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# FARMERS' FORUM

Vol. 12; No. 02; March-April 2012 ₹50 www.farmersforum.in

Issues and Ideas for Indian Agriculture

## FARMING
### Heading Towards a Bleak Future 08

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Volume 12; No. 02;
March-April 2012
RNI No. DELENG/2001/5526

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**Owner**
Bharat Krishak Samaj

**Published at**
Bharat Krishak Samaj,
A-1, Nizamuddin West,
New Delhi 110013

**Printed at**
Brijbasi Art Press Ltd., E-46/11, Okhla Industrial Area, Phase-II, New Delhi



# A Zilch for the Farmer

Over the years, it has been your labour of love that has revitalised the often tired earth and brought forth abundance for the nation. Utilising a judicious mix of age old wisdom, modern technologies and some governmental assistance, you have done it again by enhancing the agricultural production of India to all time record levels in rice (102.75 million tonnes) and wheat (88.31 million tonnes) with total food grain production reaching 250.5 million tonne for the first time..." Thus runs the adulatory message addressed to the Indian farmer by the union ministry of agriculture, which was published in newspapers, courtesy full page advertisements on March 25 this year. A grateful government has thanked the farmer and applauded his hard work that "nourishes the nation." The farmer, however, has two issues, with this government campaign. A thank you, howsoever heartfelt, does not fill his stomach and even as the farmer is nourishing the nation, there is very little to nourish India's farmer who are living in utter penury – around 80 per cent of the community – while others are just about managing to make ends meet. There is nothing in Mr Pranab Mukherjee's budget for the farmer, even as he has some things to offer for Indian agriculture per se. There is nothing in terms of putting a little more money in the hands of the farmer that the government so admires.

The problem is that much of India's simple-minded farming community is taken in by the numbers released by the budget or by announcements that place it on a high pedestal even when the bulk of the community is financially on the hang-man's noose. Years of farm suicides have led to little action in terms of a holistic solution to India's farming problems even as the farming community persists with its efforts, planting crops with nothing more than the hope that all factors will be favourable: from the weather, to pests, to yields, to middlemen and finally to prices. Voltaire's saying: "Optimism is the madness of insisting all is well when we are miserable," comes to mind.

THE BUDGET REVEALS THE GOVERNMENT'S INTENT TO INCREASE AGRICULTURE PRODUCTION BUT CONTAINS NO STRATEGY TO INCREASE FARMER PROSPERITY

FOR ALL THE ALLOCATIONAL ENHANCEMENTS, NO BASIC AGRICULTURAL REFORM IS ACTUALLY TAKING PLACE. WITHOUT THEM, THE BUDGET WILL REMAIN JUST NUMBERS, FIGURES AND A DISAPPOINTMENT



A Farmers' Forum panel discussion in the capital on March 26, featuring a cross section of political views and planning commission assessments, emphasised one thing in no uncertain terms: there is no future in Indian farming and the son of the Indian farmer would rather be a chapraasi. This may seem a little curious because the government seems to be allocating substantial sums for agriculture, irrigation and making credit accessible for the farming community. The worry is in the manner this impacts on the farmer at the grassroots even if agricultural productivity is enhanced. The greater worry is that for all the allocational enhancements, no basic agricultural reform is actually taking place and without such reforms the budget will remain just numbers, figures and a disappointment. To be charitable to the government though, its good intent often results in more money being spent in things that often do not benefit the farmer while throwing its own finances out of kilter, often exhausting its resources and severely limiting its options while losing the support of the farmer.

Not many might have noticed, but the farmer has played a critical part in the outcome of the recent state elections, especially in Punjab and Uttar Pradesh. With the Centre-determined Minimum Support Prices (MSP) – courtesy the recommendations of the Commission of Agriculture Cost and Prices (CACP) – being far from satisfactory, the Punjab farmer held the union government responsible for his miseries and expressed himself at the hustings with sorry results for the Congress. For anyone willing to read the writing on the wall, the minimum support price, which is supposed to an alternative mechanism for the government to step in and ensure a base value when market forces fail to deliver, is just not working for the Indian farmer. What has made matters worse over the years of neglecting agriculture reforms is that the MSP has become the market price. Most farmers do not understand why things should be so because the CACP is mandated to recommend a price and policy that would be beneficial to both consumers and farmers.

Photo: Prazert Promvong

Then again, there is the impact, or the lack of it, in these elections of such populist schemes as the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA). The current year has seen a reduced allocation for this scheme. Uttar Pradesh had the largest utilization of MNREGA funds at wages higher than minimum wages in the country and yet the United Progress Alliance government's (UPA) candidates lost their security deposits. The point is that the MNREGA no longer captures the farmer's imagination even though it is perceived to be populist and is expected to transfer into electoral gains for the Congress party. The election results expose the disconnect between New Delhi and the grassroots. As far as UP is concerned, there was yet another farmer problem that cost Ms Mayawati her faithful constituency. The scant availability of fertiliser has hurt Uttar Pradesh particularly hard and the need to procure it at black market prices caused enough angst amongst farmers to prompt him to vote the state government out of power. Thus, even as the centre neglects the farmer, Mr Akhilesh Yadav would be well-advised to

Photo: Griszka Niewiadomski



keep the farmers happy and the industry at arm's length should he want to seal his seat at the helm of power in India's most populous state.

It would, however, be a sad day for India if the farmer's interests were confined to vote bank politics and not made a part of India's grand strategy to become an inclusive society in which agriculture and the agriculturist plays a critical role. Yet, the signs around agriculture are dismal with declining trends on several counts. Between 1992 and 1997, when overall annual GDP growth went up by 6.5 per cent, agriculture growth went up by 4.8 per cent but as the overall GDP growth rate moved to the eight per cent range, agriculture GDP plummeted to a pitiful 2.9 per cent. This is the disparity that policy makers address with lip service alone. There is little evidence of informed investment, instead there is subsidy that is poorly targeted while an entire farming community is left to its own devices; sometimes with both its hands and feet tied. ●

THE SIGNS AROUND AGRICULTURE ARE DISMAL WITH DECLINING TRENDS ON SEVERAL COUNTS

Ajay Vir Jakhar
***Editor***

# To the Editor

## Well deserved cynicism

Apropos your editorial, 'Time to make agriculture remunerative' (Farmers' Forum, January-February 2012), as you rightly said that the budget "is as good a time as any to start to initiate change at the institutional level for starters." There was also well-merited skepticism implied in your questions: "Can the Union Budget 2012-13 fulfill the aspirations of the farming community, the aam aadmi and not expect them to lap up what they are told will be good for them? Indeed, can the Budget make a difference?"

Truth to tell, the budget is making not an iota of difference to the farmer's condition because there is a clear lack of understanding around what the farmer wants and the little understanding that the policies show amount to even less because they are not implemented.

**Mansukh Ahluwalia,**
*Haryana*

## Will the government learn?

Your editorial "Time to Make Agriculture Remunerative," needs to be read by those who frame policy in this country. What would it take to convince those in charge of governance that unless agriculture becomes remunerative no one will be interested in taking it up as a profession? What must the farmer do to make the government realise that the farmer, who is the backbone of India, deserves to be happy?.

**C. K. Mallapa,**
*Nilgiris, (Tamil Nadu)*


## Let the apricot arrive

Ravleen Kaur's article "Juicy enough for a bribe" (Farmers' Forum, January-February 2012) is very interesting. It was not just informative in terms of the quality of the Ladakhi apricot but also in terms of the bribe factor. The central government should take serious steps to remove the ban imposed by the J&K government on transporting the fresh fruits from Ladakh.

**Jitender Singh,**
*Amroha, (Uttar Pradesh)*

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

## Magical millets

I read with interest Dr Asish Ghosh's article "Magic with Millet: Towards Enhancing India's Food Security" (Farmers' Forum, January-February 2012). It is very informative especially for a farmer like myself who is growing millets. As Dr Ghosh says, this wonderful produce can adapt "to both irrigated and dry land farming." Indeed, millets can be a rich source of food and fodder in the years of scarcity and serve, as he says, as a "suitable candidate for famine reserve food." The article explains every facet around millet growing and has really contributed to the enhancement of my knowledge.

**Aanshul,**
*Bhopal, (Madhya Pradesh)*

## When technology fails…

Despite disagreement that I had with some of the views expressed by Dr Abhijit Sen in his interview: 'Crisis in agriculture: Of Technology Fatigue; Rich-Poor Farmer Divide; Governance and Growth' (Farmers' Forum, January-February 2012), I enjoyed reading the eminent economist's views and thoughts on so many issues of critical relevance to Indian agriculture. There can be no disagreement with his assessment of the main problems with agriculture: the quality of the land; the quality and quantity of water available" but what causes my concern is his opinion that there are signs that new technologies are not delivering as much as was expected and stated in the 11th five year Plan

**Rajpal,**
*Solan, (Himachal Pradesh)*

Photo: S. Mahalanobis

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COVER STORY

# FARMING: Heading Towards a Bleak Future

There are two critical spaces in Indian agriculture and one of them does not relate to farming per se. It relates to the farmer. Discussions on Indian agriculture often centres around farm productivity, agri inputs, food warehousing, agri marketing, food pricing and even food processing. Policies are written to shore up all these facets of Indian agriculture. After all, food security is the biggest issue facing the country and the rather sorry looking farm sector has to deliver.

Policies are seldom written for the farmer though, especially the indigent farmer; the cultivator who is expected to feed the nation even though he cannot feed himself. Yes, there are farm suicides, which have become passe; there are crop failures; there is rotting grain; there is the country's shrinking irrigated land; there are problems galore but none as pathetic as the plight of even the hitherto well-to-do farmer being forced into the throes of penury. The point is that farming is no more a profitable business even for the affluent farmer; it is an utterly losing proposition for the poor farmer, who comprises 80 per cent of the the farm population.

Policies are seldom written for the farmer, especially the indigent farmer; the cultivator who is expected to feed the nation even though he cannot feed himself

Farmers' Forum organised a post-Budget seminar on what the Union Budget 2012-13 had in store for Indian agriculture – Union Budget 2012-13: What is in it for Indian agriculture? The panelists came from different political parties and the bureaucracy; there were former and current people in government/Planning Commission and farm sector experts. There was acknowledgement that there has been a upward revision in the budgetary allocations for agriculture, but there were consensus across the board that it is still too little. Is it also too late?

The panelists were Sachin Pilot, Union Minister for State for Information, Technology and Communications; Satyapal Malik, head of the BJP's Kisan Morcha; Dr Abhijit Sen, member Planning Commission; Y. C. Nanda, former Chairman, National Bank for Agriculture and Rural Development; Mohan Guruswamy, former adviser to the Finance minister and author of Crisis in Indian agriculture; Dr Suman Sahai, convenor Gene Campaign; Basudeb Acharia, Chairman, Standing Committee on Agriculture; Ajay Vir Jakhar, editor, Farmers' Forum with Paranjoy Guha Thakurta, journalist, as the moderator.

## SACHIN PILOT

***India cannot be a 'front-ranking country' without caring for its farming community***

Agriculture in India has to be given the status of an industry and dealt with accordingly, like every other sector of the economy. The allocation for the agriculture sector has been increasing exponentially in recent budgets but it cannot be said that India has done enough for the farming sector. Even though agriculture contributes just 14 per cent to the gross domestic product (GDP) of India, 60 per cent of India's population is directly or indirectly involved in it and the sector should enjoy the same status as other industry silos. More importantly, the fact that 14 per cent of the GDP is brought in by two-thirds of the population demonstrates a mismatch that India cannot afford. It is not sustainable.

The second area of concern is around pricing of foodgrains. In the manufacturing sector, a shoe factory for instance, the manufacturer spends Rs 80 on making a pair of shoes and marks it up to be sold at Rs 100. He has the right to choose his profit margin and decide a maximum retail price. In agriculture, however, even as the farmer spends a lot on fertilisers, water, pesticides and such inputs, he does not have a right to choose his price. The government decides a minimum support price (MSP) for his produce. It needs to be noted that it is this 'minimum' support price – not a 'maximum'– within which he has to sustain himself for the entire year. Admittedly, the MSP has gone up by a huge sum in the last five to six years but it is still pre-determined by the government and not decided by market forces, as is the case with other commodities.

All conference photographs: Imtiyaz Khan

The third area of concern is finance. The target for agricultural lending has been increased in the current budget from Rs 4,75,000 crores to Rs 5,75,000 crores, which is a substantial sum, given that some years ago, farmers did not have any access to bank loans. Most banks would assume that the loan would become non-performing assets. However, even today, the recipients of this loan are only those who are literate, can fill forms, get no-objection certificates, get all the paperwork required by the banks done, which means only the better off farmers and not the small and marginal farmers can succeed. The small land holders, whom the government has devised these schemes for, are not able to benefit from them. The kisan credit cards came a few years ago but they have not been scaled up to a point where they are a known phenomenon.

The fourth area of concern is that for farmers with small land holdings – those with less than half a hectare of land – it is becoming increasingly difficult to produce enough food grain to feed their families and also save some cash for the rest of the year, to spend on other things like education and medical care. This desperate situation lead to suicides. Farmers committing suicides now occupy no more than half an inch column space in newspapers and that disturbs me. We, as a country, cannot expect to become a strong front-ranking country unless we care for our farming community. Of course, we have to comply with the regulations of multilateral organisations and the World Trade Organisation but nothing stops us from supporting our farming community.

The fifth area of concern is that while farmers and their issues are important, they do not have the kind of lobbying required for themselves. The reason is that the farming community is huge, it runs into millions. A small tobacco company or a brewery, for instance, may have a very strong advocacy group but, in the farming sector, the individual recipients of the advantages of lobbying are so large that the per capita gain is not a big enough incentive for

***No lobby for farmers – Sachin Pilot***

*The tiller of the land is not able to take pride in his work – Sachin Pilot*

people to organise themselves.

The sixth area of concern is food security and productivity of the farms. Food security is more important than energy security and even internal security. The others can be handled but a half fed nation is an unsustainable proposition. India is one of the youngest countries in the world but 46 per cent of its children below the age of five, are under-nourished or malnourished. Food security is, therefore, extremely important and India needs to produce more. The idea about having handsome buffer stocks makes us proud, so does the fact that India is the largest producer of milk and milk products in the world, second largest in terms of fruits and vegetables and the third largest in the production of food grains. The truth, however, is that India has to import milk in the summers and pulses and oilseeds too to meet its requirements. In the USA, only four per cent of the population is involved in farming but it produces enough. India's productivity per hectare is dismal and does not leave room for complacence.

The seventh area of concern is around the mismatch between crops sown and the regional water availability. There is insistence on growing sugarcane and paddy even if the soil and water do not permit it. Given that 60 per cent of our agricultural land is rainfed, this makes things difficult.

The eighth area of concern is around marketing with a paucity of cold chain linkages, processing, and other sources of value-addition. This needs to be tackled on a war footing.

On a different note, everytime I have met a farmer in the last 10 years of public life, I have asked him what he wants his children to do. I have never got the answer that he wants them to become a farmer. If the tiller of the land is not able to take pride in his work, it is not a very healthy sign for the country. This decade is even more crucial for us as the challenges of environment and climate change are increasing. We need to leverage technology, resources and the tremendous man power that we have to create a farming sector in India that is robust, growing and that not only takes care of the food security of our country but also makes it a food bowl for the entire region.

## Farmers committing suicides now occupy no more than half an inch column centimetre space in newspapers and that disturbs me

## SATYAPAL MALIK

*A farmer's child prefers being a chapraasi to being a farmer*

Most political parties and leaders do not have farmers on their agenda. For 10 years now, food production in the country has been stagnant. India imports edible oil worth Rs 9,500 crores and pulses worth Rs 4,500 crores. There has been no breakthrough in seeds for food crops, especially pulses and oilseeds, since the 1960s. That breakthrough came in the seeds for wheat and rice, which helped India achieve a surplus that farmers could sell. Nothing much has happened after that in terms of research or extension of agricultural services.

The productivity at the exhibition plots in Indian agriculture universities is as good as any other country in the world, but Indian fields produce only half of the world's best yields. Obviously, the farms do not get the same facilities that the university plots get or what the farmers in America, Egypt or Japan get. In India, most farmers use their seeds for at least five years, amidst declining productivity every year.

India's land area is not increasing but its population is and a great deal of research is needed to get more from the same land. In Serida, Brazil, once discarded as a wasteland – where, even Norman Borlough said, not even grass can grow – people discovered a bacteria that produces nitrogen in the soil, they applied limestone there for about three years and sowed soya bean. Today, Brazil is the biggest exporters of soya bean in the world. That is the kind of research that we need for India.

The government came up with farm loan waiver of Rs 60,000 crores, which was a very popular decision but a one time waiver is not enough. If one looks at the budget, there is bad debt of Rs 40,000 crores of the industry and allied sectors but that does not bother anyone. The irony is that one can get credit for a car in three days in this country but for a tractor, it is difficult to get the loan even in a month. A sugarcane farmer has to wait for more than 24 hours in the cold to get his cane weighed in a sugar mill. The sugar mill has every other facility but a weighbridge.

Everybody feels that a farmer is only concerned about his income but no one looks at his costs: he has to be concerned about his daughter's wedding, medical care for parents and his children's school admission. In the days of barter, there was little worry but now everything costs money and the farmer has no option but to try and earn more of it. Moreover, his income has come down a fair bit



*Satyapal Malik (left) makes a point; Ajay Jakhar listens*

in the last 10 years. He could buy a lot more things then with the money earned from one quintal of wheat than now and even without his knowledge the farmer is becoming poor. Even if his production from the same land remains the same, the hike in the prices of consummables in the market has led to his purchasing power going down.

Other things have changed too. In my own village, at least 20 families have left farming and migrated to towns only to ensure education for the children. The entire income from the farms goes into education and if there is a wedding in the family or sickness, the farmer has to sell his land. This is the plight of well-off farmers in the Ganga-Jamuna basin, which was traditionally a fertile region. What can one say about other areas?

The MSP is another factor that kills farmers. The policy itself is full of confusion. MSP is not an ideal price but a threshold price: if prices fall below it, the government will buy the produce. Recently, we met the Commissioner of Agricultural Costs and Prices and requested him to fix the MSP at 50 per cent above the input cost, which is what the Farmers' Commission has recommended. He replied that they had to go by prescribed mandates and that input cost is only one of the 10 other mandates, which are about market forces, foreign market and so on that are considered while fixing the price. Then again, the input cost numbers that the CACP gets are given by universities and are at least two years old, which means they not even authentic. Therefore, MSP is a big fraud to begin with and, in any case, 95 per cent of the farmers are forced to go in for distress sale, at a price much below the MSP.


*The MSP is a killer – Satyapal Malik*

## The productivity at the exhibition plots in Indian agriculture universities is as good as any other country in the world but Indian fields produce only half of the world's best yields

When the farmer goes to sell, there is hardly any agency to buy his crop, forget about an agency that gives the MSP. Had there been an agency, it would only tell him that the produce is wet or spoilt. So he has to leave it at the middle man's shop and tell him to sell it at whatever the price the produce can fetch. As a result, paddy is selling at Rs 500 less than the MSP in Bihar, for instance.

Also, the law says that a farmer can sell anywhere but a Sonepat farmer is not allowed to sell in the Narela mandi and vice versa. There is a lathicharge on the Mathura farmers every year when they come to the mandi in Palwal to sell their produce as the MSP agency comes to Haryana first and picks up all the grain at a better price. The Haryana government, however, says that it will buy only its own farmers' produce, and thus, the Mathura farmer gets beaten every year.

The sowing season lasts for three or four months. The price of a crop between the sowing and the harvest season usually changes by Rs 300-500 every year, thanks to the conspiracy of the government and the market. The goverment needs grain for procurement so it makes a show of how it needs to import and puts an artificial ban on hoarding. This makes the market situation such that by the time of the harvest, the crop price is down by Rs 300 to Rs 400.

Therefore, the government needs to work on changing the pricing policy, conduct research on seeds and make arrangements for marketing the produce for the farmer. Nowadays, 2,500 candidates apply for 50 posts of peons in Haryana and most of them are farmers' children. They prefer being a chapraasi to being a farmer. What can be worse for the country?

## ABHIJIT SEN

### *States giving more emphasis to research will be better rewarded*

In terms of per capita income, people engaged in agriculture have, over a long period, fallen significantly behind the rest of the population. A number of related things have followed: the best people do not want to stick to agriculture anymore. For instance, consider the social issues in rural India: there are such social tensions as who will organise a better marriage ceremony for his children or whose living standard is similar to his neighbours. Who stays ahead depends a lot on whether a family has a member working outside agriculture. In south India, for example, many young men do not want to remain in agriculture because women do not want to marry farmers. One reason is that since it is difficult to find people to care of cattle, women end up taking over the burden of rearing the cattle in the families engaged in farming. These are some of the sad social implications of being a farmer, apart from the sorry statistics on pricing or production.

It has been known that the rate of growth in the agricultural sector has been much slower that the rate of growth of the economy as a whole. The share of agriculture to the national GDP has come down to about 15 per cent today compared to 50 per cent in the 1960s while the population of the country dependent on agriculture, around 65 per cent to 70 per cent in the 1960s, remains around 50 per cent today. The main reason for this has been India's inability to create jobs outside agriculture. Had this happened, over time, this imbalance could have been taken care of.

The productivity of Indian farms has not grown at the rate that Indian agricultural scientists projected as possible. Things really started deteriorating after 1994-95 because of two reasons. First, the impetus given by the Green Revolution in late sixties in terms of a single technological advantage, started petering out after 25 years. In any event, India could not have banked on one advancement alone. Second, there was a shift in the priorities of India's political leadership and bureaucracy in terms of allocation. As a result, agriculture got neglected and matters like appointing extension officers and budgetry allocations suffered. Most importantly though, while handling a whole set of problems like balance of payment and inflation post liberalization, agriculture came to be at the receiving end of a whole set of knee-jerk reactions such as export rules. This situation worsened as India further opened up to outside trade and the shocks recieved from the rest of the world started affecting it more. Therefore, the period between the mid-nineties and 2005 was probably the worst for agriculture. Not only was the rate of growth really low in this period – it had fallen from a previous 2.5 per cent to three per cent to less than two per cent – it was then that the terms of trade actually turned against agriculture. Much of what is the situation today is because of India's failure in this period.

It is important to collectively recognise India's failure, but at the same time, the country must look ahead. With this purpose in mind, since last six years now, I have been trying to get the government to first recognise that there is no one coat that fits all the problems of agriculture as diversified as India's. Second, we have been trying to get it to recognise the need for more public investment and need for more priority in the administration of agricultural matters. I hope some of this has happened and also hope that

***The period between the mid-nineties and 2005 was probably the worst for Indian agriculture – Abhijit Sen***


*Twelfth plan is looking at concentrating efforts in a few areas only – Abhijit Sen*



some of this will accelerate in the near future.

India also needs to recognise the good things that have happened. In the current five year plan that is about to end, the rate of growth for agriculture has been 3.3 per cent till now and it might get revised to 3.5 per cent by the end of the plan period when figures are revised, especially for the previous year. This 3.5 per cent is actually better than most plan periods in the past except, of course, one or two plan periods but much short of what had been targetted: four per cent. Another positive thing that has to be recognised is that agricultural prices have grown at par with other commodities in the last five years save for one or two years in between, which is why most people were anxious about food inflation.

In order to consolidate these positive factors, the twelfth plan is looking at concentrating efforts in a few areas only. Since the plan is not yet finalised, how these efforts will roll out has not yet been reflected fully in this year's budget. There would be five missions in this plan, including two new ones on technology and extension and sustainability besides the old ones on food security and horticulture. The one on agriculture technology and extension will have a huge component for mechanisation. Apart from these missions, the emphasis will also be on decentralising funding as much as possible. The Rashtriya Krishi Vikas Yojana, which was launched in 2007, will be the main tool for states to take responsibility and the scheme will be incentivised in a way that states that give more emphasis to research get better rewarded.

## There was a shift in the priorities of India's political leadership and bureaucracy in terms of allocation post liberalization. As a result, agriculture was neglected and matters like appointing extension officers and budgetry allocations suffered

## Y. C. NANDA

### *Farm credit does not reach its intended beneficiary*

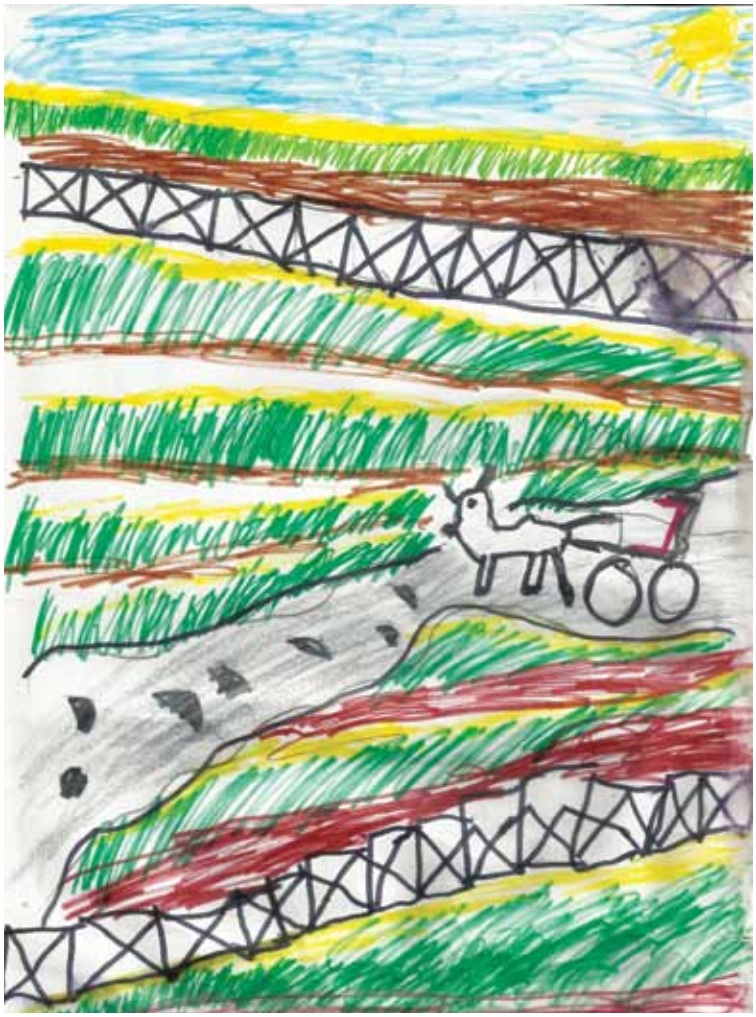
The government has announced a subvention of interest on agricultural loans by four per cent if the farmer does not default. Instead of the designated seven per cent interest, the beneficiary farmer only needs to pay three per cent. However, mostly people in Delhi, Chandigarh, Hyderabad and, I hear, even in Mumbai, which are cities and hardly have farmers, are misusing this facility. The biggest problem of farm credit is that it does not reach the intended beneficiary. Yet, the credit limit of the government for agriculture has gone up from Rs 3.25 lakh crores to Rs 3.75 lakh crores over the years and it will soon go up to Rs 5 lakh crores. For the last 25 years, farm credit has grown at a rate of about 15 per cent.

As per an information obtained by the Government of India in 2001-02 but published only in 2009, less than 1.5 per cent marginal farmers and less than three per cent small farmers got loans from commercial banks. So the figures are definitely impressive but who is getting this credit? A study shows that the farmers of Chandigarh and Delhi get more credit than those of Bengal, Bihar, Orissa and Uttar Pradesh. If one questions the Reserve Bank of India about this mismatch, one is not likely to get a reply. In my entire career in the banking sector in NABARD and even the RBI, I have never met a marginal farmer who has been able to get credit from a commercial bank for agriculture.

The government introduced Kisaan credit cards for farmers. It will be a feat if even a big leader or bureaucrat is able to obtain a Kisan credit card for a marginal farmer. I know of a Joint Secretary in the Government of India who tried to get it for a farmer in his own village but could not. This is because we are trying to achieve something that is not possible. Large corporate banks are not designed to look after the needs of small farmers; it is not in their DNA. These banks are meant for big institutions, corporate banking and large loans; their profit is in volumes, not in small loans. All over the world, small farmers' requirements are met by localised institutions but, unfortunately, India has not been able to develop a network of such institutions.

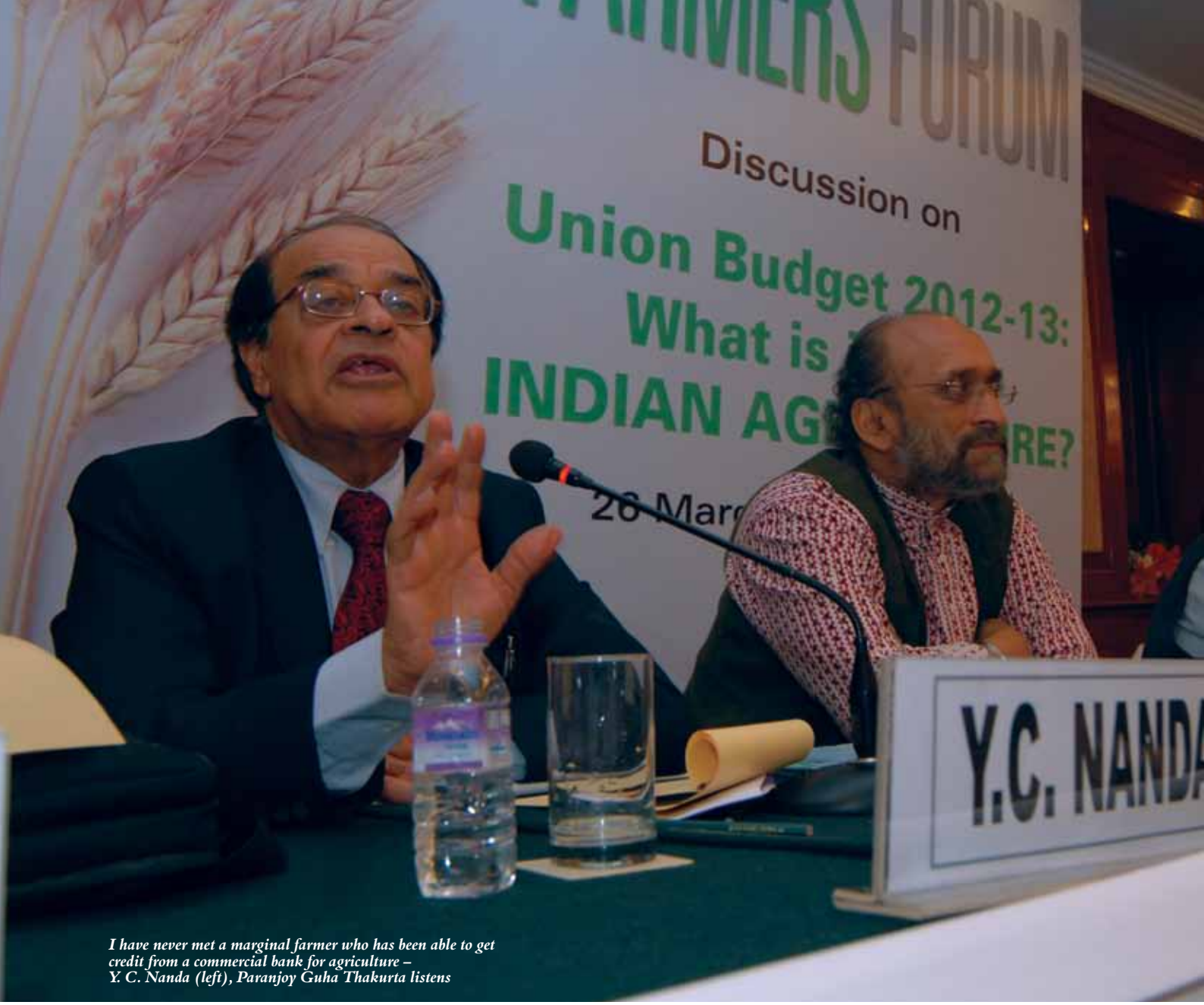
The RBI finds controlling small institutions difficult and has not, therefore, encouraged this system of localised institutions. If the RBI increased its supervision and controlling capacity instead of blocking small institutions, it would have become much easier for farmers to avail of credit. What the RBI did instead was to introduce a concept of 'banking correspondents' in rural areas to attract farmers for credit. I have seen these correspondents in many areas and, thanks to the petty commission that they get, they do not even open their offices. Even so, they are considered competitors by the branch manager banks in that particular area. So the concept has failed entirely.

Simple solutions could be adopted by the banks. For storage and distress sale, for instance, if a farmer fortunate enough to have a Kisan credit card, has a limit of Rs 50,000 in that card, the bank would be ready to give up to Rs 50,000 for buying fertilisers and other inputs for sowing. Now, one could have the same card with two components: Rs 50,000 for production and Rs 50,000 subsequently. Once the



Drawing: Purnajyoti (8), Gurgaon

***Agriculture still captures the imagination of a creative child in urban India but not that of the farmer's child who does not want to remain engaged with farming***




*I have never met a marginal farmer who has been able to get credit from a commercial bank for agriculture – Y. C. Nanda (left), Paranjoy Guha Thakurta listens*

A kisan credit card should have two components: Rs 50,000 for production and Rs 50,000 subsequently. Once the crop has been brought home after the harvest, the farmer should be able to draw another Rs 25,000 so that he does not have to sell in distress

crop has been brought home after the harvest, the farmer should be able to draw another Rs 25,000 so that he does not have to sell in distress. Very simply, a Kisan credit card divided into two parts, one for inputs and another after production, will ensure that there is no distress sale. Unless such basic changes are made by the RBI, the situation will not improve.

Unfortunately, Indian farmers are also easily misled by the promises leaders make. Had they been like an industry association, they would have made sure that these promises were honoured. Farmers do not have the clout to get the promises made to them honoured. I first heard about the four per cent growth in agriculture from Mr Montek Singh Ahluwalia in the 1980s; he said that unless there is four per cent growth in agriculture, India cannot grow but it has not become four per cent even after three decades. Unless a comprehensive seven to eight-year policy, with clear roadmaps and investment in agriculture is planned, nothing is going to happen in the years to come.

## MOHAN GURUSWAMY

***Farm incomes dip; MP's incomes grow 80 per cent in one Parliamentary term***

The Indian democracy has unfortunately become of the people, by some people and for even less than those some people. The point is that the small and marginal farmers – 80 per cent of India's entire farming community – who work in the rainfed region – 60 per cent of the entire agricultural land – do not matter politically. Farmers who do are those working large irrigated holdings and this situation seems unlikely to change because the government just does not care. I have been in and around the Indian government long enough to know that the politicians are more bothered about petty issues like their Parliament seats. If the country was growing as well as the wealth of these leaders, there would be no problems. The average growth in assets of a member of Parliament has been computed to increase by 80 per cent in one term, which is quite good for a person who is not working.

The share of GDP in agriculture, which was 80 per cent at the time of Independence, has come down to 14 per cent now. Simply put, it shows that the country does not rely on agriculture for its economic growth any more. The investment in agriculture in the 1980s was 15.4 per cent and it is down to 8.4 per cent. If one cannot produce, there is the option to import since there is money to import. Already the Delhi markets are full of imported apples, pears, grapes, wheat and cereals too. So this country is very well economically linked with the world. In the colonial times, people were exploited here as the raw material from India would go to England where it would be processed. Now, it goes from rural areas to small parts of metropolitan cities and processed there. So why does one need a four per cent growth? Because there is already a shortfall of food this year. The government of India's projected rice shortfall for the coming year is 2.8 million tons. For sugar, it is 7.5 MT, for pulses, it is 2.3 MT and, for oilseeds, it is six million tones. The growth may look good at 1.6 per cent but it has been flat from the year 2000.

Two things need to be done to overcome this shortfall. First, the government needs to spend on irrigation, not on research institutes like Pusa. What agriculture really needs is water facilities. This budget allocates Rs 14,000 crores for irrigation, which is is just one per cent of the total budget (the total budget is Rs 1,490 lakh crores). In the last 20 years, government funding has not created a single additional acre of irrigated land in this country. In 1970, government canals irrigated 41 per cent of the land holdings. In year 2000, it has come down to 29 per cent. The community tanks, which earlier contributed 13.2 per cent of the total irrigation sources, now just contribute 4.6 per cent. Tubewells, however, have gone up from 38 per cent to 62 per cent, which means irrigation is now a personalised private enterprise. Only a medium or a large farmer can install a tubewell. A marginal farmer will never get money from the bank for a tubewell as he does not have the required creditworthiness.

Farmers with marginal holdings do not have the collaterals for borrowing money. Also, there is this 'attitude' towards agri loans. For instance, if Rs 10,000 crores of loan for the agriculture sector becomes non-performing, it is very upsetting but the banks write off almost Rs 17,000 crores to Rs 18,000 crores every year as non-performing loans, most of them for industries. In other cases, banks give loans to medium and large farmers and usually get a signed reciept for their books to show that the debt has been paid and then they issue a new loan. Thus, the money keeps getting rolled over but never comes back into the system.

What the government needs to do is to design a scheme for consolidation of holdings. The fragmentation of holdings in agriculture has reached a critical state. The land assets get smaller with every generation. So unless one buys the surrounding holdings, one will be unable to consolidate his


***Sarcasm in Bengal countryside when there were hooch deaths and the state government compensated the families of the dead. The poster exhorts farmers not to commit suicide but to die drinking poisoned hooch because at least then the families would receive some compensation***

*Food production is on a slide and the state is responding to this by making investment in subsidies – throwaways – instead of investing in capital – Mohan Guruswamy*



land. When I was in the government, I asked the RBI governer to consider allowing banks to loan money to farmers to buy adjacent pieces of land but he said that it would lead to land speculation.

As consumers of food, it should concern every Indian that food prices are going up. The per capita availability of food grain in India has gone down from 1998-1999 to 2009-2010 on a factor of 100 to 90, even as the per capita income has gone up from 100 to 180. Food production is on a slide and the state is responding to this by making investment in subsidies – throwaways – instead of investing in the capital. The small farmers are neither getting the benefit of this subsidy nor of the procurement mechanism, as only those farmers who have surplus can avail of this benefit. This means, 90 per cent of the farmers do not get this benefit.

There is imbalance in spending as well: 90 per cent of Punjab is irrigated while 80 per cent of Madhya Pradesh and Maharashtra is rainfed and even in Bihar, where five rivers run, 40 per cent of the land is rainfed. India has glorified some states as granaries but what has essentially happened is that it has shifted money from one part of the country to another but this cannot continue for long. If there is no investment in the countryside, people will migrate from rural areas. The population models suggest that in the four southern states, the population will freeze by 2020 but, overall, it is expected to rise till 2090.

India's economic growth is to be based on its demographic dividends. More the people, better the growth. The problem is that the BIMARU states are growing. From 2050 onwards, the population of these states will grow. Already, Bihar has almost migrated to Punjab; Uttar Pradesh to Maharashtra and Orissa to south India. This will just mean a rise in conflicts as people have to go somewhere to earn. An intelligent government should invest in places, where there are people but that has not happened in the last 20 years!

India's economic growth is to be based on its demographic dividends. More the people, better the growth. The problem is that the BIMARU states are growing

## SUMAN SAHAI

### *Need to realise genetic potential of indigenous seeds*

The agricultural budget this year has been a mixed bag. The good things are that the budget has addressed the issues of storage of food grains and increased farm credit. The problem of food grains rotting every year has reached a critical state and, therefore, needed to be looked at urgently. There is, however, a huge gap between what the budget has proposed and the problem. As per the budget, a capacity for storing two million tonnes of grain will be created while the actual grain that needs to be stored is 50 million tonnes. Therefore, the government will have to scale up and very quickly at that.

The other good development has been around credit. It is a good idea to increase it but the fundamental problem is with the exclusion of defaulters. Only a very poor farmer would default on loans. Also, even if he cannot raise a collateral, there has to be way of bringing him in to the credit loop.

The bad thing with the budget is that it is a business-as-usual budget. The youth of this country should note that there is a civil unrest in the country's heartland, a direct consequence of going ahead with business as usual in agriculture. One can call it maoist violence, naxalism or an internal security issue, the heartland of India is exploding because its problems have not been addressed. Trouble is brewing in Chattisgarh, Jharkhand, Andhra Pradesh and now Uttarakhand, which is nothing but a tremendous reaction to the wrong agricultural policies of the government that do not address the needs of the people. It is most shameful for any Indian to live with a badge that food producers are killing themselves in this country because they are not able to produce food. No budget in the past nor even the present one has taken note of the acute crisis in Indian agriculture.

To quote Jawaharlal Nehru, "If Agriculture does not go right, nothing else will." None of his subsequent governments followed this. Nehru was the greatest protagonist of industry. The temples of modern India that he planned to build


*It is most shameful for any Indian to live with a badge that food producers are killing themselves in this country because they are not able to produce food – Suman Sahai*

had nothing to do with agriculture but he still realised the importance of agriculture, as many in his generation did. A lot more cars, roads and bridges can be built but the country's innards will keep on exploding with the violence that has resulted from the disparity that has been created by not addressing the needs of the largest section of our population. If the government has to take cognisance of these realities, the budgets have to be extremally innovative, out of the box and done on a very large scale.

Another thing that has gone wrong with this year's budget is the focus on more investment in research on new seeds. I do not think we need that. The genetic potential of all our varieties has not been realised yet. So what we need is not new seeds but more investment in creating viable farming systems. A farmer today is not able to extract even a quarter of the potential from the traditional high-yielding varieties of food grains including rice, wheat, oilseeds or pulses. Once the agronomic practices improve, the farmer will start to get more out of the seeds already there. There would be no need to give crores of rupees to universities and research stations for seeds, science and technology and research. In fact, more allocation to research in seeds should be suspended for a while. Brazil, for instance, suspended plant breeding for a long time in between and focussed on ensuring that the existing seeds produced to their optimum capability.

The other disturbing part is that women, who constitute a major work force in agriculture, are almost invisible in this budget. Feminisation of agriculture has taken place on such a massive scale and budgets should recognise not just the woman's role but also be supportive of her needs in terms of agricultural implements. If a thresher, for instance, is taller than a woman, it is difficult for her to work on it. Thus the need for investment in agricultural implements especially designed for women.

Farmers' prosperity has to be central to the agricultural budget. The farmer must take home money from the farms. The government is planning to concentrate on eastern India to bring in a second green revolution there. However, the solutions that the budget proposes is hybrid rice, the seeds of which will be brought in from China. Already, the indigenous knowledge and skills of our farmers are grossly unacknowledged and now the government wants to collaborate with China to bring in hybrid seeds.

Is this a budget for the Indian farmer or somebody else? A report of the Ministry of Finance admits that the MSP of all the 12 crops that the government procures is below the cost of production of every single crop. So how does one expect farming to remain viable? If India does not have a viable farming system, the farmer is not going to farm. Everybody says so and even an NSSO survey points out that 50 per cent farmers, if they have a choice, would like to quit farming. Nowhere does the budget address this issue.

China has developed a model called township-village enterprise to deal with this problem. Even the Chinese faced the problem of fragmented land holdings like India and the question of how to generate income. The township-village enterprises were meant to create off-farm means of income generation, be it food processing, candle making or even a small industry. Only, everything had to be close to the farm so that a farmer did not have to abandon the farm to increase his income. India does not have any such concept and is, therefore, unable to retain farmers on the farms.

Another thing that the budget should have addressed is climate change, which is going to hit India and South Asia harder than any other part of the world. The budget deals with that in a very small way as part of the National Action Plan on Climate Change, which has severe limitations of its own. The turbulence in the monsoon is there for all to see but there has been no response from the government that reflects an urgency to deal with this. We need to initiate adaptation measures soon because it will take a lot of time for them to kick in. Also, the agriculture of tomorrow, even as we need to increase productivity to keep pace with the requirement, has to be done sustainably. That is a challenge because the approach will have to be to minimise risk for the farmer. He cannot be exposed anymore to an all-or-none situation like bumper crops or crop failures.

The budget has not adequately addressed the problem of climate change, which is going to hit India and South Asia harder than any other part of the world

*Cost of agricultural inputs up from 40 per cent to 50 per cent but MSP increase not more than 15 per cent to 20 per cent – Basudeb Acharia*

## BASUDEB ACHARIA

### *Of shrinking land and fragmented holdings*

The problem with India is that growth is not balanced across states. In some places it may be too much while it is stagnant in others and there is negative growth in yet other states. However, even while there has been growth, the per capita availability of food grains has decreased from what it was 15-20 years ago. Agricultural land area is shrinking in many southern states, especially in Kerala and Tamil Nadu, in Maharashtra and in some northern states too. The per hectare productivity of many agricultural crops in our country is far below many other countries. There is, of course, the added problem of fragmented land holdings. The other problem is that the CACP decison on prices is arrived at rather arbitrarily without considering the cost of seeds and electricity. The increase in the cost of agricultural inputs over the years has been around 40 per cent to 50 per cent but the increase in the MSP is not more than 15 per cent to 20 per cent over the same period.

Agricultural labour too has become expensive due to the success of MNREGA in some states so there is a need for mechanisation not only for large holdings but also small farmers. Not many machines have been designed to operate in small holdings, keeping the cost factor in mind so that the farmer can afford it.

Another problem is stagnation in the irrigation system; there has hardly been any extension

## PETER KENMORE

The FAO representative in India
Speaker from the floor

### Learning from resident knowledge

I would like to talk about some work by the partners of the Food and Agricultural Organisation, to which FAO itself contributed a bit, that could be an important learning experiences for all of us. One of them is the "Zero Hunger strategy" in Brazil. It may not be a blanket prescription but definitely something we can look up to and which has been quite effective there in terms of providing a social safety net. Brazil is only 10 per cent of India in scale but still a big country and has a very high GDP. It has introduced the concept of local food security. It has local circuits, where food is procured locally, which means that the benefits of procurement also go to small farmers.

Sustainable intensification of agriculture is not just about seeds but also how we manage them. A system of rice intensification, for example, is being followed in many states all over India. One of the most interesting descriptions that I read about it, featuring the various elements of SRI-single seedling, line planting and managing water to reduce its use by almost double digit percentage, was in a Tamil publicaton of 1911, which refers back to 1906. So research and trials to get the most out of genetics in rice are more than a century old in this country. This shows that we need to support indigenous research by farmers on farming in the

## In centrally administered territories like Delhi and Chandigarh, the annual credit offtake is Rs 32,000 crores while the combined loan for Bihar, West Bengal, Odisha and Jharkhand, where a second green revolution is going on, is Rs. 31,000 crores

of our irrigation system over the 9th and 10th plans. A number of check dams need to be built to counter the scarcity of water. Gujarat has constructed thousands of check dams and tapped local water sources but that is not possible geographically in all regions. The Teesta project, which is very important for five or six districts of North Bengal has been stuck for the last 20 years. The reservoir is ready but the canals that will carry the water to the fields are not there. The money has been invested but water is neither being utilised for agriculture nor for drinking but only for fisheries.

Again, the many reservoirs constructed during the 1st and the 2nd plans are now suffering from decelerated capacity because of silting and there is a need for dredging. The whole of West Bengal depends on the water from the Damodar Valley Corporation. All its reservoirs, including Tilaiya, Mython and Panchet were constructed in 1950s but there has been no desilting work in all these years. Boro cultivation in about five or six districts of West Bengal needs a lot of water but because the capacity of reservoirs has come down, the water is not available to them on time.

Availability of fertilisers is another issue. Tripura has adopted SRI in 70 per cent of its land. So have Kerala and Tamil Nadu. For Tripura, the gap between their demand and production is only two lakh tonnes now but carrying fertilisers to the state is an expensive proposition. There is only one railway line there and that too on meter guage. Guage conversion has been going on since 1996 now and looks like an endless process. In the kharif season, the train services are curtailed at least six to seven times. Thus, farmers have to go to Guwahati to buy fertilisers, which arrive at Agartala first and then to the district headquarters and, finally, to the village, thereby increasing the transportation cost phenomenally.

The crisis that started in 1990s is still continuing. There is imbalance in agricultural credit too. Some states that are not even involved in agriculture – but have some people running big agro-processing units or have vast amount of land – are getting better loan facility than those that actually have farming. In centrally administered territories like Delhi and Chandigarh, the annual credit offtake is Rs 32,000 crores while the combined loan for Bihar,West Bengal, Orissa and Jharkhand, where a second green revolution is going on, is Rs 31,000 crores. ●



farming system context.

Another instance that I want to cite is about management of ground water. The FAO is supporting a programme in Andhra Pradesh where about 5,000 farmers, 40 per cent of whom are women, are monitoring their ground water. In the Deccan plateau, aquifers are in the hard rock, unlike the soft soil of the Indo-Gangetic plains and, therefore, hold less water. These farmers monitor ground water and put up the results on community boards for everybody to see. Thus, the status of an invisible resource, a common property, has become visible to people and that helps them plan their crop budget and crops for the next season and significantly reduce the amount of ground water usage. If the water level is down, they will shift from paddy to sunflower or from red gram to groundnut. If the water comes back, they shift back to water-intensive crops. Almost five to eight lakh farmers are benefitting from this knowledge generated by themselves.

It is a pilot scheme but the governments in Maharashtra, Bihar, Karnataka and Tamil Nadu have written in showing their interests in adopting the model. We are thus, looking forward to a homegrown Indian model with Indian farmers generating knowledge and sharing it with others in order to change the way they manage their crops. That is a sign of hope and we need to build that up by supporting it, while also supporting small land holders in order to get them markets and by providing them with infrastructure.

COVER STORY

# WHITHER SUSTAINABLE AGRICULTURE?

## Surplus Food and Starving People

Asish Ghosh

***"Contributing 21 per cent to the country's GDP, accounting for 11 per cent of total exports, employing 56.4 per cent of the total workforce, and supporting 600 million people directly or indirectly, agriculture is vital to India's economy and the livelihood of its people"***

— (NAPCC, 2008)

India with 1.21 billion people, comprising more than 17 per cent of the global population, seems to be a strange country of contrasts. Farmer suicides, a regular, annual occurrence, is, strangely enough, prompted either by crop failure or the inability to sell a bumper harvest at a reasonable price! The suicides of cotton farmers in western India bear testimony to crop failures and suicides of paddy farmers in eastern India stand witness to both. What exactly is ailing Indian agriculture? What are the host of issues that impact it?

Consider the current controversy over land acquisition and appropriate rehabilitation and resettlement of land losers that originated largely from the controversy over conversion of agricultural land into industrial land. Any informed person will agree that in the history of development of the western world, the sequence was but a natural event. The cost-benefit analysis of such conversion in terms of the national economy, lives and livelihood of affected citizens shows that a process of inclusive growth of the society was reasonably achieved by such a policy. In India, the spate of publicly reported conversion is happening as if in a wave, throwing the farmer off balance, especially because there is little that is inclusive about such conversions. In any event, large tracts of tribal land converted over the years for mining and power plants did little for their host communities in terms of inclusivity.

The essential problem is that India is aiming for 'infinite growth' in a finite environment. Although a signatory to the doctrine of sustainable development, in reality the government often tends to project a 'sky is the limit' vision. The philosophy of 'limits to growth' remains only in policy documents. The greed element of vested interests has usurped critical space in the growth agenda.

## For whom PDS?

The public distribution system (PDS) with half a million fair price shops is supposed to distribute foodgrains to the poor people at one kg per person per month. The Food Corporation India, a government of India owned enterprise, is supposed to procure and distribute foodgrain and essential commodities like sugar and kerosene at fair prices. It is alleged that inferior foodgrain is often distributed due to manipulation by fair price shop owners. The use of bogus cards is another allegation against the PDS in the absence of vigilance. It is estimated that only about 42 per cent of the subsidised grain reaches the target group. (Planning Commission, 2008)

PDS was relaunched as Targeted Public Distribution System (TPDS), with the hope of providing subsidised foodgrain only to people below the poverty line (BPL), while those above (APL) can avail of it at an economic cost. It is estimated that Rs 15,000 crores worth of foodgrain is distributed to 160 million households every year. The food subsidy bill in 2010-11 is estimated at Rs 60,000 crores (now put at Rs 75,000 crores). Two questions stem from this: who are the real targets? If 76 per cent of the Indian population has a nutrition consumption of below 2,400 kcal per day, the TPDS target of 36 per cent of the population remains questionable. (Saha et.al., 2011 Public Distribution System in India, Issue paper IIMA)

India has enacted a series of new and seminal laws and policies in the 21st century, which includes the Right to Work, Right to Food, Right to Education, Right to Information and Right to Forests. The Right to Food issue has, like the others, led to controversy over its mode of implementation. The PDS remains tardy and, as reports suggest, is mired in corruption.

Photo: Dilip Banerjee

The Supreme Court of India has issued instructions for computerisation of the PDS but the Department of Food & Public Distribution has expressed its inability to comply with the directive. It has filed an affidavit in the Apex Court requesting "the court to direct the Planning Commission of India to provide immediate financial assistance… for computerisation of PDS in the country."

No data is available as to why the Department of Food & Public Distribution has never tried to computerise the system in the past? How much fund has been, if any, was sought and why it was negated by the Planning Commission? The Food and Public Distribution Department also appealed to the Apex Court to direct the rural development ministry 'to provide the number of such eligible persons over and above the existing beneficiaries of the Annapurna and the Antyodya Yojana at the earliest to enable the Department to allocate food grains on recommendation of Central Vigilance Commission on PDS'. (The Times of India. Saturday, February 4, 2012). The media termed these affidavits as "extraordinary effort at resolving policy dispute"!!! Not only has the issue of computerisation or providing data of eligible persons, the very basis of PDS by ration card come under the scanner, many states have malpractices in their PDS as reports of subsidised grains going to bogus beneficiaries in the Haryana, Maharashtra and elsewhere suggest.

This is at a time when India is expected to have a bumper harvest in 2011-12 with an estimated 102 million tonnes of rice and 88 million tonnes of wheat. Such bumper crop could create a problem of plenty ( the National Food Security Bill is pending in the Parliament), as the inability of the government to offload existing stocks to the states became more apparent and the failure of states to procure grains at reasonable price from the farmers is leading to suicides, being unable to repay their debt. The total food production of 250.42 million tonnes is a first-time record, breaking the earlier record of 244.78 million tonnes but will such a bumper harvest help people access food?

Official statistics put India's poor at 37 per cent of the population, although many believe that the percentage may be reasonably higher. The very definition of "poor" was a matter of ridicule when the minimum money needed to survive above the poverty line was put at an absurdly low figure by the Planning Commission. India as an emerging economy, unfortunately, has been failing on the major indices of Human Development, even though India's upper middle and the rich classes have benefitted in an unprecedented manner over the past two decades. Joblessness and consequent poverty is driving millions of people to depression. More so in the tribal and backward-class dominated areas. India has not focused on farmers for decades despite the proven record of 'slow murder' through malnutrition and high index of deprivation.

The government now claims that poverty has declined by 7.3 per cent (from 37.2 in 2004-05 to

Photo: S. Mahalanobis

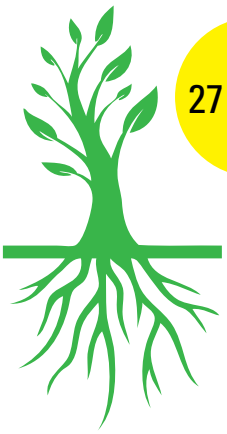
29.8 per cent in 2009-10) in five years even as the situation has turned worse in some areas like in the North-East. The total number of poor people in the country was estimated at 400.72 million in 2004-05 and it has declined to 345 million in 2009-10. In calculating the number of poor people, the Tendulkar Commission formula has been used to arrive at the curious conclusion that persons with monthly per capita income of Rs 672.80 in rural areas and Rs 859.60 in urban area can be categorized as 'Below Poverty Line'. No one is impressed.

The proposed Food Security Act aims at providing legal right to subsidised foodgrain to 63.5 per cent of the population in India. 7 kgs of food grains are to be supplied every month to a priority household (such as BPL families) and three kgs to a general one. This will entail raising annual food grain production and procurement, the latter to the tune of 65 million tonnes, from around 55 million tonnes at present (2012). It will cost the centre Rs 2 lakh crores a year as against the subsidy of Rs 60,000 crores in 2011 (more than three times). The implementation of the Act will depend on extensive efforts to improve storage facilities and wholesale markets, the inspection mechanism and transport network.

Court admitted the entitlement of people to food in India. The legal battle continued over a decade and, in December 2011, the draft Right to Food Bill was placed before the Cabinet and cleared. It is still to be passed by the Parliament. It heavily relies on the PDS for effective implementation in a country where 50 per cent of world's hungry live; more than 200 million people remain without food security.

According to the Food and Agriculture Organisation (2008), India ranks 66th amongst 88 nations on the Global Hunger Index. Half the Indian children below five reportedly remain malnourished. Chronic undernourishment from extreme hunger is rampant especially in tribal areas and poor districts. The Right to Food Bill ensures subsidised food to 75 per cent of the rural population and 50 per cent of the urban population. It is supposed to provide seven kgs of rice, wheat and coarse grains per person per month at a very low price (Baski, 2012).

Besides the targeted poor, the Bill also ensures a minimum of 3 kgs of food grains per person per month under general household category at 50 per cent less than market price. It is to be noted that the Bill provides special legal right to women and children, who always are the worst affected





## Where is the allocation for sustainable agriculture in all this? The case for saving traditional seeds and increasing use of bio-pesticides and bio-fertiliser has found no place in the budget.

The finance minister said, at a conference on the subject on February 7, 2012, that the enormity of subsidies makes him lose his sleep but he called for solution despite problems and constraints for huge investments. Increasing foodgrain production will need large scale investment in irrigation, power, fertiliser and transport. The point is that the government, while proffering 'Food for All' and establishing the Right to Food, is at loss of words to explain how to implement the law, once it is passed by the Parliament. Neither the minister in charge of finances nor the one in charge of food seems to have clarity on this game-changing proposal.

### The Right to Food Bill

The preoccupation with the Right to Food Bill started in 2001, when people in Rajasthan faced a severe drought with famine looming large on the horizon. A civil society organisation pleaded with the Supreme Court to pass an order to release state food stocks to alleviate the misery of the poor. The Supreme

in a crisis, to receive meals free of charge or at an affordable price. The same privilege is extended to people affected by disaster or to the homeless and destitute. Special provision has also been made for pregnant and breast-feeding mothers by way of cash payment for six months. The total cost of food subsidy will increase by Rs 28,000 crores. In 2012-13 the subsidy has been increased by Rs 2,177 crores.

The vexing questions of entitlement and the identification of deserving people living below the poverty line remain. Again, it is not the lack of adequate foodgrain but the lack of adequate storage and right distribution system which may pose the problem. In such a scenario, a participatory approach, linking community-based organisations with the government, may be of great use.

### Sustainable agriculture: did the budget remember the mission?

The National Action Plan on Climate Change (NAPCC) has eight missions including one on

sustainable agriculture (Box 1 and 2). The budget for 2012-13 has hardly earmarked any specific allocation for that.

The budget has nevertheless reduced subsidies on fertiliser. Together with petroleum, the three 'F' subsidies, food, fuel, fertiliser, have been reduced by 14 per cent vis-à-vis the revised budget for 2011-12 (Rs 208.503 crores to Rs 179.534 crores). However, the food subsidy has been fixed at Rs 75,000 crores with an increase of Rs 2,177 crores, from Rs 72,823 crores. The fertiliser subsidy has thankfully been reduced by Rs 6,225 crores, now pegged at Rs 60,974 crores, as against the current budget allocation of Rs 67,199 crores. Media reports suggest that reducing the subsidy may pose problem because of the compulsions of coalition politics at the centre. To intensify 'green revolution' in eastern India, the budget has stepped up allocation to Rs 1,000 crores from Rs 400 crores. Whether this will be a roadmap for "sustainable agriculture" is anyone's guess!

### Box 1: National Mission for Sustainable Agriculture

The government, while proffering 'Food for All' and establishing the Right to Food, is at a loss to explain how to implement the law, once it is passed. The mission would devise strategies to make Indian agriculture more resilient to climate change. It would identify and develop new varieties of crops and especially thermal resistant crops and alternative cropping patterns, capable of withstanding extreme weather, long dry spells, flooding and variable moisture availability.

Agriculture will need to be progressively adapted to projected climate change and our agricultural research systems must be oriented to monitor and evaluate climate change and recommend changes in agricultural practices accordingly.

This will be supported by the convergence and integration of traditional knowledge and practice systems, information technology, geospatial technologies and biotechnology. New credit and insurance mechanisms will be devised to facilitate adoption of desired practices.

Focus would be on improving productivity of rainfed agriculture. India will spearhead efforts at the international level to work towards an ecologically sustainable green revolution.

Source: Technical Document, NAPCC, 2008

Thankfully, keeping the need for agricultural credit in minds, the current allocation has been raised to Rs 5,75,000 crores, an increase of Rs 1,000 crores. The World Bank assisted project to fund protein food will offer Rs 2,242 crores to the dairy sector. Rs 500 crores has been earmarked to increase coastal fishery production, while Rs 14,282 crores has been allocated to intensify irrigation (AIDP), a hike of 13 per cent, though this amounts to no more than one per cent of the total budgetary allocations.

Where is the allocation for sustainable agriculture in all this? The case for saving traditional seeds and increasing use of bio-pesticides and bio-fertiliser has found no place in the budget. Also ignored is the case of millets in the PDS. The era of climate change demands resilient seeds that can withstand the vagaries of weather. A change from chemical to ecological agriculture is a must to ensure soil fertility. Millets can do the magic in terms of promoting right cereals in semi-arid zones. The question is can the second green revolution, as it seems to be panning out, save the farmers in the long run?

## Food bill and fiscal discipline

Mr Pranab Mukherjee's 2012 speech makes no provision for specific programmes under the Food Bill. Obviously such provisions would have made the fiscal deficit calculation go awry. The minister has pledged to lower the fiscal deficit to 5.1 per cent of the gross domestic product (GDP) in 2012-13 from 5.9 per cent this fiscal. The minister has also pledged to keep the total subsidies below two per cent of the GDP but one wonders how this challenge can be taken up given the expenses on the Food Security Programme. One does not expect the Bill to be passed by the Parliament before November-December, 2012. The estimated annual expenditure of the Food Security Programme now stands at Rs 112,205 crores. The question of how the threat to the fiscal discipline can be dealt with remains unanswered.

## The farmers' plight

The government's policy of supporting the model of 'green revolution' while preferring sustainable agriculture is baffling. The cost of chemical agriculture advocated by the green revolution has gone up while yield per unit area is coming down. A recent media report states that in West Bengal, the application of 20-25 kgs of chemical fertiliser per 'bigha' (14,400 sqft) costs about Rs 240 for urea and Rs 450 for DAP; the yield was 11 quintal per bigha. After the application of

## Box 2: Steps towards achieving the goals of National Mission on Sustainable Agriculture

Contributing 21 per cent to the country's GDP, accounting for 11 per cent of total exports, employing 56.4 per cent of the total workforce, and supporting 600 million people directly or indirectly, agriculture is vital to India's economy and the livelihood of its people. The proposed national mission will focus on four areas crucial to agriculture in adapting to climate change, namely dryland agriculture, risk management, access to information, and use of biotechnology.

### 1. DRYLAND AGRICULTURE

Out of the net cultivated area of approximately 141 million hectares, about 85 million hectares (60 per cent) falls under the dryland/rain-fed zone. Accordingly, to realise the enormous agricultural growth potential of the drylands in the country and secure farm-based livelihoods, there is a need to prevent decline in agricultural yields during climatic stress. Priority actions on dryland agriculture with particular relevance to adaptation will be as follows:

- Development of drought-and-pest-resistant crop varieties
- Improving methods to conserve soil and water
- Stakeholder consultations, training workshops and demonstration exercises for farming communities, for agro-climatic information sharing and dissemination
- Financial support to enable farmers to invest in and adopt relevant technologies to overcome climate related stresses.

### 2. RISK MANAGEMENT

The agricultural sector may face risks due to extreme climatic events. Priority areas are as follows:

- Strengthening of current agricultural and weather insurance mechanisms
- Development and validation of weather derivative models (by insurance providers ensuring their access to archival and current weather data)
- Creation of web-enabled, regional language based services for facilitation of weather-based insurance
- Development of GIS and remote-sensing methodologies for detailed soil resource mapping and land use planning at the level of a watershed or a river basin
- Mapping vulnerable eco-regions and pest and disease hotspots
- Developing and implementing region-specific contingency plans based on vulnerability and risk scenarios

### 3. ACCESS TO INFORMATION

Although many information channels are available to farmers, none of them offers need-based information in an interactive mode. Supplying customised information can boost farm productivity and farm income, and the following areas deserve priority:

- Development of regional databases of soil, weather, genotypes, land-use patterns and water resources. Monitoring of glacier and ice-mass, impacts on water resources, soil erosion, and associated impacts on agricultural production in mountainous regions
- Providing information on off-season crops, aromatic and medicinal plants, greenhouse crops, pasture development, agro-forestry, livestock and agro-processing.
- Collation and dissemination of block-level data on agro-climatic variables, land-use, and socio-economic features and preparation of state-level agro-climatic atlases

Photo: S. Mahalanobis

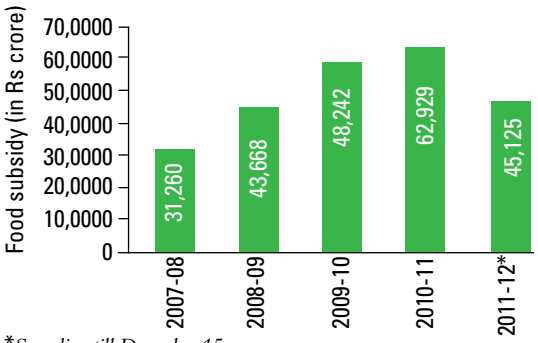
### 4. USE OF BIOTECHNOLOGY

Biotechnology applications in agriculture relate to several themes, including drought proofing, taking advantage of elevated CO2 concentrations, increased yields and increased resistance to disease and pests. Priority areas include:

- Use of genetic engineering to convert C-3 crops to the more carbon responsive C-4 crops to achieve greater photosynthetic efficiency for obtaining increased productivity at higher levels of carbon dioxide in the atmosphere or to sustain thermal stress
- Development of crops with better water and nitrogen use efficiency which may result in reduced emissions of greenhouse gases or greater tolerance to drought or submergence or salinity
- Development of nutritional strategies for managing heat stress in dairy animals to prevent nutrient deficiencies leading to low milk yield and productivity

Source: Technical Document, NAPCC, 2008

**Table 1: Expenditure on Fertiliser, Food, Petroleum Subsidy**




*Spending till December 15
*Source: Department of Food and Public Distribution*

**Appeared in *Down To Earth*, January 16-31, 2012**

Subsidy (in Rs crore)

| | 2010-11 (Actuals) | 2011-12 (BE) | 2011-12 (Revised) | 2012-13 (BE) |
|---|---|---|---|---|
| Fertiliser | 62,301 | 49,997 | 67,198 | 60,974 |
| Food | 63,844 | 60,573 | 72,823 | 75,000 |
| Petroleum | 38,371 | 23,640 | 68,481 | 43,480 |
| **Total** | **173,419** | **143,569** | **216,296** | **190,015** |

*BE: Budget estimate*

• *Expenses of food security programme will be Rs 112,205 crore. The budget has made no provision on this count for the next fiscal*

**Appeared in *The Telegraph*, March 19, 2012, Kolkata**

70-75 kgs fertiliser per bigha with urea costing Rs 360 and higher price of DAP, the yield has come down to six quintals. So while fertiliser use has gone up threefold, the yield has come down to nearly 50 per cent (Mukherjee, March 22, 2012, The Telegraph, p. 11). One would need to examine the break up and wherefore of the eastern region reporting enhanced agricultural production.

Add to this plight of farmers in getting farm credit. Barring Punjab and Haryana, few states have considered the suggestion of involving the Primary Agricultural Credit Cooperative Society (PACCS), while 'Kisan Cards' – offering advances in three instalments- have not found favour with the farmers. Thus far, traditional sources of credit, the moneylenders, remain the only source of funds, even at an astronomically higher rate of interest, since it is hassle free and easily accessible. With a bumper crop, the agony multiplies. The lack of effective procurement and marketing policies became more evident in the current season of 2011-12. As many as 21 farmers have committed suicide in two districts of West Bengal alone in four months.

The new UPA government has announced a minimum support price of Rs 1,080 and Rs 1,110 per quintal for coarse and finer varieties of rice, respectively. The government has directed farm agencies like Benfed, Confed and the Essential Commodities Supply Corporation to set up procurement camps. When the farmers take the produce to the rice mill owners, the latter is directed to pay by cheque, to eliminate middlemen. However, easy access to credit and a ready market continue to be the main hurdles. The factors that put a spanner in the government's procurement policy works are:

- Lack of an institutional response to procurement camps(a special drive for procurement, for example)
- Farmers' inability to reach rice mills without middlemen
- Lack of hassle-free credit facility
- Lack of access to centrally-aided crop insurance scheme to compensate crop loss in adverse weather

It is held that instead of advocating FDI in agrarian sector and making the farmers a collateral agency, the government would be better advised to ensure institutional support in procurement, allowing the middlemen to help farmers on a fixed commission, making banks offer hassle-free credit and making crop insurance a national agenda.

Most importantly, a rethinking is needed around the roadmap towards the goal of sustainable agriculture. Promoting ecological agriculture with the use of resilient traditional varieties, the use of biofertiliser and pesticide, micro-irrigation through rainwater harvesting and setting up farmers' seed banks could prove to be assets for a worthwhile agenda of food security. Even M. S. Swaminathan, the father of the Green Revolution now advocates a five-point agenda of soil health card for every farmer, better water management, promotion of appropriate seed varieties, cropping systems and crop livestock integrated system, better credit and insurance for farmers and assured remunerative marketing and infrastructure for crop movement.

The question is: how can the active involvement of farmers of six eastern states, Bengal, Bihar, Jharkhand, Chhattisgarh, Orissa and eastern U.P be ensured. One expects that farmers would be too eager to take up such a package if worked out sensibly and offered with adequate training and real time, the co-operation of the government, insurance and banking sectors. •

The author is director, Centre for Environment & Development, Kolkata

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COVER STORY

# AGRICULTURE AND THE BUDGET

## Not by outlays alone

**Surinder Sud**

Photo: Carlos Sillero



The Union budget 2012-13, the first year of the 12th plan, presented to the Parliament on March 16, 2012, by the finance minister, Mr Pranab Mukherjee, falls short of outlining any overarching strategy that can catapult agriculture into the four per cent-plus growth trajectory that has eluded this sector since the 8th plan (1992-97). It has, however, endeavoured to fix several nuts and bolts and has created enabling provisions that can lend, even if indirectly, the much needed support to the farm sector at some selected spots.

This approach seems to be part of the strategy to address the supply bottlenecks in agriculture, which have been listed among the five broad objectives of the budget. Some of the SOPs and duty concessions mooted in the budget are aimed at wooing private investment in agriculture and its allied and supporting sectors, including agricultural research, fertiliser, irrigation, livestock and food processing, to assist in achieving this objective.

## Agriculture outlay

Prima facie, the total plan outlay for agriculture for next financial year has been stepped up by 18 per cent from Rs 17,123 crores in 2011-12 to Rs 20,208 crores in 2012-13. This increase of around Rs 3,085 crores marks one of the largest hikes in outlays in recent years. Consequently, the budgetary support for different departments under the agriculture ministry gets perceptibly increased in 2012-13 compared to 2011-12 (*See Table-I*).

When viewed as a proportion of the total central plan outlay envisaged in the budget, the hike for the farm sector seems too slim though. The agricultural outlay amounts to just 2.71 per cent of

**Table - I: Outlays for departments under the Agriculture Ministry (Rs in crores; rounded off)**

| Name of departments | 2012-13 | 2011-12 | % increase |
|---|---|---|---|
| Department of agriculture and cooperation | 20208 | 17123 | 18 |
| Animal husbandry dairying and fisheries | 1910 | 1600 | 19 |
| Agricultural research and education. | 3220 | 2800 | 15 |

*Source: PIB*

the total plan outlay. This can, by no yardstick, be deemed sufficient, considering the vastness of this sector and the need for boosting public investment as a pre-requisite for private investment. About 52 per cent of the country's total workforce is still employed in the farm sector (NSS 66th Round). This implies that more than half of the Indian population depends on agriculture for sustenance. This sector, therefore, deserved far higher allocation of resources than is earmarked in the budget.

A large part of the additional funding proposed in the budget goes to the agriculture ministry's flagship farm development programme, the Rashtriya Krishi Vikas Yojana (RKVY). A special feature of this scheme that contributed to its success is the flexibility it offers to the state governments in spending the central funds. This scheme, notably, allows the states to take up situation-specific development projects rather than pursuing those that are thrust upon them by the centre. The livestock and marketing sectors, too, get perceptible increases in the allocation for the next fiscal (*See Table – II*)

## Mission mode approach

With the avowed motive of supplementing the development efforts under the RKVY and providing a shot in the arm to some key areas that require focused attention, the finance minister has proposed the strengthening of some existing subject-specific National Missions and launching a few new ones. The total number of missions in the farm sector will, thus, be raised to five in the 12th plan. These missions include:

The National Food Security Mission that is mandated to bridge the gap in the present and the potential yields of paddy, wheat, pulses, millets and fodder. The ongoing mission-mode schemes, such as the Integrated Development of Pulse Villages, the promotion of nutri-cereals and the Accelerated Fodder Development Programme, will now become a part of this mission.

The National Mission on Sustainable Agriculture and Micro Irrigation is being taken up as part of the National Action Plan on Climate Change. The Rainfed Area Development Programme will be merged with this.

The National Mission on Oilseeds and Oil Palm will strive to raise production and productivity of oilseeds and oil palm to bridge the wide schism in the domestic supply and demand for edible oils which is currently made up through imports.

The National Mission on Agricultural Extension and Technology is a new mission which will focus on adoption of appropriate technologies by farmers for improving productivity and efficiency in farm operations.

The National Horticulture Mission will concentrates chiefly on diversification of the horticulture sector. It will now work for boosting the production of saffron as well. In the allied sectors, agro-processing has received an impetus in this budget by bringing it under the mission-mode system. The objective, apparently, is to help cut down post-harvest losses that are currently estimated at between 20 and 40 per cent of the total production. Besides, it would encourage value-addition of food products that can, indirectly, facilitate higher returns for the farmers.

For this purpose, the budget has proposed to set up a new "National Mission on Food Processing"

**Table - II: Break up of plan allocation for major schemes (Rs in crores; rounded off)**

| Scheme | 2012-13 | 2011-12 | % increase |
|---|---|---|---|
| Rashtriya Krishi Vikas Yojana | 9217 | 7811 | 18 |
| National Food Security Mission | 1780 | 1250 | 42 |
| National Horticulture Mission | 1360 | 1200 | 13 |
| Agricultural Marketing | 864 | 336 | 157 |
| Agri Extension and Training | 736 | 618 | 19 |
| Intensive Dairy Development Programme | 80 | 24 | 228 |
| Dairy Entrepreneurship Development | 125 | 78 | 60 |
| Veterinary Services and Animal Health | 460 | 432 | 6 |
| Agricultural Education | 563 | 481 | 17 |

*Source: PIB*

Photo: S. Mahalanobis

funded entirely by the centre. This mission will work in collaboration with the state governments to address the local food processing needs. Food processing is widely hailed as a sunrise sector that has been clocking a healthy eight per cent annual growth in the past five years. The new mission is intended to spur faster expansion of this vital sector.

## Eastern agriculture

It seems to have been realised, albeit belatedly, that the second green revolution has to take shape in the country's eastern region which has, till recently, remained by and large unaffected by the earlier green revolution. This region is richly endowed with almost all natural resources needed for agriculture, including deep fertile soil, copious water and plentiful sunshine. What has been lacking is the modernisation of agriculture through new yield-boosting technologies. To overcome this lacuna, a new scheme was launched last year to usher in the green revolution in the eastern India with a token allocation of Rs 400 crores.

The budget for the next financial year sets apart a far higher sum of Rs 1,000 crores for this scheme. The areas to be covered under this scheme include Bihar, West Bengal, Orissa, Assam, Chhattisgarh, Jharkhand and east Uttar Pradesh. Agriculture in many of these states has begun to turn the corner as reflected by an impressive seven million-tonne surge in paddy production in this zone in the 2011

### Gleanings from the State of Indian Agriculture Report 2011-12

- (While) agriculture is a critical sector of the Indian economy... its contribution to the overall gross domestic product (GDP) of the country has fallen from about 30 per cent in 1990-91 to less than 15 per cent in 2011-12.
- The last two Five Year Plans mentioned that for the economy to grow at nine per cent, it is important that agriculture should grow at least by four per cent per annum.
- Achieving an 8-9 per cent rate of growth in overall GDP may not deliver much in terms of poverty reduction unless agricultural growth accelerates.
- It is interesting to note that while public investment in agriculture is critical and important, in actual terms, it forms about 20 per cent of the total investment in agriculture; 80 per cent comes from the private sector. In the early 1980s, for example, the share of the public sector and private sector (including household sector) in gross capital formation in agriculture was roughly equal, but by the early 2000s, the share of the private sector was four times larger than the share of the public sector at 2004-05 prices.

## "Food security and agricultural development in the coming decades would depend upon scientific and technological breakthroughs in raising productivity" - Finance Minister

kharif. Further impetus to farming in this area can help make this tract not only self-sufficient but, in fact, surplus in foodgrains. That would reduce the pressure on the agriculturally progressive but natural resource-stressed areas like Punjab, Haryana and western Uttar Pradesh in the north and Andhra Pradesh and adjoining states in the south to feed the nation. It would also facilitate the diversification of agriculture in these states, especially diversion of area from labour-intensive and water-gulping paddy to other high-value crops, which are in short supply and which can fetch higher income for the farmers.

### R&D and technology transfer

Acknowledging the fact that contemporary agriculture needs to be science-based, Mr Mukherjee observed in his budget speech: "Food security and agricultural development in the coming decades would depend upon scientific and technological breakthroughs in raising productivity. We have to develop plant and seed varieties that yield more and can resist climate change." He, therefore, announced several measures to promote research and development (R&D) in this field.

These include special grants for some selected agricultural universities and other organisations engaged in research and capacity building in agriculture and related activities. Under this programme, Rs 25 crores has been allocated to the Institute of Rural Management (virtually an agri-business school) at Anand in Gujarat; another Rs 50 crores has been allocated for establishing a world-class centre for water quality in Kolkata

Photo: Scott Liddell

with a special focus on arsenic contamination of water; Rs 100 crores has been allocated to the Kerala Agricultural University; Rs 50 crores to the University of Agricultural Sciences, Dharwad in Karnataka; Rs 50 crores to the Chaudhary Charan Singh Haryana Agricultural University, Hissar; Rs 50 crores to the Orissa University of Agriculture and Technology; and Rs 100 crores to the Acharya N.G. Ranga Agricultural University, Hyderabad.

Some of these institutions have already begun drawing up plans for gainful utilization of these funds. The Hyderabad agricultural varsity, for instance, plans to utilise it for strengthening research on the state-of-the art sciences like nano technology and biotechnology besides finding environmentally-safe bio-agents for pest control. The Dharwad farm university intends to set up an incubator entre in food sciences and technology. This Centre will encourage commercial projects based on these sciences. The Kerala agricultural university, on the other hand, is planning to use its grant for improving teaching and research facilities,

## Gleanings from the State of Indian Agriculture Report 2011-12

- India currently has an overall irrigation potential in the country of 140 million hectares, out of which only about 109 million ha have been created, and around 80 million hectare utilized. The current efficiency levels of public surface irrigation schemes (major and medium irrigation schemes) can be substantially improved through appropriate institutional reforms, better management and incentive environment.
- The average size of operational holdings in India has diminished progressively from 2.28 hectare in 1970-71 to 1.55 hectare in 1990-91 to 1.23 hectare in 2005-06. As per the Agriculture Census 2005-06, the proportion of marginal holdings (area less than one hectare) has increased from 61.6 per cent in 1995-96 to 64.8 per cent in 2005-06. This is followed by about 18 per cent small holdings (1-2 hectare), about 16 per cent medium holdings (more than two to less than 10 hectare) and less than one per cent large holdings (10 hectare and above).
- The increasing divergence between the growth trends of the total economy and that of agriculture and allied sectors suggests an under performance by agriculture. It is also significant that unlike the overall economic growth pattern, agricultural performance in India has been quite volatile – the Coefficient of Variation (CV) – during 2000-01 to 2010-11 was 1.6 compared to 1.1 during 1992-93 to 1999-2000). This is almost six times more than the CV observed in the overall GDP growth of the country indicating that high and perhaps increasing volatility is a real challenge in agriculture, which is likely to increase in the years to come in the wake of climate change.
- There is a wide variation in the performance of different states. During 2000-01 to 2008-09, the growth performance of agriculture in Rajasthan (8.2 per cent), Gujarat (7.7 per cent) and Bihar (7.1 per cent) was much higher than that of Uttar Pradesh (2.3 per cent) and West Bengal (2.4 per cent).
- In the case of wheat, the growth in area and yield have been marginal during 2000-01 to 2010-11 suggesting that the yield levels have plateaued for this crop. This suggests the need for renewed research to boost production and productivity.

launching new generation courses and introducing e-governance in the university administration.

The Anand-based rural B-school wishes to use these funds for revamping the campus to facilitate admission of larger number of students and introducing greater professionalization of management courses aimed at promoting rural entrepreneurship and enterprises. For the Haryana farm varsity, the additional resources will come handy to replace their obsolete research equipment and strength overall infrastructure for research and education. Apart from these special grants for specific institutions, the budget provides Rs 200 crores to recognise and incentivise outstanding agricultural research by offering rewards for institutions, where the research is carried out, and the team of scientists, who succeed in achieving the scientific breakthroughs.

The government already provides some tax incentives to private corporate houses for investing in agricultural R&D. The most significant among these sops is the weighted deduction of 200 per cent on expenditure incurred on in-house R&D facilities. These incentives are proposed to be continued for five more years beyond March 31, 2012.The budget indeed does not end at merely encouraging agricultural R&D but goes a step further to ensure that the technology being developed at the private agricultural research facilities actually reaches the farmers. For this, the budget moots tax incentives for investing in technology transfer and agricultural extension activities. A new provision is being made

Apart from these special grants for specific institutions, the budget provides Rs 200 crores to recognise and incentivize outstanding agricultural research by offering rewards for institutions where the research is carried out



Photo: S. Mahalanobis

in the Income Tax Act to allow weighted deduction of 150 per cent on expenditure incurred by business entities on agricultural extension services. This provision will, however, come into effect from April 1, 2013. This measure assumes significance as the state extension services have become mostly dysfunctional and the private sector's entry in the field of farm extension has become imperative.

## Agriculture credit

Agricultural credit has regularly been getting the attention in the budget for several years now. The targets for the flow of total institutional credit to the farm sector have steadily been stepped up every year since 2003-04. Going by the official numbers, the actual disbursement of loans has invariably exceeded the targets in all these years. In the current year (2011-12), about Rs 3,40,716 crores are estimated to have been lent to the farm sector by the public, private and cooperative banking institutions till December 31, 2011. Indications are that by the end of March 2012, the year's goal of Rs 4,75,000 crores is likely to be hit or even exceeded. (*See Table – III*)

**Table - III: Annual targets and actual flow of credit to farm sector in recent years (Rs in crores)**

| Year | Target | Actual disbursement |
|---|---|---|
| 2004-05 | 104500 | 125309 |
| 2005-06 | 141000 | 180485 |
| 2006-07 | 175000 | 229400 |
| 2007-08 | 225000 | 254658 |
| 2008-09 | 280000 | 301908 |
| 2009-10 | 325000 | 384514 |
| 2010-11 | 375000 | 446779 |
| 2011-12 | 475000 | 340716 (as on 31.12.2011) |

*Source: PIB*

Continuing the welcome trend of boosting the availability of institutional credit to this sector, Mr Mukherjee has once again raised the target for the credit disbursement in 2012-13 by Rs 1,00,000 crores to a total of Rs 5,75,000 crores. To ensure that the bank loans are available to farmers at a reasonable interest, the budget seeks to continue the ongoing interest subvention scheme for providing short term crop loans to cultivators at seven per cent interest per annum in 2012-13 as well. Moreover, an additional subvention of three per cent on the interest will be available to those farmers who repay the loans on time. This measure can be expected to come handy for those farmers who are linked to the banking sector to avail credit

### Gleanings from the State of Indian Agriculture Report 2011-12

- Another aspect, which impacts agricultural development relates to subsidies. The biggest of all these input subsidies is the fertiliser subsidy and there are clear indications that it has led to an imbalanced use of N, P and K in states like Punjab and Haryana and has also contributed to deteriorating soil conditions. The expenditure on subsidies crowds out public investment in agriculture research, irrigation, rural roads and power.
- With the Indian economy growing at eight per cent and the elasticity of fruits and vegetables and livestock as compared to cereals, there is an increasing pressure on the prices of such high-value perishable commodities. The per capita monthly consumption of cereals has declined from 14.80 kgs in 1983-84 to 12.11 kgs in 2004-05 and further to 11.35 kgs in 2009-10 in the rural areas. In the urban areas, it has declined from 11.30 kgs in 1983-84 to 9.94 kgs in 2004-05 and to 9.37ks in 2009-10. The agricultural production basket is still not fully aligned to the emerging demand patterns.
- It is estimated that by 2050, about 22 per cent of the geographic area and 17 percent of the population will face absolute water scarcity. The per capita availability of water, which was about 1,704 cubic metres in 2010 is projected to be 1,235 cm in 2050. Therefore, priority to efforts is needed in water development as also management in multiple areas as policy, governance, regulation as well as management with science and technology backup.
- About eight per cent of the total area in the country is prone to cyclones and 68 percent of the area is susceptible to drought. Most of the drought prone areas lie in the arid (19.6 per cent), semi-arid (37 per cent) and sub-humid (21 per cent) areas of the country that occupy 77.6 per cent of its total land area of 329 million has. It is estimated that the flood-affected area has more than doubled in size from about five per cent (19 million has) to about 12 per cent (40 million has) in the past five decades.

at favourable terms for meeting their cash needs to purchase farm inputs and incur other expenditure on crop cultivation.

Equally significant is the finance minister's move to concede the farmers' genuine demand for interest subvention even on the loans taken against their produce kept in the recognised warehouses for sale in the off-season when the prices are usually high. The same amount of interest subvention, as is applicable to the crop loans, will now be available on post-harvest loans taken by farmers against the negotiable warehouse receipts for a period of six months after the harvest of the crop.

The budget, moreover, allocates Rs 10,000 crores to the National Agricultural and Rural Development Bank (NABARD) for refinancing the Regional Rural Banks (RRBs). A short-term RRB Credit Refinance Fund is being constituted to enhance the capacity of these RRBs to disburse short-term crop loans to small and marginal farmers. The utility of the Kisan Credit Cards (KCC) is sought to be enhanced by transforming them into smart cards. These will, hence, be capable of being used at ATMs as well to meet the farmers' immediate needs for hassle-free cash.



## Irrigation

The finance minister has not only appreciated the need for water as a means for raising crop yields but also its scarcity value as a natural resource. He observed: "Unless we recognise water as a resource, the day is not far when water stress will start threatening our agricultural production. Focus on micro irrigation schemes to dovetail these with water harvesting schemes is necessary." Consequently, he announced that some structural changes were being introduced in the Accelerated Irrigation Benefit Programme (AIBP) to maximise benefits from investments in this field. He has hiked the outlay for the AIBP by 13 per cent to Rs 14,242 crores. Besides, the rate of withholding tax on interest payments on external commercial borrowing for construction and maintenance of irrigation dams has been reduced from 20 per cent to mere five per cent for next three years.

## Fertilisers

The budget moots a slew of fiscal concessions for the fertiliser sector to serve broadly two objectives. First, to bring down the cost of fertilisers which will, in turn, help reduce fertiliser subsidy. Second, to attract fresh investment in creation of additional

Photo: S. Mahalanobis

## India's import dependence is as high as 25 per cent in urea (N), 70 per cent in di-ammonium phosphate or DAP (P) and as much as 100 per cent in muriate of potash or MOP (K)

fertiliser production capacity, especially for urea, to reduce dependence on imports to meet the rapidly growing demand. At present, the import dependence is as high as 25 per cent in urea (N), 70 per cent in di-ammonium phosphate or DAP (P) and as much as 100 per cent in muriate of potash or MOP (K). It is noteworthy that urea is the only fertiliser that can be produced in India without any imported component. This is subject to the condition that adequate natural gas, the most preferred feedstock for urea manufacture, is made available to the fertiliser plants. The other fertilisers necessarily have to be either imported in the finished form (as in the case of potassic fertilisers) or produced from imported raw material or intermediaries. This is because the country does not have any indigenous source of fertiliser-grade phosphate or potash.

As part of the strategy to woo investments for augmenting fertiliser production capacity through setting up of new plants or expansion of the existing ones, the budget offers reduction in the withholding tax on interest payments on external commercial borrowing from 20 per cent to five per cent for the fertiliser sector for next three years. Besides, the import of equipment for urea projects has been exempted from the basic customs duty of five per cent for the next three years. In addition, the budget has raised the investment-linked deduction on capital expenditure to 150 per cent from the present 100 per cent for fertiliser plants. However, this provision will be effective from April 1, 2013 and will, thus, apply to the assessment year 2013-14 and subsequent years. These measures, the finance minister hoped, would help the country in becoming self-sufficient in urea, the most consumed nitrogenous fertiliser, in the next five years.

Mr Mukherjee, however, did not touch upon the issues of fertiliser sector reforms, notably



## The recommendations of the taskforce headed by Mr Nandan Nilekani on the use of information technology for direct transfer of fertiliser subsidy have been accepted

deregulation of urea and bringing this fertiliser under the nutrient-based subsidy (NBS) system, though he hinted at some reforms in the manner of disbursement of fertiliser subsidy. Currently, the NBS applies to most non-urea fertilisers, including the DAP, MOP and single superphosphate (SSP). The prices of these fertilisers have also been decontrolled. In his budget speech last year, Mr Mukherjee had categorically stated that the government was actively considering extending the NBS scheme to urea as well but he chose not to mention this issue in his budget speech this year.

In a move towards the direct payment of subsidy to farmers, Mr Mukherjee announced that the recommendations of the taskforce headed by Mr Nandan Nilekani on the use of information technology (IT) for direct transfer of fertiliser subsidy have been accepted. Consequently, a mobile-based fertiliser management system (FMS) is being put in place to track the movement of fertilisers and the subsidies. This system would be rolled out throughout the country in 2012 itself. Following that, the process of direct transfer of subsidy to the fertiliser retailers, to begin with, and to the consumers, subsequently, would be launched in phases. "This will benefit 12 crores farmer families, while reducing the expenditure on subsidies by curtailing misuse of fertilisers," the minister said.

An indication of slashing the fertiliser subsidy came in the form of the finance minister's declaration that the overall subsidy burden on the exchequer would be limited to below two per cent of the gross domestic product (GDP) from the present around 2.5 per cent. Subsequently, the subsidies' bill would be brought down to 1.75 per cent of the GDP over the next three years without, of course, curtailing the food subsidy. Clearly, the reduction in the overall subsidy burden will have to be achieved by reducing the subsidy outgo on two other major subsidised items – fertilisers and petroleum products.

This apart, the minister has also proposed to trim the basic customs duty on some water soluble and liquid fertilisers, other than urea. As a result, the

Photo: Rita Juliana



applicable duty will come down from 7.5 per cent to five per cent in some cases and from five per cent to 2.5 per cent in some others. This will help bring down subsidy on imported fertilisers. With these measures, the total outgo on fertiliser subsidy is expected to be brought down to Rs 60,900 crores in the next year, as provided for in the budget. According to the fertiliser industry sources, the actual fertiliser subsidy this year (2011-12) may exceed Rs 90,000 crores.

In another significant announcement, Mr Mukherjee stated that the entire amount of fertiliser subsidy due to the fertiliser industry would henceforth be paid in cash rather than in the form of bonds as was done, at times, in the past. This has generally been hailed by the fertiliser industry as a forward-looking step though the industry is apprehensive about new investment in this sector till the government commits to make the required natural gas available to this sector.

## Other fiscal SOPs

Duties on several other items and equipment used in agriculture and allied activities have also been reduced to bring down their costs. As a result, the customs duty will drop to 2.5 per cent from 7.5 per cent on a wide range of farm machinery, including sugarcane planters, root or tuber crop harvesting machinery, weeders and rotary tillers as well as on their parts that are used to assemble them locally. Similar import duty reduction will be extended to installation of mechanised handling systems and pallet racking systems in agricultural mandis or warehouses meant for storing horticultural produce. The equipment for green houses and protected cultivation of horticultural and floricultural crops will attract an import duty of just five per cent.

The customs duty on specified coffee plantation and processing machinery has been reduced from 7.5 per cent to five per cent. Furthermore, the budget seeks to exempt some key services related to agriculture and livestock sectors from the service tax which has, otherwise, been raised in this budget from the existing 10 per cent to 12 per cent. Maintaining that agriculture and animal husbandry enjoy a very important place in Indian lives. The Finance Minister declared that practically all services required for cultivation, breeding, production, processing and marketing, up to the stage of actual sale of the product in the primary markets, would be included in the proposed new negative list of services that would not be covered under the service tax. This should, hopefully, bring down the cost of these services for the farmers. ●

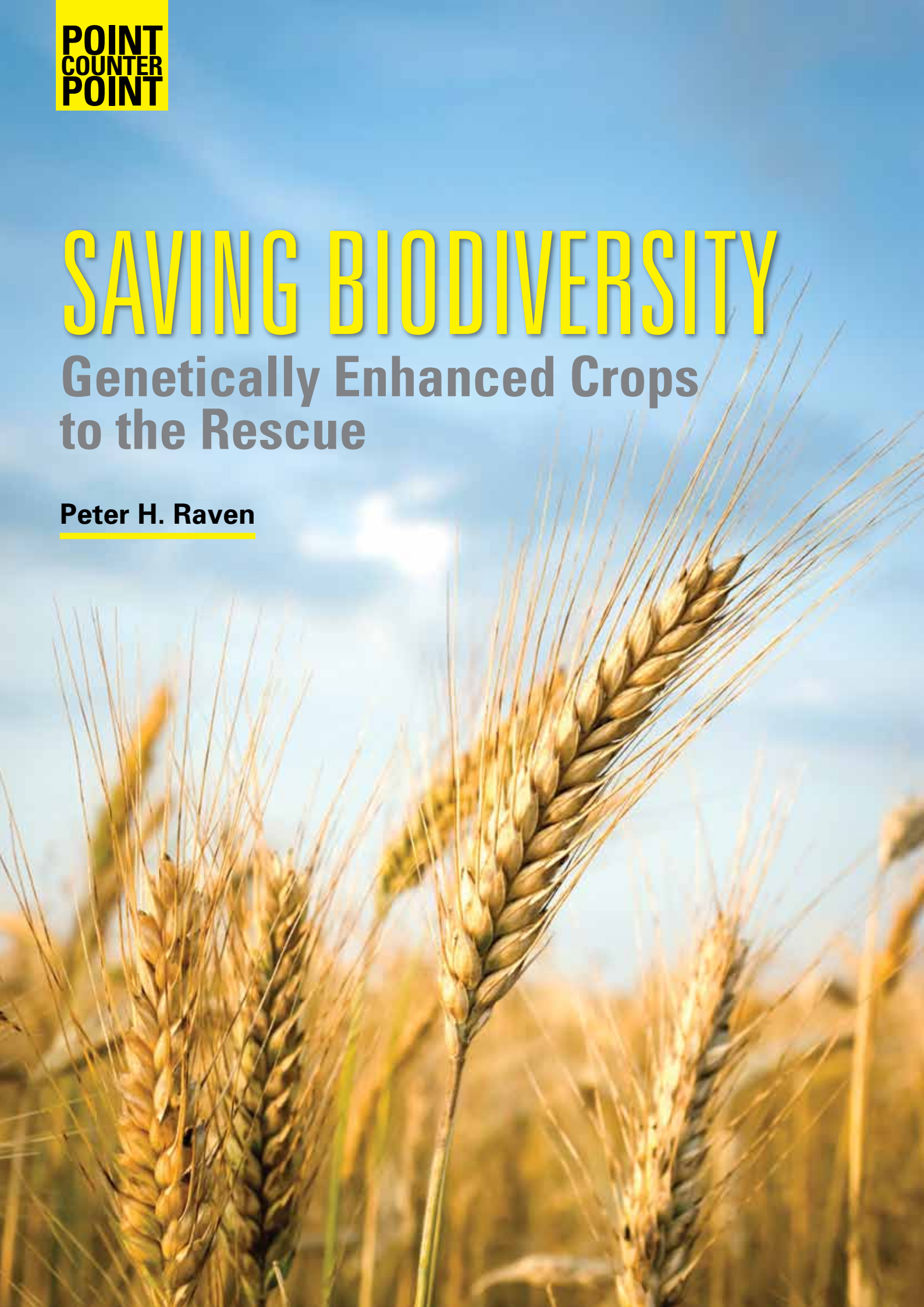
The author is a veteran agriculture journalist and a Consulting Editor with the Business Standard.

POINT COUNTER POINT

# SAVING BIODIVERSITY

## Genetically Enhanced Crops to the Rescue

Peter H. Raven



The current dispute about the advisability of approving transgenic brinjal for cultivation in India calls into question the effects that transgenic (genetically enhanced; GE) crops might have in diminishing the genetic diversity of that particular crop and its relatives or of biodiversity in general. The opponents of GE crops assert that such effects might occur but present no valid evidence to support their claims. There are fallacies in such arguments and, therefore, a need to emphasise the positive relationship between efficient and productive agriculture and the survival of biodiversity at large. Indeed, misleading arguments continue to retard the acceptance of improved, more productive crops in many regions of the world.

Ecological problems that are often held to arise from the cultivation of GE crops have nothing to do with the way in which such crops were produced. Agriculture itself is highly destructive of biodiversity: the best way to limit the damage associated with it is to enhance food production on the land that is cultivated so as to have the maximum chance of leaving natural and semi-natural areas alone. During the roughly 10,500 years since people first began to cultivate crops, the population of the world has increased from several million people to the current level of seven billion, with a projected growth by an additional two to two and a half billion over the next 40 years. Figuratively speaking, every night, when the people of the world sit down to dinner, an additional 200,000 people join them!

The requirements for feeding the current world population are such that most of the land that can be cultivated has already been put to agriculture, with some 11 per cent of the world's land surface devoted to producing crops and an additional 22 per cent used as pasture, mostly on wild lands that cannot sustain grazing indefinitely. Even with such extensive agriculture, nearly a billion people are malnourished; their brains are not developing properly; their bodies are wasting away. Of them, some 100 million are on the verge of starvation at any given time. There is a need to produce an estimated 50 per cent more food than is now done to feed the world's growing population and there is few additional land that can be converted for farming. Clearly, this means that this land must be used as productively as possible.

As soon as wild plants were brought into cultivation, the genetic diversity of those plants started decreasing. Early agriculturists instinctively selected individual plants with the most favourable characteristics to plant in successive years and the variability of crops was gradually reduced. With the advent of scientific agriculture and accurate measurements of inherited characteristics about two centuries ago, the pace of crop improvement accelerated and the genetic homogeneity of cultivated fields increased. Following major advances, such as the development of hybrid maize in the 1930s, cultivated fields have tend to become even larger and less diverse genetically.

Against this background, it should come as no surprise that farmers would choose to grow transgenic (GE) strains of the crops in some of these large fields if such strains proved to be more productive than the ones they had grown earlier. To say that the GE strains were used somehow to make the fields more homogenous genetically, however, is patent nonsense: that process was already well underway before more advanced ways of improving the productivity and the underlying properties of crops, such as transgenic methods, were developed. Where hundreds of genetically distinct strains of crops are grown, as for example soybeans in the United States and elsewhere, GE versions of all of the individual strains have been produced; the overall diversity remains as high as it was before transgenic methods were applied for their improvement.

## Two kinds of biodiversity

Agrobiodiversity: The discussion of the effects of cultivating GE crops on biodiversity is often confused because one considers, at the same time, the diversity of the crops themselves and their relatives and about biodiversity in general. As pointed out, the genetic diversity of crops has decreased steadily ever since plants were first brought into cultivation. In fact, people have made a conscious effort to develop crops with uniformly high productivity, based on such features as drought

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resistance; pest or disease resistance; and larger and more abundant seeds, fruits, leaves or whatever parts of the plant were ultimately harvested for use.

Since the fundamentally important studies of the Russian scientist N. I. Vavilov in the 1920s and 1930s especially, attention has been focused on the wild relatives of cultivated plants as important sources of genetic diversity. The centres of origin of crops began to be seen as places where a high degree of variability often persists in the crop species and its relatives. Examples of such centres would be southern Mexico for maize; the western plains of the United States for sunflowers; and temperate eastern Asia for soybeans. The wild relatives of rice persist from India to China.

Improved crop varieties are cultivated in the areas from which the crop was originally derived. The genetic features of such modified crops may be incorporated into the patterns of variability of wild or weedy crop relatives in these areas and the features both of the crop and of its relatives may be altered as a result. In addition, many varieties ("land races") of the cultivated plants may be grown together in the centres of origin or elsewhere. The total genetic variability of the wild and weedy relatives and the land races is significant for the future modification of the features of the crops and an appropriate level of concern expressed has been about how to maintain the overall genetic variability of the system as the features of the crops themselves are altered

Photo: S. Mahalanobis



## Probably the most effective way to protect genetic diversity is to conserve seed samples representing the genetic diversity that now exists in seed banks

continually and new strains are introduced.

As an example of this kind of situation, consider maize cultivated in Mexico. The pollen of maize is spread by the wind, so that genes move readily between adjacent fields. In the milpas (hillside mixed fields), maintained by indigenous and rural people in Mexico many distinct varieties of this important crop are grown. These so-called land races are important resources of genetic diversity but those cultivating them are changing their features continuously. For example, when hybrid maize was introduced in Mexico in the 1930s, its characteristics began to show up in the ever-changing land races. These land races should not be thought of as fixed strains that have persisted for all time but more like the colours in a kaleidoscope, shifting continuously and being improved, according to the preferences of the people growing them.

To preserve the genetic diversity in such a system, the changing preferences of the farmers must be taken into account. The matter is made more complex by the survival of the wild relatives, teosintes, from which cultivated maize was derived, and which differ profoundly in their characteristics from cultivated maize. Teosintes are difficult to cross successfully with cultivated maize but occasional hybridisation and the incorporation of new genes into both the wild plants and their cultivated derivative does occur.

Against such a background, what should be



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done to preserve as much as possible of the genetic diversity of maize and its relatives? It is clearly not reasonable to expect farmers to go on cultivating older strains that are not as productive or not seen by them as being as desirable as the newer ones. We could theoretically subsidise the farmers to keep growing traditional strains but there has been no real movement to do so. Probably the most effective way to protect genetic diversity is to conserve seed samples representing the genetic diversity that exists now in seed banks, both for cultivated, weedy, and wild plants of a given crop, as has been done for maize by CIMMYT, a vitally important agricultural institution in central Mexico. In addition, there should be attempts to protect the wild strains and species related to the crops in the areas where they grow naturally.

The relationships of other crops to their wild relatives may, of course, differ from the situation that has been described for maize. For example, in sunflowers (Helianthus annuus) it has been demonstrated that transgenes moving from cultivated plants to wild members of the same species have reduced herbivory and increased fecundity in the wild plants. In this case, like that of maize, it is not apparent why changes of this sort in wild plants would pose an environmental problem. The relationship of cultivated brinjal to its wild and weedy relatively might well be similar. In most cases, of course, crops do not grow with their wild relatives or with related weeds, so the possibility of gene flow does not exist.

The question of herbicide resistance is more


Photo: S. Mahalanobis

complex because related species or strains of weeds may become resistant to the chemicals applied for weed control to the crops and thus become more serious pests in the fields than they were initially. In any case, the spread of herbicide resistance does not pose any apparent problem for the survival of biodiversity; the subject under discussion here. In summary, the movement of transgenes (genes that have been transferred to GE crops to improve their characteristics) among the crop and its wild or weedy relatives appears to pose no challenge for the survival of the biodiversity of the crop and its relatives.

## Biodiversity overall

The second kind of biodiversity that merits discussion and analysis here is biodiversity in general, the estimated 12 million kinds of organisms and the additional millions of kinds of bacteria and archaea that form the basis of life on Earth. Not only did the life activities of these organisms mould the characteristics of the soil itself, the waters, and the atmosphere over the past billions of years, they continue to maintain them now and to sustain mankind. Thus plants supply all of the food man needs directly or indirectly and a major proportion of the medicines; ecosystems as a whole maintain the soil and water on which mankind depends; and the beauty and diversity of organisms nourishes humankind spiritually. A major portion of human progress in the future will depend on the ability to maintain biodiversity and use the properties of organisms sustainably, often doubtless in ways that one does not yet recognise.

One of the advances that organismal diversity now makes possible is the ability to transfer genes from any kind of organism to any other kind – transgenic technology. Many kinds of medicines are produced by transgenic technology and virtually all beer and cheese produced in the world is manufactured using enzymes produced by transgenic organisms as well.

It is, therefore, fundamentally important to ask whether transgenic crops threaten the existence of biodiversity. One knows many reasons why species are becoming extinct so rapidly. Among them is the destruction of natural habitats, often for agriculture or because of urban sprawl, forestry or other reasons; the spread of invasive species, pests, and pathogens; and climate change. Climate change is advancing rapidly and according to estimates published in the latest report of the Intergovernmental Panel on Climate Change (IPCC) might itself be responsible for the loss of a fifth or more of all species by the end of this century.

As a result, more than half of all species on Earth, the great majority of which will be unknown to man at the time of their disappearance, may become extinct by the end of this century. The loss of such a high proportion of organisms would lead to significant loss of man's ability to rebuild global sustainability. Clearly, mankind has a great common interest in slowing down the loss for its common present and future benefit.

Paradoxically, one of the advances that organismal diversity now makes possible is the ability to transfer genes from any kind of organism to any other kind – transgenic technology. Many kinds of medicine are produced by transgenic technology and virtually all beer and cheese produced in the world is manufactured using enzymes produced by transgenic organisms as well. In view of this unquestioning acceptance, it is not clear why we have built up such a concern about GE crops based on their properties and the degree of risk involved and why people continue to spread such large amounts of misinformation concerning this area.

What is the relationship between the cultivation of GE crops and biological extinction? As one has noted, agriculture itself is a powerful driver of biological extinction and low-grade agriculture more so than intensive, productive agriculture because it impacts more species over wider areas. Agriculture has traditionally been focused on the exclusion of plants and animals those being cultivated from the productive fields and its success has often been judged in part by the degree to which such exclusion has been successful. It is clearly beneficial to maintain habitats among the fields where pollinating insects and other beneficial organisms can persist but the fields themselves, by and large, are kept as free from biodiversity as possible.

In the case of GE crops that lessen or eliminate the need for pesticide applications to the crops, the neighbouring natural communities actually benefit by not receiving substantial amounts of such chemicals on a regular basis. In general, it is clear that the relationship between the cultivation of GE crops and the survival of biodiversity is a positive one and it is a complete mystery why the Convention on Biological Diversity has historically put such a premium on restricting the cultivation and movement of such crops between countries.

There is no reliable scientific evidence that anything produced by GE crops affects non-target biodiversity negatively and there is massive evidence that by avoiding the application of pesticides at the levels routinely applied, for example, in Europe, major negative effects both on biodiversity and on human health are avoided.

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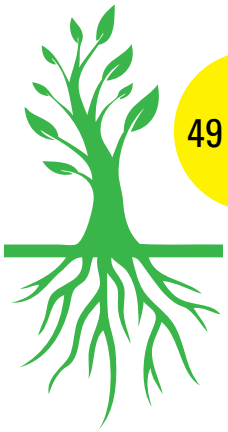



## Effects of GE crops on non-target species

It has been claimed that those crops that have been modified to produce Bt toxin, a natural toxin from the bacterium Bacillus Thuringiensis may, in turn, have a detrimental effect on other organisms that were not intended as targets. The case of the monarch butterfly (Danais Plexippus) in North America provides an illustrative example. It was claimed, on the basis of laboratory experiments, that Bt toxin engineered into maize was expressed in such large quantities in the maize pollen that it could, when shed, coat milkweed plants (Asclepiadaceae), the food plants of monarch caterpillars, so thickly that it would poison them. In fact, such a thick coating of pollen virtually never occurs in nature. Moreover, nearly all maize strains grown currently have been engineered so that Bt toxin is not produced in the pollen. Thus the proposed problem proves to have been an illusion.

Photo: S. Mahalanobis

On cotton fields in the Southeastern USA more than 20 applications of pesticides per crop have conventionally been applied, with obvious and directly traceable environmental effects. Other crops are even more highly doused in poisons, especially in Europe, where the chemical industry sells much higher amounts of pesticides and herbicides than in the USA. In view of these considerations, it is understandable why such a high proportion of cotton cultivated throughout the world has been engineered to produce Bt toxin, with higher yields and improved human health a characteristic outcome.



## Cultivating GE crops appears to enhance the survival of biodiversity by raising the productivity of the cultivated land and thus avoiding assailing new lands that are often rich in biodiversity

In a second case, it was claimed, on the basis of faulty laboratory data, that Bt toxin from residual plant material was poisoning caddis fly larvae (Trichoptera) in streams near the maize fields; such effects simply do not hold for the concentration of the toxin that could occur in such streams. There is no reliable scientific evidence that anything produced by GE crops affects non-target biodiversity negatively and there is massive evidence that by avoiding the application of pesticides at the levels routinely applied, for example, in Europe, major negative effects both on biodiversity and on human health are avoided.

In many tests, invertebrates have been found to be much more abundant and diverse in agricultural fields where GE crops were being grown than in those subjected to the continual application of pesticides, not a surprising outcome. On cotton fields in the Southeastern USA, for example, more than 20 applications of pesticides per crop have conventionally been applied, with obvious and directly traceable environmental effects. Other crops are even more highly doused in poisons, especially in Europe, where the chemical industry sells much higher amounts of pesticides and herbicides than in the USA.

In view of these considerations, it is understandable why such a high proportion of cotton cultivated throughout the world has been engineered to produce Bt toxin, with higher yields and improved human health a characteristic outcome. Why many Europeans should have chosen to live in unhealthy, highly polluted environments rather than use the new, much cleaner technologies remains a mystery.

### Conclusions

Cultivating GE crops in general appears to enhance the survival of biodiversity by raising the productivity of the cultivated land and thus avoiding assailing new lands that are often rich in biodiversity. In fact, the environmental damage caused by traditional farming systems, involving the application of large amounts of chemicals to the crops, poses a much greater threat to biological diversity, as it does to human health. It is proper to consider additional genes proposed for inclusion in commercial crops individually in terms of their effects, however. In that sense, the close consideration given to the new transgenic crops should also be applied to other novel strains of crops regardless of the ways in which they were produced. ●

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# IFFCO KISAN SEZ - Nellore

## Creating India's First Agribusiness Based Special Economic Zone


Realizing the need to bring in high value agribusiness activity into the country, **IFFCO, Asia's largest** fertilizer company through its SPV IFFCO Kisan SEZ Ltd., has embarked on the development of an **Agri-based Special Economic Zone based on the** concept of **"Agroparks" (AP) in Nellore** in the state of **Andhra Pradesh.** The developer has brought in the expertise and lessons learned by the northwestern European agro sector in **innovating metropolitan agriculture by forging strategic consultants with Wageningen University and Research** Center, the Netherlands and YES BANK Limited.

•IFFCO Kisan SEZ is a notified Multiproduct Special Economic Zone spread over 1000 hectares located 22 KM North of Nellore, A.P. It comes with many customs duty and sales tax concessions provided by the government of India to promote economic activity in notified Special Economic Zones. The concept of Agropark is based on the principles of sustainable development, i.e.

- Application of principles of industrial ecology, i.e. mutual use of waste and by-products.
- Advantages of scale through industrial production and processing.
- Improvement of farmers position as a preferred supplier.
- Independence from seasonality and land during the whole year of production cycle
- Significant reduction of costs

Locational Advantages: IKSEZ is at a distance of just 50 Km from Krishnapatnam Sea Port, a new mega port on the east coast, and within a reach of three hours drive from Chennai International airport.

Nellore, the catchment area which is the Heart of Indian Aquaculture, is a strong source of various agricultural produce such as paddy, sugarcane, fruits & vegetables (especially tomato) and is a prime source of supply of poultry products and milk to near by metropolis. Major fruits include mango, citrus, papaya, banana & sappota.

• Infrastructure that is being provided: The IFFCO Kisan SEZ comes with a bundle of world class common infrastructure conforming to international standards including internal roads, high quality rain harvest supported water supply, uninterrupted power supply, common operation, maintenance and management of security, logistics, ICT etc. Moreover, the Agropark offers a framework of industrial ecology, managing waste and byproducts thus significantly reducing costs.

• Land at IFFCO Kisan Project site is being offered on long term lease basis for 33 years for potential Entrepreneurs for setting up their units on attractive terms and conditions. For further details contact our website www.iffcokisansez.com or can be obtained from,


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Photo: Jack Arrington



# Unfounded Claims Around Bt Crops

It has been argued that Genetically Engineered (GE) crops do not pose a threat to biodiversity – no more than agriculture-based on the selection of certain varieties over others, normally does. When wild varieties are brought into cultivation, their genetic diversity decreases over time. So the only way of preserving biodiversity is to improve productivity of land under agriculture, leaving as much as possible to natural vegetation. Also, the movement of trans-genes among crops or among land races or traditional varieties of those crops, do not pose a threat to biodiversity. Dr G. V. Ramanjaneyulu, Executive Director, Centre for Sustainable Agriculture, Secundrabad, provides a counterpoint in an interview with Bhavdeep Kang

**Ramanjaneyulu:** The argument that domestication of wild varieties of a crop, involving a preference for certain varieties over others, negatively impacts biodiversity, is valid. However, GE crops have an additional, destructive impact. The GE crops tend to monoculture genes not only in a crop but across crops. For example, for pest resistance, we are depending on only Bt genes (various delta endotoxins produced by bacillus turiengenises). There are more than 600 hybrids of

Bt cotton, all with the same gene. They all fight off the same pest with the same mechanism. This is not merely true of Bt cotton but of other GE crops as well, like Bt brinjal.

Once a pest is resistant to the Bt toxin, produced by the Bt gene, it retains that resistance across all crops. This tends to develop resistance faster. Where in every crop there are varieties that display resistance to any pest, the mechanism of pest resistance would very different. For instance, hair on the plant leaf will make it more resistant to sucking pests, like aphids. This holds good with other traits as well. When there are varieties with diverse genetic background, this does not happen because the mechanisms differ in each variety.

The contention that movement of trans-genes does not impact biodiversity is untrue. The transgene transfer via pollen flow is an established fact. It does effect in two ways. First, these genes are not naturally occurring. So when they are transferred to wild varieties, willy nilly, whether the farmer wants them or not. Even farmers who want organic, GM free crops may not have a choice in the matter if their fields are contaminated with these transgenes. Some traits like herbicide resistance may create super weeds as well.

Second, these transgenes come with patents/ proprietary rights attached, laying farmers/other scientists open to legal action. Recently, the ICAR was forced to withdraw a desi Bt cotton variety developed by the University of Agricultural Sciences, Dharwad, when it was found to have a Monsanto's gene. There were several such cases that happened globally, which has put farmers at risk.

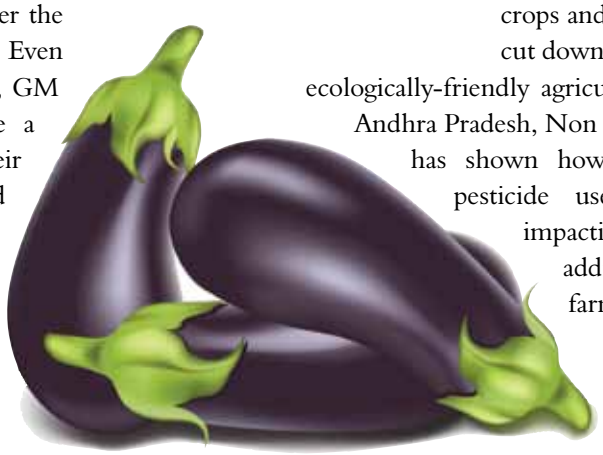
**Bhavdeep Kang:** ***Transgenic organisms are already being used to produce medicines and enzymes used in the manufacture of cheese and beer. Does that not show transgenes do not pose an ecological or health threat when released into the environment?***

**Ramanjaneyulu:** In the case of medicines and enzymes used in manufacturing food products, let us bear in mind that it is the product that is being released into the environment and not the gene or the organism carrying the gene. The transgenes themselves are held in containment. You can have control over products. However, once the transgene is released into the environment, as happens when you practice agriculture, you do not have control over them.

**Bhavdeep Kang:** ***It has been argued that by cutting down on the need for pesticides/agrochemicals, GE crops actually help in maintaining biodiversity and create a much healthier environment for humans. Is it really a choice between GE crops and pesticides or is there a viable alternative?***

**Ramanjaneyulu:** This argument is completely unfounded. All our experiences have shown that there is no reduction in pesticide use after the introduction of Bt cotton. It is not as if we are presented only with a choice between GM crops and pesticides. We need to cut down on both. The option is ecologically-friendly agriculture. For example, in Andhra Pradesh, Non Pesticidal Management has shown how to bring down the pesticide use drastically without impacting yield and without adding additional cost to farmer.

All our experiences have shown that there is no reduction in pesticide use after the introduction of Bt cotton

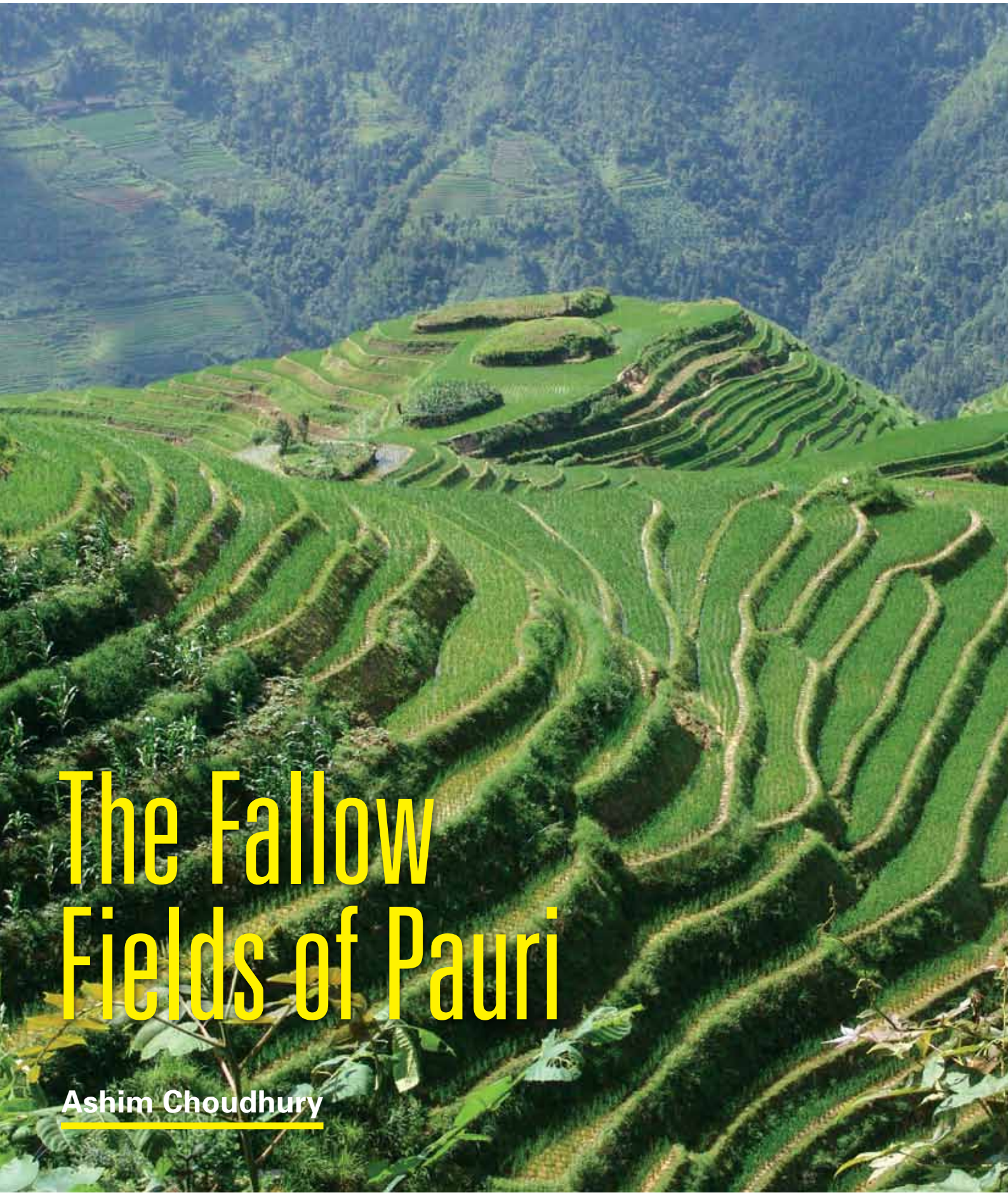


Courtesy 2muchvector.com

**Bhavdeep Kang:** ***Do you agree that GE crops boost productivity? Has Bt cotton not improved yields in India by a factor of 70 per cent and doubled cotton output in the last 10 years?***

**Ramanjaneyulu:** This is not true at all. GE crops do not boost productivity. There is not a single GE crop bred to improve yield so far. Even the claims that Bt crops yield more by reducing pest damage, for instance are unfounded. The data shows that there was an initial increase in productivity when Bt cotton was first introduced, between 2002-04, to the extent of 70 per cent. This was when the area under Bt cotton was 5.6 per cent of the total area under cotton in India. If you look at the period 2004-10, the area under Bt cotton had increased 85 per cent but the yield had gone up by only two per cent. ●

AGRI FOCUS



# The Fallow Fields of Pauri

Ashim Choudhury

Photo: Paul Segal

The small fertile steppes in the hills of Pauri Garwhal are lying idle. They are troubled by a host of issues; most importantly, lack of irrigation. The pine plantations of 'chipko' have further aggravated the water problem but the farmers are currently facing a new scourge: raids from monkeys and wild boars! Thus once verdant and fecund farms, the steppes now lie desolate and everyone in the foothills of Pauri Garhwal is complaining.

My first complainant is Dashrat Singh Rawat of Gumkhal, at a height of 1,560 meters some 35 kilometers from Kothdwar on the winding road to Pauri. "Kheti (farming) has virtually stopped here for the last two years because of the monkeys and pigs." Dashrat has some 20 bighas of land scattered in the hills of which just a little over a bigha is under the plow. Like many others in the area, he has now switched to farming turmeric and ginger. "The pigs do not eat them. Everything else they dig up. Over ground, the monkeys are destroying everything from fruits to vegetables," he laments.

Nearby, in Gum village, I hear a similar refrain. Mahavir Rawat, 54, says, "Kheti bundh hai (agriculture has stopped) even the orange and other fruit trees are not spared." He points to a distant hilltop and says: "I remember, as a child, the lush green fields of urad and mandva there." Till the other day these hills were rich producers of cereals like maize, jhangora (a unique rice used in kheer), cholai and lentils like urad, rajma, tur and soybean. Fruits, like grapes, oranges, malta and nashpati (pears) also grew in abundance until the monkeys arrived. The animals were allegedly dumped here, brought in truckloads from Haridwar during the 2010 Kumbh Mela. Some allege they were dumped from as far as Delhi. The wild boars were always there, mostly confined to the lower reaches of the hills but their numbers have grown rapidly (pigs reproduce fast) pushing them to the farms and making them bolder. "Every night they come in groups of 20 or 30. They can tear you apart," Dashrat Singh says, fear writ large on his face.

So what will happen if the hill slopes are not tilled as in the past? "Bhuk se marenge (We will die of hunger)," comes Rawat's reply. Another ex-army man from Gum (the hills are full of them), Captain Mahavir Singh, is not quite a farmer but likes to potter around his patches of land, some five bighas. He avers that the wild population has shot up beyond manageable limits. "We have not sown wheat for the last two-three years because of the menace," he says.

"With no farms to plough, we have even sold our oxen. If the land is not tilled for long it will become fallow," he fears. He also feels that, thanks to climate change, the rains have become erratic. "Around this time (February-March) of the year, we always had some rain. Not now." The dry post-winter hills, a stark contrast to its monsoon greenery, are a clear testimony that all is not well.

While the ex-servicemen of Gum, thanks to their sarkari pension, can manage life without farm outputs, for Bimla Devi, a 50-plus grandmother, life has become unbearable. She lives on a small patch of land downhill close to the road in Hattnia, Dugadda block. With folded hands she pleads: "Babuji, do something. We have to live." The monkeys and boars have usurped her land, she says. "Now I have to have buy foodgrain; buy vegetables!" Not long ago she earned a living, selling vegetables that grew on her land. "Now even the ration we buy these monkeys snatch away," she recounts a recent incident. As we chat, as though to corroborate her story, a bunch of monkeys arrive on the roof of her kutcha house daring the kids and adults alike with their bared fangs. The invisible wild boars invariably raid at night digging up the farms for food.

Monkeys and wild pigs are not the only reason for Bimla Devi's cup of woes though. Her bigger worry – and that of several others – is the lovely chirs (pines) that whisper in the winds, covering the hilly slopes of Pauri Garhwal. She folds her hands in supplication again: "We have to remove the chirs that are encroaching on our farms and homes." How can the green cover of pines be harmful? "They suck the water from the ground," Bimla's neighbour explains. "Their needle-like leaves cover the entire hills choking the grass. Without grass how can our cattle survive?" he asks. Moreover, the pine and its leaves catch fire easily giving rise to frequent forest fires. "As long as they are away from our homes and farms we have no problem," says Bimla Devi repeating her request to banish the pines. In the earlier days, the hills were covered with an array of trees and plants that also provided fodder for cattle but the government's poorly thought out 'chipko' plan has driven away other varieties, also leading to a loss of precious plant diversity.

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That the pine cover has led to a reduction of other varieties, particularly oak, which retain water and help recharge ground water, is common knowledge in the hills. Satyendra Rautela of Jehri khal, perched at a height of 1,660 meters, holds a similar view. "Nothing grows underneath the

Photo: Iris Scherer

pines and they are the cause of frequent fires. In the coming years, the ground water will go down further. Our lands will become banjar (barren)," he says. Pointing to a banj (oak), he says, "Banj ke jar mein pani ka srot rehta hai (The root of the oak holds water). In the earlier days, Rautela says, they would grow two crops and vegetables during the rains. With the chirs drying up the natural aquifers and chashmas (springs): "farming is giving us diminishing returns and less than 10 per cent of the farms is being ploughed." The officials echo the feelings of the villagers.

Virendra Kumar Gildial, assistant agriculture officer in Jehri khal, agrees: "If farm output does not match with the inputs and effort that go into it what is the use?" According to Gildiyal over half the people have quit the hills for the plains; particularly the educated and the better off. "In my own village, Sukoli Malli, which is right behind the tourist town of Lansdowne, only 10 or 12 of some 45 families remain. The rest have left," he says. Palayan (exodus) is another issue. Palayan has adversely affected farming on the one hand and as returns diminish, more people are fleeing the hills. Gildial oversees a seed bank, which distributes high-quality seeds from Pantnagar to the surrounding villages. "Where do we sow them?" he asks, referring to the near absence of farming because of the monkeys and boars. He is also aware of the chirs drying up the soil. "It is true that the oak retains water and helps replenish ground water. We recommend the oak and other trees, not chir wherever we have any integrated project," says Gildiyal.

He is, however, unaware of any government efforts to replace the pines with oak. That, he says, is the domain of the forest department, not that he is aware of any exchange of information between the departments of forests and agriculture. That, going by current government standards, is a tall ask. Irrigation, thanks to the hilly terrain, is virtually non-existent in the entirely rain-dependant state.

Meanwhile, Uttarakhand's avowedly "organic" tag is also under threat. In pursuit of the organic tag, the state has employed master trainers of organic farming in the state's 95 blocks under the central 'Rashtriya Krishi Vikas Yojana'. The trainers are a demoralised lot though, earning barely Rs 6,000 a month. After seven to 10 years of service they remain "temporary." A master trainer, speaking on condition of anonymity, says, "We are not getting what we are worth. Even our salaries are uncertain." Ironically, the agriculture office under the block development office in Jehri khal is also promoting use of chemical fertilisers. Sacks of chemical fertilisers are stacked in the stores of the agriculture office in Jehri khal. "We give them free but you can see there are few takers," says the agriculture officer.

These are larger issues that the state forest and agriculture departments need to sit across the table and address. Right now though, the hills – the Bimla Devis, the Rawats and the Rautelas – are crying out to be saved from raiding animals. By all accounts it will not be an easy task knowing the hilly terrain. The region is contiguous to the buffer zone of the Corbett National Park. Nobody is even talking about the problem for fear of the outrage that it will spark among the greens! ●

The writer is a freelance journalist and author of the forthcoming novel '*The Sergeant's Son*'.

PROFILE

# YUAN LONGPING

# China's Father of Super Rice



In his 80s now, Professor Yuan Longping (born September 1930) is hard at work at farm research. That is his life and his contribution to solving the problem of hunger is unparallel. Professor Yuan is the "father of hybrid rice." He came up with high-yielding hybrid rice in the 1960s, when China was suffering serious famine. Ten years later, he succeeded in inventing a new variety that produced a 20 per cent higher yield than the common types of rice. Professor Yuan is still chasing his dream and working like a farmer. He jokes: "If I am not in the field, I must be on my way there."

Professor Yuan graduated from Agriculture department in the Southwest Agricultural Institute and has been working on agriculture education and the research in hybrid rice since he left the institute. He is currently an academician of the Chinese Academy of Engineering, the Director General of China National Hybrid Rice Research and Development Center, the Honorary President of the Hunan Academy of Agricultural Sciences in China and the Vice-Chairman of Hunan Provincial Committee of the Chinese People's Political Consultative Conference.

His achievements that largely solved the food shortage and provided a solution to worldwide starvation, won him many international awards: the Gold Medal Award for the Outstanding Inventor from the United Nations World Intellectual Property Organisation, the Science Prize of United Nations Educational, Scientific and Cultural Organisation, the Rank Prize for Agronomy and Nutrition of the United Kingdom, the Medal of Honor for Food Security and Sustainable Development of the United Nations Food and Agriculture Organisation and the Fukui International Koshihikari Rice Prize of Japan.

Professor Yuan started the research of the indica hybrid rice in 1964. He first discovered male-sterile rice and then brought forward the hybrid paddy and carried out experiments on the farm, making a breakthrough in 1973, becoming the first person to develop indica hybrid rice. The new technology was tested in many areas of South China in 1974 and 1975 and then extended to other areas. China became the first country that is capable of producing hybrid rice. Prof. Yuan is the first scientist who successfully altered the self-

pollinating characteristic of rice and realised large-scale farming of hybrid rice. This earned him the title "Father of Hybrid Rice."

His pioneering work in hybrid rice breeding and production techniques has revolutionised rice cultivation in China, establishing its world leading position in hybrid rice research. From 1976 to 1987, the total cultivated area of the hybrid rice developed by Prof. Yuan reached 1.1 billion mu (15 mu=1 hectares) and increased the rice yield by 100 billion kg. In 1979, the hybrid rice was transferred as China's first agro-technology patent to the United States. The hybrid rice developed by Yuan is planted on farmlands all over China and plays an important role in increasing China's grain production. It made possible the feeding of 22 per cent of the world population on only seven per cent of the world's total arable land!

In 1995, Prof. Yuan made his breakthrough in two-line hybrid rice, a new breed that further increased the national output. Later, he devoted himself to research in "super rice," a superb marriage of hybrid technology with the production-enhancing genes of wild rice. The "super" moniker refers to both superior yield and quality.

In 2000, Prof. Yuan completed phase one of the super rice project sponsored by the Ministry of Agriculture and its yield had reached 700 kg per mu. When the second phase concluded in October 2004, a year ahead of schedule, the output per mu was as high as 847 kg. According



**Fig. 1. Area and yield of hybrid rice in China.**

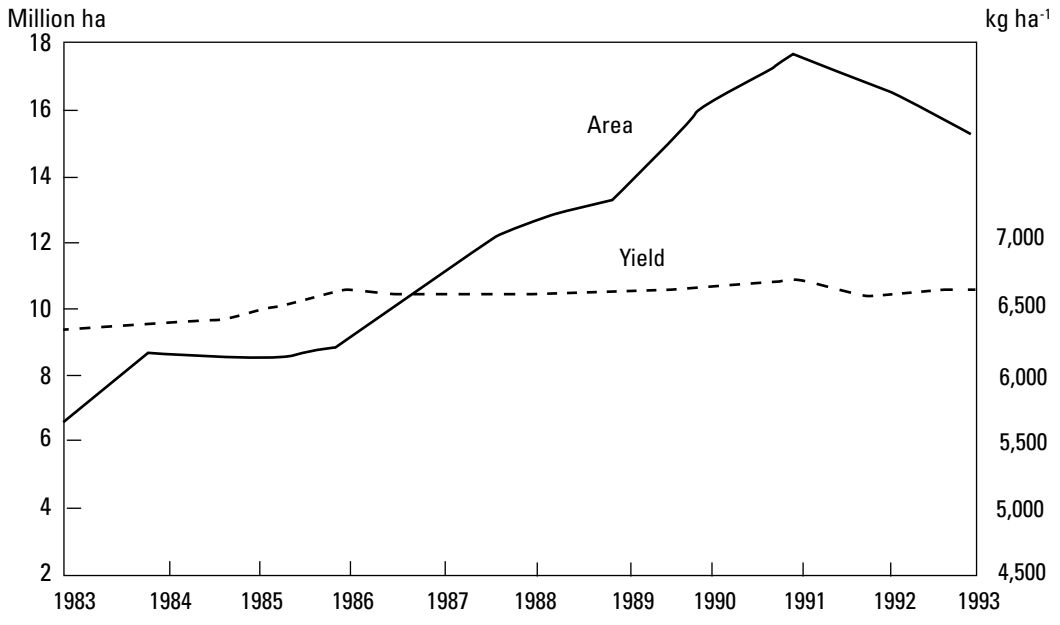

Photo: Diana Myrndorff



## Since 1949, more than 10,000 new hybridizations have been developed. China has realised five to six large-scale strain updates, which allowed large yield increases

to the Agriculture Ministry's plan, phase three should have been completed by 2015, meeting an output target of 900 kg.

Hybrid rice is mainly planted in South China over 250 million mu acres (16.7 million hectares); in other words, 57 per cent of the rice fields across the country. Weather permitting, North China grows japonica rice while South China plants hsien rice, which cannot withstand the freezing winds of the north. "We are researching the japonica rice," Prof. Yuan has high expectations of this project. "If we succeed, the total area of hybrid rice will account for as high as 80 per cent."

Incomplete statistics indicate that since 1949, more than 10,000 new hybridisations have been developed. China has realised five to six large-scale strain updates, which allowed the yield of grain per mu to increase to 330 kgs and the total output to reach 528.5 million tonnes. In 1949, these two measures were only 69 kilograms and 115 million tonnes.

Now, the per capita arable land area for 1.3 billion Chinese people is 1.3 mu. When the population grows to 1.6 billion in 2030, it will reduce to one mu. Referring to food security, Prof. Yuan asserts: "With the right policies that prompt farmers to plant and our advanced technology and high quality seeds, I see no problem."

As one of the world's main crops, rice is planted

## Since 1996, the Chinese government has dispatched more than 700 agricultural experts and technicians to Mauritania, Ghana and five other countries



**Table 1. Yield of hybrid rice compared with conventional rice from 1986 to 1993 in China.**

| Year | Conventional variety (kg ha$^{-1}$) | Hybrid rice (kg ha$^{-1}$) | Hybrid over conventional (%) |
|---|---|---|---|
| 1986 | 4,857 | 6,600 | 36 |
| 1987 | 4,779 | 6,615 | 38 |
| 1988 | 4,539 | 6,600 | 45 |
| 1989 | 4,787 | 6,615 | 38 |
| 1990 | 5,315 | 6,675 | 26 |
| 1991 | 4,551 | 6,565 | 44 |
| 1992 | 4,986 | 6,636 | 33 |
| 1993 | 4,950 | 6,675 | 35 |

in more than 120 countries and regions. Half the world's population depends on rice but the yield per mu remains at about 200 kg. "China can solve its food shortages and also help others," Prof. Yuan says with pride. "The total area of rice paddies globally is 2.2 billion mu (147 million hectares) and at least half of that is applicable to hybrid varieties. If the hybrid rice area were expanded by 100 million mu, another 15 million tons of rice could reach the world's tables, feeding 10 billion people, assuming everyone needs 150 kg every year."

As early as the 1990s, the Food and Agriculture Organisation of the United Nations (FAO) listed hybrid rice as the prime solution for developing countries grappling with food shortages. Over the past few years around 240 million mu of the paddy worldwide has been converted to hybrid variety each year, with an annual extra output that can feed 70 million people.

Since 1996, the Chinese government has dispatched more than 700 agricultural experts and technicians to Mauritania, Ghana and five other countries under the framework of the South-South Cooperation, a programme for developing countries to work together on solutions to their common development challenges. This co-operation is jointly implemented by the Chinese government, the FAO and beneficiary governments.

According to Chen Deming, Minister of Commerce, China, the government has trained about 2,000 new specialists in hybrid rice for more than 50 countries. He announced this human resource contribution in his keynote speech at the Ministerial Forum of International Cooperation on Chinese Hybrid Rice Technology and the creation of agricultural technology demonstration centers in the Philippines and Liberia. In the Philippines,

hybrid rice has been cultivated in large fields, producing three or more tons per hectare than a regular rice paddy. India also learnt from China's experience, increasing its production by 30 per cent.

Since 2007, China has exported 50,000 tonnes of hybrid rice seeds. Prof. Yuan regarded Vietnam as a big hybrid rice success story. As early as the 1980s, farmers in northern Vietnam on the border with Guangxi started to import hybrid seeds and plant them in their paddies. Chen Deming also mentioned that Vietnam imported and planted Chinese hybrid rice in 1993, which produced yields 20 per cent higher than their local strain. Now the country grows 10 million mu of hybrid variety, with an average yield of 400 kg per mu. This application has enabled Vietnam, previously a food importer, to become the second largest rice exporter in the world, following Thailand.

In 1999, the Yuan Longping High-tech Agriculture Co. Ltd was granted by the Ministry of Commerce the title of Chinese Foreign Aid Hybrid Rice Technology Training Base. Since then, the company, named after the outstanding scientist, has been commissioned by the ministry to train nearly 1,000 agricultural management officials and technicians from 50 countries and regions in Asia and Africa.

Apart from hybrid rice, the Chinese government has also increased its aid to foreign countries in the form of fishery and livestock technologies. Experts, farm machinery and fertilisers have all been shipped abroad. According to Chen Deming, China has helped implement 216 farming projects in 62 countries, and trained 20,000 officials and technicians from developing nations as part of skills transfer.

At the Beijing Summit of the China-Africa Cooperation Forum in November 2006, President Hu Jintao promised to construct 10 agricultural demonstration centres and the dispatch of 100 senior agricultural experts for Africa. In September 2008, Premier Wen Jiabao announced a series of projects to assist developing countries at the UN High-Level Meeting on Millennium Development Goals. This included increasing the number of agricultural technology demonstration centres to 30, the number of agricultural experts and technicians to 1,000 and opening agricultural training opportunities in China to 3,000 people from developing countries. A sum of $ 30 million funding was also designated to the FAO to establish a trust fund to help developing countries enhance general agricultural productivity.

As time goes, so does Professor Yuan Longping's career and his dream of the Super Rice! ●

The article has been prepared by the Science & Technology Office, Embassy of China in India

# Ghirsindi Kala
# Finding Hope in Self Help

**Ajay Vir Jakhar**



I travel on the Grand Trunk Road, that historic thoroughfare, first constructed in the 3rd centruy BC when Chandra Gupta Maurya ruled India and then extended by Sher Shah Suri. I am on my way to village Ghirsindi Kala on the banks of Bihar's Falgu river, which finds mention in the Ramayana. This was the region of academic and cultural excellence (CE) in ancient times.

Standing in the mid-day sun, under the shade of a mango tree, I wonder at the state of Bihar. What could have gone wrong, so horribly wrong, for the once culturally and economically rich state to have descended to such a pitiable state? Here, around the 5th century CE was set up at the greatest university and library of the world: the Nalanda university. It was also here, at Bodh Gaya, that Gautam Buddha attained enlightenment. More to the point, it is at the heart of the alluvial plains in the Indo-Gangetic region: the natural heartland for agriculture. Yet it is far from being agriculturally prosperous; the farmers are a sorry lot here and a worse future awaits their children.

Farmers pray to the trees for salvation. The turd tree offers hope: they scrape the bark of the tree and collect the liquid that oozes out in earthen pots. This is an excellent health drink provided it is consumed immediately. If not, it gets fermented into a light intoxicant alcoholic drink. One farmer asks the obvious question: why can this not be bottled and sold like other alcoholic drinks. I wonder: why does a government that seems to be doing wonders in the state not, address a simple issue like this? Cut to the bigger picture: why is the food processing industry fighting shy of Bihar? Clearly the dynamic chief minister realises that unless remedial action arrives at the Bihar countryside, the hype around administrative competence will wear thin. Bihar shows me how not to do things: demonstrable disdain and an opposition to good interventions that could really improve the farmers' lot continues.

Consider the plight of a group of farmers in village Ghirsindi Kala, who talk to me. It is a village with 200 families and a thousand people. At least two thirds of the youth here are engaged in non-farming professions. More than 200 villagers are employed outside Bihar. Only one person has a government job. Geeta Devi and Raghu Yadav are quite vocal about their plight but the story is consistently depressing from village to village here and, indeed, across India. Lack of access to credit; usurious terms; shortage of water; lack of knowledge: the litany of

*Ghirsindi Kala residents: helping themselves*

woes is the same and why not? There is little by way of professional agricultural extension work and filling up the vacuum is the shopkeeper who sells the seeds and also advises the farmer on what seeds to buy, for instance. Obviously, he pushes those seeds that offer him the greatest margins. Nobody is concerned though, as the countryside is an easy prey as to spurious seed sellers. The other big problem is electricity. It is not available for more than four to five hours a day and that too at unspecified times at Ghirsindi Kala.

Even more scare is credit. Geeta Devi says that getting loans is near impossible. Worse is the shocking rate of interest that the moneylender charges: Loans for Rs 1,000 to Rs 5,000 come at a rate of interest of Rs 6 to Rs 8 per Rs 100, per month, which works out to 100 per cent annualised return for the moneylender. There is no state level intervention to bring about reforms in the agri systems in the region. Indeed, the government machinery is conspicuous by its absence.

The livestock fares no better than the humans. The villagers tell me that most of the livestock has been sold because there is not much to feed the animals. Those that have cows say that the yield is a litre of milk a day and there is no effort to increase the yields. No veterinary doctor ever visits the village; no agriculture officer has ever visited the village. I provoke them and insist that this is not possible. A teenager turns out of the crowd and informs me that "official visits are all on paper; the officers do not leave their offices but the paper work is all there." This is the kind of cynicism that resides in the masses about agriculture officials.

It is in this sad state of affairs that the IFFCO Foundation has ventured to intervene. It has helped with the formation of a self-help group with 11 members as a Primary Agriculture Society (PAX). It realised early enough that that self-staining farming is the key to upliftment of the farmer and not just doles. It dug a well and installed a water lift irrigation infrastructure, which the village self-help group regulates, maintains and operates. The membership has grown to 521 members. Of them, 141 farmers get water from the tube well and an 11-member committee after the working of the well. The farmers pay a service charge of Rs 15 per hour and every time the diesel generator is operated to draw water from the well the farmer has to replenish the diesel tank for the quantity that he has consumed. These are simple rules, they work very well and teach an important lesson.

Personally, they reinforce my understanding that the future lies in grouping farmers to negate the otherwise minuscule voice that they have on account of the small individual land holdings. Control and a sense of ownership of the stakeholders in these groups is critical to their success. Simplicity is the other key. Once the structure is simple and the members 'own' it, the rest falls in place. Even myths are dispelled.

In the Ramayana, the river Falgu was cursed by Sita and the popular belief here has been that the wells would run dry when used. This skepticism accompanied the installation of this tube well too: water would run out, the villagers said. It has not. There are major problems facing the river Falgu though. This rain-fed river is no more than a stream following three years of extremely scanty rains. There was not enough water for the river to be recharged. The underground water level too has been continuously receding and there are no other systems for recharging ground water.

Things are changing though, even with the very basic introduction of the tube well. The village sowed a single crop in the yesteryears. With the lift irrigation now available, the farmers who get water through this scheme also grow potatoes and pulses such as masoor dal. The farmers are very happy with this

A lot has changed in the village since the advent of lift irrigation. Regular farming has become possible and fewer people are migrating for work

diversification because they see profit for a change.

Raghu Yadav explained to me the System of Rice Intensification (SRI) that the self-help group has started to practice with help of foundation experts. Plant cultivation is optimised as seeds are planted under the 20 cm X 20 cm regime or two seeds instead of one. Holes are dug by hand and seeds are planted at a depth of between four cms and five cms. Green manuring is used first for better results and the average yield has increased from 40 quintals per acre to 98 quintals per acre. A little extension service has transformed the state of the farmer from one of despair to hope.

A lot has changed in the village since the advent of lift irrigation. Regular farming has become possible and fewer people are migrating for work. Surprisingly, only those belonging to the scheduled castes get MGNREGA work – not the others – at a salary of Rs 120 a day. Labour charges in the village have increased by Rs 350 to Rs 400 per acre. There is share-cropping as well: land owners give land to other farmers on a 50:50 ratio. The land and the inputs are provided by the farmer and the labour is provided by the tenant. One farmer has just purchased the first tractor in the village and most people have mobile phones. Never have MP or MLA funds been given to the village though.

Thus there are problems aplenty. Even financial dues arrive late in this region: the Rs 200 per month old age pension comes six months late and there are the aged who have received no pension for six months. There is no dispensary in the village. No doctor visit the village. The only health care is the annual check-up offered by the foundation. There are no toilets in the village and it got its first school only two years ago; up to class five. Children must go to the adjoining village to study thereafter.

Neglect and inadequacies rule the countryside. A person is entitled to 25 kgs of grains a month but gets only 20 kgs: 12 kgs of rice and 8 kgs of wheat. A farmer is entitled to 2.75 litres of kerosene but gets only 2.50 litres. Does the balance get siphoned off, as has been proved in Punjab or is there inadequate supply? Even the below the poverty line schemes are meant for the favourites. "There are the laal (red coloured) card, the ration card, the APL, BPL and the Antyodaya Scheme but the beneficiaries are chosen by the administration. All those who genuinely qualify do not necessarily get these cards," I am told. In fact, in Ghirsindi Kala, a lot of people who are not eligible for such largesse have got cards, thanks to political patronage. This is the worst aspect of elected governance. Such discrimination only enhances friction in the village.

There are no cold storages or godowns but neither is there a shortage of fertiliser in the village because there is no demand. Only rudimentary implements are used, possibly little improved since the Maurayan times. Rice sells at less than the minimum support price and there is nothing by way of a marketing infrastructure. Mandis or markets are required before production increases and only then can the fruits of the 'second green revolution' accrue to the farmer. Increased production is not a solution in itself but a link in the process.

At Ghirsindi Kala though, the farmers are no longer praying for better crops: bijli, paani aur siksha (electricity, water and education) is what they want first. Education is probably what will get their children out of the vicious cycle of farm poverty. No child can be more cursed than to be born to a farmer in this forsaken land. ●

The writer is a freelance journalist and author of the forthcoming novel 'The Sergeant's Son'.

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