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Issues and Ideas for Indian Agriculture

LEGISLATING RIGHT TO FOOD Mismanagement Straddles India's FOOD ECONOLIUM

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Greenhouse







EDITORIAL



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Hobson's Choice for the Farmer

hether it is the harvesting or sowing season, joy has gone out of the Indian countryside. The harvest is faced with uncertainties around selling and prices while sowing is a bigger cause for anxiety because the Indian farmer does not know what crop will earn him a fair price. Consider a personal dilemma. As a farmer, after my wheat harvest, it is time to sow the next crop. In figuring out what to sow next, I narrowed down to guar, instead of cotton. The price of cotton has dropped by more than 80 per cent since last year due to the flip-flop in the cotton export policy of the Union Commerce Ministry amongst other reasons. Guar, prices, however, have gone up by of over 400 per cent in one year.

I have always sown guar to improve soil fertility rather than as a commercial crop but with its price at Rs 30,000 per quintal, I decided to do a little more research before committing myself. Surprisingly, 85 per cent of the global guar is grown in India and 80 per cent of what is grown here is exported, fetching the country valuable foreign exchange. (Guar gum, it may be noted, finds applications in the fields of oil-drilling, textiles, paper, medicines, cosmetics, mining, explosives, apart from food). Expecting more farmers to sow guar given the high prices that it is fetching, I decided to explore the opportunity to sell 80 per cent of my projected guar output in the futures market as a risk-mitigation strategy. What else could I expect? The government of India has banned futures trading in guar!

Now, guar is not an essential food commodity but vested interests that lost money on the futures market and international buyers manipulated the system to depress prices. A good thing cannot be kept down for long though and the price of guar which, on the day of the ban on futures trading, was prevailing Rs 23,000, is now Rs 30,000.

The Indian Constitution begins with the phrase: "India that is Bharat". Yet, over the years since India became a Republic, the development and progress



"POOR COUNTRIES ARE POOR BECAUSE THOSE WHO HAVE POWER MAKE CHOICES THAT CREATE POVERTY. THEY GET IT WRONG NOT BY MISTAKE OR IGNORANCE BUT ON PURPOSE..."

03

EDITORIAL

"SELFISHNESS IS NOT LIVING AS ONE WISHES TO LIVE, IT IS ASKING OTHERS TO LIVE AS ONE WISHES TO LIVE," WROTE OSCAR WILDE. THAT IS THE PROBLEM ONE ENCOUNTERS WITH MANY INDIVIDUALS AND NGOs... of the country has been so selective to particular regions and communities that, quite literally, India has progressed while Bharat – that resides in the villages – has become another nation. To give Bharat a voice in policy-making it has now become a mission.

Even when the Prime Minister formed a sub-committee on 'Enhancing Agriculture Production and Food Security', he selected members of the Prime Minister's Council on Trade & Industry. Farmers are still not being consulted or not considered intelligent enough to know what is good for them. It is apparent that the industrialist and, increasingly, the those from urban areas influence policy more than any other section of society.

Non-government organizations in India have received donations from overseas worth nearly \$20 billion or Rs 1,00,000 crore, from 2000 till date. One is quite certain that most of this largesse has gone into propagating policies that will not allow Indian citizens and India, as a nation, to be self-sufficient. It appears there are conspiracies to contain India's growth by funding NGOs that oppose constructive policies and propose destructive programmes. Oscar Wilde, had in a different time and under different circumstances said that: "selfishness is not living as one wishes to live, it is asking others to live as one wishes to live". It applies perfectly to that half of India that decides how the other half should live. That is the problem one encounters with many individuals and many NGOs that are cynically referred to as "no good organisations" in the country.

On the issue of enacting a law to ensure right to food for all, the intention is fabulous but the approach has been diabolical. India needs to invest money, time and effort to become self-sufficient in food, more than anything else. It is absurd that the policy of providing cheap food is destined to make farmers, who are supposed to feed the nation, the recipients of cheap foodgrains. Could the money not be used to making farming a profitable profession? If that were the case, the government would not need to provide jobs or food to people.





India is an extractive economy. *Why Nations Fail: The Origins of Power, Prosperity and Poverty*, a book by Daron Acemoglu and James Robinson, points out that India is "saturated by economic institutions that are structured to extract resources from the many by the few and that fail to protect property rights or provide incentives for economic activity. Extractive economies can achieve growth for a while, particularly as today when resources are being transferred from the unproductive agricultural sector into manufacturing but run out of steam eventually. The right policies for growth are not too difficult to determine. The question is why do some regimes deliberately follow a perverse path to economic ruin. The answer: politics. It has been said that poor countries are poor because those who have power make choices that create poverty. They get it wrong not by mistake or ignorance but on purpose".

There is no single solution to providing food security for all Indians but many small and significant changes and solutions put together, right from research, policy, use of traditional and modern knowledge, optimum input utilization, transferring knowledge to farmers while accepting and adopting age old knowledge available with the farmers, is what will together help solve the country's problems. Security means being able to fend for oneself. India can only feed everyone if it first ensures soil health in its farms and the financial health of its farming community. At present it is doing neither.

)ay Jaika

Ajay Vir Jakhar *Editor*

THERE IS NO SINGLE SOLUTION TO PROVIDING FOOD SECURITY. MANY SMALL BUT SIGNIFICANT CHANGES ARE REQUIRED



To the Editor

Gujarat shows the way

Sir, I have been following the reports and articles published by Farmers' Forum very carefully. I believe that while exposing what is wrong with Indian agriculture, you should also highlight such achievements as have been made in Gujarat. There the government has ensured water for agriculture by pursuing the Narmada project and simultaneously enhancing the ground water table by commissioning lakhs of small check-dams. It is important to have a combination of large and small projects to attain long-term sustainability.

> **Rakesh Patel,** Mehsana, (Gujarat)

Any takers for good advice? It was most interesting to read the excellent report, 'Farming: heading towards a bleak future' (Farmers' Forum, March-April 2012), based on the seminar you organised. It was good to hear speakers from across the political divide, including Sachin Pilot from the ruling party, agreeing on the plight of Indian farmers. My main question is will these views and suggestions get reflected in the next Union budget. I appreciated the efforts of Farmers' Forum and hope that you will keep up the good work and organise more such seminars. Some time or the other; somewhere down the line, somebody may well listen.

Manpreet,

Shahpur, (Himachal Pradesh)



Super Longpin

Apropos of your article, Yuan Longpin, China's Father of Super Rice, (Farmers' Forum, March-April, 2012), Prof. Yuan Longping is truly a living legend. It is amazing that he has solved the problem of hunger in China and made it a selfsufficient nation in rice production. Such persons inspire others to do something extraordinary for their people and nation. Shyam Verma,

Darbhanga, (Bihar)

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

Country's backbone

It is quite shameful that the farmer of this country whose efforts helped in achieving record levels in agriculture production does not have enough for his family and himself (Farmers' Forum. March-April 2012; Farming: heading towards a bleak future). Farmers are always neglected by the government yet they play a major role in ensuring the country's food security and are often referred as the backbone of this country. It is very disappointing that the farmer does not want his children to take his profession. It is high time that the government takes very serious and effective measures to make his backbone stronger. It can begin by ensuring higher minimum support prices.

Joginder Singh,

Jalandhar, (Punjab)

Pauri's plight

Apropos of Ashim Choudhury's article "The Fallow Fields of Pauri" (Farmers' Forum, March-April, 2012), the excellent report should serve as an eye-opener for the Uttarakhand government. I was moved by the author's description of the 'palayan' that not only represents the poor state of the farmer but also indicates how more people are fleeing the hills because they cannot make a sustainable living. The state government should take immediate steps to solve the problem of this region and stop only giving verbal promises.

Man Singh, Uttarakhand



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WASTED FOOD; HUNGRY NATION

"The proposed food security act is the largest social protection against hunger anywhere in the world. Its success will depend upon how far we are able to reach all those who need food. In the current approach, lots of street children and the destitute will be left out".

– M. S. Swaminathan



t is not a little curious that there is so much intellectual debate in India around the need to ensure that every Indian is fed. The intelligentsia has raised questions about the ability of the system to bear the burden of feeding the nation (in terms of costs); others have suggested that feeding the people be left to market forces (systems); yet others have said that no matter what the government does, there will be unfed people. The point is that at some time or the other the need to provide food security will become a legal necessity: an enactment is on the anvil. It is, therefore, important to understand some of the elements involved with ensuring it. Farmers' Forum's cover story in this issue examines some of the critical aspects of ensuring food security and to push for a legislation that helps the largest numbers at the least cost and with minimal leakage.

Dr M.S. Swaminathan, believes that the "bill on food security is somewhat defective in some respects. It calls for selective PDS (public distribution system). I personally believe there should be universal PDS as in Tamil Nadu and Kerala. The country should follow the principle of exclusion as against inclusion. Categorization of below poverty line (BPL), above poverty line (APL) and targeted PDS are controversial issues and there is a large amount of corruption in such classification. One has to pay money to be a BPL. Why to get into those? There should be transparent criteria to exclude people. For example income tax payers, those who own a car and so on can be excluded from food security provisions".

Dr. Swaminathan's observations should provide a good starting point for examining the case for food security. In India, however, one does not need an examination to see the kind of mess that exists vis-àvis food management. In the lead story for this issue, Biraj Patnaik, principal advise to the Supreme Court Commissioners in the Right to Food case, refers to the reports in the print and electronic media about rotting grain. These reports, however, "have managed to merely touch the tip of the proverbial iceberg", he says. The three main sites areas where reports of rotting foodgrain appeared in the media — Harduaganj, Orai and Hapur — account for just 340 mt (metric tonnes) of foodgrain damaged. "What is



not yet in the public domain is that 17.8 million mt of foodgrain are lying in the open, exposed to the elements with only – what Food Corporation of India (FCI) euphemistically calls – 'CAP' or 'cover and plinth' (tarpaulin sheets covering foodgrains kept on an elevated plinth) as protection, weathering the Indian monsoon".

This quantity roughly corresponds to the covered storage capacity in godowns that the FCI has actively de-hired between 2006-09. "If this was not bad enough, the real shocker is that state agencies in Punjab are storing close to 1.5 lakh mt of wheat, in the open. This wheat was procured in 2008-09 and has weathered three monsoons. It is doubtful if more than half of it is now fit for human consumption. Even by the most conservative estimates, at least 50,000 mt of wheat that is more than two years old will have to be destroyed soon; repeat: 50,000 metric tonnes of wheat! At 35 kg per family per month, it is the annual foodgrain quota for 1,20,000 families under the public distribution system (PDS). It is food that could have staved off hunger for more than half million Indians for a whole year", points out Biraj Patnaik. So much for the system working towards food security.

Even by most conservative estimates, at least 50,000 mt of wheat that is more than two years old will have to be destroyed soon; repeat: 50,000 metric tonnes of wheat!





Looking at the issue from a different perspective altogether, Alok Sinha, former chairman and managing director of the Food Corporation of India, makes a very compelling case for reexamining the administered price regime for food in his article: 'Indian imperative: food security for the poor'. He points out that: "half the wheat and rice produce and, more importantly, at least 75 per cent of India's marketable surplus, is squeezed out by the FCI at government-created artificially high prices". What this does is push up market prices of food crops while emptying out the market. "This also has the twin effect of pushing up the income of farmers with a marketable surplus (a minority of less than 20 per cent of the rural populace) and eating into the real income of 80 per cent of the rural populace, which has to buy the food that it helps produce".

The problem, he explains, is that no political party will have the guts to challenge the current practice of food procurement because it would sound politically unpalatable. "Yet the market is being squeezed out at the expense of the poor, who then have to buy high-priced food. This then is the main reason why the MSP (minimum support price) system of enriching the rural rich has to be remedied by a PDS-supported food security for the poor", he explains.

Sujan Pandit examines the global perspective on food security and then analyses India. In his article 'Threatened food security: global and local factors', he says, "What the government has failed to do is to develop alternative means of livelihood for farmers. The percentage of rural population to total population has fallen only marginally since Independence (from 82 per cent in 1951 to 72 per cent in 2001)". That means the standard rural-urban migration safety valve that occurred in the 19th century and early 20th century in developed countries has not taken place in India.

Thus, "as the rural population has grown, plots have been subdivided to the point that many have become uneconomic. In 1951, agricultural labourers (those with land holdings less than 0.01 hectares) formed 28 per cent of the farming population; by 2001 they formed 45 per cent of the farming population. Until the Indian government devises ways of providing gainful employment as an alternative to agriculture the crisis will continue and India's future food security will be imperilled", he argues.

Providing a glimmer of hope in an environment of threat to food insecurity haunting the Indian countryside, there are absolutely shining examples of grassroots level work that is providing solutions where they are most needed. Asish Ghosh provides a case study from the Sundarbans in his article, 'Salt tolerant rice for adapting to climate change'.

It is in India's fabulous farmers who work at the grassroots and their innovative ways that salvation may eventually lie.



Mismanagement Straddles India's FOOD ECONOMY

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Biraj Patnaik



s the nation debates the National Food Security Act (NFSA) and its implications on food security for the country, it is pertinent to pause for a moment and ponder some of the structural reasons for the mismanagement of the food economy of the country. Forget the past or the future or even the present set of policies being pursued. The UPA-II government is pushing the nation inexorably towards a regime of greater food insecurity. The mismanagement straddles all the arenas of the food economy including financing, storage and allocation of foodgrain.

Take the Union Budget 2012-13. In a skilful display of fiscal chicanery, Finance Minister, Pranab Mukherjee, ensured that the Union Budget allocated only Rs 55,578 crore for food subsidy - a figure that is, in fact, less than last year's allocation of Rs 56,002 crore. What makes this budget allocation alarming is the fact that the Ministries of Finance and Food, Public Distribution and Consumer Affairs know full well that the actual expenditure that will be incurred this year on account of the food subsidy will be much higher at around Rs 72,000 crore. The food subsidy has two elements to it - one based on consumer offtake and, the other, the cost of maintaining buffer stocks. So, it is possible to accurately project in advance the budget required for any particular year.

The Food Ministry had, therefore, budgeted its expenditure based on the spending of the previous financial year. For the last financial year, the government of India allocated Rs 14,000 crore less than the expenditure incurred by the ministry. This year, the ministry is likely facing a similar deficit. Since the funds are not going to be made available, the Food Ministry will neither reimburse the Food Corporation of India (FCI), nor the state governments, the full complement of the funds they use up for procurement this year.

The result? The FCI will borrow the money from banks at near-commercial interest rates of 11.25 per cent and the State Food Corporations (SFCs), whose loans are not backed by a sovereign guarantee, will pay interest rates that are even higher. Some state governments will choose not to provide budgetary support to bear the additional interest burden; the SFCs will be insolvent and will end up paying even higher interest rates to the banks.





The fact that the banking system charges extortionate interest rates for food procurement is itself a travesty. These are five per cent higher than what the same banking system would charge a consumer for purchasing a super-luxury condo in a gated community in Gurgaon. This is compounded by the graver injustice on those state governments that participate in the decentralized procurement scheme to help provide farmers with a minimum support price and bail out the government of India by procuring food stocks for the central pool.

Uttar Pradesh (with an un-reimbursed balance of close to Rs 1,600 crore has already shown its unwillingness to participate in the decentralized procurement scheme and Chhattisgarh – to which the Union Food Ministry owes it Rs 600 crore for last year's procurement – has threatened to follow suit. This will severely affect the procurement process and thereby the food security situation in the country. Postponing expenditures to contain fiscal deficits is one of the oldest tricks in the book. To do this at the cost of food security, in a country where nearly half the children under the age of six still struggling to store foodgrain procured two years ago. The most logical way of dealing with this situation would be to immediately release the foodgrain into the public distribution system (PDS) so that the poor can afford it. This would also contain inflation. The Empowered Group of Ministers (EGOM), headed by the Finance Minister, did exactly the opposite and decided against the Food Ministry's proposal to release five lakh metric tonnes every month to state governments for use by families holding above poverty line (APL) cards that are equally badly hit by food inflation.

The ostensible reason was that it would possibly extend the food subsidy by Rs 5,000 crore. The shortsightedness of this policy becomes apparent when one considers that the storage cost for this quantity of foodgrain is likely to be in excess of Rs 2,000 crore, while a significant amount will go waste as well.

The alternative avenues with the state governments to deal with this situation are even more frightening. Maharashtra and Andhra Pradesh are providing subsidized foodgrain to distilleries to produce liquor. Is there any more evidence needed

India's banking system charges extortionate interest rates for food procurement. These are five per cent higher than what a bank would charge a consumer to buy a luxury home

are malnourished, is downright perverse.

The nation has, in recent weeks, been shocked to see photographs from across the country of food stocks rotting in the open even as reports of chronic hunger and starvation pour in. In Rajasthan, the FCI godowns are being used to store liquor while food stocks rot outside. Even more shocking is the fact that the FCI systematically dismantled its own storage infrastructure by 'de-hiring' 170 lakh metric tonnes of storage space in the three years during 2006-2009. This was ostensibly done to 'rationalize' the storage infrastructure but, in reality, is a classic example of poor planning.

Consider this: if one were constructing a road, one would factor in peak traffic that is likely to use the road 20 years hence and not the traffic that uses it today during non-peak hours. While dismantling its own infrastructure, the FCI did exactly the reverse by using projections of the lowest levels of procurement. The likely outcome is that foodgrain will continue to rot in the open while millions sleep hungry.

What will further exacerbate this situation is that the rabi harvest is round the corner and the government is

to prove the dictum that power not only corrupts, but also intoxicates?

Not many summers ago, in 2001, India was giving exporters a higher rate of subsidy than it was providing to the poor to ship out excess grain. That year saw the landmark Right to Food case being filed in the Supreme Court that virtually led to the courts taking over the implementation food schemes. Will there be a repeat this year or will the political class do better this time around and legislate a National Food Security Act that comprehensively reforms our food economy? The jury is still out on this one.

The mess in the management of the food economy of India is so deep-rooted that media reports so far have managed to merely touch the tip of the proverbial iceberg. The three main sites where the rotting foodgrain were reported from in the media — Harduaganj, Orai and Hapur — account for just 340 mt (metric tonnes) of foodgrain damaged. What is not yet in the public domain is that 17.8 million mt of foodgrain are lying in the open, exposed to the elements with only – what Food Corporation of



Photo: Roberto Ribeiro

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India (FCI) euphemistically calls – 'CAP' or 'cover and plinth' covers (tarpaulin sheets covering food grains kept on an elevated plinth) as protection, weathering the Indian monsoon.

This quantity roughly corresponds to the covered storage capacity in godowns that the FCI has actively de-hired between 2006-09. If this was not bad enough, the real shocker is that state agencies in Punjab are storing close to 1.5 lakh mt of wheat, in the open. This wheat was procured in 2008-09 and has weathered three monsoons. It is doubtful if more than half of it is now fit for human consumption. Even by the most conservative estimates, at least 50,000 mt of wheat that is more than two years old will have to be destroyed soon; repeat: 50,000 metric tonnes of wheat! At 35 kg per family per month, it is the annual food grain quota for 1,20,000 families under the public distribution system (PDS). It is food that could have staved off hunger for more than half million Indians for a whole year.

In any other country, allowing so much grain to go waste would be seen, justifiably, as criminal negligence. This in a country with the dubious distinction of the highest number of starvation deaths, a nation that is ranked 66th out of 88 countries (behind Cameroon, Nigeria and, believeit-or-not, even Sudan) in the Global Hunger Index; where the hardest lesson that almost half the mothers have to teach their children is the lesson of how to live with hunger. Genocidal negligence describes it better. How does a country with the most number of hungry people in the world manage such a feat, year after year?

In the past two years that have seen the highest food inflation in three decades in India, ironically, or perhaps unsurprisingly, the procurement of foodgrain for the central pool by the FCI has crossed 60 million mt. The buffer and strategic reserve norms for the country is around 21 million mt. The corporation is holding on to more than twice the buffer norms prescribed by the centre.

To explain the quantities involved, economist and fellow Right to Food campaigner, Jean Dreze, had once pointed out that if the foodgrain hoarded by the FCI was lined up, the line would "stretch for a million kilometres; more than twice the distance from the earth to the moon". The corporation, which I have endearingly referred to in the past as the Food Corruption of India, is no Santa Claus. Its failings over the years are far too many for it to deserve any public sympathy. Surprisingly, this time around it is not the principal villain.

The Food Ministry and the FCI had sounded the alarm and proposed in March the release of 50 lakh mt of foodgrain to the states at APL prices, which are higher than the rate at which foodgrain is supplied to below poverty line (BPL) households. Even this minimalist proposal was rejected by



the EGOM on the ground that it would entail an additional expenditure of Rs 5,000 crore in food subsidy. This single decision will ensure that an equivalent value of foodgrain will rot, while millions of Indians sleep hungry.

Ancient Rome had a Nero. Contemporary India does not need one. Just as well. It has the EGOM.

The obvious way of dealing with this crisis of plenty that commonsense – the most uncommon entity in the corridors of power in Delhi – would suggest is to simply transfer these grains to the poorest households in the 150 districts that the National Advisory Council (NAC) is proposing (minimalist though it is), to initiate the first phase of a universal PDS under the proposed food security bill. This would be an opportunity not only to mitigate hunger in the poorest regions of the country and have a direct impact on food inflation, but also allow the storage and distribution bottlenecks to be smoothened before the bill is enacted.

There is no better exemplar in India of what Lant Pritchett calls a "flailing" state (as distinct from a 'failing' state): "a state in which the head, that is the elite institutions at the national (and in some states) level remain sound and functional but that this head is no longer reliably connected via nerves and sinews to its own limbs", than the way the food economy of India is managed. Sonia Gandhi may have put together the finest constellation of minds for her NAC but the motor neuron disease that afflicts the different arms of the Indian state will strive with each other to ensure that the best-laid plans falter. The FCI and the food ministry, though, are likely to find themselves between the EGOM and a hard place. All that the starving millions in India can expect from the state: business as usual.

The manifesto of the Congress party promised the enactment of a Right to Food Act, if the United Progressive Alliance (UPA) was voted back to power. A preliminary shape of such an Act has emerged in what was reported in the media as the very first letter from Congress President Sonia Gandhi to Prime Minister Manmohan Singh. The UPA government hopes to repeat through the passage of this Act what it had achieved during its last term through the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA) — a vision for more inclusive governance.

At the heart of the idea of the right to food is a very simple premise. That no citizen of a country



should go hungry and that each citizen should at all times have physical access to, or the means to acquire, adequate nutritious food. It is time India delivered on this.

Few countries in the world can claim to have achieved this fully and, till recently, fewer still have legislated it. The reasons for this are not difficult to comprehend. Only a handful of developed countries have the resources and the social commitment to welfarism to make this happen.

Some countries, such as the US, which actually have the resources to achieve the goal of a country free from hunger, do not legislate it. To them, such socio-economic rights are seen as a throwback to the Cold War, when the international debates between the socialist block and the US were on the superiority of civil and political rights over socio-economic rights. The idea of nation states guaranteeing citizens the right to food is not a new one though. Article 25 of the Universal Declaration of Human Rights, adopted by all United Nations member countries in 1948, lists among a state's obligation, the right to food. case, has seen at least 60 orders over the last eight years and has emerged as the longest continuing mandamus—a legal writ where the court orders a person or entity to do something—in the world on the right to food. Somehow, until recently, this judicial activism has not translated into legislation. Now is the opportunity for India to deliver—and learn from similar legislation abroad.

Over the last few years, there has been a slew of legislation across the world, which recognize the right to food as a fundamental right and provide state guarantees (see box on global experience). South Africa and Brazil have shown the way. So what are the key lessons that India can learn from this rich range of international experience on right to food legislation and the practice they have been put to?

The first lesson is that of political commitment of the leadership to the idea of right to food. A case in point would be a comparison between South Africa and Brazil. While South Africa guaranteed the right to food in its constitution in 1996 through a bill of rights, the absence of political will to turn this into reality means that millions of South Africans

In the past two years that have seen the highest food inflation in three decades in India, ironically, or perhaps unsurprisingly, procurement of foodgrain has gone up

Closer home, Article 21 of the Constitution, which provides for the fundamental right to life and personal liberty, has been repeatedly interpreted by the Supreme Court as enshrining within it the right to food. Article 47 obliges the Indian state to raise the standard of nutrition of its people. Despite this, India continues to have one of the worst track records globally, as far as the commitment to tackle hunger and malnutrition is concerned. The last round of the National Family Health Survey in 2006 confirmed that the child malnutrition rate in India is 46 per cent, almost double that of sub-Saharan Africa. India, the world's second fastest growing economy, ranks 66th among the 88 countries surveyed by the International Food Policy Research Institute (IFPRI) in the Global Hunger Index (2008), below Sudan, Nigeria and Cameroon and slightly above Bangladesh.

Yet, India has also seen some of the most remarkable judicial activism anywhere in the world on the right to food. The landmark People's Union for Civil Liberties vs. Union of India and others (2001) case, better known as the Right to Food continue their daily encounter with hunger. In stark contrast, the determination of the Brazilian president to eliminate hunger was evident in his inaugural speech when he announced the "Fome Zero", or "Zero Hunger", programme. "We will make it possible for people in our country to eat three square meals a day, every day, with no need for hand-outs from anyone". It is this unambiguous commitment that continues to be at the heart of Brazil's battle against hunger.

The second lesson is convergence. The right to food cuts across programmes of many sectors including health, nutrition, agriculture, livelihoods and labour. This means that in any context, at least a dozen ministries will be operating programs that have some impact on the right. Converging all of these under a central leadership is critical. Brazil converged as many as 31 programmes, which are now overseen by its ministry of food security and combating hunger. In the context of India, nine programmes run by five ministries, along with agencies such as the Food Corporation of India, are the respondents in the Right to Food case before the





Supreme Court. It is imperative that the proposed legislation brings together all these programmes on a single converged platform. The state government of Delhi is currently undertaking a "Mission Convergence" with precisely this objective in mind.

The third lesson is creating a system of not just administrative but also legal recourse. This is a key feature of the right to food acts across countries. In Brazil, the public prosecutors' offices take up violations of human rights, including socioeconomic rights, at the local level. Guatemala, Venezuela, Brazil, Peru, Uganda and South Africa have already put in place or proposed powerful national commissions that act as oversight bodies and also have the power to impose penalties. Although the Supreme Court has appointed its own commissioners to monitor the food and employment schemes of the Indian government, these commissioners do not have the kind of statutory powers to impose penalties that their counterparts in other countries do.

The fourth lesson is the involvement of civil society. All countries that have legislated the right to

The right to food acts legislated globally are not only leading to stronger legal safeguards for poor and marginalized people and are translating into other policies and programmes. These include canteens in urban areas for the poor that serve cooked food at subsidized prices, cash transfer schemes, school meals, supplementary nutrition for infants, minimum food guarantees for labour and social security pensions.

While there is a lot that India can learn from the global experience, it can also contribute uniquely to the international discourse on legislation on the right to food. Most of the laws mentioned above are framework pieces of legislation that define the broad parameters of the right to food. The Supreme Court has already established very detailed individual entitlements that are legally binding on the government. These include universal mid-day meals to every child studying in a governmentrun or aided primary school, nutrition, health and preschool education services through the Integrated Child Development Services for every child under the age of six, subsidized grain to households living

Even by the minimalist estimates of the Planning Commission, a third of the rural population and a fifth of the urban population lives in abject poverty at present

food have involved civil society organizations, not just in local structures but also in the national-level oversight bodies. Consea, the Brazilian council that oversees the implementation of the right to food, has as many as 38 civil society representatives. It is important that this engagement is not just in letter, but also in spirit, with governments taking civil society as seriously as it does its own bureaucracy and legislature. Most other countries have also involved civil society in the process of formulating their right to food legislation.

Lastly, the key to the success of right to food legislation has been flexibility and innovation. Uganda has proposed including the "head of the household" as a duty bearer, with penalties including fines and imprisonment — imposed for non-fulfillment of right to food obligations within the family. While this may not be a desirable innovation for India, it is specific to the national context there. Venezuela, Guatemala and Ecuador have a strong component of food sovereignty, with strong safeguards against genetically modified foods. below the poverty line and monthly pensions for old people living below the poverty line.

A Right to Food Act that weaves these legally binding entitlements into the text and spirit of the law will set a unique precedent globally. Are our lawmakers ready to take on this challenge? After years of systemic neglect, the Public Distribution System (PDS) is back in the news. The United Progressive Alliance now realizes that this muchmaligned government programme — providing subsidized foodgrain through a chain of more than half a million fair price shops (FPSs) — is critical to the success of the proposed National Food Security Act. So the nation should note that over the past six years, the state of Chhattisgarh has scripted a remarkable but largely unnoticed, PDS turnaround (see box on the Chhatisgarh model).

What are the lessons that the UPA can learn from these reforms—something that should form a critical part of the National Food Security Act? First, an expanded PDS, with universal or near-universal coverage, stands a much better chance of succeeding rather than one driven by



The Chhatisgarh Model

Thanks to its governance reforms, the "Chhattisgarh model" of PDs reforms continues to win admirers among policy-makers. The reform was initiated in 2003 after the Supreme Court commissioners' office and the Right to Food Campaign reported, through detailed surveys, the wide-ranging corruption in foodgrain distribution. One key reason for this leakage was the privatization of the FPS network. In 2001, the government had added almost 5,000 private traders as FPS dealers, ostensibly to increase the outreach of the PDS. In reality, this was a cynical move to extend political patronage: the local elite invariably ran the FPSs. The first reform, then, was to cancel all private FPS dealers in a single stroke and hand them over to co-operative societies, panchayats, women's selfhelp groups and other public bodies.

After the initial euphoria of de-privatization, it became apparent that more drastic changes were required. FPSs depended on private transporters to get grains into the shops. The state food and civil supplies corporation undertook the doorstep delivery of foodgrain to each such shop. Chhattisgarh also used its own finances to increase FPS commissions fourfold, allocating Rs 40 crore to recapitalize all the shops so that their working capital needs could be met without their having to pilfer foodgrain to make up the deficit.

In 2007, grassroots surveys by the Right to Food Campaign brought out a startling fact. Though rice was now reaching the shops, the poor's access to the subsidized rice remained limited. Only 1.9 million families were listed as being below the poverty line (BPL): The Union government released foodgrain only for these households. The state government decided to double the number of households that were receiving foodgrain, also reducing the rate at which rice was sold to the BPL households to Rs 3 per kg. Chief Minister Raman Singh launched the Chief Minister's Food Security Scheme and made it his government's flagship programme.

Simultaneously, state-wide drives were undertaken to eliminate nearly 300,000 bogus ration cards. All the 3.7 million ration cards were reprinted centrally through the creation of a database, which allowed both photo identification and bar codes. As an additional measure of transparency, each BPL household had its details painted on the house, the entire list of card-holders prominently painted on the panchayat building too.

To curb leakages during transportation, all the trucks carrying PDS commodities were painted bright yellow: consumers could alert the food department in case this truck was found unloading foodgrain at any location other than FPSs. Global positioning systems were installed in the trucks as well. That was not the only good use of technology. The government used SMSs to alert those who registered for this service to the quantity of foodgrain and the registration number of the truck carrying it. A toll-free helpline was set up to receive and, more importantly, redress complaints.

Chhattisgarh made an annual fiscal commitment of close to Rs 1,800 crore for this programme and enforced a zero-tolerance policy on corruption. A number of senior officials from the state food and civil supplies corporation were booked under the Essential Commodities Act, with arrest warrants issued against them. This had a salutary effect in



Photo: Darryl Smith

reducing corruption: The latest survey by the Right to Food Campaign in a sample of 650 villages (excluding the Naxalite-affected pockets in south Bastar and Dantewada) showed that 92 per cent of respondents received their full quota of foodgrain; 96 per cent had their ration cards in their possession (compared with 58 per cent in 2004) while 97 per cent of the respondents were satisfied with the food quality.

Many states have subsidized rice schemes for the BPL households. The only difference Chhattisgarh made was to add the highest level of political commitment. If politics is all about numbers, the evidence from this state is clinching. In parliamentary and assembly elections, in which the Bharatiya Janata Party won, many a seasoned political commentator felt that it was paddy rather than the lotus that seemed to have bloomed in this state.



minimalist BPL quotas. A scheme only for the very poor will always remain a very poor scheme. Second, privatization that just strengthens the local elite should be done away with; instead the government machinery should be strengthened. Third, a majority of leakages occur much before the foodgrins reach FPSs: an excessive focus on the "last mile", with solutions such as smart cards and unique IDs, will change little on the ground.

Fourth, political will and good governance need to translate into specific reform steps. It is obviously there when one is willing to prosecute offenders without fear or favour and one commits the best human resources to strengthen a programme. As the last general election showed, the states (Orissa, Chhattisgarh, Tamil Nadu and Andhra Pradesh) where political parties successfully managed to break the anti-incumbency factor had expanded their PDS.

There is yet another set of complex circumstances that India had to address. The drought of 2009,



for instance, is all set to go down in history as the worst-ever that India has faced since Independence. The reasons for this are not just meteorological. This drought comes at a time when the country is already reeling under the impact of a global recession as well as the global food crisis. The impact of this drought, therefore, will go far beyond the agricultural sector and spill into India's cities, affecting a significant number of people working in the non-farm sector too.

To take just one example of this complex interplay between the financial crisis and food crisis, one just has to look at the retrenched labour migrating out of the diamond industry in Surat back to Orissa. At least half a million jobs have been estimated to be lost in the gems and jewellery sector in Surat alone. Adding to that, there have also been media reports of a large number of these retrenched workers, who were earning up to Rs 7,000 a month, turning up at the National Rural Employment Guarantee Scheme (NREGS) worksites.

Global Experience

South Africa was among the first countries in the world to explicitly guarantee the right to food in its constitution through its bill of rights. The Brazilian constitution in 1998 introduced a minimum wage to meet basic needs, including food; the constitution was further modified in 2003 to introduce the concept of social rights for every citizen, including the right to food. This process culminated in Brazil's Nutritional Security Framework Law (Losan) in 2006, which created a set of institutions for monitoring the right to food and is likely to be the most lasting legacy of President Luiz Inacio Lula de Silva.

Article 16 of the Bolivian constitution explicitly states, "Every person has the right to water and food. The State has the obligation to guarantee food security for all through healthy, adequate and sufficient food." Even Belarus and Moldova have clear constitutional guarantees on the right to food. Argentina (2003) and Guatemala (2005) were the first Latin American countries to introduce framework laws on food security, closely followed by Ecuador (2006) and Venezuela (2008). South Africa, Honduras, Peru, Nicaragua and Uganda have already drafted right to food legislation that is being actively considered by their respective cabinets and parliaments.

Photo: Dilip Banerjee

Yet, it is unlikely that all these workers will be able to get the 100 days of labour promised under the NREGS, given the fact that the average number of days of employment provided under this programme has been less than 40 in the last fiscal year. This is going to put an enormous strain on their household economies, which are, in any case, reeling under the spiralling prices of foodgrain over the past few months.

Therefore, the Prime Minister's recent reassurance of record grain procurement and the Food Corporation of India's buffer stocks, need to be seen in this context. The situation today is similar in some ways to the drought of 2002 when India had equally humongous food stocks and yet the state response remained woefully inadequate to stave off large-scale starvation and chronic hunger.

Since 60 per cent of agriculture in India is rain-fed, there is little hope that India will be able to divorce the agricultural economy from the uncertainties of the monsoon. What should be cause for greater national concern are the policy choices over the last two decades that have increased the vulnerabilities because they have still not been operationalised, two years after they were drawn up. The nonfinancial aspects of the new guidelines, which put much greater emphasis on capacity building of farmers and creating people-centric development programmes that were part of that integral vision, lie buried in bureaucratese.

Moreover, any increase in productivity is likely to be offset by the rapid diversion of agricultural land for industry and real estate. We are unlikely to achieve the food security targets that have been set without rationalizing land use.

While the systemic neglect of the farm sector would takes decades to undo, there are a number of short-term measures that need to be urgently put in place if the impact of the drought has to be mitigated. The NREGS has the potential to not just raise wages but also rejuvenate the farm sector. The programme already allows for agricultural development in the private lands of scheduled caste, scheduled tribe and below-poverty-line farmers. If, with careful planning, this scheme was dovetailed into public works for watershed

India may well overcome the drought that nature brings but the drought of vision in policy-making will take much longer to overcome

of India's small and marginal farmers — these farmers have landholdings of less than 2 hectares and constitute 80 per cent of the farming population. India still lacks a comprehensive vision for water security; precious little has been done to address the issue of falling water tables across the country.

In fact, the over-emphasis on procurement of cereals (mainly rice and wheat) has led to a systemic neglect of dry-land crops. Millets and other coarse cereals, oilseeds and pulses have seen a negative rate of growth in the last five years. The procurement of these crops — staple in states in central and eastern India with a predominantly rain-fed agriculture — has not been prioritized adequately. Research on dry-land agriculture to increase productivity has been neglected and virtually no major technological innovations have been introduced for bringing about yield improvements.

It is not just a lack of vision that reflects this neglect. Where there is a vision, red tape ensures that it is not implemented. The new watershed guidelines, which provide for doubling of the allocation per hectare have been lying in limbo development, it has the potential to significantly improve productivity. The Congress party manifesto promise of extending NREGS to every adult and increasing the daily wage rate to Rs 100 should be implemented promptly. A well-designed urban employment guarantee scheme will also have the potential to address the urban poor.

Similarly, the proposed National Food Security Act could be the site for institutionalizing transformative social protection policies. A return to the universalized PDS, with adequate reform measures; deepening entitlements for the more vulnerable by providing subsidized cooking oil and pulses and other essential commodities from PDS outlets; and putting on track the Integrated Child Development Services (ICDS) programme — the only government programme that addresses child malnutrition — would go a long way on getting food security back in the agenda.

India may well be able to overcome the drought that nature brings but the drought of vision in policy-making vis-à-vis the agricultural sector will take much longer to overcome.





Food security and child malnutrition

Any debate on food security in the country has to be contextualized with the alarming levels of malnutrition in the Indian population. India continues to languish at the bottom of the social sector rankings for most indicators of development. It has the highest burden of child malnutrition in the world and with 42.7 per cent of children under three years of age (U3s) classified as underweight (low weight for age). The child malnutrition rate in India is twice that of Sub-Saharan Africa.

According to the most recent National Family Health Survey (NFHS 3, 2005-06), one third of children are born with a low birth weight. The percentage of U3s that is anaemic has actually increased from 74.2 per cent to 79.2 per cent and the immunization coverage has decreased slightly from 26.9 per cent to 26.2 per cent. A survey by the National Nutrition Monitoring Bureau (NNMB 2007) shows that there is a daily deficit of over 500 calories in the intake of children in the age group of one to three years and about 700 calories in children in the age group threesix years.

That these figures are the most "updated" ones – and that data on malnutrition is not compiled more regularly – is reflective of the failure of the country's policymakers to appreciate the seriousness and scale of the problem of child malnutrition in India. What is even more worrying is the lack of progress in tackling child malnutrition. In 1999, NFHS 2 had estimated the child malnutrition rate at 47 per cent. Only a one per cent reduction in the intervening six years, between NFHS 2 and NFHS 3, points to a serious crisis in tackling malnutrition. Table 1 (NFHS 3) reflects the indicators at the national level on a range of nutritional indicators.

As this article goes to print, the Union Health Ministry has decided not to go ahead with the fourth round of the National Family Health Survey and the website of the NFHS (www.nfhsindia.org), that has all the rounds of data from the previous surveys, has been taken offline.

While the problem of malnutrition is endemic across the country, some states bear a more than disproportionate burden of hunger and malnutrition.

Figure 1: Indian States in the Global Hunger Index (Source: IFPRI, Global Hunger Index 2010)



Figure 1 (IFPRI, Global Hunger Index, 2010) classifies all the states/ union territories with respect to three indicators of child malnutrition, infant mortality and percentage of persons consuming less than 1700 calories per day. The map demonstrates how the regional distribution of malnutrition in the country varies widely, with Madhya Pradesh having the highest proportion of malnourished U3 children (60 per cent) and Mizoram with the lowest percentage (19.9 per cent).

There has been uneven progress in the reduction of malnutrition in India, in terms of regional variations. Table 2 summarizes the performance of the best performing States between the two NFHS surveys (1999 and 2006). Sixteen states reported a reduction of child malnutrition between 1999 and 2006. However, 13 states reported an increase in child malnutrition, in the corresponding period.

Table 3 summarizes the worst performing states. Ironically, some states with the highest per capita income in country, including Punjab, Haryana and Gujarat showed an increase in the child malnutrition

Table 1: National Family Health Survey: a comparative account			
Status of children under six	NFHS-2	NFHS-3	
Infant Mortality Rate	68	57	
Children under three years who are wasted (%)	19.7	22.9	
Children under three years who are underweight (%)	42.7	40.4	
Percentage of children 12-23 months who received all recommended vaccines	43.5	42	
Children with diarrhoea in the last two weeks who received ORS (%)	26.2	26.9	
Children age 0-5 months exclusively breastfed (%)	46.3	40.8	
Children age 6 – 35 months who are anaemic	78.9	69.4	
Children age 3 -5 years who are attending a pre-school (%) (NSS, 2004-05)	34.4		

Note: The figures here are based on NCHS data to facilitate comparison between NFHS-2 and NCHS-3. Figures for NFHS-3 based on 2006 WHO Growth Standards are available at http://www.nfhsindia.org/nfhs3.html and reflected in subsequent tables in this article.



Table 2: Best performing states (NFHS 2 & NFHS 3)			
	NFHS 2 (1998-99) % of U3s child malnutrition*	NFHS 3 (2005-06) % of U3s child malnutrition	% decline in U3s child malnutrition
Orissa	54.4	44.0	10.4
Maharashtra	49.6	39.7	9.9
Chhattisgarh	60.8	52.1	8.7
Himachal Pradesh	43.6	36.2	7.4
Rajasthan	50.6	44.0	6.6

*Weight for age (NCHS)



Source: NFHS 3 data (compiled by UNICEF)

rates. Kerala, which is also by far the best state in India with respect to most social indicators, also showed a marginal increase in child malnutrition rates.

The causes of malnutrition in India are many, including low birth weight of babies, early marriage and pregnancy, low status of women and lack of access to quality health care at the primary level. India has the highest rate of open defecation in the world (58 per cent of all the global total), poor access to potable drinking water and cultural practices, which inhibit early initiation of breastfeeding. Young children also do not have access to quality foods when they are introduced to complementary feeding and consume foods that have low nutrient inputs.

Programmatic interventions for preventing malnutrition are therefore likely only to succeed if they are multi-dimensional and are focused as much around prevention as around dealing with the consequences of malnutrition. In terms of the burden of children who are severely wasted (Severe Acute Malnutrition or SAM), the Indian Association of Paediatrics (IAP) notes that: "Estimates from the most recent nationally representative survey indicate that 6.4 per cent of children below 60 months of age have weight for height below -3 SD". In the current Indian population of 1,100 million, this would amount to about 132 million children under five years of age (12 per cent of population), of which 6.4 per cent or roughly eight million can be assumed to be suffering from SAM". If we accept these numbers, India clearly emerges as a country not only with one of the highest burdens of child malnutrition but also

Table 3: Worst performing states (NFHS 2 & NFHS 3)

	NFHS 2 (1998-99) % of U3s child malnutrition*	NFHS 3 (2005-06) % of U3s child malnutrition*	% increase in U3s child malnutrition*
Assam	36	40.4	4.4
Jharkhand	54.3	59.2	4.9
Madhya Pradesh	53.5	60.3	6.8
Haryana	34.6	41.9	7.3
Kerala	NA	NA	NA

*Weight for age (NCHS)



Source: NFHS 3 data (compiled by UNICEF)

the largest number of children with SAM, anywhere in the world.

The NFHS 3 data shows 19.8 per cent of Indian U5s children as wasted and 6.4 per cent of U5s children as severely wasted. In terms of numbers this would translate to almost astounding 8 million children in India who are severely wasted out of the 25 million children who are wasted (See Figure 3).

The burden of SAM in India is disproportionate to the population and this is evident from the fact that with just 16 per cent of the world's population, India has close to 42 per cent of the severely wasted children of the world. Even for the number of children who are wasted, India compares very poorly with Sub-Saharan Africa. The number of children below the age of five is roughly around 125 million both in India and in Sub-Saharan Africa. The number of children who are wasted on the other hand is 11 million for Sub-Saharan Africa and 25 million for India.

In terms of the regional variation within India, the burden of SAM is most prominent in those states, which also have a high burden of poverty and malnutrition, as reflected in the regional desegregation of the Global Hunger Index. The states of Uttar Pradesh, Madhya Pradesh and Bihar are the three states with the highest burden of SAM in India. In some states, a disproportionate number of girls are affected as compared to boys (58 per cent and 67 per cent respectively in Madhya Pradesh and Bihar). These figures are particularly stark, given the already adverse sex ratios in these states.







Indian Indian Meanative Food Security for the Poor

Alok Sinha

ndia's agricultural progress has become a showcase, courtesy the Green Revolution. From an annual foodgrains output of less than 50 million tonnes at the time of Independence in 1947, India's food output increased more than five-fold within three decades. It now seems to have reached its peak, steadying itself at around 250 million tonnes for the last decade or so, giving rise to the call for a second Green Revolution. This time the focus is on the rain-fed areas, considered an imperative to achieve the next big jump in food output. India must, however, introspect on how the first revolution was made possible and what have been its many consequences, especially vis-àvis the administration of the food regime.

A system of minimum fair prices for the main commodities has been put in place on the annual recommendations of the Commission for Agricultural Costs and Prices (CACP). The Food Corporation of India (FCI) then mops up all the marketable surplus of wheat and paddy, since the minimum support price (MSP), running well above normal market





Lack of affordability and not lack of availability causes hunger. What causes this lack of affordability is a deadly combination of rising prices and declining purchasing power... no political party can do away with the MSP system

prices, drives normal purchases to the corporation. Accordingly, the FCI's annual procurement now hovers at around 55 million tonnes, which is more than 20 per cent of the total food output and at least half the wheat and rice that India produces.

In effect, thus, half the wheat and rice produce and, more importantly, at least 75 per cent of India's marketable surplus, is squeezed out by the FCI at government-created artificially high prices. This has had the effect of pushing up market prices of food crops while emptying out the market itself. This also has the twin effect of pushing up the income of farmers with a marketable surplus (a minority of less than 20 per cent of the rural populace) and eating into the real income of 80 per cent of the rural populace, which has to buy the food that it helps produce.

No political party is in any position to do away with the high prices set by the MSP system because of 'political' reasons. Yet the market is being squeezed out at the expense of the poor, who then have to buy high-priced food. This then is the main reason why the MSP system of enriching the rural rich has to be remedied by a Public Distribution System (PDS)-supported food security for the poor. There are other equally compelling reasons. *Table 1*, given in the "Alternative Economic Survey, India 2011", shows how "one rupee's purchasing power in March 2011 was equal to 26 paisa in 1990-91"

Further, while the wholesale price index has been rising at a high rate, the consumer price index has been rising even higher. This is alarming because it shows the consumer is more adversely affected than the owner producer with a marketable surplus, as

Table 1: Rupee's purchasing power (paisa)			
Voor / Poriod	(Base 1990-91 = 100 paisa		
ical / i cilou	Based	Based on	
	on WPI	CPI-IW	
1990-1991	100	100	
1993-1994	74	75	
1997-1998	55	53	
2000-2001	47	43	
2006-2007	36	34	
2009-2010	30	26	
April 2010	29	25	

Table 2, based on data from the ministries of finance and labour shows. The inflation rate of essential commodities is higher still, as *Table 3* from the government's Economic Survey shows.

Despite higher food output and undoubtedly due to lower purchasing power of the poor, the foodgrain average consumption during 2001-08 was 444 grams per person per day, even lower than the average consumption level during the difficult years of 1960s, infamous for large imports of wheat under PL 480, prior to the Green Revolution.

In an ideological sense, the right to food is a human right. In 2000, the Food and Agricultural Organisation (FAO), defined absence of hunger as "access by all people at all times to enough nutritionally adequate and safe food for an active and healthy life". The "Hunger Task Force 2003" defined hunger as "a condition in which people lack the basic food intake to provide them with the energy and nutrients for fully productive lives".

The Human Development Report, 2011 quotes the government's own "National Family & Health Survey" of 2009 to establish that, in terms of undernourished children under five years, India's figure of 48 per cent was almost double that of 26 sub-Saharan African countries (only 25 per cent).



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Table 2: Inflation rates based on CPI-IW and WPI				
Month	WPI			CPI-IW
	2008-2009	2009-2010	2008-2009	2009-2010
April	-	1.3	-	8.7
May	-	1.4	-	8.6
June	-	-1.0	-	9.3
July	-	-0.5	-	11.9
August	-	-0.2	-	11.7
September	-	0.5	-	11.6
October	-	1.5	-	11.5
November	8.5	4.8	10.4	13.5
December	6.1	7.3	9.7	15.0
January	5.0	9.43	10.4	16.22
February	3.5	10.06	9.6	14.86
March	1.2	9.90	8.0	14.86

Table 3: Inflation rate of essential commodities

Commound		
Commodity	Month	Inflation rate (%) (year- to-year)
Rice	October 2009	14.29
Wheat	November 2009	12.66
Pulses	December 2009	41.58
Vegetables	December 2009	39.22
Potatoes	December 2009	123.85
Onions	October 2009	33.10
Fruits	November 2009	10.64
Milk	December 2009	13.36
Eggs, Meat & Fish	November 2009	29.75
Sugar	December 2009	53.98

Source: Economic Survey 2009-2010

On a comparative scale, Kerala, Himachal Pradesh, Punjab, Sikkim, Manipur and Mizoram were shining beacons since the rest of India was either at par or well below the sub-Saharan average.

If these arguments do not convince opponents



Sources: Ministry of Finance and Ministry of Labour

of food security, they could consider the specific findings on nutrition:

- India is the worst performer in terms of low birth weight, underweight and wasting among children in the Brazil, Russia, India and China (BRIC) and the South Asian Association of Regional Cooperation (SAARC) countries;
- Nearly half of India's under three age group is malnourished;
- There are wide gaps between states and between rural and urban areas with respect to cereal consumption;
- 21.5 per cent of newborns in India have low birth weight;
- Anaemia among adolescent girls is very high; Severe anaemia is more prevalent among them than among pre-school children;
- Anaemia among children has increased over the years with rising rural-urban disparity.

The 'Save the Child' organization put it most pithily when it held that it is lack of affordability and not lack of availability that causes hunger. What causes this lack of affordability? The deadly combination of rising prices, declining purchasing power and the strange phenomenon of the government pushing up prices through the artificial MSP system that benefits the rural rich, squeezing out the market by forcing the FCI to buy up more than 75 per cent of the marketable surplus of wheat and rice and then not releasing all of it back to the consumer.

That is, of the 55 million tonnes of wheat and rice that the FCI procures each year, at least 20 million tonnes remains un-released. Even a wellthought out conspiracy to harass the poor could not have been more effective. Such is the tragicomedy being played out by not implementing food security for the poor. The author is former chairman and managing director of the Food Corporation of India and a retired officer of the Indian Administrative Service. 27



FOOD Security Global and Local Factors

Sujan Pandit

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here are few issues more important to the well-being and stability of a nation than that of food security. Its absence threatens catastrophe: famines, social breakdown and riots while its presence is rarely commented upon. Like electricity, water and other utilities, one only notices it when deprived of its benefits. Unlike individuals, however, governments can rarely afford to be complacent. Throughout history, rulers of various persuasions — be they democratic, monarchial, dictatorial or totalitarian — have feared the emergence of 'bread riots' where their hungry citizenry, goaded beyond endurance by the lack of basic foodstuff have

risen against their rulers in desperation. Both the French and Russian revolutions were preceded by food shortages. Indeed, it can be said that after providing for a national defence and justice system, food security is the third most important task of any competent government.

The Indian government has been no different. India has a long history of famines and the sufferings that these have caused have been seared into popular consciousness. During the late 19th century (in the 1870s and 1890s in particular), there were massive famines in various parts of India that led to the deaths of tens of millions of people. Even the British administrators, who had been brought



up on Malthusian and Social Darwinist beliefs that any assistance to the poor and starving would be counterproductive, were forced to modify their views and introduce famine relief and the construction of irrigation works to guard against its worst effects of food shortages and entillements.

This did reduce the incidence of famines for the next few decades but the disruption of food supply during World War II, especially that of rice from Burma (then under Japanese rule) lead to the Great Bengal Famine of 1942-43, along with other factors. It cost the lives of two to three million people. More Indians died from the lack of food in less than two years than the sum total of all British soldiers, sailors and airmen who died on the battlefields of the World Wars I and II. Even today, there are elderly Bengalis who vividly remember the events of the Great Bengal Famine as though they happened only yesterday.

The occurrence of such a traumatic event shortly before Independence greatly affected the thoughts and actions of Indian policy makers once they had control over the levers of power. annual average, 2.3 million tonnes of foodgrain in the 1950s and 5.5 million tonnes in the 1960s. During the drought years of 1965 and 1966, India imported over 10 million tonnes annually, living a humiliating ship-to-mouth existence (as it was then called) and which led population experts like Paul Ehrlich to believe that mass-scale famine and India's political breakup was imminent.

As is well known, this parlous state of affairs was transformed by the Green Revolution. In response to the agricultural crises of the mid-1960s the government set up the Food Corporation of India (FCI) and the Agricultural Prices Commission (later renamed Commission of Agricultural Cost and Prices) in 1965 with the specific aim of enhancing national food security. Simultaneously, high yielding varieties (HYV) of seeds like Lerma Rojo, Sonora and Kalyan Sona in wheat and IR-8 and later, Jaya and Padma, in rice were promoted aggressively by the Indian Council of Agricultural Research (ICAR) among farmers in the irrigated lands of north-western India and a National Seeds Corporation was set up to produce breeder,

The Green Revolution achieved it goals. India no longer needed to depend on the goodwill of foreign powers to feed its populace

This was exacerbated by the disruption caused by Partition, which broke up the long established flows of agricultural products from hinterland to markets, often resulting in the two lying on either side of the newly created borders. As a result, the thrust of government policy was on rapidly increasing food availability, either through increased production or through imports. Indeed, India's First Five Year Plan (1951-56) can be viewed as primarily an agricultural plan since its main focus was on constructing dams, irrigation works and increasing the yield and acreage under agriculture. (The emphasis on industrialization and import substitution only began with the Second Plan in 1956).

India's record on food security in the six and a half decades since Independence has been fairly encouraging. For one thing, India has achieved self-sufficiency in foodgrain production since the late 1970s. This is in sharp contrast to the 1950s and 1960s when India was a major importer of foodgrain, mainly from the US through the PL480 programme. Specifically, India imported, on an foundation and certified seeds.

This is not to say that the Green Revolution was an unalloyed blessing. Over time the widespread usage of HYV technology led to unpleasant sideeffects: greater inequalities between regions and rural classes; the increasing use of expensive fertilizer and pesticide inputs over time that has gradually eroded the profitability of using HYV seeds; an exploding fertilizer subsidy bill that has burnt a hole in the government's finances; the rapid depletion of aquifers and fall of ground water levels due to excessive pumping of underground water; the inability to extend the HYV technology to coarse cereals; and lastly, the decline in the momentum in introducing new varieties of rice or wheat seeds since the 1990s.

However, as far as the political aspects of food security are concerned, the Green Revolution achieved it goals. India no longer needed to depend on the goodwill of foreign powers to feed its populace and this gave its leaders a certain freedom on the world stage. In fact, since the 1990s, India has been a marginal net exporter of agricultural





products (with the exception of a couple of years on account of drought or low international prices).

At the social level, India's achievements have been less spectacular. India still has the largest number of undernourished people in the world, with over 200 million chronically undernourished and almost half of its children underweight. As a 2009 report by Action Aid, 'Hunger Free' puts it, "Hunger exists in India not because there is insufficient food but because people cannot access it, and that the exploitation of natural resources has led to 'displacements' of people, pushing many into poverty." The International Food Policy Research Institute has constructed a global hunger index on which India's condition in 2009 was categorized as alarming.

Even the Green Revolution in its heyday was confined to relatively small parts of the country and the public distribution system (PDS), where low cost foodgrain is distributed through a network of over four lakh fair price shops (FPS), has shown extremely uneven development across the states. While states like Gujarat, Kerala, Maharashtra, Tamil Nadu, Andhra Pradesh, Chattisgarh and West Bengal have a fairly widespread and efficient PDS network, other states have lagged behind.

Serious problems remain. Since the early 1990s there has been a serious slowdown in the growth rate of Indian agriculture. This was partly due to a deceleration in growth of the acreage devoted to HYV crops due to the maturity of the technology. It was also partly due to a decline in investment in agricultural infrastructure. Whatever be the cause, the indubitable fact is that the growth rate of agricultural GDP fell from 3.08 per cent per annum in the 1980s to 2.38 per cent per annum in the 1990s. Secondly, Deaton and Dreze have shown that while real incomes did rise in rural areas after the liberalization of the Indian economy in 1991, per capita consumption of foodgrain fell during this period. These contradictory findings lead to a lively debate among Indian economists as to whether liberalization had helped or harmed Indian agriculture.

Less controversial but more worrying is the steady rise in the number of farmer suicides that



has received much media attention. While this is mainly due to a lack of easily available and affordable agricultural credit and crop insurance and the power relations in rural areas that force many farmers to turn to moneylenders, the death of so many farmers points to a deep-seated insecurity in the farming profession. If left to fester, this could become a serious food security issue in India in the future.

Such is the current state of affairs as far as India's food security is concerned. What lies on the horizon — the spectre of future threats, the distant but darkening clouds - will now be the focus of attention. Though speculative, such a long-term perspective is essential because as Julian Cribb observes in his book, The Coming Famine: "In the general hunt for someone to blame for the shortterm food crisis, a more profound truth was being obscured — that the challenge is far deeper, longerterm, and more intractable than most people and certainly most governments, understand. It stems from the magnifying and interacting constraints on food production generated as civilization presses harder against the finite bounds of the planet's natural resources, combined with human appetites that seem to know no bounds".

Before one turns to India's future food security threats, however, it will be useful to try and define what food security is all about as this will bring some clarity in analyzing future problems. As the World Health Organization (WHO) has stated: "Food security is a complex sustainable development issue, linked to health through malnutrition, but also to sustainable economic development, environment, and trade". However, the canonical definition of food security was given at the first World Food Summit held in Rome in 1996. It defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life".

From this definition it follows that there are four main dimensions to food security, namely:

1. Physical availability of food: sufficient quantities of food should be available on a consistent basis. This supply side issue depends on the level of food production, stock levels and net trade.

2. Economic and physical access to food: having sufficient resources to obtain appropriate foods for a nutritious diet.





The Great Bengal Famine of 1942-43 cost the lives of two to three million people. More Indians died from a lack of food in less than two years than the sum total of all British soldiers, sailors and airmen who died on the battlefields World Wars I and II

3. Food utilization: what matters is appropriate use of food available based on knowledge of basic nutrition and care, as well as adequate water and sanitation. Combined with the good biological use of food consumed, this determines the nutritional status of individuals.

4. Stability in availability and access to food: adverse weather conditions, political instability, unemployment and rising prices can result in an inadequate access to food on a periodic basis.

For food security objectives to be realized, all four dimensions must be fulfilled simultaneously. To concentrate on the threats to the first two dimensions: the problems concerning the availability and access to food in the future (analysis of food utilization issues is better handled by a nutritionist; food price stability issues have been discussed in the article entitled "Financializing Food: The Origin of the Present Crisis" in the November-December 2011 issue of Farmers' Forum - Vol. 11; No. 6), while availability of food is usually determined by geophysical and environmental factors (quantity and quality of land, seeds and other inputs, weather, water and so on), access to food is contingent on economic factors like income, prices and so on. This dichotomy ---between physical and economic factors - provides one with analytical focus in assessing the threats to India's food security.

This is because geophysical and environmental factors tend to be global in scope: they affect all parts of the world, though different regions are affected in different ways. For example, one of the most discussed of these factors, climate change, is a global phenomenon, since it not possible for one country to shield itself from the ill-effects of



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its neighbour spewing out excessive carbon dioxide into the atmosphere. Of course, each country will have to face or adapt to the climate change threat in its own specific way. A country like India with its tropical weather and its large, low-lying deltaic regions is going to face a far greater threat to its agriculture on account of global warming than a large, sparsely populated country like Canada with its sub-Arctic weather.

Many cereals are grown in India in weather conditions that are close to their thermal maximum: increase the atmospheric temperature any further and their yields will drop sharply. In contrast, a temperature rise would probably benefit Canadian agriculture! Thus, though global phenomena like climate change have local effects, for analytical purposes it would be better to classify it as a global factor.

In contrast, economic factors or threats to food security are usually quite specific to a particular country. While it is true that a global rise in food prices, as happened in 2004-08, can adversely affect the domestic price level and hence the well being of the inhabitants of a country, more often than not, economic access to food depends on policies and institutions that have prevailed in a country over time. Poor policies can hinder access to food by reducing incomes, artificially raising prices, or



India's condition in 2009 was categorized as alarming on the International Food Policy Research Institute's global hunger index

restricting their supply to certain favoured segments of the population. Economic and institutional factors are, therefore, being classified as the local factors in determining food security.

Global factors

To better understand the global threats to food security it would be useful to revisit the results of a conference held in Sweden in 2009. This was organized in Stockholm by Johan Rockström, director of the Stockholm Environment Institute in Sweden who invited 28 eminent environmental and earth-systems scientists (including Nobel Paul NASA laureate. Crutzen, (National Aeronautical and Space Administration) climate scientist, James Hansen, Gaia researcher and "tipping point" specialist, Tim Lenton, and the German chancellor's chief climate adviser, Hans

Joachim Schellnhuber). These scientists were tasked with the challenge of identifying long-term threats to the planetary life support system.

They were encouraged to look at the problem holistically and go beyond the usual suspects like global warming and fresh water shortage. The questions they were asked included: "We know about climate change but what about other threats? To what extent do pollution, acidifying oceans, mass extinctions, dead zones in the sea and other environmental problems really matter? We can't keep stressing these systems indefinitely but at what point will they bite back?"

The participants at the conference identified nine "planetary life-support systems" that are vital for human survival. They are:

1. Acid oceans: This is closely related to anthropogenic global warming (AGW) because





Photo: Elisabeth George

the more the carbon dioxide is pumped into the atmosphere due to the burning of fossil fuels and changed agricultural practices, the more the carbon dioxide is absorbed by the oceans, thereby creating carbonic acid. Since the Industrial Revolution, the pH level of the ocean surface has fallen from 8.16 to 8.05 (the lower the level, the greater the acidity). At present, such a level of acidity poses no threat to marine life but if it were to fall farther, the shells of shellfish and corals could be dissolved by the acid waters. The danger this poses to seafood availability and the livelihoods of fishermen is obvious.

2. Ozone depletion: This is one problem that is receding on account of the banning of Chloro – Fluro Carbons (CFCs) as a part of the Montreal Protocol. Ozone depletion was first detected in the 1970s when a giant ozone hole was discovered in the stratosphere over Antarctica. Had this problem been left unchecked it could have had deleterious effects both on the health of human beings and on agriculture since it is ozone that shields us from the dangerous effects of ultraviolet radiation.

3. Fresh water: As world population has burgeoned

over the past 60 years, the demand for fresh water has grown exponentially. Less than 2.5 per cent of all the water on the planet is fresh water and that too most of it is stored in glaciers. At present the world consumes 2,600 cubic kilometers of fresh water per year while, according to Rockstrom and his team, the boundary is 4,000 cubic kilometers of fresh water per year, beyond which the planet will grow waterstressed. Given the projected population growth, this boundary is likely to be crossed by the middle of this century. This excessive water use threatens humans in three ways: shortage of drinking water, loss of irrigation for agriculture and changes in climate (through the emptying of wetlands and the drying out of rivers and lakes).

4. Biodiversity: While individual species may not matter much on their own, collectively they form ecosystems that provide a range of ecosystem services (like bees and their pollination services). This is one boundary whose limits have been far exceeded. While it is estimated that during the course of the Holocene period (the last 10,000 years) the annual species extinction rate was less



than one per million per year, the current extinction rate has now reached 100 per million per year, or ten times the threshold level. As Fred Pearce points out: "Humans are driving species to extinction by ploughing up or paving over their habitats, by introducing alien species like rats and weeds, by poisoning them with pollution, by hunting them for food and, increasingly, by changing the climate". This has led scientists to say that we are in the midst of the sixth great extinction event in the 4.5 billion years of the earth's existence, the last having occurred 65 million years ago when a large meteorite strike destroyed the dinosaurs.

5. Nitrogen and phosphorus cycles: This is one threshold that has been crossed due to the insatiable demands of agriculture for chemical



fertilizers to provide a short-term boost in crop yields. Unfortunately, the long-term consequences are more serious. Until the discovery of the Haber process around 100 years ago that allowed for the artificial fixation of nitrogen from the atmosphere, there was a limit to the amount of nitrogen that could be 'fixed' naturally. Though this has greatly increased the production of chemical fertilizers, much of this fertilizer is wasted and runs off the land into rivers and oceans. The excessive nitrogen helps to acidify soils killing vulnerable species and saturating ecosystems so that they lose the ability to recycle the nitrogen back into the air. Meanwhile, some over-fertilized lakes and seas are filled with algal blooms, sucking all the oxygen out of the water and in the process creating anoxic dead zones. 6. Land use: It was estimated by Rockstrom and his group that no more than 15 per cent of all the ice-free land on the planet should be devoted to agriculture. Right now 12 per cent (or 80 per cent of the safe level) is and this area is rising. It is likely to cross the threshold level of 15 per cent by 2050. The expansion of agriculture is a major factor behind the destruction of tropical rainforests and the ecosystem service that it provides. Once again, it is clear that the demand for greater food output now threatens the food output of the future.

7. Climate change: This is by far the best known of all planetary life support systems. Unfortunately, as James Hansen has shown, the safe threshold level of 350 ppm (parts per million) of carbon dioxide was crossed over two decades ago and is at over 390 ppm now. This represents a 40 per cent increase from the pre-Industrial Revolution level of 280 ppm. The effects of climate change on ecosystems and agriculture have been well documented, both by the various assessment reports of the Intergovermental Panel on Climate Change (IPCC) and by the Stern Report, which specifically focused on the economic aspects of the issue. At the very least, global warming will result in a rise in sea levels that will lead to the loss of agricultural land and will reduce the yields of various crops as their thermal maximum is exceeded.

8. Aerosol loading: One of the byproducts of industrialization has been the churning of the earth that has created more dust in the atmosphere and the burning of coal, dung and forests which has filled the atmosphere with soot, sulphates and other particles. The effects of increased aerosol loading are ambiguous. On the one hand, increased haze due to aerosols counteracts the temperature rise caused

by increased greenhouse gases. This has led some scientists to suggest that sulphates be pumped into the atmosphere to reduce global temperatures. On the other hand, aerosols reduce crop yields by falling on fields and also clog up human lungs, contributing to millions of deaths from lung and heart disease.

9. Chemical pollution: Like aerosol loading, this is another planetary life-support system whose effects are not fully understood. It is estimated that over 100,000 different chemical compounds have entered the atmosphere and ecosystem as a byproduct of manufacturing. The harmful effects of a few like DDT, PCBs, dioxin and lead are well known and are regulated or banned. The effects of other chemicals remain undiagnosed though.

The effect of these global factors on food security is critical. As mankind blithely crosses various thresholds, it increases the probability of a collapse in agricultural output in the future. Some of these problems like excessive demands for fresh water, the burning of tropical forests to increase agricultural land, the nitrogen and phosphorous cycles, are caused by agriculture itself. In a sense, a trade-off is being resorted to between present and future agricultural production. In this shortsightedness, man has privileged the present over the future in order to meet the insatiable demands of feeding the current population. Other global factors like acid oceans, ozone depletion, aerosol loading, chemical pollution, and to some extent, climate change, have primarily been caused by industry but whose adverse effects on agriculture are very real.

Local factors

To better understand how local factors, primarily institutional and economic, will affect India's future food security it would be useful to turn to G. S. Bhalla's *Condition of Indian Peasantry*. This book is based on the five reports of the 59th round of



Photo: Pam Boyd

the National Sample Survey Organization (NSSO) called the Situation Assessment Survey of Farmers that interviewed 51,770 households in 6,638 villages during January to December 2003. Though conducted almost a decade ago, the answers to the questionnaires provide a good insight into the problems that plague Indian agriculture even today and are likely to persist.

The most important finding of the survey is the precariousness of the Indian farmer. The incidence of poverty is higher among farming households than among non-farming rural households. Most farming households are indebted and nearly 40 per cent of these loans were obtained from moneylenders. The single most critical factor, however, is that the overwhelming majority of Indian farms are uneconomic in size. *Table 1*, showing incomes of farming households from various sources by the size of their land holding, makes this point abundantly clear.

For farms less than four hectares in size, income from farm-related activities is less than their total

Table 1: Incomes of farming households from various sources						
Size of Land (hectares)	Income from wages	Income from cultivation	Income from farm animals	Income from non-farm business	Total consumption expenditure	Investment from assets
<0.01	1075	11	64	230	2297	40
0.01-0.40	973	296	94	270	2390	37
0.41-1.00	720	784	112	193	2672	96
1.01-2.00	635	1578	102	178	3148	151
2.01-4.00	637	2685	57	210	3685	387
4.01-10.00	486	4676	12	507	4626	685
>10.00	557	8321	113	676	6418	737
All Sizes	819	969	91	236	2770	124



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COVER Story



consumption expenditure. Those with these small land holdings have to make up for this deficit by earning a part of their income from wages, either as agricultural laborers or from non-farm activities. If these prove to be insufficient, the farmers have to rely on borrowings, usually from moneylenders, which leads many of them into a debt trap.

Unfortunately, 94.8 per cent of the farms covered by the survey was less than four hectares in size. This implies that almost 19 out of 20 farms are uneconomic in size and their holders cannot wring out sufficient income from their farming activities in order to cover their consumption expenses. This explains why so many farmers rely on moneylenders to meet their consumption expenses and why farmer suicides are so common these days.

It is this statistic that most clearly captures the crisis of Indian agriculture. The eight hundred pound gorilla in the room is the burgeoning Indian population, at least with respect to the land that is available. Land use constraints are one of the limiting factors for expanding global agricultural output but in India, the situation is far worse. There has been almost no increase in land devoted to agriculture since the early 1970s. This is because all land suitable for agriculture has been used up for that purpose. Since the early 1970s, all increases in output have come either through increase in yield or through extension of irrigation, which has prompted multiple cropping of a single plot of land.

What the government has failed to do is to develop alternative means of livelihood for farmers. The percentage of rural population to total population has fallen only marginally since Independence (from 82 per cent in 1951 to 72 per cent in 2001). That means that the standard ruralurban migration safety valve that occurred in the 19th century and early 20th century in developed countries has not taken place in India. So as the rural population has grown, plots have been subdivided to the point that many have become uneconomic. In 1951, agricultural labourers (those with land holdings less than 0.01 hectares) formed 28 per cent of the farming population; by 2001 they formed 45 per cent of the farming population. Until the Indian government devises ways of providing gainful employment as an alternative to agriculture the crisis will continue and India's future food security will be imperiled.

This is by far the greatest problem facing India in the coming decades. Other problems include the growing dissatisfaction of farmers with their profession (almost 40 per cent of the farmers interviewed said that they did not like farming), the lack of knowledge of modern agricultural techniques and the failure by the government and other organizations to increasing the knowledge base of farmers. For example, most farmers contacted for the survey had never heard of bio-fertilizers, crop insurance, minimum support prices or the World Trade Organisation (WTO). They were unaware of schemes set up by the government to benefit farmers. The generalized lack of awareness meant that the benefits of government schemes were appropriated by large farmers. Until the government modifies its institutions to better disseminate much-needed information, Indian agriculture will continue to underperform.

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Notes:

¹ Bhalla, G. S., Indian Agriculture Since Independence, Chapter 13; National Book Trust, 2007
² http://www.actionaid.org/hungerfree
³ Bhalla, G. S., Indian Agriculture Since Independence, Chapter 5; National Book Trust, 2007
⁴ Deaton, A. and Dreze, J., Nutrition in India: Facts and Interpretations, Princeton University Working Paper, April 2008
⁵ Cribb, J., The Coming Famine, University of California Press, 2010
⁶ http://www.newscientist.com/special/ocean-to-ozone-earths-nine-life-support-systems
⁸ Bhalla, G. S., Condition of Indian Peasantry; National Book Trust, 2006

Photo: Dilip Banerjee



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 <u>www.iffcokisansez.com</u> or can be obtained from,

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Food Security in the Indian Sundarbans

Salt Tolerant Rice for Adapting to Climate Change

Asish K. Ghosh



Farmers with harvested seeds at Mousami Islands, Namkhana Block in the Sundarbans, West Bengal



f the eight missions contained in the National Action Plan on Climate Change, possibly the most critical one is "sustainable agriculture". This is especially significant given that agriculture will be high on the Rio+20 Agenda, scheduled to take place in June 2012 at Rio de Janeiro, Brazil, 20 years after the historic UN Conference on Environment and Development (UNCED) held in that city in June 1992. If the conference manages to drive a global shift to 'environmentally sustainable farming', a big victory will have been won.

Agriculture ensures food security for seven billion people currently and expects to do so for nine billion in 2050. It is also responsible for 32 per cent of global greenhouse gas emissions. Chemical agriculture is said to be responsible for degradation of one third of the world's arable land. In India, small farm holdings are common and a problem but it is the lack of any meaningful strategy on 'access to land, water, seed, extension services, credit and marketing services' that makes it harder to sustain any farm-based economy.

Where else can one witness a glaring example of all the aforementioned factors than in the Sundarbans, amongst the world's largest mangrove forests? With 4.37 million people depending largely on 100 days of monsoon rain for irrigation, the problems are easy to understand. Add to this the threats of climate change and global warming and the reality becomes harsher with every passing year.

The Sundarbans are marked as a critically vulnerable coastal zone, both in the Indian Coastal Regulation Zone Notification (2008) and IPCC's 4th Assessment Report published in Bali, Indonesia, in 2007. Storm surges and cyclones are becoming more frequent with increasing intensity. In three successive years, the region witnessed three major catastrophes named Sidr, Nargis and Aila (2007-2009). Loss of human lives and livelihood differed from region to region within the affected areas of Myanmar, Bangladesh and West Bengal, where the Indian Sundarbans lie but the events left a stern warning.

Aila; May 29, 2009

The ill-famed Aila hit the Sundarbans at 125 km per hour wind speed with waves rising as high as 40 feet, demolishing 900 kms of earthen embankment on a single day. Saltwater flooded half of the islands' agricultural land, making it impossible to grow rice during the monsoon of 2010. Sundarban farmers, like elsewhere have been taught to grow

An intensive search was launched to trace seeds of varieties of rice that were salt-water tolerant



Talmugur seeds sown in the Hingolganj block





of rice as a legacy of the Green Revolution, along with the use of chemical fertilizers and pesticides. The farmers experiencing a decline in productivity over the years despite an increasing use of chemical fertilizer but the package failed totally following salt water incursion into farmland. The state agriculture department provided little

high-yielding

help; the Indian Coucil of Agricultural Research (ICAR) Institute Port Canning did not provide much solace either. It was a dismal picture of the most pathetic kind.

CSO initiative

А Kolkata-based society organization, Endev for (Society and Development), comprising

professionals (led by the author), looked for a way out. Tracing the traditional knowledge base, one of its members, Debal Deb (who has set up an organisation named Basudha in the semi-arid Bankura district of West Bengal and successfully saved more than 600 rice varieties), provided the names of six rice varieties, known to have been grown by Sundarban farmers for their salt-tolerance qualities. They were called 'Matla' (named after a river in the area), 'Hamilton' (named after the famous British settler, Daniel Hamilton, who encouraged settlers during British period in the Sundarban forests), 'Nona Bokra', 'Talmugur', 'Lal Getu' (red) and Sada Getu (white). These varieties had been grown for between 80 years and 100 vears and were known to withstand salt in the soil. Once the names were available, Endev launched an intensive search for these lost varieties. After more than a year, very small quantities of seeds of four varieties could be accessed from diverse places. The National Bureau of Plant Genetic Resources (NBPGR) in New Delhi provided 100 gms of Talmugur and Nona Bokra. The other varieties were reportedly not available even with the NBPGR but were eventually found in remote

The green line shows the areas of coverage under the NCRI project

villages of Mathurapur and in the Mousami Islands in the Namkhana block of the Sundarbans.

Micro planning

A project was then drawn up to use micro planning for sustainable agriculture with support being offered by National Council of Rural Institutes (NCRI), Hyderabad (a Ministry of Human Resources Development funded institution). Endev linked five community-based organizations, working in seven of the 19 blocks of the Sundarbans, under the North and South 24 Parganas districts of West Bengal. Collectively organizations-WWF-I, these (Namkhana Block), Lutheran World Service India Trust, (Mathurapur I & II Block), Tagore Society for Rural Development (Gosaba Block), Joygopalpur Youth Development Centre (Sandeshkhali I & II Blocks) and Paschim Sridharkhati Jankalyan people of the Sundarbans (see map)

Experiments were conducted by Debal Deb at







Seed bed of Lal Ghetu, Hingolganj block

Samples of salt-tolerant rice varieties

Table 1: Salt tolerant capacity of the rice varieties			
Rice varieties	Salt tolerant capacity		
Nona Bokra	3mS/cm		
Talmugur	5mS/cm		
Lal-Getu	6mS/cm		
Sada-Getu	7mS/cm		

Basudha to establish the salt tolerance limits of these four varieties (*Table 1*)

Endev then organized a day-long training workshop in May 2011 with all the five Community based organisations (CBOs), explaining to them the methods to be adopted after assessing the level of soil salinity (each variety's upper tolerance limit had been tested by Debal Deb) without any chemical fertilizer or pesticides. Small quantities promote the process. The level of enthusiasm and the acceptance by the farmers of these once-common but now rare seeds was evident when farmers in Mathurapur composed a song eulogizing the properties of these 'miracle' seeds. Farmers have carefully preserved all the harvested seeds in community seed banks (earthen vessels are used for each variety) with the intention of sowing the seeds and multiplying them during the monsoon of 2012. Endev estimates that at least ten times more area can be covered using these seeds during the current year and the cropped area can be scaled by up to 30 times by 2013.

As far as the future is concerned, the civil society initiative provides some valuable lessons. First, by successfully tracing back the history and

After these once-common but now rare seeds were accepted by farmers, they composed a song eulogizing the properties of these 'miracle' seeds

of seed were made available to the CBOs and in the monsoon of 2011, after soil-testing, the CBOs started a seed bed preparation in their respective areas. Saplings were transplanted with a variable degree of success and at the end of the monsoon season, the crop was harvested. Endev estimated a success rate of 75 per cent to 80 per cent but major damage was experienced in Sandeshkhali after 10 days of incessant late, monsoon rain. Crops were harvested and rice seeds for each of the four varieties were collected.

Farmers' meetings were held every month to

capturing traditional knowledge, rare but valuable genetic resources were accessed and climate change combatted by 'adaptation'. Indeed, this can become a bigger reality. Second, collective action can make a difference against what is called 'collective inaction'. Third, such spontaneous acceptance by the farmers and their eagerness to preserve and use salt-tolerant rice varieties in critically vulnerable areas like the Sundarbans, offers hope for the future. Finally, micro-planning can well and truly lay the foundation of a replicable model for sustainable agriculture.



The author is former director general of the Zoological Survey of India and currently heads Endev

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Growing Population, Inefficient Farms

Bhavdeep Kang



he first-ever report on the state of Indian agriculture, brought out by the Ministry of Agriculture, paints a fearful picture of the farm sector: declining soil fertility, decreasing water availability, smaller and smaller farm holdings, falling productivity for key crops, wastage of produce and poor supply chain management.

In terms of solutions, the approach reflects confused thinking at the policy level. On the one hand, it acknowledges the devastating impact of the green revolution on soils and water in the north-west. On the other, it speaks of bringing the green revolution to eastern India. It emphasizes the necessity of increasing public investment in agricultural research and development but maintains the breakthrough technologies will come from the private sector.

At the very outset, the report concedes the "inefficient use and mismanagement of productive resources" like land and water. An estimated 29.4 million hectares of soil is "experiencing a decline in fertility, which is likely to increase in future". Another 120 million hectares are degraded, 3.1 million hectares of agricultural land are water logged and 4.1 million hectares affected by salinity.

The report observes that nutrient imbalance and micronutrient deficiency in agricultural soils



is a serious problem. Inefficient use of fertilizers, overuse of pesticides, dumping of municipal solid and industrial wastes containing toxic heavy metals and other poisons has resulted in "vastly reduced fertility". The decline in soil bio-diversity, that is, living organisms, which build up soils, fix nitrogen and make nutrients available to plants has had a severe impact on fertility.

In a large measure, this is because high fertilizer use has seriously distorted the nutrient balance in the soil. The report recognizes the adverse impact of high doses of agro-chemicals, introduced by the green revolution. "An inadequate and imbalanced nutrient use coupled with neglect of organic manures has resulted in multi-nutrient deficiencies in Indian soils. These deficiencies are becoming more critical for sulphur, zinc and boron", it says.

It points out that groundwater irrigation – the main mode of irrigation – has resulted in over-exploitation of groundwater in most states, particularly in the north-west, where the water table is getting depleted drastically. Water is a critical issue: half of the private investment in agriculture, which accounts for 80 per cent of the total, is on irrigation alone! "Free or low pricing of power for irrigation has primarily contributed to this problem", says the document, highlighting the Catch 22 situation in which most state governments now find themselves: free power is given to farmers to encourage higher productivity, but this results in overdrawing of groundwater. More and more power is required to source water from deeper and deeper aquifers.

The report says that by 2050, about 22 per cent of the geographic area and 17 per cent of the population will be under absolute water scarcity. "The per capita availability of water which was about 1,704 cubic metres in 2010 is projected to be 1235 cm in 2050. Ground water quality is affected by arsenic, iron, fluoride content, overdraft, fertilizers and pesticides use and saline water intrusion in the coastal regions".

Irrigation demand is likely to go up with increase in temperature because of climate change, resulting in drier soils, further lowering of the ground water table, salt accumulation in upper soil layers, a rise in sea level, decrease in soil organic carbon (SOC) and such like. "The changes in rainfall volume and frequency, as well as wind velocity may alter the severity, frequency and extent of soil erosion."

It also records the decline in productivity of certain crops, like wheat, for which data indicates that "yield levels have plateaued....This suggests the need for renewed research to boost production and productivity". Given that "the limit of land availability for agriculture has already reached... continued inability to judiciously use these nonrenewable natural resources can have serious implications." The net sown area has remained at 141 million hectares for several decades.

The report claims that in recent years, realizing the limits of green revolution technologies, "the

"The changes in rainfall volume and frequency, as well as wind velocity may alter the severity, frequency, and extent of soil erosion."







emphasis shifted to appropriate/alternative and sustainable land use systems and to improving the efficiency of resources and inputs". To this end, the "National Project on Management of Soil Health & Fertility" (NPMSH&F) has been introduced. This will promote soil-test based balanced use of chemical fertilizers, along with organic manures like Farm Yard Manure (FYM), vermicompost and green manure to maintain soil health and fertility.

At the same time, the National Mission for Sustainable Agriculture (NMSA) has been initiated under the National Action Plan on Climate Change (NAPCC). It seeks to promote sustainable farming as a way to mitigate the impact of climate change. The claims of striving for sustainability are given the lie by the massive increase in the use of chemical fertilizers and pesticides in the last five years. Pesticide use has gone up from 39.77 thousand tonnes in 2005-06 to 55.54 thousand tonnes in 2010-11. Similarly, fertilizer use is up to 265 lakh tonnes in 2010-11 from 203 lakh tonnes in 2005-06. The report itself acknowledges that the overall consumption of fertilizer has increased from 70 kg per hectare in 1991-92 to 144 kg per hectare by 2010-11!

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Green revolution technologies are being applied on a wider scale than ever before, to power the "Eastern India Green Revolution", which has boosted overall agricultural production. It is the rice production in this region that has enabled the government to claim record-breaking yields for the past couple of years. After acknowledging the ecological impact of the green revolution in north-west India, it fails to point out the dangers of applying the same techniques in the eastern region.

In terms of the way forward, it calls for special treatment of the agricultural sector, because its significance "is not restricted to its

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contribution to GDP, but that on account of its complementarity with other sectors. It has far reaching ability to impact poverty alleviation and rural development." It points out that the average Indian still incurs almost half of his/her total expenditure on food, while roughly half of India's work force is still engaged in agriculture for its livelihood.

The report raises the dilemma of subsidy versus investment. The fertilizer subsidy, the largest

The report seeks to justify the Seed Bill on the ground the farmer will have access to better quality seeds through the private sector. "Seed is considered to be a catalyst of change in agriculture. The Green Revolution in India during the late sixties and seventies bears witness to this truth. And lately, during the decade of 2000s...The major difference in the two periods is that earlier these high yielding seeds came from public institutions, but lately they are increasingly coming from the private sector in selected crops. The Seeds Bill seeks to answer some of these concerns". input subsidy apart from free power, leads to an imbalanced use of agro-chemicals and contributes to deteriorating soil conditions. It also crowds out public investment in agriculture research, irrigation, rural roads and power. Investment is preferable in terms of long-term growth in agricultural production. Yet there are several areas of unaddressed problems in Indian agriculture.

- What the report does not say is that drastically cutting down the fertilizer subsidy would have a negative political fallout.
- The sensitive issue of land reforms is not addressed at all.

No reference is made to the Ministry of Rural Development's report on the need for a fresh round of land reforms; the emphasis is on freeing up land lease markets, so that big retailers/processors can have access to big chunks of agricultural land, leased from small farmers.

The report merely notes that "fragmentation of operational holdings has widened the base of the agrarian pyramid in most states". The average size of operational holdings in India has diminished from 2.28 hectares in 1970-71 to 1.55 hectares in 1990-91 to 1.23 hectares in 2005-06. The proportion of marginal holdings (area less than one hectare) has





Source: Directorate of Economics & Statistics, Ministry of Agriculture & CSO.

"The agricultural production basket is still not fully aligned to the emerging demand patterns."

increased from 61.6 per cent in 1995-96 to 64.8 per cent in 2005-06.

However, the report acknowledges that the size of a farm has nothing to do with its productivity (in fact, small farms are known to produce more per unit of land than large farms, given access to the same inputs) and calls for technology suited to small farms, support infrastructure and market systems that allow aggregation of produce from small holdings.

The report throws up useful numbers, indicative of the problems faced by the agricultural sector. For instance, "the share of Gross Capital Formation (GCF) of agriculture & allied sector in total GCF has hovered between six to eight per cent whereas it was around 18 per cent during the early 1980s". It notes that "the share of agricultural exports in India's overall exports has been declining from 18.5 per cent in 1990-91 to 10.5 per cent in 2010-11".

It points to the "increasing divergence between the growth trends of the total economy and that of agriculture". 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, indicating that increasing volatility is a real challenge and may increase because of climate change.

Interestingly, the report makes a strong pitch for diversification to high value (non-foodgrain) crops. It points out that foodgrain constitutes only one-fifth of the total value of output from the agriculture and allied sectors, which is less than the contribution from the livestock sector and almost equal to that of the horticulture sector.

The diversification is justified on the grounds of changing consumption patterns. With economic growth, the demand for cereals has declined, with consumption at 11.35 kg per capita per month in 2009-10, as compared to 12.11 kg per capita in 2004-05 and 14.80 kg per capita in 1983-84. In urban areas, it has declined from 11.30 kg in 1983-84 to 9.94 kg in 2004-05 and to 9.37 kg in 2009-10.

At the same time, high value perishable commodities like fruits, vegetables, milk, meat, fish and eggs are more in demand. "The agricultural production basket is still not fully aligned to the emerging demand patterns." The emphasis should therefore be on these products, which have been the main drivers of food inflation.

This is a dangerous assumption, given that per capita availability of foodgrain in India is far below that of China and the USA. In fact, the crops that have recorded high growth are either edible oils or



OUTLOOK



non-food crops. Rice has done well but at the cost of coarse cereals, which have a better nutritional profile.

Soyabean and groundnut have recorded a high rate of growth in production, the former mainly because of expansion of the area under cultivation and the latter because of better yields. The negative ecological and economic impact of soyabean cultivation has not been described.

The report claims that cotton has boomed, with yields going up by 70 per cent, thanks to the introduction of Bt cotton. This claim has been challenged by both government and social sector agencies, who have used studies and statistics to show that Bt cotton has not improved yields in the long term. The Bt cotton experience is used to give a boost to the private sector in the area of seed production. "Bt cotton seeds and hybrid maize seeds have shown spectacular results" says the report. "India's private sector has the strength to multiply those technologies and to reach millions of farmers (big and small) in the fastest possible way", it adds, neglecting to mention that a substantial part of the agricultural inputs sector is controlled by multinational corporations.

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Much emphasis is laid on public-private partnership in storage infrastructure and supply chains. This is nothing new; the policy has been in existence for a decade but few investments in critical areas have been made. This is put down to government interventions, like export bans on wheat and rice, or limits on the stocking of grains by private trade, all of which dissuade private sector players from investing in the agri-system.

However, the report somewhat reluctantly

Although there is no creative, out-of-the-box, thinking that the report has at all been brought out is itself a positive move

acknowledges the importance of government intervention in maintaining the minimum support prices (MSP) for agricultural commodities. For procurement of perishable horticultural commodities, which are not covered under the Price Support Scheme, with a view to protect growers from making distress sale in the event of bumper crop when the prices fall below the economic cost of production, there is a Market Intervention Scheme (MIS) but half the loss must be borne by the state/U.T. The MSP is one way of ensuring a fair deal for farmers, by setting a benchmark price.

Interestingly, the report notes that labour costs have increased and now account for 40 per cent of the cost of production. The MNREGA has had a positive impact in that it functions as a social safety net, but it has also led to a substantial increases in the wage rates of agricultural and non-agricultural labourers, reduced the availability of labour for agricultural operations and increased the cost of cultivation.

In brief, the report's prescriptions for the farm sector include more emphasis on eco-friendly farming, more R&D, improved seed varieties, more investment in storage and processing infrastructure, more credit for the farm sector, stronger linkage with global markets, crop diversification and boosting animal husbandry, fisheries and poultry.

What the report does not do is address the basic issue of farmer's distress, due to spiralling input costs. Nor is there any push towards preservation of biodiversity and farmers' varieties; the emphasis is on transgenic or hybrid varieties. While it calls for a push towards sustainable farming technologies, there is no plan for making bio-inputs available to farmers.

Although there is no creative, out-of-the-box thinking, the fact that the report has at all been brought out is itself a positive move. Also, the frank admission that the farm sector is in serious trouble can at least fuel a search for solutions. The report should become an annual feature. A logical next step might be a separate budget for agriculture.

The author, a senior journalist, has been a political commentator for magazines like Outlook and India Today and newspapers like the Telegraph and the Indian Express. She now writes on agriculture and food policy. She also works on sustainable agriculture initiatives in various parts of

the country.

VIEWPOINT



Bhavdeep Kang



VIEWPOINT

section of economists has opposed the 15.7 per cent increase in the minimum support price (MSP) of paddy proposed by the Commission of Agricultural Costs and Prices (CACP). Farmers, on the other hand, feel the increase is too low to offset the rising cost of farm inputs. Economist Surjit S. Bhalla argues that the Indian farmer receives the highest price for paddy globally. This, in turn, increases the food subsidy bill and creates inflation. Rather than incentivize him to grow paddy through a high support price, the farmer should be encouraged to shift to other crops. Others argue that in setting a high benchmark price for paddy, the government artificially inflates the price of rice and makes it harder to access for the poor.

What Bhalla and others should recognize, while arguing in favour of a lower MSP for paddy and other essential commodities, is the rising cost of farm inputs. The Centre for Sustainable Agriculture in Andhra Pradesh (CSA), a major rice-growing state, calculates that the cost of cultivation for paddy in 2011-12 was Rs 1,800 per quintal, whereas the MSP was only Rs 1,080. Even with the hike to Rs 1,250 per quintal, the costs will not be adequately covered.

Paddy farmers of Andhra Pradesh observed a "crop holiday" last year, to protest the increase



Paddy farmers of Andhra Pradesh observed a "crop holiday" last year, to protest the increase in input costs, which they claimed had rendered farming non-viable. Some three lakh acres of land were left fallow in four districts

in input costs, which they claimed had rendered farming non-viable. Some three lakh acres of land were left fallow in the East and West Godavari, Guntur and Warangal districts.

Later in the year, the Bharatiya Kisan Union, representing wheat farmers of Punjab, Haryana and Uttar Pradesh threatened a similar crop holiday. The Ministry of Agriculture responded by raising the MSP of wheat virtually overnight, from Rs 1,120 per quintal to Rs 1,285 per quintal.

All agricultural inputs – land, seeds, water, labour, fertilizers, pesticides and farm equipment – have become more expensive. In particular, the cost of labour and fertilizers has gone up dramatically, thanks to policy interventions by the government.

The cost of labour, estimated to account for

40 per cent of total agricultural input costs, has gone up in tandem with the increase in wages under MNREGA (National Rural Employment Guarantee Scheme). In fact, MNREGA merely sets a base price; the actual cost of labour is higher. In Odisha's coastal districts, agricultural workers demand Rs 200 per day and in Punjab, it is even higher, at Rs 250 a day.

Another major input cost is fertilizers. With the introduction of the nutrient-based subsidy, fertilizer prices have risen across the board. The prices of the widely used phosphatic (P) and potassium (K) fertilizers, DAP (di-ammonium phosphate) and MoP (muriate of potash) have almost doubled since April 2010, with rise in international prices and part withdrawal of



subsidies. Prices of DAP increased by Rs 18,350 per tonne in mid-2011, from Rs 9,950 in the previous year. MoP went up to Rs 11,300 per tonne, from Rs 5,055 per tonne.

The cost of urea has also been increased although prices have yet to be decontrolled. It must be kept in mind that the final price paid by the farmer is even higher because many of them are forced to buy in black. Bigger farmers tend to hoard fertilizer, with the result that middle and small farmers have to queue up for them.

The cost of fertilizers is not likely to come down anytime soon, with the weakening of the rupee against the dollar. India is the largest consumer of DAP and the second largest consumer of MoP. Almost all of these are imported.

Seed prices have been going up steadily, with private players accounting for a bigger chunk of the market. Farmers' organizations have opposed the Seed Bill, intended to regulate the seed sector, on the grounds that it does not have a provision for seed price control.

The cost of energy is another factor. As most

farmers increasingly rely on groundwater for irrigation, state governments heavily subsidize power to the farm sector. With water tables falling across most states, more power is required to access water and this is added to production costs. Where power supply is erratic, as it is in many parts of India, farmers rely on diesel pump sets. Despite subsidy, the cost of diesel has gone up sharply.

Paddy is both water and labour intensive. Punjab farmers have been forced to go in for increasing mechanization because of labour shortage, which entails a high capital cost. The state government has introduced a subsidy on mechanical transplanters for paddy farmers.

While fixing the MSP of rice, certainly the food subsidy bill and inflation must be kept in mind. At the same time, if farmers do not get what they feel is a remunerative price for their produce, they might well follow the example of Andhra farmers and leave their fields fallow.

Is that what the country has planned for its farmers? •

FOCUS





Missing Bees Could Sting Himachal's Apple Economy

Ashim Choudhury

arch is the best time to visit the Kullu Valley that straddles the gushing Beas river, surrounded by snow-clad peaks most of the year. Kullu's famed apple orchards are in bloom then, giving it that 'Garden of Eden' look, accompanied by a cold nip in the air. The beauty that will take a way your breath, however, hides an ugly fact that could threaten the state's fragile apple economy: the missing bees. Also missing are the butterflies, hornets, flies and other insects that act as pollinators. Bees are one of the most important and effective pollinators of the apple crop. Yet people in the apple valley, whom this writer spoke to, are not fully seized of the threat facing apple cultivation, their livelihood and economy.

Farmer after farmer appears to be only vaguely aware of the missing bees. Every other person in Kullu is an apple farmer or 'orchardist' as they like to call themselves. Prashant Thakur, 37, is one



such. He owns, besides a petrol pump, 30 bighas of orchard with around 1,000 apple trees. "I am not a technical person but I can say for sure that the number of butterflies and bees has gone down. When we were kids, the place would be swarming with bees and butterflies", he remembers. Unlike his father, who passed away three years back, he does not spend too much time in the orchards, just ensuring that the spraying in done from time to time. "My father used to inspect every tree and we did not use so many chemicals", he recalls. "That old knowledge is missing among the younger farmers", he admits.

Rakesh Sharma, alias Pappu, my guide in Naggar on the upper reaches of, has a similar tale to tell. "These days you do not see many wild bees or butterflies like earlier. This may be because of the chemicals we use", he suggests. Another middle-aged government servant cum apple farmer, says the same thing: "Butterflies, bees; they have all finished. Earlier the organically grown apples were much more juicy and tastier". Harinder Thakur, who also runs a garage in Naggar, says, "There is a big difference from the past. Earlier farming was organic. Now they use too many pesticides. That is the main reason for the bees disappearing". I ask Pappu to take me to an old, experienced apple farmer and I meet Gayatri Dutt, 72, a former mali (gardener) of the horticulture department. Dutt appears unfazed about the imminent threat to apple growing in the Kullu valley. "Scientists had predicted this more than 20-25 years ago. Kullu also has a low altitude (1,700 metres) which is not ideal for apple growing", he says with a toothless grin.

He too feels it is the chemical pesticides that may be the culprit. "I have worked for 40 years in the department (of horticulture). I know. In the eighties, we used to ply farmers with loads of pesticides. Earlier it was one spray per crop; now even three-four sprays are not enough. Log nahin mante", he adds for emphasis. Ganesh Goswami, another 60, is veteran 'orchardist', who has been in apple growing the business for over 35



years. He is just back from spraying his orchards when we meet him in the evening. If you thought he was a farmer of traditional practices, perish the idea. "On average we spray six to seven times till the apples are ready", he says with no trace of guilt even though he knows chemicals are responsible for the fall in wild bee population. His first 'oil spray' is to give the apple tree a smooth 'skin'. The next pesticide sprays are during the 'silver tip', the 'pink bud' and after the 'petal fall'. Two more sprays are done when the apple reaches 'pea-size' and 'apricot-size'. As though all this spraying was not good enough, he also sprays apples for "colour, shine and size".

With all this indiscriminate spraying, it is no surprise that the bee, butterfly and other insect population in the hills has declined drastically.





There has been a sharp decline in the bee population and it is because of the indiscriminate use of pesticides

After talking to the 'orchardists', my search led me to an expert on the subject of bees, Dr Joginder Pal Sharma, an entomologist who works at the Regional Horticulture Research station in Bajaura, close to the Kullu town. Sharma, a mine of information on bees, warms up quickly to the topic of dwindling bee population, when I track him down at the Horticulture Research centre in Seo Bagh, Lugar Bhatti.

"Of course there has been a sharp decline in the bee population and it is because of the indiscriminate use of pesticides", he says with emphasis. "Where they may need two sprays, they use six", he says. He also attributes the decline in bee population to a loss of habitat. "Much of the wild flora, particularly bee flora, has fallen drastically, contributing to their decline", he says. "Most of all, however, the new building architecture is to blame", he says. Yes, architecture. "Earlier the homes, made of wood and stone, would have a few niches for the bee hives". Pointing to an old village of wooden homes in the distant mountain, he says: "Each of those homes still has hives in them".

With new concrete architecture of bricks and cement, the old Himachali tradition of rearing bees in homes is fast disappearing. This is borne out by

FOCUS



Photo: drouu

several villagers I speak to. Goswami, the farmer from Naggar, mentioned earlier, says every home used to have hives. "My ancestral home still has seven or eight hives", he says. Yet, when he recently moved into a new house, partly made of wood, he did not keep any space for the hives. Why? "Because nowadays people, particularly children, are afraid the bees will sting them". With the boom in tourism and concrete structures choking the green valley, there does not appear to be much hope for wild bees.

According to Sharma, bees (much more than butterflies, common flies and other insects) are "extremely important" for apple pollination. "The quality of pollination has a huge impact, not only on quantity but also on the quality of the apple", he says. According to him, a well-pollinated apple has six seeds that give it the best shape and size. An apple with lesser seeds (not properly

A GLOBAL PHENOMEN

A 2009 study by the Punjab University had concluded that radiation from cell phones adversely affected navigation of the bees that could not find their way back to the hives. An experiment found that 'live' cell phones placed beside hives for 15 minutes, twice a day, over a three-month period led to there being neither honey nor pollen in the hives. Also, the queen bee's capacity to lay eggs had been compromised. Though the study had been widely publicized in the media, shockingly very few people in Kullu, including the experts, had heard about the study.

Several such research studies in the west have linked electromagnetic radiation from cell phone towers and transmission lines to loss of bee populations as the waves disorient their homing facility. The Punjab university study only confirms global trends of alarming fall in bee populations commonly termed as CCD or colony collapse disorder. Meanwhile, in India there is news that Mukesh Ambani's, Reliance Industries' subsidiary, Infotel Broadband Services is to set up over 100,000 telecom towers across the country over the next three years for its 4G operations. No one has thought about the fallout this will have on the already vanishing bee colonies and, more importantly, its impact on agriculture.

pollinated) does not have a good shape or size nor does it command the best price. Sharma is now on a mission to propagate a new kind of hive among farmers, developed at his research centre. "We are urging villagers to rear bees in their homes and orchards. This hive will be a boon for increasing the bee population". Not many people in the valley have access to the knowledge stored in the confines of the research centre though.

Interestingly, the fall in bee population has provided wandering beekeepers from the plains of Haryana and Uttar Pradesh with a business opportunity. During the apple-flowering season groups of beekeepers descend on the valley with truckloads of bee boxes. Now, in addition to getting nectar and pollen (important feed for the baby bees), the beekeepers also earn money from orchard owners for keeping their bee-boxes in the apple farms. The going rate is 500 per box. The demand for bee-hives is so strong during the apple-flowering season that beekeepers find it difficult to keep pace. We meet Ravinder one such roving beekeeper from Yamuna Nagar in Haryana. We found him beside a road in Laran Kello village with 150 boxes. "We keep moving from place to place. I have been here (with six others of his group scattered around the hills) for over a month now. We will stay here for another month and move to Lahul where one gets the best honey that comes from natural jari booti (herbs), he says.

Ravinder says he does not get much honey from the apple blossoms, just pollen. Entomologist, Dr Sharma, says: "It is true. The apple pollen is sticky and does not pollinate through wind like many other fruits. That is what makes bees so important to the apple crop". Do the roving beekeepers make a difference, I ask Sharma. "Big difference", he says emphatically and cites the example of three villages of Khanknal, Gojara and Jagat Sukh (now sucked into the vortex of Manali's tourism). These villagers form a co-operative to hire the hives, and their apple production is high. Currently Himachal has some 15,000 hives available to apple farmers, far short of the 200,000 needed. These are the reared, domestic bees, which are more fragile and die easily in the cold. Hives need an ideal temperature of 32-33 degree centigrade. Whenever there is a rise or fall in the temperature the bees regulate it through their own unique, wild ways.

Meanwhile, no one is talking about the natural bee species in the wild that used to thrive in the hills thanks to the abundance of wild flora. Now much of the flowering wilderness has given way to apple farming. The attendant chemicals and pesticides have brought another set of problems for the survival of bees (and other insect species). The fragile ecology of the hills has been further threatened by deep encroachments into forest land. Pune Ram, a range forest officer in Manali, asked if he was aware of any study or research on the dwindling wild bee, was candid enough to admit: "We have not even heard about this issue, forget about any research". On further prodding he did admit that one no longer came across wild hives like in the days of yore. "May be they are facing extinction", he guessed. If what he says is even half true, agriculture in Himachal, particularly apple farming, faces a grim future. It is high time the policymakers stood up and took notice before missing bees sting the state's apple economy.

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

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The Guar Growers of Rajasthan

Ajay Vir Jakhar

ot just corporates; farmers too love to profit. Having decided to grow guar this season, I decided to travel to Rajasthan to interview a farmer growing guar, a crop that has been raking it in, thanks to global demand. I arrive at Hetramwala, near village Mayhiawali, in the late afternoon and set about getting a feel of the farmer's pulse. I meet Vijay Singh Bhambhu, who owns five acres. Vijay Singh's parents settled here more than 50 years ago. He lives in the same kachha house that his forefathers made. It has a charm that is near impossible to find now-a-days.

I asked Vijay Singh who is also director of the Panchayat Samiti in the Congress government of Rajasthan, about the state of its farmers. He is goodhearted, simple farmer and quite disillusioned with his own government for many reasons. The primary angst is over the curtailed supply of canal water. He is supposed to get around seven minutes of water per bigha once every week but gets erratic supplies for less than 26 weeks, which is half the mandated time. Even this water is not and Sri Ganganagar in Rajasthan. They find this discrimination in price unacceptable. The price of diesel in neighbouring Punjab is Rs 4 per litre more than in Rajasthan and diesel is smuggled into Rajasthan from Punjab. They ask if there was a similar case of dual pricing within any other state. I say that do not know of any such instance. Things were not so bad when Vasundhara Raje Scindia was the chief minister.

It takes a lot of persuasion to wean upset farmers from such a discussion that gets increasingly interesting. They surprise me with the information that the adjoining village of Ganeshgarh has voted to recall a directly elected sarpanch. The right to recall elected members of parliament is the amongst the demands of Anna Hazare. It has already been put into practice in this Rajasthan village. An elected representative can be recalled after two years of election by 75 per cent majority.

Electricity has never been a problem here. Household electricity is available at the rate of Rs 4.5 per unit for 17-18 hours per day while water for the tube well is available for five hours for Re

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available when required. There are other problems associated with water; drinking water is a problem; so is drainage.

His second grouse is that politically influential people manage to get water on demand. Rich farmers manage to store two months of erratic drinking water supply in their tanks while small and marginal farmers have to carry it on their backs over long distances. There has been no repair of water tanks for many years.

The third worry is that animal husbandry, which used to be profitable, has turned red. The price of fodder has increased manifold while the price of milk had been stagnant at between Rs 15 and Rs 20 per litre. Clearly, dairy farming is no more profitable.

There are other infrastructural issues: roads are very bad and have not been resurfaced for many years. Assistant agriculture officers visit the village twice a year but are of little assistance. While I talk to Vijay Singh, other villagers gather around and join in the conversation. They all agree with Vijay Singh. The price of diesel has recently gone up by Re 1 in the two adjoining districts of Hanumangarh 1 per unit. The Rajasthan government is paying a bonus of Rs 100 per quintal over and above the MSP price of Rs 1,280. The farmer needs to show his land girdawari/land crop documentation to get the bonus. This is to prevent Punjab and Haryana farmers from selling their produce in Rajasthan.

The cost of land in Hetramwala is between Rs 8 lakhs and Rs 10 lakhs per bigha. Just just four kilometers away, on the banks of the Gang canal, the price is between Rs 18 lakhs and Rs 20 lakh per bigha. The underground water of the hamlet is a little brackish while the tubewells adjoining the canal have sweet water that seeps from the canal due to the sub-standard lining. While one cannot take canal water, one can dig a well and access the sweet water. Consequently, the rent of the land is Rs 8,000 per bigha for land without a tubewell and Rs 16,000 per bigha where there is sweet water from the tube well. The rent has gone up by Rs 2,000 per bigha because of better prospects from sowing guar.

Vijay Singh is not going to sow his normal crop of Desi Narma (non-hybrid) cotton because he



GREEN FINGERS



could not economically control the Lal lat (Pink Ball worm) attack last year. This may have due to long spell of humid weather and unseasonal rains. The sarson (mustard) that he sowed in January 2012 was not very good either because of the exceptionally long spell of cold weather.

Vijay Singh tells me that the last year the farmers were thrilled to sell guar at prices less than Rs 5,000 per quintal. After six months they felt cheated because gaur was selling for more than Rs 30,000 per quintal. Most of the profits were made by the middlemen and the millers while the farmers were helpless bystanders.

Making the local headlines now, however, is Seth B. D. Agarwal with his largesse for guar farmers. He is the managing director of of Vikas WSP, India's largest guar gum manufacturer and currently working with U.S. multinationals, It takes a lot of persuasion to wean upset farmers from such a discussion. They surprise me with the information that the adjoining village of Ganeshgarh has voted to recall a directly elected sarpanch

Economy Polymers and Chemplex, to distribute 2,000 tonnes of free seeds worth Rs 62 crores to more than 2.5 lakh farmers this season.

When comparing cotton with guar, it is easy to realize that cotton requires to be watered seven to eight times a season and requires five to six pesticide applications. Guar requires to be watered twice and the pesticide usage is not more than double, depending on humidity levels. Further, being a leguminous crop, it improves soil fertility by nitrogen fixation. By using 500 grams of seed per bigha, one can get up to $3\frac{1}{2}$ quintals of guar yield per bigha. Guar can be harvested by a machine in a day, thereby saving precious time for timely sowing of the next crop.

Cotton that has to be hand-picked takes time and costs a lot. Even if one nets Rs 5,000 (current price Rs 30,000) per quintal for guar, it better than cotton at Rs 8,000 (current price Rs 4,000) per quintal after considering all factors. It takes no economist to understand that there will be less cotton sowing this year compared to last year. The irony is that because of low prices, there will be a drop in sown acreage for cotton and crops such as jeera (cumin). Prices of these commodities will sky rocket next year.

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