it will take at least three years to roll out.

This year, only 200 mandis are going to be linked and, in any case, the majority of farmers, who bring produce to the mandis do not bring it in big enough volumes to interest traders sitting outside that market. There has to be a minimum of one truck-load for somebody sitting in Delhi to buy in Narsinghpur, for instance. While the local trader will continue to be important, there is really nothing in the budget that would signal the intent of the government to address the issue in a fundamental manner. •





o give the finance minster his due, he had a very difficult job. First, he had to make up his mind on whether he would be a good boy for the purposes of the fiscal deficit, maintaining the pre-announced deficit number, or actually give himself some leeway. He decided to be a good boy with the deficit number, which limited his ability to spend more than what is collected in taxes or revenues.

Second, he was presented with a pay commission and had to find the money to initiate that process, if not actually go the whole hog. One is not sure what the exact number is but the cost is very substantial and a very large amount of what he could spend ended up being committed. Within that, he had to meet the demands of a lot of people and one of the most important demands was, of course, from the farmers. That possibly inspired the certain sleight of hand: ₹15,000 crore being shifted from the ministry of finance to the ministry of agriculture.



ABHIJIT SEN
Member,
former Planning
Commission

Take the much larger picture, not simply the department of agriculture and cooperation, but the entire ministry of agriculture, animal husbandry and agricultural research and go further to look at the rural budget rather than merely the agriculture budget. After all, the agriculture ministry does not build roads or construct irrigation facilities. Add everything under rural development, including Pradhan

Mantri Gram Sadak Yojana, MGNREGA and the entire water resources ministry so that all the irrigation spend comes in and take the total expenditure of these three large ministries and all the departments under them, only leaving out that ₹13,000 crore or that ₹6,000 crore. What obtains is the following:

In 2014-15, these three ministries together spent about ₹102,000 crore. In 2015-16 the revised estimates are about ₹110,000 crore and the projection for next year in the budget is about

The spend on animal husbandry has not increased, which is of concern. This is the neglected sector and continues to stay neglected. It ends up getting a little less

The figures are not incorrect because subvention of agriculture credit sounds better and it is something to do with agriculture rather than finance. Nonetheless it is a sleight of hand. There was no extra ₹15,000 crore but just ₹2,000 crore. There are other such examples. The National Bank for Agriculture and Rural Development (Nabard) is credited with something called extra budgetary resources of about ₹6,000 crore, also shown in the plan outlay under agriculture. Given the finance minister's need to play the optics of the day, he was prodded to do so as would anyone in his position, though probably not to the extent that it was done this time.

What is the amount finally? If the department of agriculture is taken into account, there is about a 30 per cent increase, after cutting out that ₹15,000 crore, from the revised estimate to the budget estimate for the next year. That is not a small amount though it is another matter that compared to the actual expenditure for 2014-15, the increase is only about nine per cent. Essentially, there was a year in the middle when the expenditure had gone down and one is sort of recovering from that.

₹122,000 crore. Again, the increase next year is about 13 per cent that is less than the 30 per cent in the department of agriculture. Even 13 per cent is not a bad number but the worry is that last year, it had increased by about nine per cent. This year the projected increase is about 13 per cent. If, indeed, there is a crisis that the nine per cent increase failed to address, the 13 per cent is a relatively small add-on. What then becomes important is the quality of this spending that has to be substantially better than what it was in the previous period.

Some other issues have been raised. There is more spending on roads but less on irrigation. There is also a substantial increase from about a little less than ₹3,000 crore to a little over ₹5,000 crore for crop insurance. These are the big increases coming because of the total going up from ₹110,000 crore to about ₹123,000 crore; a ₹13,000 crore increase. What has not increased — and this is a bit of a worry — is the spend on animal husbandry. This is the really neglected sector in government that continues to stay neglected. In fact, it ends up getting a little less.





There is a need to look at this vis-à-vis the signals that the government is trying to send in terms of the change in the nature of agriculture policy. The signal is that it will concentrate on infrastructure first and roads seem to be one area because most of the irrigation is under state governments. The second signal is that income support for farmers will come from things like insurance.

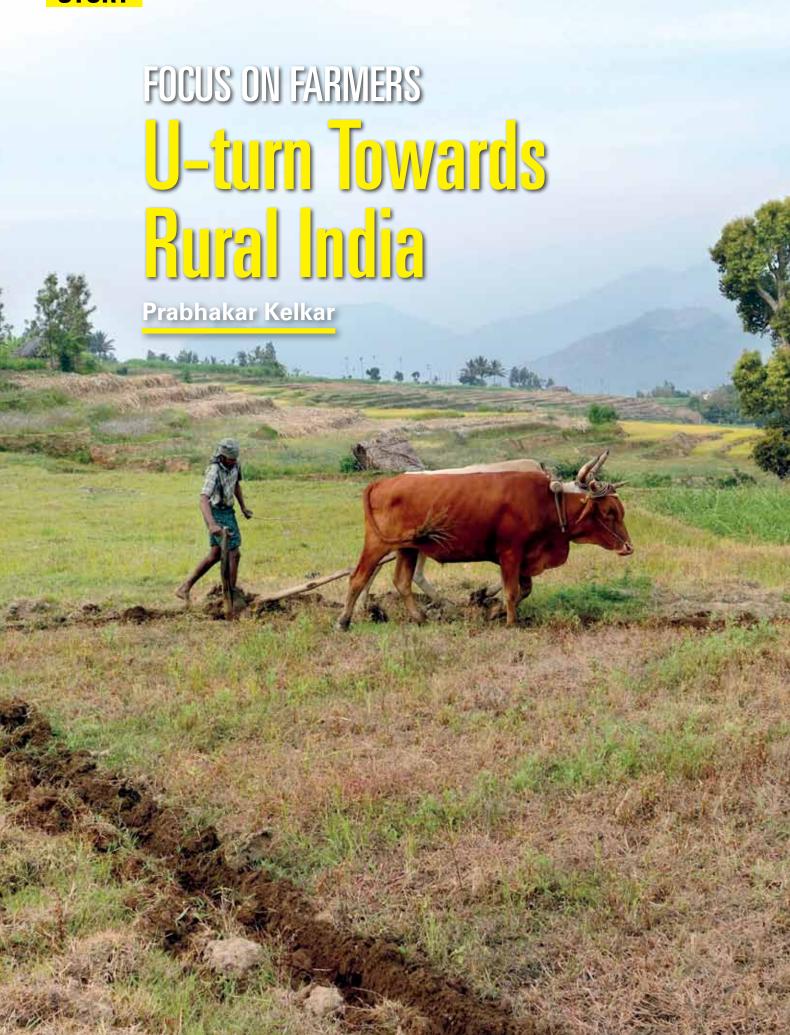
However, the risks of farming are not just risks of the weather. There are risks of the market as well but this does not get reflected in the budget numbers or even the budget optics. Again, to be fair to the finance minister, one reason why the total spending dropped last year was that the states were expected to spend a lot more after the 14th Finance Commission and one cannot really know what happened till the revised estimates of the state budgets come in. They are available for three or four states but the entire lot will not come in for some time and one cannot know the consolidated spend of the states and the centre.

There is an expectation that the states will do certain things but states often tend to neglect exactly the same things that the centre neglects. Animal husbandry and marketing are some prime examples. The states themselves have been the reason why,

for example, the Agriculture Produce Market Committee (APMC) reforms have never really taken off. Since the actual picture is not clear one should not jump the gun but only point out that fundamentally a lot of this sounds very familiar. Finance ministers may have much to say in the budget simply because a budget is political tool too. A lot is read into it, much of it having nothing to do with the budget. More importantly, many problems being faced by this government were faced by the previous government as well; and not just the UPA.

As far as the question of doubling of incomes is concerned, clearly it is a ridiculous promise. It is probably something that cannot be true in terms of real income of farmers. The real incomes would have to increase at something like 14 per cent per annum and that has probably never been achieved anywhere in the world. If considered in terms of doubling the nominal terms, there is nothing to it. It happened in the last five years and even in the first five years of the UPA government. Unfortunately, much of that happened because the prices went up, but not because the output went up. It would be fair to say that the finance minister is under pressure and had to work under severe constraints.







n its capacity of being a people's organization, the Bharatiya Kisan Sangh offers certain arguments on behalf of the farmers. The budget is an annual activity and a practice in which politicians and economists try to balance the finances. It is almost like a circus in which finance ministers have to perform every year. The thing to look out for is



PRABHAKAR KELKAR General Secretary, Bharatiya Kisan Sangh

the political vision. Everyone talks about what has been done to uplift the people in the lowest rung of the economic ladder and what policies have been envisioned for them.

The numbers have been analyzed in detail but what is really important for the rural and agricultural space is that budget 2016 appears to be one in which the government has taken a u-turn towards rural India. Certainly there are pressures on the government, negative and positive, which have caused this and farmers have to be congratulated for forcing the government to return to the villages by creating a positive pressure. What are the negative pressures?

Farmer suicides are a massive negative pressure as the *annadaata* (food provider), the prime workforce keeping us alive, is forced to commit suicide. There can be nothing more tragic or disgraceful. Agriculture should be a life-saving practice and one should be ready to contribute one's best for its wellbeing. This perspective has always been disregarded and investment in agriculture has dwindled, while farmers want to quit farming and there is a negative environment surrounding agriculture. What does a farmer really want specifically from the budget?

Farmers want two things: a remunerative price (laabhkari mulya) for their produce and good arrangements to procure the produce. What does this budget say about remunerative price? The finance minister has said that states would be directed to ensure good procurement facilities on minimum support price (MSP). However 86 per cent of the farmers in the country are 'small' with farms under a hectare. So what would 'good procurement' mean?

Can a market be provided to a small farmer having 10-12 quintals of grain within 10 km of his farm? Today, he must go 25-30 km to sell his produce and that is hardly profitable. The farmer must hire a tractor or some other loader for a day or



two during which anything can happen. The idea of MSP is hardly acceptable but even if insisted on, there should be efficient procurement. Many states have no procurement centres and a small farmer awaits a trader to pick the produce from the doorstep and even compromise on the MSP from $\[Tilde{7}\]$ 1,400 to a low of $\[Tilde{7}\]$ 1,200 or $\[Tilde{7}\]$ 1,100.

This budget does not mention anything about providing a safety net, assured procurement, good marketing and such others. It talks of e-marketing but how would a small or marginal farmer be able to understand e-marketing and benefit from it? The problem is that the trader buys wheat, paddy and such produce from the house of the farmer at as low as ₹1,000 to ₹1,200 and earns a profit of around ₹200 per quintal by merely producing the diary of the farmer.

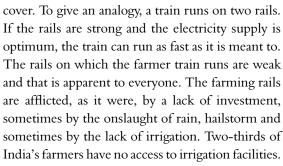
Therefore, there is a need for an entirely different perspective on agriculture, to be provided by a forum — comprising notable individuals and others concerned with agriculture — to guide policies that take farmers towards a protective

failed in so many states. What is the mechanism to ensure that it becomes failsafe? This responsibility too does not lie solely on the central government; both state and central governments have to ensure it. There are umpteen examples where the intent of a scheme, as envisaged by the centre, becomes entirely different when it reaches the states.

Until and unless the centre and the states have a homogenized perspective on agriculture, there will be no resurrection of farmers. This is a difficult job; very difficult. In a democratic country everybody has his own thinking and when it is not possible to channelize them in one direction even on matters of national security, it is even more difficult to achieve this feat in the agriculture space.

When asked by the finance minister to suggest proposals to be included in the budget, the Bharatiya Kisan Sangh had categorically written that it wanted five organic agriculture universities because until India's agriculture scientists say that organic is indispensable, India will not move the organic way. Everybody agrees that chemical





Having said that, an intent is visible in this budget. The Bharatiya Kisan Sangh's slogan is 'samrudh gram; samrudh Bharat' (prosperous village; prosperous India). No matter how hard one tries, India cannot prosper unless its villages are prosperous. For the first time, in my 20-25 year long association with agriculture, the focus of the budget is towards villages and farmers; the intent is visible. How well that intent plays out will depend not only on the government but on citizens as well.

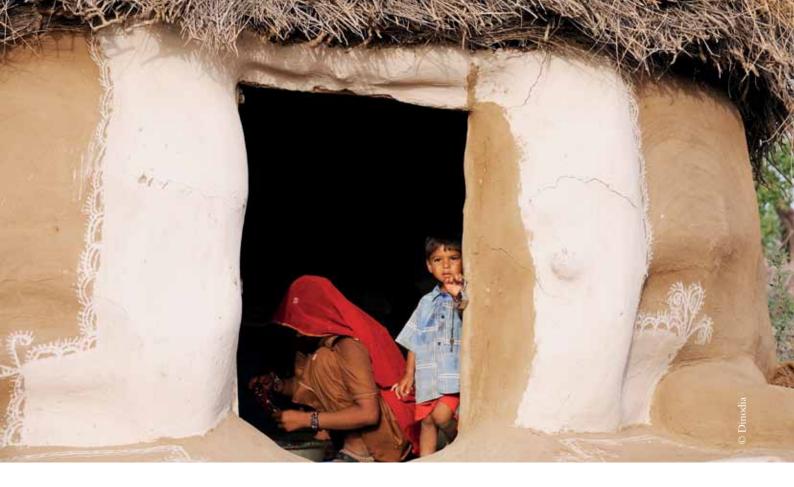
The government has made projections and given actual achievements. Projections include doubling of farmer incomes; 10 lakh bio-pits to be dug or five lakh ponds to be constructed via MGNREGA. How much is MGNREGA actually able to achieve? It has

fertilizers ruin human and soil health. The finance minister did not accept that demand but he has talked of 10 lakh compost pits and promised to earmark around ₹400 crore to promote organic farming. The 647 Krishi Vikas Kendras can do something meaningful in this regard.

The time has come to take a u-turn from chemical farming to organic farming that requires less capital and water. Governments should focus on organic with full force. It is admitted that cancer is rampant in Punjab with special trains running for such patients. Yet India's agri-scientists say that without chemical fertilizers and pesticides, India would be ruined and its people starve to death. How can this mindset be changed?

Dinesh D. Kulkarni, Organizing Secretary, Bharatiya Kisan Sangh, an M.Sc in agriculture, is familiar with the history of agriculture in India and says that in the medieval era, an acre would yield as much as 50 quintals! There was no chemical usage then. This is why there is need for holistic and homogenized thinking in governments and the people who will pressure the government and political parties to move towards chemical-free farming.





The budget proposes to raise foreign direct investment in food processing to 100 per cent, which the Bharatiya Kisan Sangh does not support. Raising India's productivity would mean food processing in the villages. There was a time when a person would go to a farmer's house and collect 10 kg of mustard to be crushed into oil. They would settle the deal either in cash or barter. Today, the money of the village does not stay in the village and there is need to focus on increasing rural employment, which is only partially visible in this effort. Migration from villages will not stop unless employment opportunities in villages increase.

Today, villagers get employment for nearly 180 days. What about the remaining 180 days? The situation is so bad that one cannot even find a barber or a mechanic to mend a punctured tyre in villages and people travel five to 10 kilometres to fix a puncture. Until rural employment and agriculture go hand in hand, farmers will migrate to cities. There is no strong initiative visible in this budget towards this end.

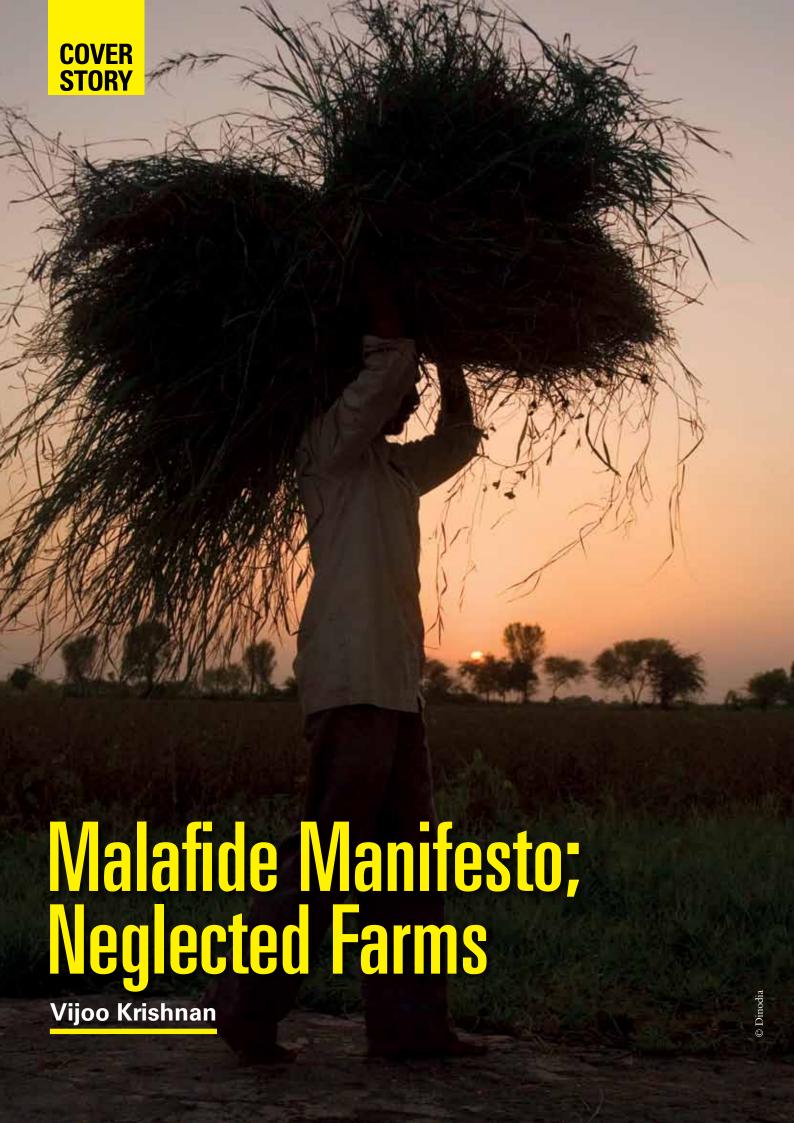
The Bharatiya Kisan Sangh has also pointed out that farmers have been tormented by either drought, excessive rain or hailstorms for the last two years. The situation in Bundelkhand is well known. Unfortunately, just the other day, Betul witnessed a hailstorm. Crops have been destroyed in Chhindwada. The crop insurance scheme, for which ₹5,500 crore have been earmarked, should have come with a helpline number. In case of a distress, a farmer

should be able to call this number, just as he can call 108 for medical emergencies, for immediate redressal.

The incident of the Mahoba (Jhansi) farmer who died on the spot from the shock he got when he saw his ripe crop lying flat on the ground is well known. Had he known about this helpline and some reassurance that he could get help; someone could have counselled him not to worry and given him some immediate monetary help of ₹2,000 to ₹5,000. It is great to talk about crop insurance schemes but by the time insurance can be claimed and the money reaches the farmer, he would have departed from the world.

There is need for out-of-the box solutions for farming issues. Direct subsidy transfer in case of chemical fertilizers is being discussed without realizing the complexity of the idea. To whose account would the subsidy go? To the man who owns the land, of course. Today, more than 40 per cent people get others to do farming on their land. How would these two parties come to any agreement? The government is apparently thinking about these issues. There is also the welfare of bataaidaar (tenant farmer) and many other issues to be considered to make the direct transfers work.

For the time being, the good news is that the focus is back on the farmers and it would be important to have initiatives for their benefit implemented efficiently so that they prosper, courtesy remunerative prices and an efficient, accessible market. •



he government has been in a state of amnesia ever since it won the election. The manifesto of the Bharatiya Janata Party (BJP) and the over 400 speeches made by Prime Minister Modi – in person as well in 3D projections – promised every item on the farmer wish-list. The post-election reality has been quite different, though the farm

suicide phenomenon is not something that this government alone is responsible for. Earlier governments following neo-liberal economic policies created a situation where farmers ceased to get remunerative prices and found agriculture increasingly unviable, as they got caught in a web of indebtedness, leading to suicides.

The BJP had come to power by promising to end farmer suicides. While this could not have been achieved overnight or even in a few days, some policies and confidence-building measures could have been initiated to give farmers the



VIJOO KRISHNAN All India Joint Secretary, All India Kisan Sabha

per cent to comprise the MSP. In speech after speech candidate Modi talked of this but, after coming to power, the government has given an affidavit to the Supreme Court that this is not feasible.

The agriculture minister told a visiting All India Kisan Sabha delegation: "We promise a lot during the elections; do not take such things so seriously". Now that elections are approaching, the budget speak

has turned to the farmers though the actual impact of the budget on farmer lives will take some time to reveal itself. What is clear is that currently the MSP does not even cover the cost of production for most crops.

Where MSP is given, for paddy and wheat for instance, only about 10 per cent of the farmers get the MSP. This clearly underscores the need for assured procurement. Even remunerative MSP is of no use if there are no procurement centres. Farmers in Odisha, Jharkhand and large parts of eastern India do not get even ₹1,100 a quintal when

The 46-farm-suicides a day phenomenon has increased to 52 farm-suicides a day. In Maharashtra around 3,300 farmers have committed suicide this year

hope that their toil and investment in agriculture would not go in vain. Yet the 46-farm-suicides a day phenomenon has increased to 52 farm-suicides a day. In the hotbed of suicides, in Maharashtra, around 3,300 farmers have committed suicides this year; almost double of what it was two years ago.

On this most important count the government has failed to instill confidence through its budget. There is nothing forthcoming for the farmer by way of loan waivers though lakhs of crore of loans are being waived for the corporate sector along with tax concessions. For farmers, there is some talk of interest subvention where the need is for a scientific debt relief commission to look into the loans taken from private lenders as well because a large section of Indian farmers – small and marginal – depends on private money lenders. It has no access to institutional sources and little has been done to address the problem.

The other promise was regarding the minimum support price (MSP) being fixed in accordance with the M. S. Swaminathan Commission's recommendations for cost of production plus 50

the announced MSP is more than ₹1,400 a quintal. Worse, in some states, the cost of production is around ₹1,800 per quintal.

The bottom line is that there is no effort to increase the number of procurement centres that would need a great deal of investment in terms of infrastructure and recruitment of personnel to man them. Nothing is happening in that regard. Consider some other interesting features:

- The BJP manifesto proposed cheaper agricultural inputs and credit but the budget gives no indication of movement in that direction. For instance, under the nutrient-based subsidy (NBS) regime for fertilizers, the government subsidy per tonne for diammonium phosphate (DAP) is around ₹12,500. The cost of DAP, procured mainly in bulk from China or Morocco, is around ₹30,000. So the cost of the DAP per tonne is around ₹17,500 but the farmers pay between ₹30,000 and ₹36,000 per tonne!
- The government talks of many fertilizer company outlets that will also look into soil health card and soil fertility issues and so on. The fund allotted



for this soil fertility and soil health management is around ₹360 crore, which is a joke!

- There is also an allocation of around ₹500 crore for pulses in 622 districts. Farmers get ₹30-₹40 per kilogramme for pulses, which sell for ₹220 a kilogramme in the market.
- The government has relaxed the storage limits that benefits certain companies like the Tatas, Birlas, Ambanis, Adanis and ITC. In the four months when pulses cost ₹220 in the market, their profit was around ₹180 per kg multiplied by a minimum of four million tonnes of pulses consumed. No one is talking about this corruption.

The expectation of government intervention in all these cases has been belied. Now comes the promise of doubling of incomes. According to one assessment, if the annual income from cultivation is around ₹20,000 per farmer, doubling it would mean taking it from around ₹1,600 to around ₹3,200 a month in six years. Where does inflation fit into this calculation? What exactly is being envisaged for the farmers?

Farmers require insurance from policies. Even under Pradhan Mantri Fasal Bima Yojana, earnings by private insurance companies have increased by ₹8,500 crore. The benefit to the farmer is not clear

Repeatedly, different finance ministers have said that the number of agriculture-dependent people must come down drastically and the government is moving in that direction because crops are not remunerative and there is no assured procurement. Commercial crops like rubber, tea and coffee too are facing a crisis but little is being done to revive some of the commodity boards to help the farmers. Coconut palms in large parts of India have become low yielding but there is no plan to help them improve their productivity.

Instead, there is talk of Pradhan Mantri Fasal Bima Yojana though farmers actually require an insurance from government policies. Even in this scheme private insurance companies see



their earnings increasing by ₹8,500 crore though the benefit for the farmer is not clear. Clearly, there should be total subsidy on the (insurance) premium for SC/ST farmers that should be borne jointly (50:50) by the states and the centre. There are many states that cannot bear such expense and insurance policies have not been successful so far.

Around 95 per cent of paddy farmers are not insured while 100 per cent of the growers are not insured for some other crops. Even the current scheme is complicated and if one needs the subsidy in insurance premium, three other insurances have to be taken along with that in terms of what the Pradhan Mantri Fasal Bima Yojana says.

The MGNREGA with its dubious ₹38,500-crore



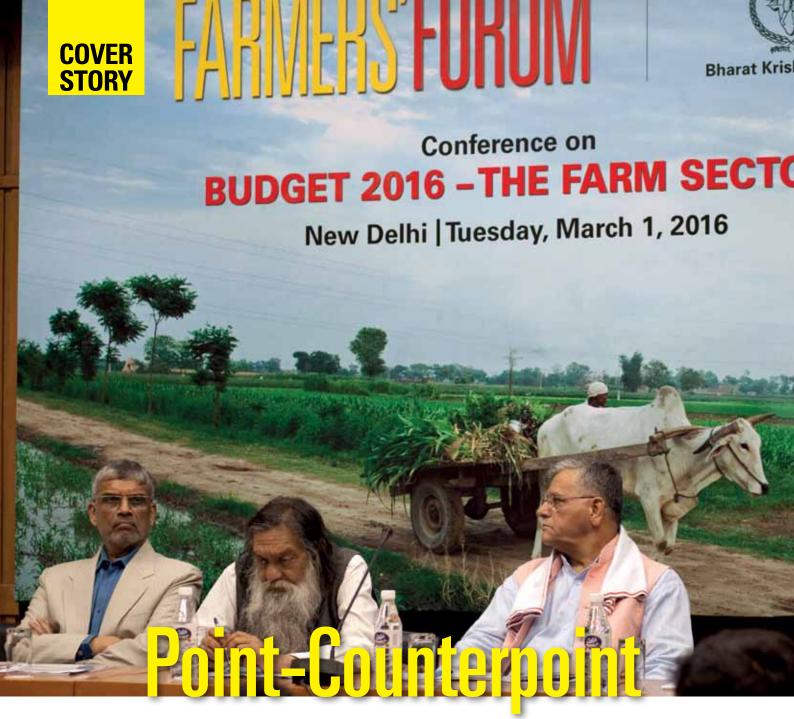


allotment is another worrisome area because one has seen how unprofessionally ₹41,000 crore has been spent earlier; the inflation impact and the between ₹6,500 crore and ₹7,000 crore arrears to agriculture workers. The government talks about linking MGNREGA with agriculture and increasing the number of days to 150 while it has provided no more than around 38 days of employment under the scheme last year. States that are doing well, Tripura for instance, find that their funds are being cut. The government wants it to reduce the number of blocks served from 6,500 to 2,500 blocks only.

The budget has talked of welfare for farmers above 60 years, apart from small and marginal farmers and farm labour, without mooting any

social security measures for them. Also, what had been announced with much fanfare in the earlier budgets, the price stabilization fund, seems to have made no progress. Compensation for farmers suffering crop loss is another advertised mother of all initiatives with the biggest allocation in the history of independent India. In Haryana, where the BJP is the ruling party, people get cheques for as little as ₹5 as compensation! The proof of the pudding is in the eating and only when measures get implemented will one realize the usefulness or futility of these programmes.

Farmers are not fools. They understand the government's intentions and will speak through their votes in the coming elections. •



Where is the fertilizer subsidy vanishing? Who will benefit from the new insurance schemes? Should the MGNREGA, an on-demand payment (scheme), conferring a statutory right whether or not it is budgeted for, even supposed to be in the budget? Why cannot what V. Kurien did to dairy farming be done for the rest of agriculture? Why do parties play politics even with the suicides of farmers?

AJAY VIR JAKHAR

No Place for Pan-India Policy for Farming

What is the difference between the UPA and this government? The UPA never consulted us; it did consult farming experts living in cities and pontificating on farming. This government has, at least, consulted farmers if only to validate its own ideas. As far as the budget is concerned, the economic survey released by Arvind Subramanian,

the chief economic advisor to the prime minister, contains an interesting fact that 31 per cent of the fertilizer subsidy is either smuggled out of the country or used by the industry.

The Fertilizer Association of India confirms that the quantity diverted to industry is quite small compared to total quantity smuggled out of the country. Now, 31 per cent total urea subsidy of ₹50,000 crore amounts to over ₹15,000 crore. Even



if for argument's sake one considers a figure of 50 per cent being smuggled, the sums involved are a whopping ₹7,500 crore. Farmers are aware that the subsidy per bag is around ₹650. Each truck of 10 ton capacity carries 200 bags of 50 kg each. Which means that each truck is subsidized to the tune of ₹130,000.

Moving such large quantities should require 600,000 lakh truck trips across the border, which seems a rather ludricrous proposition if not downright sinister. It implies that Ajit Kumar Doval, the National Security Advisor should do something about this. These many trucks leaving India are obviously not staying back overseas but are returning home. The implications are horrific from the security perspective and vis-à-vis the porosity of Indian borders.

There is also the question of ₹900,000 crore of agriculture credit supposedly going to farmers of which 60 per cent never reaches the farmer

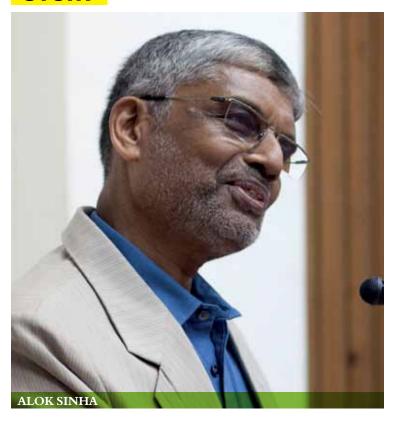
community. In states like Maharashtra, Tamil Nadu, West Bengal, upwards of 50 per cent of the credit is disbursed from the metropolitan branches of banks. The agriculture credit given to states and union territories like Delhi and Chandigarh is more than the combined agriculture credit given to states like Jharkhand, Chhattisgarh, Odisha and Bihar.

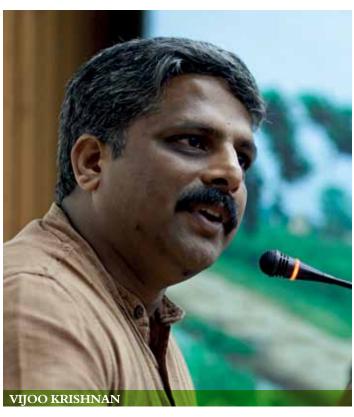
The government was expected to be more transparent on this and the BKS, in its consultations with the minister and with the secretaries of various departments, had suggested a white paper from the government to replace the traditional lack of transparency. This figure of ₹35,000 crore minus ₹15,000 crore is ₹20,000 crore; not a huge sum and one had expected a far better budget on that score alone. It is better than the budgets in the past two years but is still way below the mark.

I grow maize; this is my fifth crop of maize and I have personal experience of what happens in this space. The government allowed imports of 500,000 tonnes of maize a few months ago and the Bharat Krishak Samaj had explained the consequences to the finance minister during the pre-budget consultations. As maize is allowed to be imported, the price in the spot market is around ₹1,600, when the import becomes functional the price in the futures market comes down to ₹1,200. So there is a fall of something around ₹400 per quintal in maize prices. Irrespective of whether he is small, marginal or large, the farmer loses.

On an average, a farmer gets 25 quintals of yield of maize per acre. In Bihar, for instance, with the benefit of good weather, soil and water, the yields could be up to 50 quintals per acre. Multiply 25 quintals per acre by the ₹400 per quintal loss (because of the 500,000-ton maize import), the direct loss per acre is ₹10,000. The area under maize is 200,000 acres and this means a loss of ₹20,000 crore to maize-growing farmers alone. Compare that with ₹20,000 crore allocated to the agriculture ministry. The government is clearly taking things from the farmer and not really giving anything in return.

The BKS has also told the government that there could be no pan-India policy. What is needed is targeted policy as 80 districts account for 80 per cent of India's poor. Even if 100 districts accounted for 80 per cent of India's poor, they should be targeted to make a difference. Policies made in Delhi for pan-India application cannot work and that is what afflicts the MGNREGA; the food security initiative and many other policies. The answer lies in targeted policies.





The other misunderstanding caused by the Union budget hype is that it holds the keys to farm allocations and actions. Farming in India actually gets more affected by the budgets made in state capitals because agriculture is a state subject. Also, the budget is primarily about balancing the government's books. Why should it become the main policy document of the government?

QUESTIONS

S. P. SINGH

President, Surajmal Memorial Education Society

I would like to comment on two issues. Does this government understand the plight of farmers because it can only make policies when it understands their plight? Having said that the 'MGNREGA is a necessary evil' for the past two years, the Prime Minister has had a sudden change of heart and increased MGNREGA allocations.

Since the MGNREGA is about giving employment and minimum wages to labourers, large scale irrigation in India would engage labourers, who could earn daily wages on a permanent basis. If land is irrigated, there would be more work in agriculture throughout the year and the farm labourer would get more than MGNREGA wages. As far as digging pits under MGNREGA is concerned, farmers can dig them on their own. It is important to get to the bottom

of the problem. The second question is about the ₹6,600 crore that the government gave sugar mill owners to pay the farmers. Why was that money not transferred directly to our accounts?

AVIK SAHA

Co-convenor, Jai Kisan Andolan

I thought that MGNREGA was an on demand payment (scheme) and the government would have to pay as a statutory right whether or not it is budgeted for. It has to pay or declare insolvency. Does this provision in the budget really mean a provision for the farmer? Is the MGNREGA even supposed to be in the budget?

PAWAR

Farmer, Baghpat, U.P.

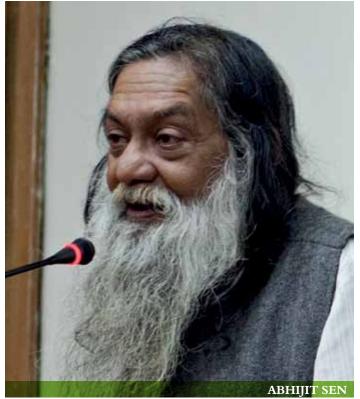
In science, if something is right, it is right. If something is wrong, it is wrong. Why do all the parties not sit together and find a permanent solution to the plight of the farmers? Second, why cannot what V. Kurien did to dairy farming be done for the rest of agriculture? Third, why do parties play politics even with the suicides of farmers?

JATIN SINGH

CEO, Skymet

I work in crop insurance and I do not see the solution. I support the Pradhan Mantri Krishi Bima







If there are no tenancy rights and the share-cropper is not included, of what use would that crop insurance money be or, for the matter, direct benefit transfer

Yojana and the money it spends. However, it does not work till the title to the share-cropper is fixed. First, most farmers are not the landlords and the one taking the risk is someone else. Second, climate change presents a very real crisis in agriculture and it is here to stay. Between 1900 and 2000, on an average, a drought has occurred in every decade. Between 2000 and 2015, there have been five with El Ninos as a recurring phenomenon.

ASHISH

Cogencis

The Minister of Food and Public Distribution, Ram Vilas Paswan, has said that India cannot stop the imports of any foodgrain because of the WTO agreement. How should the government tackle that?

UNIDENTIFIED FARMER: How can one who does not share the pain of the poor draft a budget for them? Should not someone with a farming background draft a farmer-friendly budget?

ANSWERS

AJAY VIR JAKHAR: Since Independence, every

finance minister has said that farmers must progress, rural India must be prosperous and all politicians/political parties concur, but has Parliament ever been stalled because the farm promises have been belied. This is because farmers do not influence the fine print of the policy. Till they do so, things will not change.

Policy objectives are very good but achieving them means more than just budgetary allocations. It means designing the fine print. As has been pointed out, if there are no tenancy rights and the share-cropper is not included, of what use would that crop insurance money be or, for the matter, direct benefit transfer.

At the consultation meeting with the finance minister, a CEO of a multinational company was present. He actually said that India should import foodgrain. Imagine the incongruity of calling a multinational trading company to a farmer's consultation meet; where farmers were supposed to interact in a pre-budget discussion. The CEO pointed out that international commodity prices were low and went on to assess that given the climate change issues, India would be short of food. Therefore, India







Old oil is being imported from New Zealand that, the NDDB believes, has been repackaged and re-dated. The imported oil is being mixed with Indian products

should import food in large quantities.

When it was my turn to speak, I told the finance minister that I was aghast that the CEO was present at a farmer's meeting (there was pin drop silence) and that I chose not to speak at that time because there were others in the room with whom I was sure to disagree. It would be convenient to contradict them all at one go, after everyone had spoken, instead of objecting every time someone spoke. The minister was kind enough to permit me to speak when I wanted.

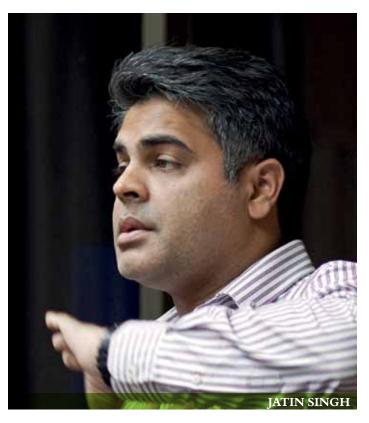
I gave the example of butter oil (ghee) being imported into India at around ₹240 per litre (inclusive of duty) while Indian farmers can sell it no cheaper than ₹360. Even imported ghee was ₹80 cheaper. If this did not stop, irrespective of how much money is given to the dairy sector, it will get killed. Even if the branded dairy companies like Amul or other co-operatives survived the onslaught, dairies that were not marketing their own produce and did have not branded products — small dairies, private dairies, co-operative dairies — would collapse.

The private sector actually imported butter oil and used it without informing the consumer

about the source of the butter oil. Old oil is being imported from New Zealand that, the NDDB believes, has been repackaged and re-dated. The imported oil is being mixed with Indian products. If one were to check the balance sheets of private dairies ending March 31, 2016, the last six months would be the most profitable because their money is being made on subsidized imports.

The finance minister wondered what should be done about it and I referred to Indian rules and regulations that were used to stop Nestle even though it was buying Indian grain to produce Maggi. Similarly, these imports must be judicially scrutinized. What is the food safety act doing? Food imports can always be stopped. The west has been doing it to Indian mangoes, grapes and other produce on the pretext of there being some chemical or a worm or some other problem. The imports are stalled or stopped for two-three months, which is the time when farmers are harvesting or selling their produce.

As far as the food minister's qualms about the WTO rules are concerned, India has to be fair to its farmers first because this is an unfair world and one



must not suffer from any illusion that fairness is what everyone pursues. The only way to do it is to make things difficult for imports within the WTO rules and actually stall these imports into the country.

To get back to the maize question, only non-genetically modified (non-GM) maize imports were permitted by the government. Most of the maize production in the world is GM maize though. Countries like Ukraine are officially non-GM countries but I was in Ukraine last year and realized that countries claiming to be growing non-GM maize are actually growing GM maize. There are at least 10-15 rulings in the WTO that say that one could take any maize in the world into Ukraine — even maize that does not enter Ukraine — pay money and get a certificate of sourcing from Ukraine!

We asked for every consignment of maize coming into the country to be checked and be stopped even if they are WTO compliant. There are ways to do it but the government cannot think out of the box or does not understand the mechanism. Governments have a very good *niyat* (intention) but the *niyat* does not translate into *niti* (policy) unless the farmer's viewpoint is taken into account.

VIJOO KRISHNAN: Political will is very important. At the WTO, for instance, the advanced capitalist countries demand that the subsidies being given to our farmers be cut further. The public

postures taken by our ministers at such fora is that come what may, the interests of our farmers will not be surrendered. Yet, after the Modi government came to power, an order was issued that procurement would be stopped in all states giving a bonus over and above MSP for paddy or wheat; that the Food Corporation of India (FCI) would not store those grains.

This is exactly a demand of some western countries. Our government takes a pro-farmer position in public and quietly issues an order that implements the demands of these countries. Political will is thus a major issue. As pointed out, unless the tenant farmers and many who are cultivating on the government lands — even in Karnataka there are 26 lakh farmers designated as bagair-hukum cultivators who can be evicted any time — are empowered, there can be no change. There is no subsidy, no insurance, nothing for them. Unless they have policies covering them, nothing will improve.

PRABHAKAR KELKAR: There are pressure groups in the government and all the political parties. The misfortune is that not enough pressure has yet been formed to set the agenda for profarmer policies.

ABHIJIT SEN: I have one specific question about the MGNREGA funding. The idea is that the government puts it into a *kosh* (urn) and that keeps getting filled up. The real problem with MGNREGA is that it is not really meeting the



demand and in fact, nobody is actually recording the demand either. If there is not enough money, the demand is determined by how much money there is. That is the structural problem there.

Titling or modernizing land records has been on the cards for at least 15 years now and that is absolutely essential before even considering direct benefit transfer. In the farming sector, nothing can be done in terms of direct benefit transfer unless that process is first completed. A lot of effort is being made on putting the cart before the horse.

As far as climate change is concerned, I look at a somewhat optimistic scenario. The frequency of not just droughts but of extreme weather events too is increasing massively. It is also the case that till year 2000 or so, in every 10 year period, there were at least three years of negative output. This is the first year after 2002-03 that the agriculture GDP is negative and that too marginally. Part of the reason is diversification but there is another part that should be remembered.

Someone asked 'why do we not get a permanent solution'. Let scientists sit down and get a permanent solution. The Green Revolution was one such solution that actually raised the yield but at a huge cost, which is being recognized only now. Therefore, one must listen to the farmers because a lot of things are being assumed. For example, irrigation is considered to be the solution where there is simply no water available. There are issues that have to be settled through consultations but there are no easy answers.

PRAVESH SHARMA: I would like to give another perspective on imports to counter certain examples that BKS has provided, though they are well taken. India has benefitted from import of pulses and edible oils too because it would not have been able to meet its own demand and prices would have been much higher but for the imports. The question is why has India not been able to increase pulse or edible oil production to meet the demand, which is also a function of rising prosperity that is outstripping output. To take a normative position on imports would be very difficult for India that has levels of tariff protection for most agricultural commodities but it has applied much lower tariff to suit itself. India allows duty free import of pulses, edible oil imports at five per cent duty while for wheat there is a 150 per cent tariff barrier. The examples quoted perhaps are exceptions. This year's corn imports are certainly an exception not having taken place in several years. However, one must keep the other aspects in mind.

People have also been alluding to the role of the market. One of the great policy failures in agriculture is that India has not recognized the central roles that markets play in agriculture in signalling change, in signalling demand to farmers where the government, in fact, has no role. That is part of the reason why, despite two successive years of drought, India had a drop in wholesale inflation. That would have been unthinkable 10 years ago.





The farmer should be given proactive help to divert from paddy and wheat to dal and other crops with some good policy reformulation as was done for the green revolution

PARANJOY GUHA THAKURTA: To add to what you said, never in the history of India has the wholesale price index (WPI) consistently been in negative territory for 15 months and never has it been simultaneously accompanied by the Consumer Price Index (CPI) not only remaining in positive territory but driven almost entirely by food price.

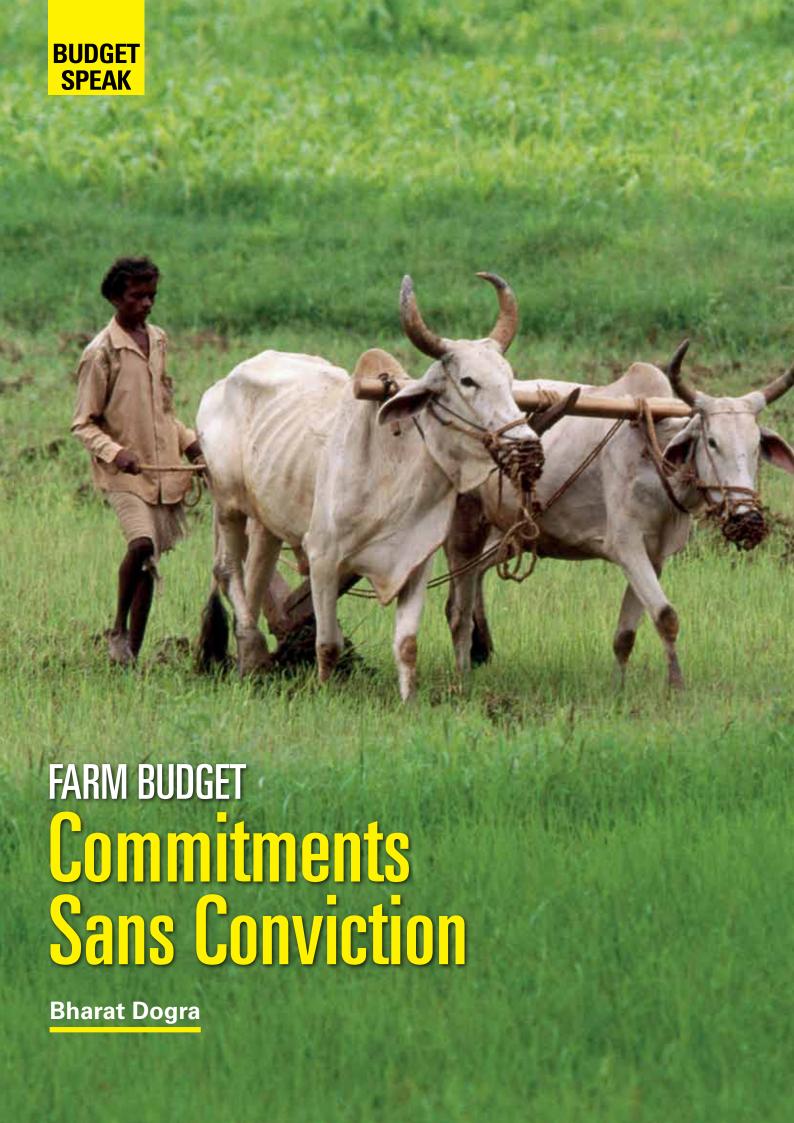
PRAVESH SHARMA: The fact that agriculture GDP declined only marginally below zero is actually a huge accomplishment and 90 per cent of the credit for that goes to the farmers. Diversification and adoption of technologies have enabled a lot of drought mitigation to be built into agriculture production systems. The point was made that India has such diversity of conditions that it is not possible to announce one agricultural policy solution at the national level.

I work in Madhya Pradesh that is like four different states in terms of agro climatic conditions. Malwa can have commercial agriculture supported by the resource endowment but the Bundelkhand region needs to look at very different risk mitigation strategy. Both perspectives should be kept in mind. Taking one, somewhat strong position may be good sitting on a panel but it does not really work on the ground.

ALOK SINHA: The finance minister has done his job but what would I want had I been the agriculture minister? Diversification of Indian agriculture is very important. The successful procurement of paddy has led to the alarming crash in the water tables in Punjab and Haryana on the one hand. On the other hand, there is a dal (pulses) shortage and India imports dal so that the consumer does not shout too much. What is needed is for the farmer to be given proactive help to divert from paddy and wheat to dal and other crops with some good policy reformulation as was done for the green revolution in the sixties.

If I were the irrigation minister I would wonder why — when the success of Indian agriculture lies in increase in irrigation capacity that will not happen through major dams and minor dams — the country cannot go in for micro and minor irrigation. If I were the minster for rural development, I would urge that MGNREGA be linked with asset creation, especially in the field of irrigation. It would help agriculture as well as the landless labourer looking for his daily wages. •







as the Union budget delivered on the farm front? The budget speech has, of course, emphasized the government's commitment to farmers but there are not many specific proposals to drive this commitment or solid contributions to match



BHARAT DOGRASenior journalist, specializing in the farm sector

the minister's rhetoric. Much has been said about the budgetary transfers from one head to another leading to a modest increase in allocations from ₹15,809 crore to ₹20,984 crore.

The revised estimates (RE) of the previous year were lower than the budget estimates (BE) for several im-portant schemes and programmes. In the case of the Rashtriya Krishi Vikas Yojana, for example, the budget estimate of ₹4,500 crore was lower in the revised estimate at ₹3,900 crore. The BE for the National Food Security Mission was ₹1,300 crore but reduced to ₹1,137 crore in the RE. The Parampragat Krishi Vikas Yojana had received an original allocation of ₹300 crore that was reduced to ₹250 crore in the RE.

The troubling issue, however, is the absence of the roadmap to doubling the farmer's income in five years. Where is the strategic thought that can convince the farmer that significant improvements are in the offing? The proposal to raise resources for farmer's welfare by a special cess on the services sector is welcome but inadequate keeping in view the seriousness of the farm crisis.

The improvements in crop insurance with higher allocations too have to be seen alongside the very common experience of affected farmers not even coming to know that insurance payment has been made into their bank accounts. A proper review of how crop insurance has functioned so far and who has benefitted is necessary before promises of improvement can bring real hope to farmers.

One can examine this budget from five perspectives beginning with the need to massively in-crease allocations for agriculture to counter, amongst other threats, the sector's growing vulnerability to climate change, highly erratic weather and increasing disasters with the worst impact often borne by farmers and farm workers. New initiatives to empower mitigation of climate change impact with strong support structures demand investments in agriculture, animal husbandry and related activities.

BUDGET SPEAK

In the Indian context, more specifically, almost half the districts in the country are either affected by drought or are yet to recover fully from the impact of other calamities like floods. Yet governments at both union and state levels have generally functioned in a business-as-usual way, showing little comprehension of the critical times and their urgent requirements.

The budget even fails to provide immediate relief to farmers and affected villagers in nearly 300 drought affected districts. There are no specific allocations and even the marginal increase in the MGNREGA allocations is not a real one because of the backlog of unpaid wages and other expenses from the previous year. The budget makes no announcements for essential drought relief work that is desperately needed.

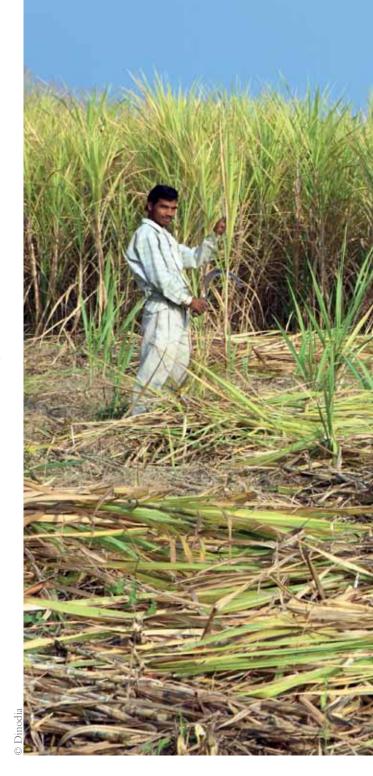
The increased allocations for irrigation is welcome as is the minister's emphasis on the need to rapidly push ahead many major and medium irrigation schemes. However, several of these schemes have faced serious objections vis-à-vis their desirability and environmental impact. The right approach would be to increase irrigation in a more balanced and better planned way, sup-ported by detailed studies with an emphasis on smaller projects, capable of giving quicker results with the close involvement of local people.

Second, while increasing allocations for agriculture there is need to ensure that the benefits

Production should be increased in ways that net income from farming is satisfactory and costs are kept at low levels

actually reach the farmers, particularly small and medium farmers. This bears reiteration because allocations for agriculture have been raised in such ways that the bulk of the benefits have gone to corporates or traders or suppliers of inputs but not to farmers primarily.

Third, small farmers should be a special focus group because small and marginal farmers constitute an overwhelming majority of farmers. The welfare of sharecroppers, tenants and farm workers should be paramount. The welfare of landless farm workers is very important and regrettably much neglected.



Fourth, the objective of increasing production and productivity should not be seen in isolation from the welfare of farmers. Production should be increased in such ways that the net income from farming is satisfactory and the costs of farming are kept at low levels.

Fifth, the methods promoted or encouraged for increasing farm production should be in harmony with environment protection, particularly protection of the most basic resources of soil and water. Unfortunately, the methods which are sometimes followed to increase production rapidly in the short term are those which have an adverse





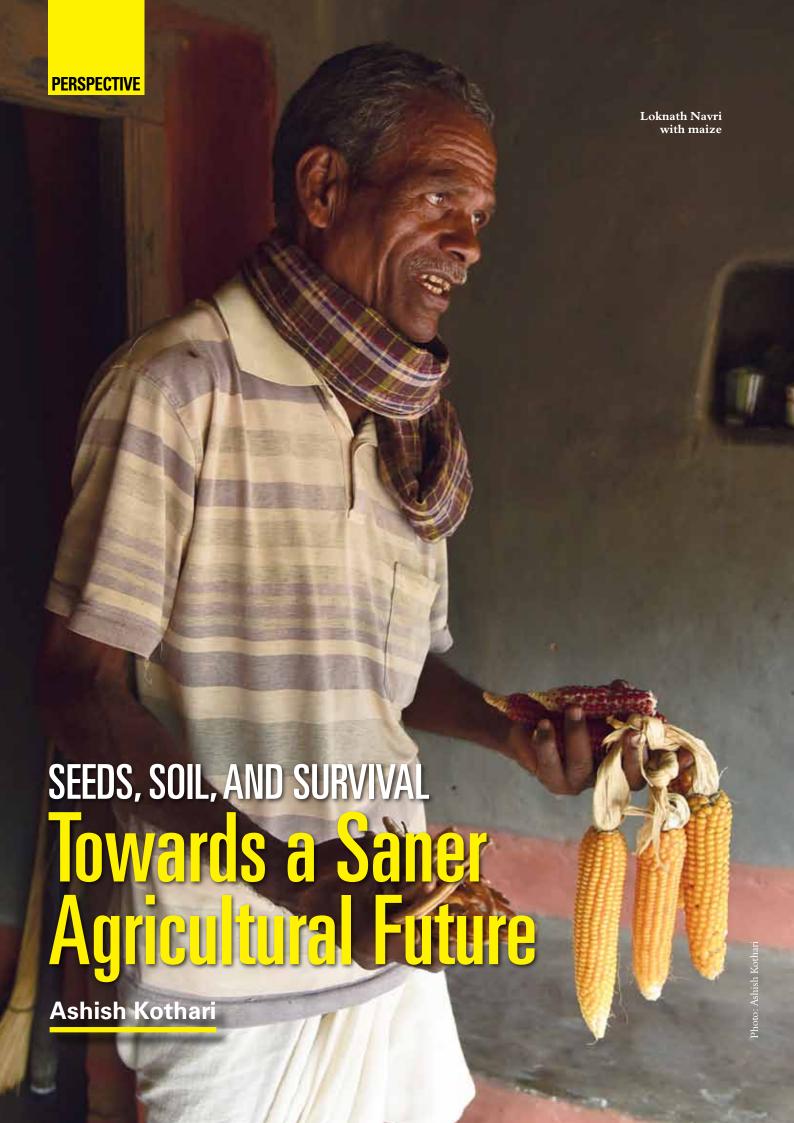
impact on soil and water after some time.

Technologies that destroy or deplete the base of sustainable progress of farming can never be regarded as desirable though ecologically destructive policies are being globally subsidized, resulting in careless and excessive use of water, loss of natural fertility of land and soil quality, large scale mortality of farmer-friendly insects and birds. A related factor is that a certain balance exists in terms of staple food needs of people as well as the need to maintain the basic resource base of fertile farmland and water. Fiscal policy should be careful not to disturb such balances.

The budget announcement to bring more

farmland under organic agriculture is welcome but goes unsupported by a strong policy announcement in favour of organic farming. Without such policy change, organic farming will remain confined to a few patches and the governments commitment to eco-friendly agriculture and healthy food will sounds hollow. Contrast this with the high power support that the government extends to GM food and crops.

Examined in the context of these criteria, the 2016-17 union budget has belied farmer expectations. More basic changes are needed in the overall fiscal map to find the kind of resources which are needed to bring real hope to farmers. •



"In just two years, we gave up all pesticides as we saw the results of vermicompost and amritpani ... now we are well on way to stopping chemical fertilizers too".

- VILLAGERS OF KEDIA VILLAGE, BIHAR

"This year I planted 45 varieties of crops and got enough produce to last the family the whole year, plus had some left over to sell in the market and earn ₹2 lakh. My expenditure for the year? ₹18,000. Would have been better were it not for drought conditions this year!"

– Nadimidoddi Vinodamma, dalit woman farmer of Nagwar village, Telangana

"On my three acres I have this year grown 72 crop varieties, enough to feed family of 10, plus income from sale of ragi, sesame, pigeon pea ... in a year with 30 per cent less than normal rainfall".

– Loknath Navri, Talia Kondh adivasi farmer of Kerandiguda village, Niyamgiri, Odisha

hese three narratives are representative of a slow but steady transformation that is taking place in India's agriculture, providing flickers of hope in an otherwise bleak scenario of farming distress, symbolized most tragically by the spate of farmer suicides across the country. Over the last few decades an industrial model of agriculture has certainly increased yields of crops, milk

and other produce. The ecological, economic and social costs are, however, so high that even scientists within the government establishments are recognizing its unsustainability.

It is a bit like being on steroids for a while and collapsing when the steroids are withdrawn or no longer effective because, meanwhile, the body itself has been shorn of its inherent strengths. Externally generated or artificial inputs of fertilizer, pesticide, lab-grown seeds and surface irrigation have been the steroids but, in many places, they are not only no longer working but have damaged the soil, eroded seed and livestock diversity, erased centuries of in-depth knowledge, pushed marginal and small farmers out of business such that they who can no longer afford even subsidized chemicals and seeds.

They have reduced the independence and selfreliance of rural communities and distorted state and national economies because of the thousands of crore of subsidy having to be paid by governments.



ASHISH KOTHAR Coordinator, Alternatives at Kalpavriksh

Increasingly, agricultural policy, R&D and resources like seeds too are being controlled by private corporations. This is an oft-repeated story.

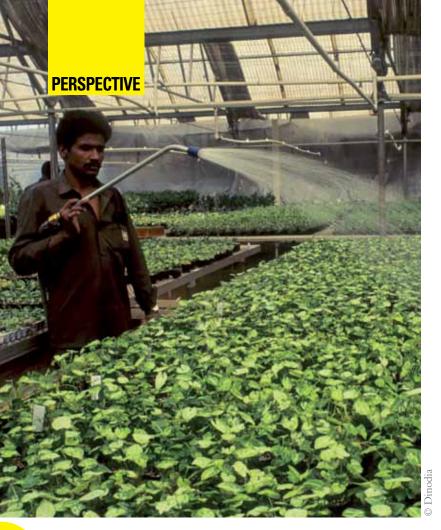
Does the latest budget, labelled by many as a pro-farmer, pro-village exercise that will help revive agriculture and rural livelihoods, signal a shift in government policy towards agriculture? That the central government has finally recognized, even if on paper, the need

to boost the rural economy seems to be a sign of hope. That the budget even contains, for the first time ever, provision for organic farming, is also encouraging though the overall neglect of farming continues to be shocking.

What are the initiatives trying to get the country out of this mess (not related to pastoralism, a usually neglected topic that needs separate treatment)? Briefly, taking three examples, one can look at policy implications and directions that the country needs to take if agriculture is to be revived and food security achieved. The three quotes at the beginning represent stories of resistance and transformation, resistance to the continuing push for the green revolution kind of farming and transformation towards more sustainable, equitable forms.

Kedia village, which I visited in February this year, is in the Jamui district of Bihar. The economy of its 94 households is predominantly agriculture-based.





Till 2013, its agriculture was typical of so many across India, with an increasing homogenization of crops, heavy dependence on chemical pesticides and fertilizers, poor market returns for their produce and consequently the inability to generate a decent livelihood from farming.

It was in 2013 that Kedia's residents, being on the route of a 'Living Soils' padayatra that Greenpeace (GP) India had taken out, offered their village as a testing ground for what this organization proposed. They started with sample plots where GP India and enterprising farmers experimented with the use of biofertilizers and biopesticides, including vermicompost.

The results were remarkable enough for an increasing number of households to turn to organic methods. GP India helped them in obtaining government funds allocated for activities like vermicomposting (itself a big struggle as bureaucratic hurdles had to be overcome!) and the village's considerable cattle wealth (all of a local desi breed) was harnessed. Over just two years, the residents were convinced that they could completely stop pesticides and reduce chemical fertilizers by about 70 per cent.

Had the yields declined? "Yes, a bit", said Kedia's farmers, but confident that "We will go back to the yields that we were getting earlier as the

Kedia villagers have turned to organic methods and managed to stop pesticides and reduce chemical fertilizers use by about 70 per cent

fertility of the soil returns; and even higher over time. Besides, our inputs costs have gone down significantly and so we are better off." Increasingly, they are also going back to or trying new mixed and inter-cropping techniques, enhancing overall food yields and maintaining the soil fertility.

Nadimidoddi Vinodamma, ably helped by her husband Vinayappa, is part of a woman's Sangham (voluntary village level association) set up by the Deccan Development Society. I met her and her husband in their field, surrounded by a bewildering array of jowar, bajra, ragi, red gram, green gram, til, sama, korra and other crops. She spoke about how she is merely using knowledge handed down over generations, trusting the land and traditional seeds. This year there has been about 40 per cent less rainfall than usual, she said. So they may need to go to the market to buy vegetables; otherwise the produce is enough to feed the family. The surplus jowar is sold and fetches a handsome amount.

As we walk through Vinodamma and Vinayappa's farm, they point to five varieties of jowar (sorghum), telling us how one grows quite fast and with very little water (and is therefore called 'poor person's jowar'). Another is good for diabetics, a third one has high productivity and so on. We notice some trampled jowar and bajra; Vinayappa tells us that wild pigs sometimes get into the field but even after the pigs, birds and other creatures have done their damage or taken their share, there is enough for the family!

As in the case of Kedia village, Vinodamma and other members of DDS Sanghas use natural products for dealing with pests or adding fertility to the soil, such as vermicompost, cowdung powder, dried neem powder, jaggery water (attracting ants that will feed on pests).

In Odisha, at the foothills of the Niyamgiri hills (globally famous for the iconic struggle of the Dongria Kondh adivasis against a multinational mining company, Vedanta), I visited Loknath Navri, a Talia Kondh adivasi farmer of Kerandiguda



village. His crop diversity of 72 varieties was even higher than Vinodamma's. In the three acres he farms, he produces enough to feed a family of ten.

Members of the NGO, Living Farms, which has been documenting and helping farmers like Loknathji, told me that the area is full of farmers continuing to thrive on agriculture based on traditional knowledge, diversity, and organic inputs, in some cases with recent innovations or new seeds but still with relative independence from the market and the government. As in the case of the dalit women farmers of Telangana, here too much of the farming is dryland, rainfed, not with heavy surface irrigation.

What makes these three examples tick, why are these different from the very many places in India where farmers, especially dryland farmers, are in severe distress? There are many factors but consider few (not in any order of importance). A full picture of the complexity of factors would need a more in-depth study and much more to explain.

One crucial reason for the success of the farmers of Kedia, Zaheerabad and Niyamgiri is that they are part of or helped by larger collectives. For instance, Vinodamma's Sangham is one of several such Sanghams in 45 villages affiliated to the DDS, with about 3,000 women members. Through seed exchange, fund collection and management,

knowledge sharing, collective labour and other joint activities, the Sanghams have overcome the barriers and limitations that each individual marginal farmer faces, especially as a woman.

As the umbrella organization, DDS has helped in many ways: getting credit and linking women to banks, conducting participatory natural resource documentation and planning exercises, overcoming resistance from men and upper castes, trying to get women ownership of or rights to lands they are cultivating, dealing with hostile or indifferent government officials and bringing in helpful ones, providing information on the dangers of chemicals and hybrids and genetically modified seeds, helping build capacity to understand policies and laws, marketing of organic produce through a co-operative called Sangham Organics and in many other ways, facilitating the empowerment of women to take back control over their lives.

Another important factor in success has been the facilitation and support of civil society organizations. In Kedia, Greenpeace India's help was instrumental not only in reviving the village's belief in organic fertilization techniques while introducing technical innovations but also in advocacy with local government agencies responsible for agriculture and rural development. In Niyamgiri, Living Farms has helped network many of the farmers and the activist





researcher, Debal Deb, has shown innovations in combining diversity with productivity through some painstaking scientific work in his small fields (he lives in a hut in the same village as Loknath Navri, carrying out what is possibly the most rigorous research on rice diversity undertaken in India).

None of the above would have worked, of course, were it not for the farmers' own knowledge and skill base and the availability of essential inputs like seeds and biomass (gobar, leaf manure, cow urine, neem or other trees amongst others). One reason Kedia's farmers asked GP India to work with them — and GP India too agreed — was the presence of a large number of cattle and, therefore, of gobar. Unfortunately, this is a significant constraint now in many parts of India, where even if farmers want to move away from chemical fertilizers, the options are limited. This is where a policy shift of the incredibly

Neeraj Jain of Lokayat puts it in perspective when he says: "the fact that most eloquently brings out the absolute unconcern of India's policy makers with regard to the severe crisis gripping the agricultural sector is the total government spending on agriculture as a proportion of its total expenditure / the country's GDP. It works out to an abysmal 0.3 per cent of the GDP and just 2.25 per cent of the total budget outlay — for a sector on which even today nearly 70 per cent of the people are dependent for their livelihoods. Compare this to the tax concessions given to India's rich, some of whom are amongst the most wealthy people in the world — they amount to 4.1 per cent of the country's GDP, and are equivalent to nearly one-third of the union budget!"



One of DDS's most important innovations is the parallel public distribution system (PDS) in which the organic jowar produced by the farmers is offered at reasonable rates to residents in the villages, helping create a local cyclical economy that benefits both producers and consumers. This example has been used to advocate fundamental changes in the official PDS system across India, including its decentralization (in terms of democratic control) and localization (in terms of diverse foods relevant to local ecologies and cultures).

Perhaps as a result of this and advocacy from other groups, the Food Security Act 2013 states that "the central government, the state governments and local authorities shall, for the purpose of advancing food and nutritional security, strive to progressively realize the objectives specified in Schedule III", and Schedule III includes "(a) incentivizing decentralized procurement including procurement of coarse grains; and (b) geographical diversification of procurement operations". Without any mandatory, time-bound provision, however, it is not clear if this part of the Act will get implemented in the near future; or at all.

There are some other hopeful signs of policy shifts; well before the central government recognized the need to support organic farming, over a dozen states had already instituted policies or programmes for this. Sikkim's move to become 100 per cent organic is by now well-known, though the continuing dependence on exports to fuel this shift is worrying given the fickleness of export markets and the fact that the ecological costs of transporting food long

One of DDS's important innovations is a parallel distribution system. Farmers offer their organic jowar to villagers at lower rates creating a local cyclical economy

high subsidy on fertilizers, ₹70,000 crore for the current year, towards organic inputs, could play a massive role in promoting organic farming.

Other than the need for reorienting government subsidies towards organic, there are a number of other policy changes that are needed if these three examples (and many others like them) are to be multiplied across the country. These include providing better market access and prices (the government's minimum support prices for most crops have remained shamefully low, and farmers in Kedia complain about this being the biggest hurdle). This can be done in many ways.

distances is simply being externalized.

Kerala, Andhra Pradesh and a number of other states are actively promoting organic cultivation; to this they need to add a focus on biologically diverse farming, particularly traditional crops like millets, old rice varieties, indigenous vegetables and fruits. When I visited Vinodamma and other farmers near Zaheerabad, I participated in a programme titled 'Organic Medak', organized by DDS, where the district collector, D. Ronald Rose, and superintendent of police, B. Sumathi, assured help in transforming the district into a hub for organic farming with millets as a fulcrum.



In Jamui, Bihar, the block agricultural officer, Haroon Rashid, was all praise for the organic initiative in Kedia. He said that the Bihar government is substantially increasing its support to vermicomposting and other such inputs (he also gave the hopeful news that fertilizer consumption on the district had decreased by 30 per cent). According to the 2016 Union budget speech, there is now a provision for "10 lakh compost pits for production of organic manure", and a $\overline{4}$ 12-crore "scheme called 'Organic Value Chain Development in North East Region', (with) emphasis on value addition so that organic produce grown in these parts find domestic and export markets". If implemented in earnest, the latter could support states in north-east India that have avowed commitments to promote organic.

Yet another major policy shift has to be to provide farmers a central place in agricultural R&D. After all, they are the ones who, over millenia, have generated India's incredible diversity of crops and livestock, created and sustained sophisticated knowledge systems regarding soil and weather and other components of agriculture, and linked all these to complex cultures. Yet in the last few decades of the green revolution, they have been relegated to 'recipients' of what 'experts' in laboratories produce.

What we need now is to place the farmer back in the centre of research and innovation, with the formally trained scientists facilitating them. In fact,



Collaboration of Kondh farmers and workers of Living Farms and scientists like Debal Deb is an example of different knowledge systems combining to achieve sustainable farming

the Krishi Vigyan Kendra (Agricultural Science Centre) at Pastapur is run by the DDS women with help from government-appointed scientists, one of the few in India where the curriculum is set by farmers. The collaboration between Kondh farmers and workers of Living Farms and scientists like Debal Deb is another example of different knowledge systems combining to achieve sustainable farming.

Facilitating linkages between farmers and consumers is another important arena for policy support. To make the local organic food more popular, DDS has set up Café Ethnic and a Sangham Organics shop in the town of Zaheerabad, where millet-based products and dishes predominate. The group, Timbaktu Collective, has set up Dharani, a farmers' company that enables more collective processing

of organic agricultural produce, its branding, its enhanced pricing for the market, outreach to consumers and equitable sharing of revenues; similar producer companies or cooperatives are coming up in many agricultural communities.

Certification is also a crucial part of policy support. Private or government certification of organic produce is costly, way beyond the ability of small farmers but several groups like Timbaktu and DDS have pioneered a peer-review based certification system (the Participatory Guarantee Scheme). Farmers are involved in the process that is recognized by the government. Providing farmers across India with an orientation on how PGS can be used is important.

All this will not work, of course, unless the corporate grab of India's agriculture land

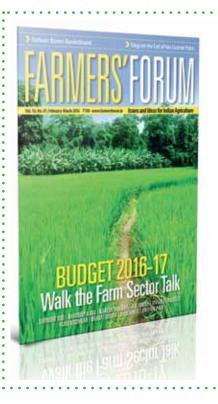




is stopped. The increasing stranglehold that companies (domestic and multinational) have not only on farmers but also on decision-making in government circles, the entry of genetically modified crops with all their attendant problems are just some of the menaces. The hope lies in the many networks like the Alliance for Sustainable and Holistic Agriculture (ASHA), Anti-GM Coalition and Millets Network of India (MINI) and others that have been lobbying hard against these forces.

Over and above all this, is something that everyone must reflect on: how much do we respect the farmer? Every time I am with extraordinarily 'ordinary' farmers like Vinodamma and Loknathji, I am reminded that I may be starving or be eating substandard artificial food dished out by corporations, were it not for people like them. Recognition of the absolutely crucial role played by the small farmer and especially of women, is long overdue; across the world they remain the major producers of our food.

Yet for the middle or richer classes, they are a forgotten category and even the periodic reports of farmer suicide are treated by us like any other news. Is the urban middle-class Indian prepared to move out of his or her comfort zone, build relations with farmers and provide facilitation to their voices and needs, bring them into our institutions as teachers and co-learners and colleagues and honour them as our annadatas? •



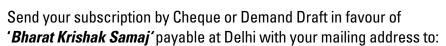
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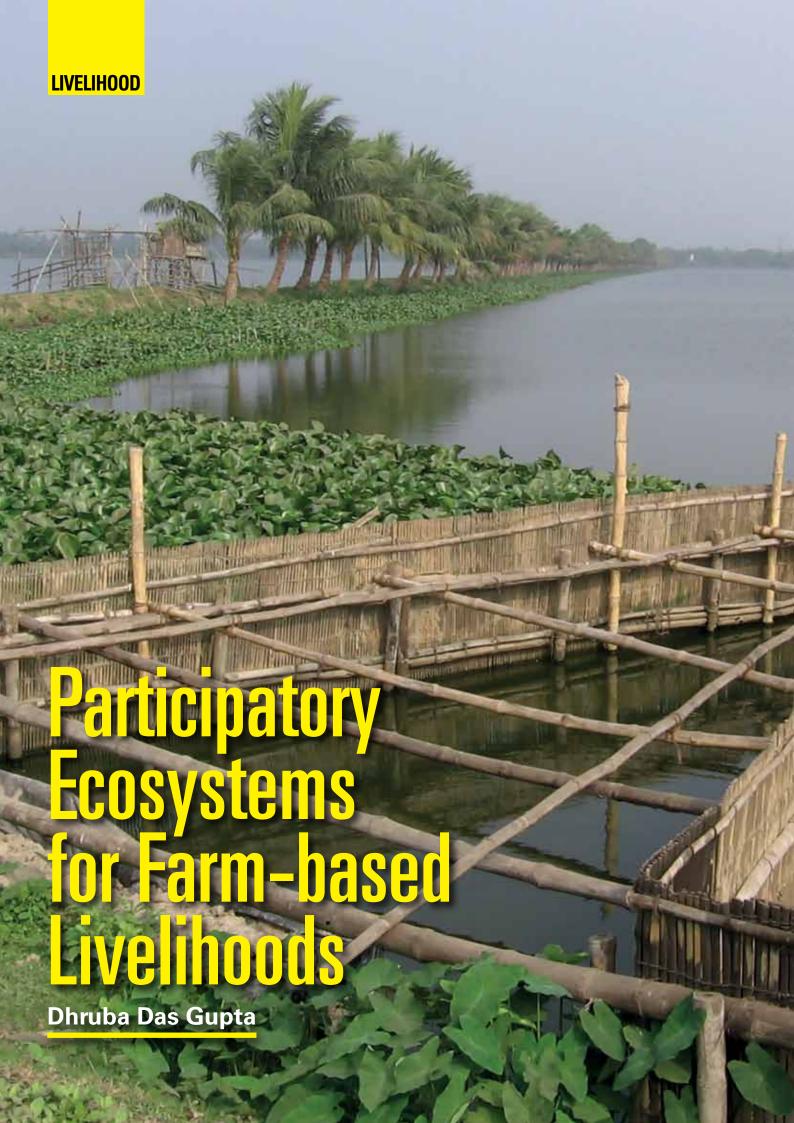




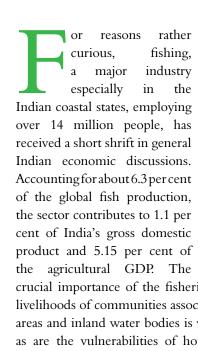
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crucial importance of the fisheries sector for the livelihoods of communities associated with coastal areas and inland water bodies is well documented as are the vulnerabilities of households in Asia linked to the fisheries sector.

What is not disputed is that fisheries represent a vital livelihood option for the poor and are an important protein source at the householdlevel with millions of rural Indians in particular seasonally or regularly dependent on fisheriesrelated activities. As such they need the same wherewithal that other sectors need in term of resources, skills, credit and education. Few sectors, however, are as threatened as are fisheries by poor management, inadequate oversight and urbanization pressures. The case of the East Kolkata Wetlands is illustrative.

For many decades, in the districts of North 24 Parganas and South 24 Parganas in the southern part of West Bengal, fish farmers of the East Kolkata Wetlands (EKW) have practiced sewage-fed fish production. The uniqueness lies in their choice of feedstock; the city's wastewater. In essence the fisheries provide livelihood and serve as the city's water treatment plant. The lifeline of this wetlands system is wastewater because they serve as a lowcost biological sewage treatment plant, better than a mechanical STP (that cannot get rid of the bacteria E. coli). The Kolkata Municipal Corporation saves treatment costs.

Unsurprisingly, Kolkatans in general are quite unaware of this, though FAO in its analysis of the fishery sector in India, makes a special mention of the productivity of the sewage-fed fishery culture of the Bidyadhari spill area, where the EKW is located. Worse, most fish farmers choose to underplay the uniqueness of their vocation or the philosophical import of their worldview that 'wastewater is



Inlet structure

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a nutrient', rather than subscribing to western worldviews about wastewater being a pollutant.

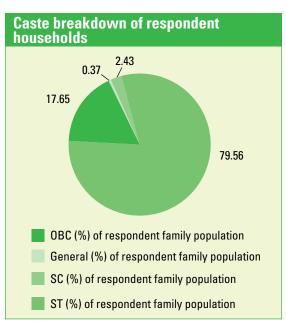
Despite the commercial success of their practices, these fish producers and their families (upwards of 100,000 people) face an uncertain future. The recently published results of a sixmonth perception survey conducted over 2014 and 2015 show that the fish farmers see their sewage-fed fish production practices being challenged by multifarious factors, even as they try to come to terms with the threat of losing their livelihood.

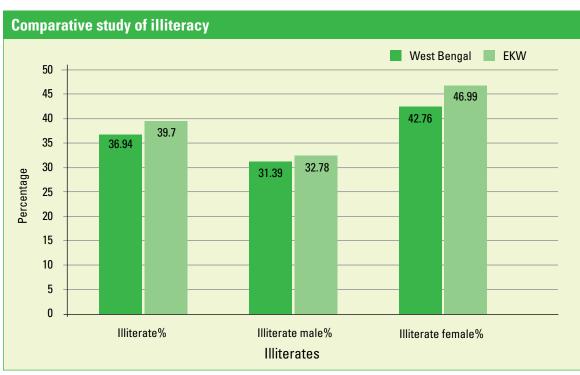
The aim of the survey was to gauge the sense of well-being among the fish producers and assess their current threat perceptions. Conservation efforts do not perceive the utility of such research. However, the emergent picture vis-à-vis the wise use of these wetlands (for which it got Ramsar recognition) and the future of its conservation possibilities is ominous. The report, 'Making Conservation Inclusive: Perception Survey and Familiarization Studies in the East Kolkata Wetlands', was published by the Eastern Regional Centre of the Indian Council of Social Science Research.

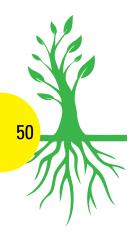
Scheduled castes form the majority of the population in this wetland area, with 79.56 per cent average; scheduled tribes follow (17.65 per cent) with minimal general caste presence (average 2.42 per cent). The fisheries draw their manpower from them. However, fishing skills and wise use

abilities do not ensure the preservation of the Ramsar status that protects these wetlands. They have to be supplemented by enabling management practices at the individual fish ponds, availability of sewage, administration that facilitates livelihood conditions, availability of capital, tenurial stability and assurance of continuity of the fishing practices. A good literacy rate helps all entrepreneurial efforts. The biggest threat to these wetlands comes from real estate.

The literacy status of the EKW region is below the West Bengal average (see chart: 'Comparative study of illiteracy'). Paucity of education centres







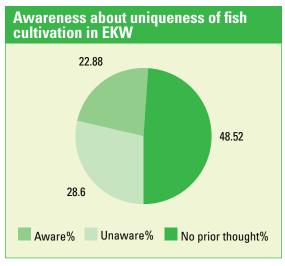
is a matter of concern in the region with few government schools and only a single college within the wetlands boundary. This lack of education makes the population easy victims of realty sharks who manipulate the fishery owners into giving up their ownership.

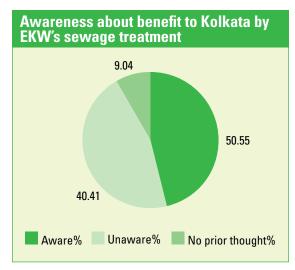
Lack of education is also responsible for an absence of initiative among fishworkers to (1) consider ways and means to improve their earnings in the fish pond or *bheri* (2) attempt to appeal to the authorities for credit facilities and (3) expand the size of the business.

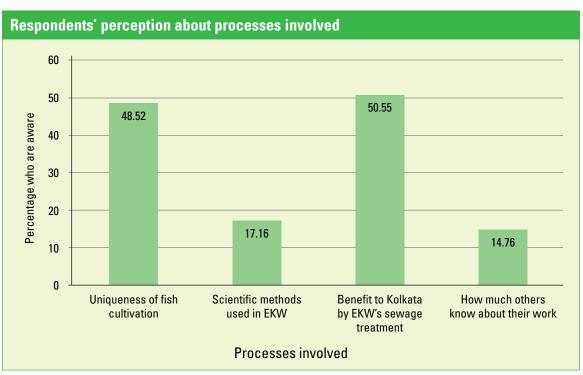
The populace is short of knowledge about the uniqueness of the EKW fishing practice with only 48.52 per cent is aware that the fish cultivation system differed from other bheris in Bengal and

more than half the population (51.48 per cent) did not know or had not considered its fish cultivation process to be unique. Just about half the population was aware that this fish cultivation practice benefits the residents of Kolkata: 50.55 per cent was aware that Kolkata residents enjoy the benefit of sewage treatment done in the wetlands while 49.45 per cent was unaware.

This state of awareness weakens the bargaining powers of the population when they face the crisis of sewage supply that is happening only too often and is threatening the survival of the fisheries in these wetlands. All institutional arrangements in Kolkata that regulate the supply of sewage, most notably the Department of Irrigation & Waterways and Kolkata Municipal Corporation,





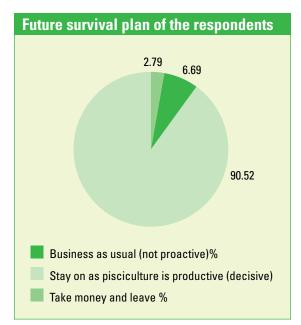


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take advantage of this ignorance and either hold up or re-route the sewage in such a manner that fish cultivation and resultant livelihood activities get jeopardized. Conservation of wetlands will remain a distant dream with this kind of administrative indifference.

In terms of ownership and institutional management of fish ponds, there are privately-owned, co-operative owned and leaseholder-run fish ponds. They all suffer from a lack of credit that is essential to improve the *bheris*. Neither the co-operatives nor the *bheris* held privately or on lease have the funds to do this entirely by themselves. Yet there is virtually zero concern about the lack of credit. Long ago, in 1956, when Bidhan Chandra Roy, Chief Minister of West Bengal declared the plan to reclaim the Salt Lakes, banks slowly stopped financing the fisheries that could earlier raise such institutional credit. Thereafter, tenurial and political changes eased institutional financing out of public memory.

The survey shows that 83.36 per cent of respondents has never considered asking for credit. The idea of functioning of *bheris* precluded the role that institutional credit could play in pond management. Lack of capital holds up investment for improving productivity of the ecosystem, maintenance of fish ponds and canals that carry the sewage, promoting income supplementing activities and community welfare in general. After landlords, who owned the fish ponds earlier were dispossessed, the most important source of investment stopped without any alternative being put in place. This greatly jeopardized fish

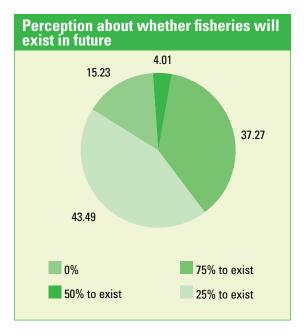




production, a mortal blow from which there has been no recovery.

Though the majority of the surveyed fishworkers agreed that it would not be good if the city further engulfed the wetlands, about 8.5 per cent has a contrary view and 2.79 per cent is actually ready to take money and leave right away. A massive 90.52 per cent is of the opinion that pisciculture is productive and these people would like to stay on as fishworkers.

The threat to livelihood is embedded in the minds of the fishermen though and the survey had to strive hard to draw out the respondents vis-à-vis





These 12,500 hectares sewage-fed wetlands are the largest in the world and receive sewage/ wastewater from core Kolkata city, through a network of outfall channels, throughout the year. They comprise shallow ponds which receive wastewater, introduced in specific proportions and kept inside the ponds for a time period of around 16-30 days. The abundant sunlight facilitates symbiotic interaction of the algae and the bacteria in the sewage, and the resulting algal boom serves as fish feed (production is more than 10,000 MT a year and fish is staple Bengali diet). About 750 million litres per day of wastewater gets treated in the process before reaching the river Kulti that receives this water. Additionally, this wastewater is used to grow vegetables, supplied to Kolkata's markets at about 150 tonnes per day and paddy is also regularly grown using sewage.

A 6-month perception survey (2014-2015) shows that fish farmers see their sewage-fed fish production practices challenged by multiple factors, even as their livelihood is threatened

their perceptions about the survival of the fisheries. More than one-third (37.27 per cent) believed that fisheries would cease to exist but a sizeable (43.49 per cent) said that 75 per cent of fisheries would exist, while 15.23 per cent believes that only 50 per cent of the fisheries would survive.

The continuing sense of threat among the wetland fishworkers is exacerbated by a lack of knowledge that they are placed on a pedestal of a protected wetland. They know little about the East Kolkata Wetland Management Authority (EKWMA) that the fishing community needs to approach for protection and assurance regarding the continuity of its livelihood conditions. This

lack of connect between the fishermen on the one hand and the administration on the other may be addressed by better awareness initiatives.

The EKWMA is entrusted with the protection of this wetland known for its wise use. Interacting with the grassroots fisherfolk is imperative. There is also need for commitment amongst the powers-that-be to promote an improved livelihood scenario. Only if the administration is more active, will a much higher involvement of the local community in preservation of these wetlands become a greater possibility. After all, conservation measures need to accommodate livelihood concerns appropriately, to be acceptable and successful. •

References:

Béné, C., Macfadyen, G. & Allison, E.H. (2007). `Increasing the contribution of small-scale fisheries to poverty alleviation and food security.' FAO Fisheries Technical Paper. No. 481. Rome, FAO. 2007. 125 p FAO (2007). Integrating fisheries into the development discourse. FAO, Regional Office for Asia and the Pacific, Bangkok.

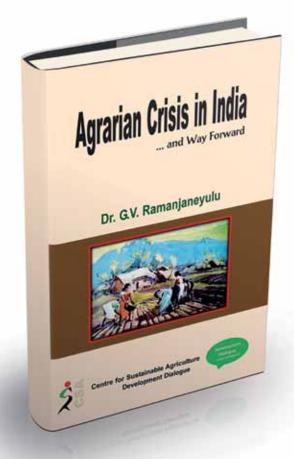
Payne, I. (2000). `The changing role of fisheries in development policy.' Natural Resource Perspectives, ODI/DFID. Whittingham, E., Campbell, J. & Townsley, P. (2003). Poverty and Reefs. DFID-IMM-IOC/UNESCO, 260 pp. World Bank & FAO. (2008). `The sunken billions. The economic justification for fisheries reform.' Agriculture and Rural Development Department. The World Bank. Washington, D.C.

World Bank. (2004). `Saving Fish and Fishers: Toward Sustainable and Equitable Governance of the Global Fishing Sector.' The International Bank for Reconstruction and Development/The World Bank, Washington, D.C.



BOOK EXCERPT

The Small Holder and Climate Change



AGRARIAN CRISIS IN INDIA: THE WAY FORWARD
Published by Centre for Sustainable Agriculture and
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Pages: 208

http://csa-india.org/product/agrarian-crisis-in-india-and-way-forward/



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he profound changes in Indian agriculture since the 1960s have had cascading effects on India's agrarian economy and society. After the ecological and economic crisis the farmers are faced with the changing climate. The worst affected in the process are the small and marginal farmers, who constitute 70 per cent of the farming community. Data from the Census Division, Ministry of Agriculture, Government of India, operational holdings below 4.0 hectares (ha) constitute 93.6 per cent of the operational holdings in 2000-01, covering 62.96 per cent of the operational area or about 100.65 million ha in absolute terms (Agriculture Census, 2005).

The impact of climate change on agriculture is often underestimated and its contribution to climate change ignored. As a result much of the discussion, debates on climate change and agriculture are around particular technologies that can help farming to adapt to climate change. To do so, there is need to understand this in a broader context of ecological, economical and socio-political crisis that Indian farmers are facing and build support systems to facilitate the process of adaptation.

The relationship between climate change and agriculture is three-fold.

- First, climate change has a direct bearing on the biology of plant and animal growth.
- Second, there are changes in the farm ecology such as soil conditions, soil moisture, pests and diseases and such like.
- Third the ability of the existing social and economic institutions, particularly in rural areas, to deal with the challenges posed by global warming.

In the larger context of food security and climate change, it is also important to consider other sectors like animal husbandry and livestock that are closely linked with agriculture.

Climate change is manifesting itself in many ways, across the country. While long term rainfall data analysis shows no clear trend of change, regional variations as well as increased rainfall during summer and reduced number of rainy days can be noticed. In the case of temperature, there is a 0.6°C rise in the last 100 years and it is projected to rise by 3.5-5°C by 2100. The carbon





dioxide concentration is increasing by 1.9 ppm each year and is expected to reach 550 ppm by 2050 and 700 ppm by 2100. Extreme events like frequency of heat and cold waves, droughts and floods have been observed in the last decade. The sea level has risen by 2.5 mm every year since 1950 while the Himalayan glaciers are retreating. These are all symptomatic of climate change (Smith et al, 2007).

Research indicates that climate change-induced rise in temperature is going to affect rainfall patterns. Farming in India depends on monsoons and there is a close link between climate and water resources. Indian agriculture being predominantly rainfed may be more prone to the impact of climate change. Rainfall extremities are being witnessed frequently. For instance, it is reported that about two-thirds of the sown area in the country is drought-prone and around 40 million ha is flood prone.

The organic carbon levels and moisture in the soil will go down while the incidence of runoff erosion will increase. The quality of the crop may also undergo change with lower levels of nitrogen and protein and an increased level of amylase content. In paddy, zinc and iron content will go down and this will impact reproductive health of animals. Insect life cycles will increase and in turn will raise the incidence of pest attacks and virulence. Other likely impact include change in farm ecology such as bird-insect relations and an

increase in the sea levels that will cause salinity ingression and submergence.

It is projected that climate change will lead to higher kharif rainfall and this might benefit kharif crops. Further, a one-degree rise in temperature may not have big implications for kharif productivity. However, a temperature rise in the rabi season will impact production of wheat, a critical foodgrain.

The surface air temperatures will increase by 2°C to 4°C by 2070-2100. The rabi crop will be impacted seriously and every 10°C increase in temperature reduces wheat production by 4-5 million tons (mt), says a study by Indian Agricultural Research Institute. This loss can be reduced to 1-2 mt only if farmers change to timely planting. Increased climatic extremes like droughts and floods are likely to increase production variability. Productivity of most cereals would decrease due to increase in temperature and decrease in water availability, especially in the Indo Gangetic plains (Agarwal et al. 2010). The loss in crop production is projected at 10 per cent to 40 per cent by 2100, depending on the modelling technique applied.

Crops have the ability to adapt to extreme climate variability even up to, say, 40°C while fish and animals do not. It has also been recorded that the pest ecology of certain crops is changing due to climate change. Global warming may increase average water vapour and evaporation, increase in precipitation in high-altitude regions, significantly

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alter the monsoon pattern, resulting in long dry spells and heavy downpours and change in storm patterns that could influence the global movement of pests, especially pathogens.

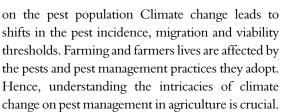
Insect populations like all animal populations are governed by their innate capacity to increase as influenced by various abiotic and biotic factors. The changes caused by the natural evolutionary forces are accelerated with the human interventions. After depletion of natural resources, environmental pollution, extinction of certain species of plants and animals, inadvertent anthropogenic disturbance driven climate change becomes more evident.

In agricultural ecosystems, soil, plant and animal interactions are rarely persistent enough, in time and space, to provide the ecological stability but result in dynamic equilibrium. Pest shifts are observed with changes In the ecological balance. The natural balance between beneficial and harmful insects changes with the cropping patterns, pest management practices and variability in environment. Weather and climate have an impact

Most terrestrial insects live in dry environments. The only source of water for insects is the water obtained with food material from their host plants. These insects have, therefore, developed a variety of mechanisms to conserve water. In spite these mechanisms, exceptionally dry air may prove lethal to most insects. Likewise, excessive moisture may also adversely affect many insects by encouraging disease outbreaks, affecting normal development and by lowering their capacity to withstand lower temperatures. The reproductive capacity of the insects is also affected by moisture but there are great differences in the capacity of different insects to tolerate conditions ranging from extreme dryness to near saturated environments. The incidence of Rice Hispa in the Telangana state has increased due to prevailing dry conditions in the last two years.

There is a shift from the leaf/fruit eating caterpillars to sucking pests in the recent years. While monoculture of crops/varieties and chemical pest management practices understood to have resulted in such pest shifts, climate change has also

Farming is affected by pests and pest management practices. Understanding the intricacies of climate change on pest management in agriculture is crucial



All life survives with a certain narrow range of temperature. Deviations from this in optimum range on either side are tolerated to some extent, depending on the physiological adaptations of the concerned species or populations. Temperatures above or below these limits can prove lethal. Exposure to lethal high or low temperatures may result in instant killing or failure to grow and reproduce normally.

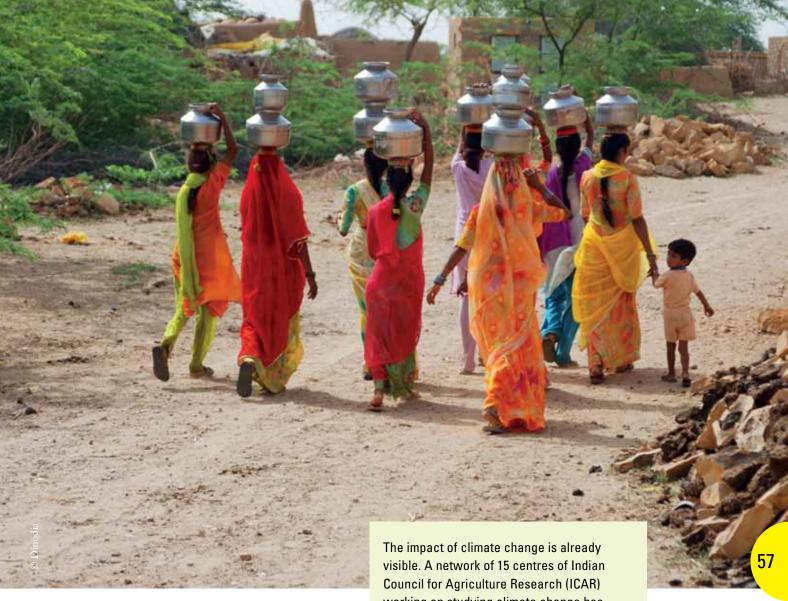
Harmful effects of exposure to sub-lethal temperatures may be manifest at a later critical stage like molting or pupation. The rise in temperature might also have a negative effect on delicate natural enemies such as hymenopteran parasitoides and small predators. This may affect natural enemypest relationship. For example, the Brown Plant Hopper is 17 times more tolerant to 40°C than its predator *Cyrtorrhynus lividipennis* but wolf spider *Paradosa pseudoannulata* is tolerant to 40°C.

contributed to such shift. In cotton, for example, there is a shift towards sucking pests (mealy bugs, jassids) particularly after the introduction of Bt cotton. Similarly, there is aphid incidence in groundnut and thrips and yellow mites in chillies. Most of the sucking pests are also vectors of viral diseases. With increasing incidence of sucking pests viral diseases are also increasing: Budnecrosis in groundnut, tobacco streak virus incidence in cotton and similar viral problems in most of the fruit crops and vegetables.

Agriculture contributes around 10 per cent to 12 per cent of the total global greenhouse gas (GHG) emissions but is the main source of non-carbon dioxide (CO₂) GHGs emitting nearly 60 per cent of nitrous oxide (N₂O) and nearly 50 per cent of methane (CH₄) (Smith et al., 2007)

Amongst various GHGs that contribute to global warming, carbon dioxide is released through agriculture by way of burning of fossil fuel; methane is emitted through agricultural practices like inundated paddy fields; nitrous oxide through fertilizers, combustion of fossil fuels and such others.





Nitrous oxide has a global warming potential 310 times greater than CO₂. In India, it is estimated that 28 per cent of the GHG emissions are from agriculture; about 78 per cent of methane and nitrous oxide emissions are also estimated to be from agriculture.

Nitrogen fertilizer (N) manufacture and application to the soil contribute significantly to emissions and to climate change. India consumes 14 mt of synthetic N every year, of which about 80 per cent is produced within the country, making it the second largest consumer and producer of synthetic N fertilizer in the world, after China. The GHG emissions from fertilizer manufacture and use in India had reached an estimated nearly 100 mt of CO₂ equivalent in 2006-07, representing about six per cent of total Indian greenhouse gas emissions (Roy et al. 2010).

There are many sources of emissions in the manufacture of synthetic N fertilizers:

- Manufacture of synthetic nitrogen fertilizer is a very energy-intensive process and currently requires large amounts of fossil fuel energy.
- Natural gas is the main fuel and feedstock, which

visible. A network of 15 centres of Indian Council for Agriculture Research (ICAR) working on studying climate change has reported that apple production is declining in Himachal Pradesh due to inadequate chilling. This is also causing a shift in the growing zone to higher elevations (Rana et al. ___). Similarly, in the case of marine fisheries, sardines are shifting from the Arabian Sea to the Bay of Bengal, which is not their normal habitat. In fact, fisheries are the most vulnerable to climate change.

accounts for 62 per cent of the energy used in synthetic N fertilizer production.

- Less efficient and more polluting fuels such as naphtha and fuel oil also represent a high share, 15 per cent and nine per cent respectively, of the energy used in fertilizer manufacture (values as of 2006/07, FAI 2007).
- Of the various forms in which synthetic N fertilizers are available, urea accounts for a chunk of the total N fertilizer produced and consumed (81 per cent in 2006).
- The synthesis of urea is based on the combination of ammonia and CO₂ and its emissions are dominated by CO₂

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- While other synthetic N fertilizers comprise a smaller percentage of the fertilizer market, they make notable emissions to the atmosphere both during production and consumption. We calculated emissions from the manufacture of synthetic N fertilizer following the Intergovernmental Panel on Climate Change (IPCC) methodology.
- Total GHG from the manufacturing and transport of fertiliser are estimated at 6.7 kg CO₂ equivalent (CO₂, nitrous oxide and methane) per kg N.
- Globally, an average 50 per cent of the nitrogen used in farming is lost to the environment. Significant amounts escape into the air or seep into the soil and underground water that, in turn result in a host of environmental and human health problems, from climate change and dead zones in the oceans to cancer and reproductive risks (Galloway et al., 2008)
- 1.25 kg of N₂O emitted per 100 kg of Nitrogen applied as nitrate polluting wells, rivers and oceans
- Volatilization loss 25 per cent to 33 per cent
- Leaching loss 20 per cent to 30 per cent
- Being high energy intensive, the fertilizer prices increase as the feed stock prices rise. The increased costs are subsidized by the central government and the budgeted subsidy reached ₹90,000 crore in 2011-12 as per the revised estimates.
- After nutrient based subsidy was introduced in 2008, fertilizer prices were decontrolled except for urea and prices have increased by five folds. Phosphotic reserves in the world are getting depleted and could be economically be exploited only for another 25 years.

Another major contributor of GHGs is the burning of crop residues. In Punjab, wheat crop residue from 5,500 square kilometres (sq kms) and paddy crop residues from 12,685 sq kms are burnt each year. Every four tonnes of rice or wheat grain produces about six tons of straw. Emission factors for wheat residue burning are estimated as: CO - 34.66g/Kg, NOx - 2.63g/kg, CH₄ - 0.41g/km, PM10 - 3.99g/Kg, PM2.5 - 3.76g/kg (Gupta et al., 2004).

Burning of crop residues also impacts the soil (fertility). Heat from burning straw penetrates into the soil up to one centimeter, elevating the temperature as high as 33.8°C to 42.2°C. Bacterial and fungal populations are decreased immediately and substantially in the top 2.5 cm of the soil upon burning. Repeated burning in the field permanently



sharply differentiated effect on different agroecological regions, farming systems and social classes and groups. The poorest people are likely to be hardest hit by the impact of climate variability and change because they rely heavily on climate-sensitive sectors such as rainfed agriculture and fisheries. They also tend to be located geographically in more exposed or marginal areas, such as flood plains or nutrient-poor soils. The poor also are less able to respond due to limited human, institutional and financial capacity and have very limited ability to cope with climate impacts and to adapt to a changing hazard burden.

diminishes the bacterial population by more than 50 per cent. The economic loss due to the burning of crop residues is colossal. Each year 19.6 million tonnes of straw of rice and wheat, worth crore of rupees are burnt. Used as recycled biomass, this potentially translates into 38.5 lakh tonnes of organic carbon, 59,000 tonnes of nitrogen, 2,000 tonnes of phosphorous and 34,000 tonnes of potassium every year.

Another potent GHG is methane emitted in copious amounts through inundated paddy cultivation. Rice paddies emit CH₄ when they are flooded due to the anaerobic decomposition of



oxide through inefficient fertilizer use. Emission of methane from rice paddies in India is differentially estimated. The average methane flux from rice paddies ranges from 9-46 g/m² over a 120-150-day growing season.

Another indirect contribution of agriculture to GHG emissions comes in the form of large dams. Large dams contribute an estimated 18.7 per cent of emissions in India. The total methane emissions from India's large dams could be 33.5 mt per annum, including emissions from reservoirs (1.1 mt), spillways (13.2 mt) and turbines of hydropower dams (19.2 mt). The methane emission from India's dams is estimated at 27.86 per cent of the methane emission from all the large dams of the world, which is more than the share of any other country of the world (Lima et al. 2007).

India is now among the world's largest producers of milk, poultry, meat and eggs. It has the world's biggest dairy herd, 300 million strong, comprising cows and buffaloes and is the second largest global producer of cows' milk and first in buffalo milk. It is also the world's top national milk consumer and demand for milk and other dairy products is growing by seven per cent to eight per cent per year. This country is also the world's fourth largest

Burning of crop residues also impacts the soil (fertility). Heat from burning straw penetrates into the soil up to one centimetre, elevating the temperature as high as 33.8°C to 42.2°C

organic matter in the soil producing the gas, which then escapes to the atmosphere mainly through diffusive transport through the rice plants (Nouchi et al., 1990) or is oxidized before reaching the surface. The level of CH₄ emission from any given rice paddy is related to factors that control the activity of the methane producing (methanogens) and methane-oxidizing bacteria (methanotrophs) such as temperature, pH, soil redox potential and substrate availability, and also soil type, rice variety, water management and fertilization with organic carbon and N (see reviews by Le Mer and Roger, 2001 and Conrad, 2002).

In India, 99.5 million ha is under cereal cultivation and 42.3 million ha (or 42.5 per cent) is under rice cultivation under flooded conditions. The seedbed preparation involves puddling or ploughing when the soil is wet to destroy aggregates and reduce the infiltration rate of water. Such anaerobic conditions lead to emission of methane and possibly nitrous

producer of eggs and fifth largest producer of poultry meat, principally from chicken.

However, the livestock in India is more distributed and household based and mostly integrated with crop production. The crop residues are used as fodder and the animal waste is used as the manure for the crop fields. The impact of livestock on climate change needs to be understood in this context. Livestock is also impacted by climate change. Possible temperature increases in India of between 2.3°C to 4.8°C by 2050 will add to heat stress in animals used to produce milk and affect reproduction and the amounts of milk each animal provides. Crossbred cows may be most vulnerable to higher temperatures. Increased temperatures and sea level rise may also reduce the availability of land to grow feed, and result in lower crop yields and an increase in the severity and spread of animal diseases.

In 2010, India was the world's fastest growing poultry market, outpacing Brazil, China, the USA



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and the European Union and Thailand. The costs of producing chicken for meat in the country is world's second lowest. Production of eggs in India is cheaper than in any other country, according to the Poultry Federation of India. India is the top global exporter of buffalo meat and its also exports increase quantities of maize and soy, both important ingredients in commercial feed. In addition, India's leading poultry producers are expanding their sales to countries in Asia and Middle East.

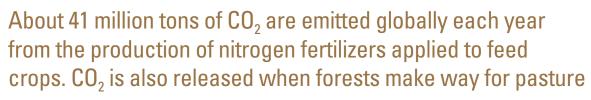
Greenhouse gases are generated at virtually every point along the livestock production chain. Enteric fermentation in livestock released 212.10 mt of CO₂ eq (10.1 mt of CH₄). This constituted 63.4 per cent of the total GHG emissions (CO₂ eq) from agriculture sector in India. The estimates cover all livestock, namely, cattle, buffalo, sheep, goats, poultry, donkeys, camels, horses and others.

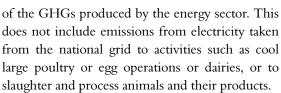
Manure management emitted 2.44 mt of CO₂ (MOEF, 2010). In India, emissions from the energy used by agriculture and fisheries industries totalled 34 million tons of CO₂ or three per cent

in calculating overall GHGs from such changes in land use, though the FAO estimates that 2.4 billion tonnes of CO_2 are emitted every year due to deforestation to create pasture land for livestock or land for cultivation of feed crops. On the top of this, 100 mt of CO_2 is released every year from livestock-induced desertification of land.

The other major source of energy emissions in intensive farming models are in the form of fossil fuels for machinery like tractors, harvesters and so on, pumps for irrigation and such others.

Conventional approaches to understanding climate change were limited to identifying and quantifying the potential long-term climate impacts on different ecosystems and economic sectors. While this approach is useful in depicting general trends and dynamic interactions between the atmosphere, biosphere, land, oceans and ice, this top-down, science-driven approach failed to address the regional and local impacts of climate change and the local abilities to adapt to climate-induced changes (TERI). The two main types of





Soil cultivation related to animal agriculture globally emits about 28 million tons of CO₂ every year. More than half of this energy used in producing milk and eggs can be attributed to feed production. There are other indirect CO₂ emissions, specifically from the manufacture of chemical and nitrogen based fertilizers. About 41 million tons of CO₂ are emitted globally each year from the production of nitrogen fertilizers applied to feed crops.

Carbon dioxide is also released when forests and other vegetation are destroyed to make way for feed crops or pasture. Considerable uncertainty exists adaptation are autonomous and planned adaptation. Autonomous adaptation is the reaction of, for example, a farmer to changing rainfall patterns, in that the crop is changed or different harvest and planning/sowing dates are used by trial and error.

Planned adaptation measures are conscious policy options or response strategies, often multisectoral in nature, aimed at altering the adaptive capacity of the agricultural system or facilitating specific adaptations. For example, deliberate crops/varieties selection, promoting/discouraging certain practices by incentivizing or regulating and such others. The adaptation measures are to be considered holistically including tradeoffs among biophysical and socio-political factors.

Biodiversity in all its components (genes, species, ecosystems) increases resilience to changing environmental conditions and stresses. Genetically-diverse populations and species rich ecosystems have greater potential to adapt to climate change. Use of indigenous and locally-adapted plants and animals and selection and multiplication of crop varieties animal species locally adapted and resistant to adverse conditions are essential.

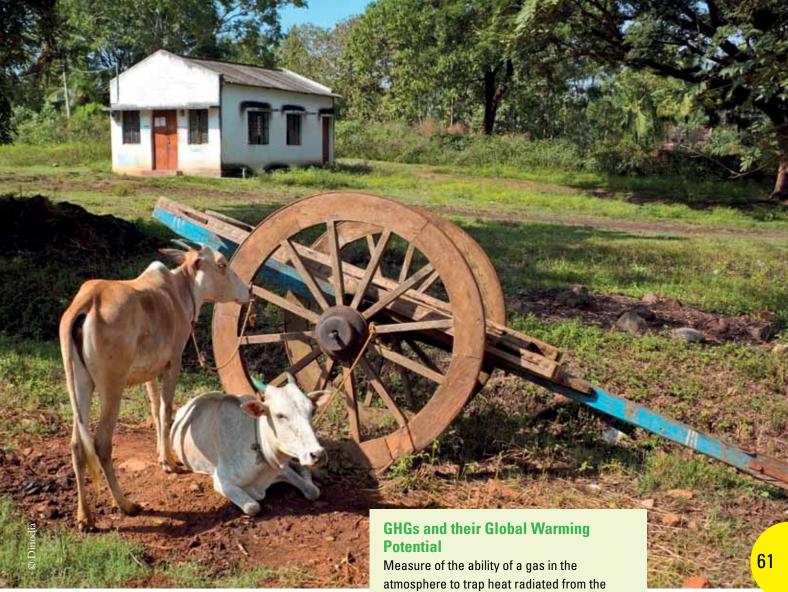


Table. Methane (on4/ chilosion level	
CH ₄ emissions (Tg CO ₂ - eq yr 1)	References
55.2-138	Parashar et al, 1994
135	Yan et al. 2003

Gupta et al 2009

Table: Methane (CH.) emission level

94.07 +/1 27.37



Work on adapted crops and animals cannot be separated from their management options within agro-ecosystems. For example, rice one of the staple food crops of India had several varieties with different abilities to tolerate high temperature, salinity, drought and floods. Rice varieties with salinity tolerance have been used to expedite the recovery of production in areas damaged by the 2004 tsunami (FAO, 2007). Similarly, practices like System of Rice Intensification (SRI) can reduce the water usage and thereby methane emissions from the paddy fields. It was observed that the methane emissions are four times lower and nitrous oxide emissions are 5 times lower from SRI fields compared to conventional paddy fields (Karki 2010).

Climate change adaptation for agricultural cropping systems requires a higher resilience against both excess of water (due to high intensity rainfall) and lack of water (due to extended drought periods). A key element in both problems is soil organic matter, which improves and stabilizes the soil structure so that the soils can absorb higher amounts of water without causing surface runoff, which could result in soil erosion and, further

atmosphere to trap heat radiated from the earth's surface compared to a reference gas, which is usually assumed to be carbon dioxide

- Carbon Dioxide (CO₂)= 1;
- Methane (CH₄)= 21;
- Nitrous Oxide (N₂O) = 310;
- Sulphur Hexafluoride (SF₆) = 23,900;
- Tetrafluoromethane (CF₄)= 6,500;
- Hydrofluorocarbons (HFCs): HFC-134a = 1,300;
- Chlorofluorocarbons (CFCs): CFC-114 = 9,300
- Hydrochlorofluorocarbons (HCFCs): HCFC-22
- = 1,700 Smith et al. (2007)

downstream, in flooding. Soil organic matter also improves the water absorption capacity of the soil for during extended drought.

While intensive tillage reduces soil organic matter through aerobic mineralization, low tillage and the maintenance of a permanent soil cover (through crops, crop residues or cover crops and the introduction of diversified crop rotations) increases soil organic matter. A no or low-tilled soil conserves the structure of soil for fauna and related macropores (earthworms, termites and root channels) to serve as drainage channels for excess water. Surface mulch cover protects soil from



excess temperatures and evaporation losses and can reduce crop water requirements by 30 per cent. Thus organic/ecological farming can increase soil organic carbon, reduce mineral fertilizers use and reduce on-farm energy costs.

A broad range of agricultural water management practices and technologies are available to spread and buffer production risks. Enhancing residual soil moisture through land conservation techniques assists significantly at the margin of dry periods while buffer strips, mulching and zero tillage help to mitigate soil erosion risk in areas where rainfall intensities increase. The inter-annual storage of excess rainfall and the use of resource efficient

Table: GHG emission from farm machinery		
Operation type	Emission level (kg CO ₂ – eq ha-1	
Tillage	4.4.0-73.60	
Drilling or Seeding	8.10-14.30	
Application of Agrochemicals	1.80-37.00	
Combine Harvesting	2210-42.10	

Calculated from data in Lal (2004)

irrigation remain the only guaranteed means of maintaining cropping intensities.

The negative impact of ruminants on greenhouse gases emissions can be addressed through changes in animal husbandry including ruminant diets and animal stocking ratios to avoid nitrous oxide emissions. Effective waste management in the form of biogas and such like can also reduce the emissions in the form of methane.

The risks and vulnerabilities of the poor who live in insecure places and need to build their resilience to cope with climatic fluctuations are among the more important challenges in adapting to increasing climate variability and climate change.

Sustainable agriculture (ecological farming/organic farming/LEISA/Non-Pesticidal Management/SRI and such others) approaches are now acknowledged for the wide set of ecological and economic benefits that accrue to the practitioners as well as consumers of agricultural products. These approaches, based on low external inputs are also low energy intensive and less polluting hence mitigate and help in adapting to the climate change.



institutions working in partnership with farmers.

Almost every one of the successes has been achieved despite existing policy environments that still strongly favour 'modern and established' approaches (technology and support systems) to agricultural development.

The challenge is to scale them up across the nation given the wide diversity of situations. This needs a newer approach in terms of capacity building, horizontal learning, newer institutional systems and newer forms of financial support to be put in place. The programmatic support to agriculture today favour only high external input based agriculture. As a result, none of the mainstream programmes provide any support for promotion of these models. This needs the recasting of programme guidelines or initiating newer programmes to provide support to more sustainable models in agriculture that can be easily accessible to small and marginal farmers.

Any effort to initiate a programmatic support to scale up sustainable agriculture must have a broad framework of:

- Reducing the risks with uncertain weather conditions and degraded and limited natural resources in these regions, by adopting suitable cropping patterns and production practices,
- Diversifying the assets and income sources to sustain the livelihoods by integrating livestock

Two large scale initiatives, Community Managed Sustainable Agriculture (CMSA) in Andhra Pradesh and SRI in states of Tripura, Orissa and Tamil Nadu, have brought in new learnings

However, the promotion of sustainable agriculture on a large scale is often confronted by questions about its potential as well as its practical limitations. In the last five years two large scale initiatives, NPM scaling up – Community Managed Sustainable Agriculture-CMSA in Andhra Pradesh (Ramanjaneyulu and Rao, 2008) and SRI promotion in states of Tripura, Orissa and Tamil Nadu – have brought in new learnings and broken the earlier apprehensions on scaling up such practices and their relevance on a large scale.

These successful experiences had three elements in common.

- First, all have made use of locally adapted resource conserving technologies. Second, in all there has been coordinated action by groups or communities at local level.
- Third, there have been supportive external (or non-local) governmentand/or non-governmental

and horticulture into agriculture and promoting on-farm and off-farm employment opportunities,

- Conserving and efficiently using the available natural resources like soil and water and promoting biomass generation,
- Organizing farmers into institutions that can help them to have better planning, greater control over their production, help to access resources and support, improve food security and move up in the value chain,
- Building livelihood security systems to withstand the natural disasters like drought, floods and other climate uncertainties.

Adapted and excepted from Agrarian Crisis in India ... and Way Forward', Dr G. V. Ramanjaneyulu, Centre for Sustainable Agriculture, Development Dialogue, Secunderabad





visit Kuldeep Singh Brar, a Sikh farmer, brimming with enthusiasm and ideas; a reflection of a bygone Punjab. The state was once the epicentre for entrepreneurship and energy that is sapped today, thanks to the government's shortsightedness; if not sheer lethargy. The farmers refuse to believe they can survive without government subsidies; constant dependence on minimum support price and free electricity does that. It saps the animal spirit. Meanwhile, developments in agriculture are happening elsewhere in India.

Kuldeep Singh Brar and his wife live with his parents on the farm in village Sandhwan, Tehsil Kotkapura, District Faridkot. Their daughter studies architecture while the son is in his first year of a B-tech course. The 13.5-acre farm between the three generations does not make them "large farmers"; they are enterprising nevertheless.

After graduating in 1990, Kuldeep Singh joined his father to till the land. It has been a roller coaster ride since then, first as a Nestle contract dairy farmer. At that time their milk procurement fat rate was ₹4.50 a kg including SNF (solid not fat) and the feed rate was ₹1.75 kg. After two years all this got reversed; the fat rate was ₹3.75 a kg while the feed rate became ₹2.75 a kg.

At that time Nestle's procurement and transportation was entrusted to one of its local shareholders, who paid his staff a minuscule salary for working 18 hours a day. They responded by stealing the farmer's milk and adulterating the rest. These circumstances expedited the failure of many dairy farmers of that era, including Kuldeep's.

In 1995, Kuldeep Singh visited the Agri Expo in New Delhi, an international agro technology exhibition and decided to grow vegetables. In 1997, he became the first farmer in north India to install a Netafim pressure-compensated drip irrigation system for open field vegetables. The company charged him 40 per cent more because Netafim did not have a distribution network in Punjab and would have to service him from its Bombay office.

In 1997, an Indo-Israel Research and Development Farm was started at Pusa, where Kuldeep tried to learn new Israeli techniques. He attended onthe-spot training courses for fruits, vegetables and integrated pest management at the Pusa Agricultural University (PAU) conducted by Israeli experts.

In year 2000, Kuldeep got a 60-tonnes-an-acre tomato yield; compared to 25 tonnes per acre at the PAU at that time. The variety he planted was Syngenta's Avinash 2. He never achieved the same yields again, possibly due to quality of inputs. The initial batch of inputs had been imported, he believes.

Eltan Neubaur, the agriculture counsellor in the Embassy of Israel in India, was an extentionist and a farmer in his heart. He visited Kuldeep Singh Brar's operations and was impressed by his passion for new technology. He recommended Kuldeep's name for a two-month international course on pressurized irrigation conducted by Cinadco in Kibbutz Shaffyem in Israel.

That was when Kuldeep understood that Indian farmers were far more oriented towards agricultural inputs but were technically poorly informed in comparison to their Israeli counterparts. The extension officer is revered like God by the Israeli farmer and that held the key to Israel's success in agriculture, Kuldeep realized.

Back in India, he started growing vegetables with mulching in micro tunnels. The problem with growing vegetables in a mono-culture mode in the same field is that the field gets affected by nematode very soon. When vegetables are grown in open field in a cycle with paddy, however, the anaerobic landita in paddy cultivation sterilizes the nematode.

The agronomy practices of protected cultivation are completely different from those on uncovered soil open to air. Plant protection experts for protected cultivation are very rare and not very well versed with the modern-day technologies. Even good products are only now becoming available. Consistency and quality remain an issue.

Denmark has lessons to teach as well. The Danish government focusses on organic farming and, in 2002, took six Punjab farmers for a two-month programme on "Organic Farming, Cooperation and Democracy" to Denmark. Kuldeep was one of the participants and learnt well.

First, organic farming in Denmark is regulated by the Crown. Second, all inputs for organic cultivation are readily available, unlike in India.

Small Israeli farmers could export, thanks to the Israel Agri Export Corporation that educated farmers on international bylaws, marketing strategies and helped with logistics

He met trainer, Gadi Tasfror, a vegetable extension expert, who introduced him to the "Red Book" written by the plant protection department of the Agriculture Extension Services in Israel. It was the Bible on plant protection for Israeli farmers, written in Hebrew and would prevail in any eventuality. A third of the resources of Israel's extension department focusses on plant protection.

He quickly learnt that it was the quality of the produce that fetched value and that per acre pesticide doses in Israel were more than what was recommended in India. Even so, the produce cleared Japan's quarantine, one of the toughest in the world market as well as the European markets for their fruits and vegetables exports.

Kuldeep found even small farmers exporting, thanks to the Israel Agri Export Corporation (Agrexco), which educated farmers on international bylaws, marketing strategies besides helping them with logistics. Punjab's Pagrexco was a poor copy of Agrexco; a failure that is now relegated to buying wheat for the government.

Denmark has altogether different agroclimatic conditions. Most importantly, the weather of Punjab changes every 70 days and no crop can complete its cycle in this short span of time.

Therefore, the learnings in Denmark could not be "Xeroxed" and applied in Indian conditions. The extension system in Denmark is 100 per cent contributed and managed by the farmers and successful marketing of their products in a conventional market is of great interest.

Kuldeep has a deep grouse with the Indian establishment for not facilitating change over the decades. In Denmark, a farmer wanting to hold more than 75 acres of land for cultivation must have a Green Certificate. That involves a two-year field training and one and a half years of theoretical training of agriculture in an institution that teaches economics of agriculture, machinery, pest management and such subjects.

This makes a Green Certificate holding farmer a specialist, better than Indian extensionists, because in Denmark a vegetable grower learns only about



GREENFINGERS





In Denmark, a farmer wanting to hold more than 75 acres of land for cultivation must have a Green Certificate

vegetables and fruit grower about fruit only. One can become a master of one's trade but not a jack of all trades who are worth nothing. Significantly, banks give loans only to Green Certificate holders.

In 2005, Kuldeep was invited by Tropicana Juices in Florida, USA as a part of the farmer delegation to explore possibilities for contract farming of orange orchards in Punjab. He examined the infrastructure for horticulture, particularly for fruits and vegetables and post-harvest handling, and some very successful nursery operations. The visit motivated him to go for greenhouse vegetables and raise nursery seedlings.

Kuldeep took a huge loan from the Punjab National Bank to set up a greenhouse project for vegetables and to raise vegetable nursery seedlings and experienced nematode infestation. There is no solution in sight neither with the domestic research community; nor is the government keen to source the expertise from outside the country.

Kuldeep tried to pre-empt it and started soil-less growth of vegetables. This requires fertigation — not just irrigation — and that too with computer-controlled irrigation systems that can deliver the required quantity of water after every half hour in peak summer season. He installed a state-of-the-art automatic irrigation system to ensure the delivery of right amount of

water mixed with the optimum dose of fertilizer at an appropriate time. Besides, the rooftop rain water of the entire project is collected in a huge tank and reused for irrigation.

Automation demands reliable power sources and, when the project was nearing completion in 2005, Kuldeep realized that the Punjab government had no electricity connection policy for greenhouses and he would be charged industry rates. That would sink his greenhouse in a pool of red. He worked tirelessly to get the greenhouse power supply policy for Punjab streamlined. It took more than three years and a great deal of personal resources to ultimately get it sanctioned by the Punjab State Electricity Regulatory Commission. The greenhouse project did not, however, start on time and Kuldeep defaulted on his loan. He has pressed on, notwithstanding, hoping that one day India will formulate strategies that serve its people well.

As the March day draws to a close, there is a cool evening breeze. Pleasant though it is, one cannot but wonder if it is an ill wind that is blowing across the world: climate change. All that one has learnt will have to be un-learnt as new laws of nature will bear upon the earth with their fury. Till then the world of farming continues to face a different nightmare: an indifferent establishment. •

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