Perspective: Fresh Veggies, Big Potential

Sugar is Sweet, Sugarcane is Not

FARMERS' FORUM

Vol. 14; No. 06; Dec 2014-Jan 2015 ₹100 www.farmersforum.in

Issues and Ideas for Indian Agriculture

GOOD MANURE BAD MANURE!

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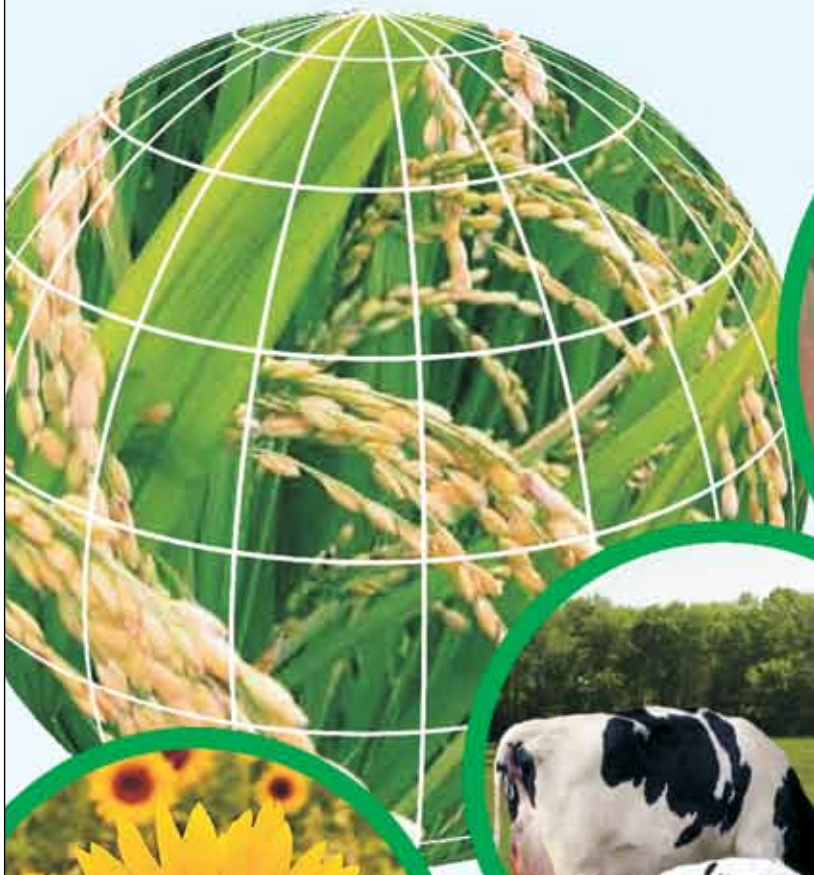

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Volume 14; No. 06;
December 2014-January 2015
RNI No. DELENG/2001/5526

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Owner
Bharat Krishak Samaj

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

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

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Unfolding Nightmare for Hapless Farmers

"Not by depending on financial allocations alone but by blood and by sweat we shall achieve..."

— Prime Minister **Pandit Jawahar Lal Nehru**
at the *Bharat Krishak Samaj* Fair in 1957

It is time for nostalgia as the Bharat Krishak Samaj plans to celebrate its 60th anniversary in April 2015 and its archives throw up proud and historic moments that are worth reliving. At the inauguration of the Bharat Krishak Samaj seminar on the "Role of farmer organizations in agricultural and community development in India", there was none other than the Indian Prime Minister, Pandit Jawahar Lal Nehru, who, while referring to the targets set for the 2nd Five Year Plan, talked of India's ambitions and of how the country would achieve them. India would not do so by depending on financial allocations alone but "by blood and by sweat we shall achieve them", he said.

"Like a weighing scale, the progress in industrial and agriculture sectors had to be balanced for the achievement of an integrated economy. Industry alone could not deliver the goods", the Prime Minister said, as he placed the country's farm sector in perspective. Not only did farmers achieve those targets but India became a self-sufficient nation in agriculture production. Today, however, the balance is missing, the scales are tilted against farmers.

The Indian farmer is in a bind; facing an unfolding nightmare with the fall of commodity prices in India. Cotton, gram, basmati, maize, mustard and many other commodities are fetching less by one fourth what the farmers were getting last year. Sugarcane farmers are not getting paid their dues. As if these were not enough, farmers have to purchase even fertilizers like urea and DAP in the black market for premia as high as 33 per cent over the maximum retail prices designated by the government.

THE INDIAN FARMER IS FACING AN UNFOLDING NIGHTMARE WITH MOST COMMODITY PRICES LESS BY ONE FOURTH WHAT THE FARMERS GOT LAST YEAR

Those perpetuating such loot must not be allowed to get away and, indeed, it will not be possible for them to loot and scoot, as it were, without the nexus of the manufacturers and distributors. All this, while the while fertilizer industry is crying itself hoarse about being a victim of bad policy – which may well be correct – and no one held answerable

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for these serious transgressions. The Fertilizer Association of India (FAI), representing mainly fertilizer manufacturers, distributors and importers, likes to categorize itself as a non-profit organization. One is left to believe that fertilizer co-operatives are the only saving grace in this unholy mess.

The question is how does one navigate the system out of the mess and ensure that the new policy is not counterproductive. It is actually an oft-asked question and the answer is the same: involve farmers in policy making. Of course, the next question will be who will represent farmers at every level. One would have to leave the decision to the wisdom of the ruling alliance and hope that it does not err by selecting political appointees, especially property dealers or farmers, who reside in cities and those who advocate on behalf of vested interests.

THE INDIAN FARMERS ARE DOOMED TO SELL COTTON AT LESS THAN THE MINIMUM SUPPORT PRICE; GETTING LESS THAN HALF THE PRICE THAT THEIR CHINESE COUNTERPARTS GET

The Prime Minister has given hope that things will change for the better. He has promised to implement the M. S. Swaminathan Committee Report that recommends that the procurement price of agricultural commodities be based on production cost + 50 per cent margin. The key word is 'cost' and one can hardly accept the cost as calculated by Commission for Agricultural Costs & Prices (CACP) or any such facile organization.

It is time to act fast for farmers cannot live on hope alone. The budget for 2015 could be that defining moment. The good news is that the finance ministry has initiated the consultation process for collecting farmer views but past experience makes one sceptical.

Subsidies are very important for farmer prosperity and also play a very important role in managing to keep the farmers' at subsistence levels so that they do not migrate to cities in desperation. It has been suggested that this is precisely how farm subsidies keep the rural areas populated, cities governable and the nation from disintegrating.

Yet, in spite of the hue and cry by Indian economists and voices at the WTO, the subsidies that Indian farmers receive are not comparable to those in other countries like the USA, Europe or Japan. It is fashionable these days to compare India with China, to a glaring contrast. China directly subsidizes cotton farmers by ₹2,800 a quintal over and above the ₹5,900 a quintal that they receive from the market, amounting to ₹8,700, a quintal. The Indian farmers are doomed to sell at less than the minimum support price; getting less than half the price that their Chinese counterparts get.

Pandit Nehru had said mere allocation of finance is not enough. Forecasting, designing subsidies and policies are more important than just allocating finance. It is far more complex than it appears. Is India prepared? No; it is not. Is the farmer worried? Yes he is. ●

Ajay Vir Jakhar
Editor
twitter: *@ajayvirjakhar*
blog: *www.ajayvirjakhar.com*

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To the Editor

Talk about the weather; correctly

Congratulations on completing 24 issues of this superb magazine on Indian agriculture. You have not only fulfilled a felt need but have done it with such competence and sophistication. Your editorial, "Whither 'Ache Din' for the Farmer?" (*Farmers' Forum,* October-November 2014) was not only interesting but also hit the nail on the head in terms of India's failure to provide reliable weather information to the farmers even when agriculture is so dependent on the weather. Of what use is the successful mission 'Mangalyan' mission to Mars when the country cannot provide for the *mangal* (good) of its farmers who hold the key to its food security?

Neeraj Verma,
Rohtak, Haryana

A crop of misery

It was satisfying to read the proceedings of your conference on "Containing Food Inflation" (*Farmers' Forum,* October-November 2014) and the manner in which you have provided insights into inflation under the cover story "Inflation Insights: Price of Our Daily Bread". There is no denying that agriculture has got marginalized since Independence even as the need for food has increased by leaps and bounds. That much is clear from the statistic – that agriculture accounted for around 55 per cent of the gross domestic product in 1950 and has declined to about 14 per cent now. What is worse is that this diminishing position is reflected in the current thinking of the policy makers. Sadly, agriculture has "got marginalized even in the policy making agenda and in other ways too", as Arun Kumar suggested in his piece, "Inflation: Understanding the Complex Economic Linkages".

Virender Negi,
Uttarakhand

The FCI fix

Sir, Clearly a humungous FCI with decentralized operations is not working? It is time one heeded Subir Ghosh's suggestion in "Reinventing the Food Corporation of India", *Farmers' Forum,* October-November 2014) for an SBI-like government-owned company that operates at the marketplace for most of the day but does the government's bidding during national emergencies.

Rahul Mehra,
Chandigarh

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

Poor understanding of inflation at the top

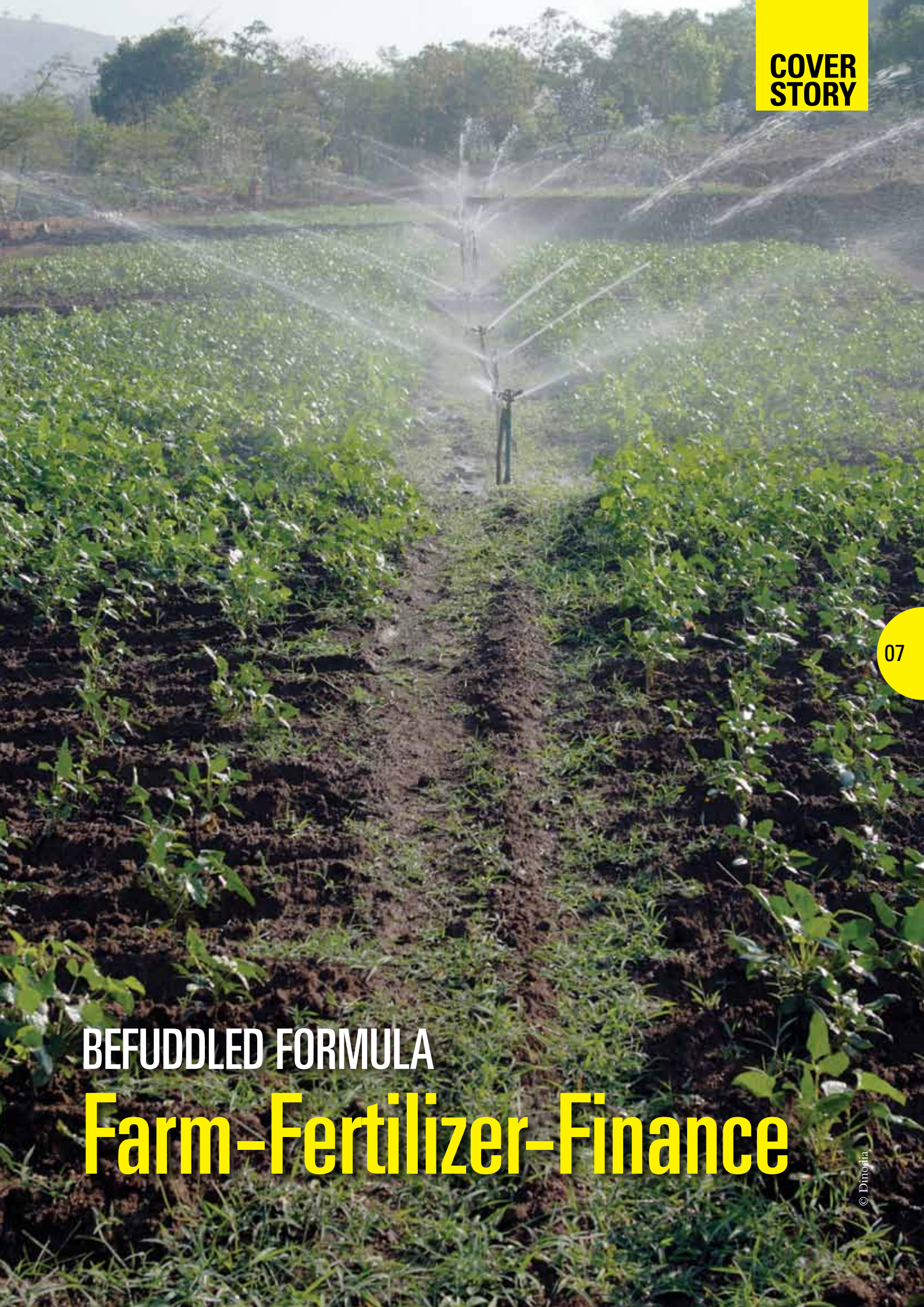
"Despicable Double Digits: Diagnosing India's Food Inflation" by Ashok Gulati and Shweta Saini (*Farmers' Forum,* October-November 2014) tries to explain a rather complex set of factors. India must get out of the mindset that support prices for farm produce are what fuels inflation. Minimum support prices have been declared for 23 crops and are effective for mainly wheat and rice and that too in Punjab, Haryana, Andhra Pradesh, Chhattisgarh and Madhya Pradesh. Why should prices sky-rocket across the board and across the country?

Ramesh Bhasin,
New Delhi

The ability to share

The success story of Vikas Choudhary, "Vikas Means Development, Answers to Farmland Woes" (Greenfingers, *Farmers' Forum,* October-November 2014) is not impressive only because of Vikas' achievements but because of the manner in which he is sharing knowledge and training others. Knowledge grows with sharing.

Jagbir Singh,
New Delhi

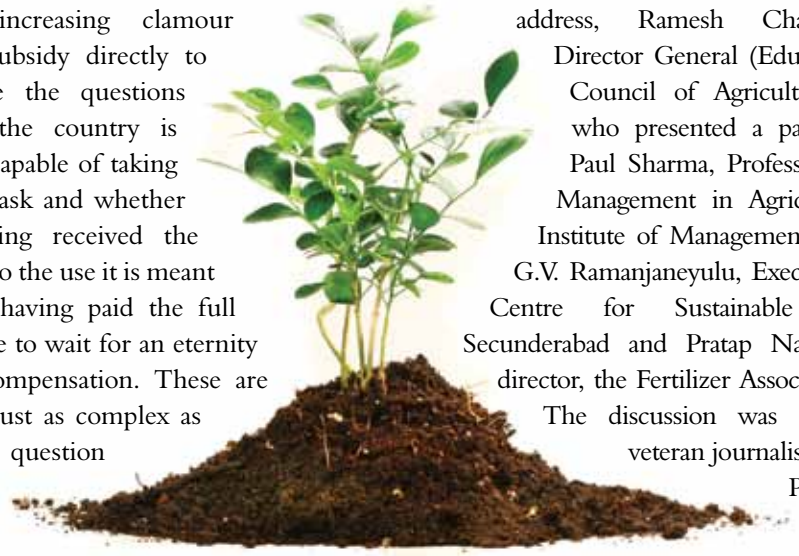


BEFUDDLED FORMULA

Farm-Fertilizer-Finance

There are three players involved in the fertilizer subsidy game: farmers, government, and industry. The government is finding it difficult to fund the massive subsidy burden; the industry is steeped in a pool of red ink and the farmer cannot afford market prices. All this while India's food security, which has been virtually equated with fertilizer use, is the topmost concern of the country. Is this a Catch-22 situation of India's own making thanks to some serious muddling of political and real issues or is there a professional way out?

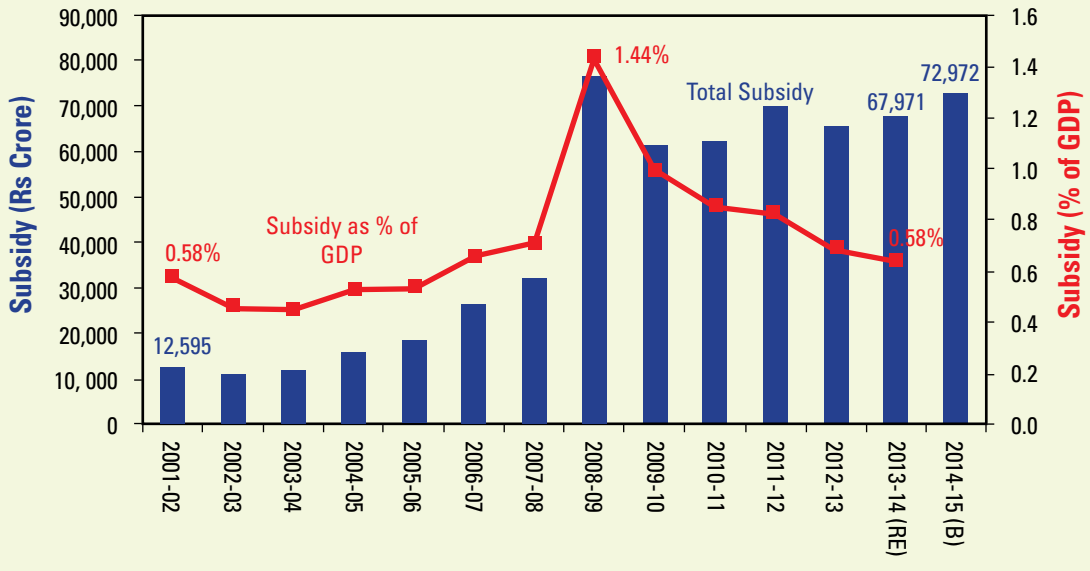
Amidst an increasing clamour for giving the subsidy directly to the farmer arise the questions about whether the country is administratively capable of taking on this massive task and whether the farmer, having received the funds, will put it to the use it is meant for or whether, having paid the full price, he will have to wait for an eternity to receive the compensation. These are complex issues. Just as complex as the fundamental question around whether India's fixation with the NPK (Nitrogen, Phosphorus, Potash) ratio is valid or not.



In a bid to figure out some answers, Bharat Krishak Samaj organized a seminar on "Understanding Fertilizer Use & Subsidy" at the India International Centre Annexe, New Delhi on November 7, 2014. The discussions that were flagged off by Ajay Vir Jakhar, Chairman, Bharat Krishak Samaj, featured, Jugal Kishore Mohapatra, Secretary, Department of Fertilizers, Ministry of Chemicals and Fertilizers, Government of India, U.S. Awasthi, Managing Director, IFFCO, who delivered the keynote address, Ramesh Chand, Deputy Director General (Education), Indian Council of Agricultural Research, who presented a paper and Vijay Paul Sharma, Professor, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, G.V. Ramanjaneyulu, Executive Director, Centre for Sustainable Agriculture, Secunderabad and Pratap Narayan, former director, the Fertilizer Association of India. The discussion was moderated by veteran journalist and educator, Paranjoy Guha Thakurta. ●

The fertilizer subsidy represents a Catch-22 situation of India's own making, thanks to some serious muddling of political and real issues

Fertilizer Subsidy Trends



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TECHNOLOGY RELATIONSHIP

BRINGING SEEDS OF PROSPERITY

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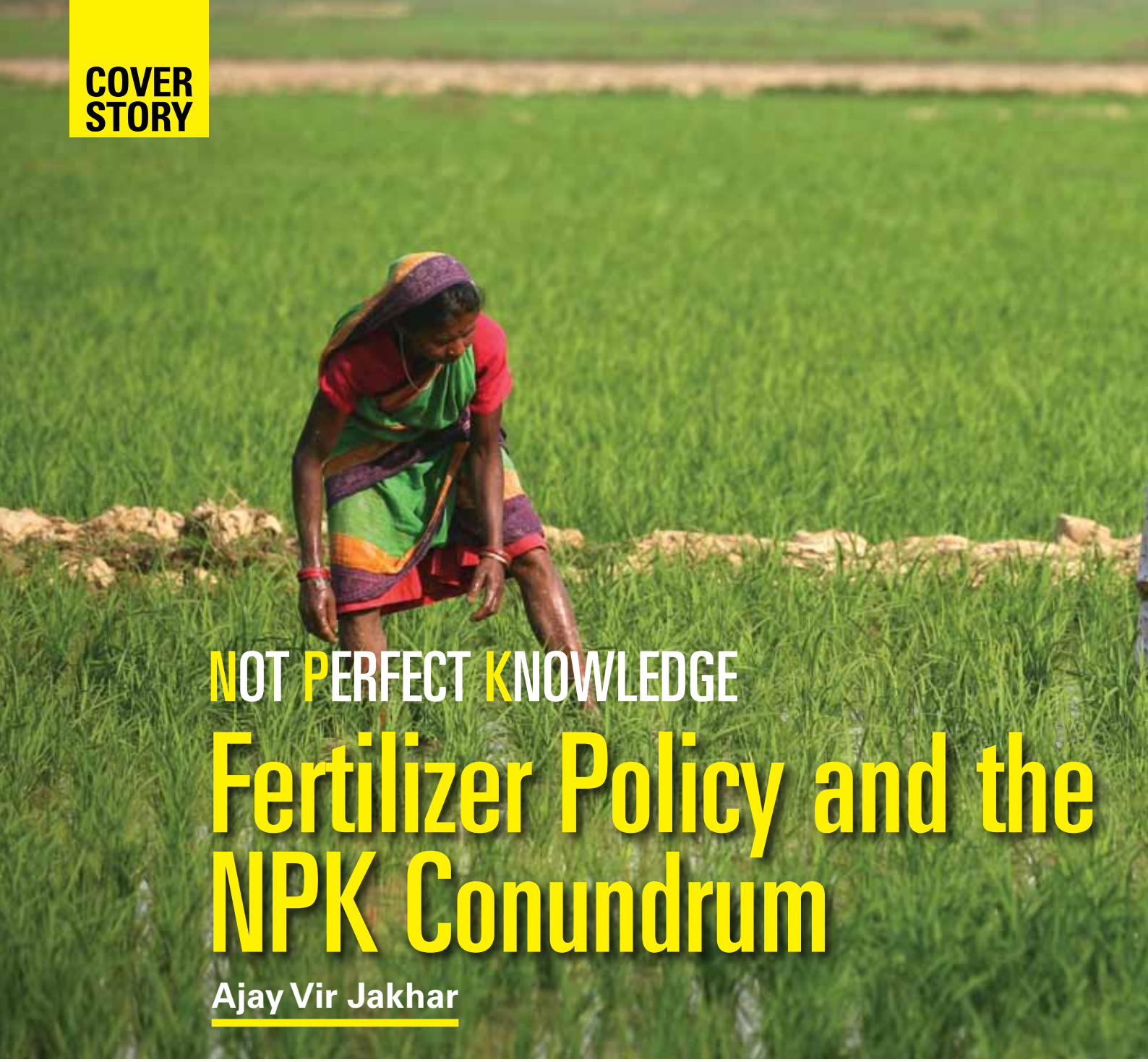

NOT PERFECT KNOWLEDGE

Fertilizer Policy and the NPK Conundrum

Ajay Vir Jakhar

Bharat Krishak Samaj (BKS), a non-communal and apolitical organization, is exclusively committed to farmer prosperity. It focuses on bringing happiness to farmer homes and explores various avenues to achieve this. Diverse views emerge while discussing various approaches to farm well-being and BKS provides the platform where these opinions are discussed and the best roadmap charted. To this end, BKS organizes seminars featuring all stakeholders from farmers to policy makers and economists amongst others; it also publishes *Farmers' Forum* and engages in other forms of meaningful dialogue.

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

BKS will celebrate its 60th anniversary on April 5, 2015 and will observe the occasion by inviting farmers from across India to brainstorm on their own welfare. At this platform BKS will also invite important leaders from all significant parties and ask them to share their thoughts on ensuring farmer happiness. The issue is as complex as Indian agriculture is but BKS believes in taking a problem solving approach.

Few issues are as riddled with complexities and differences as is fertilizer. They range from organic farmers who believe that there should be no fertilizer subsidy, which will ensure reduced wastage of resources and release funds for

genuine nation-building. A growing number is keen that the fertilizer subsidy be given to the farmer directly but there is a sting in the tail: there is no unanimity on whether the savings to the nation will actually benefit the farmers. Do both positions amount to the same thing or will inequality decrease as a consequence?

This seminar is about coming to a better understanding of these different positions. Dr Ramesh Chand will hopefully tell us whether the NPK (Nitrogen, Phosphorus, Potash) ratio, on the basis of which the country's fertilizer policy is formulated, is a flawed concept. If indeed it is flawed, how grievously wrong are the policy formulations based on it? How does the country rid itself of such policies? ●

IN SEARCH OF ANSWERS

- Do fertilizer companies need a forensic audit? Are they padding cost to corner subsidy? Why is inefficiency rewarded in India?
- If subsidies are given to individuals through direct cash transfer, will India save money even as inequality increases?
- Who said that the NPK ratio is for good soil health management? Who started this myth and how does India suffer? Why do we continue?
- Is there excessive use of fertilizers when most farms have less than optimum fertilizer use and it is expected to double with the second Green Revolution?
- Why has fertilizer capacity not been expanded in India in the last two decades? Is it the handiwork of the international fertilizer cartel?
- Is the work of Fertilizer Association of India detrimental to Indian interests? Does it work with the international fertilizer cartel?
- Why give a fertilizer subsidy? Use of chemicals for growing crops is not organic farming and it destroys soil health and farms.

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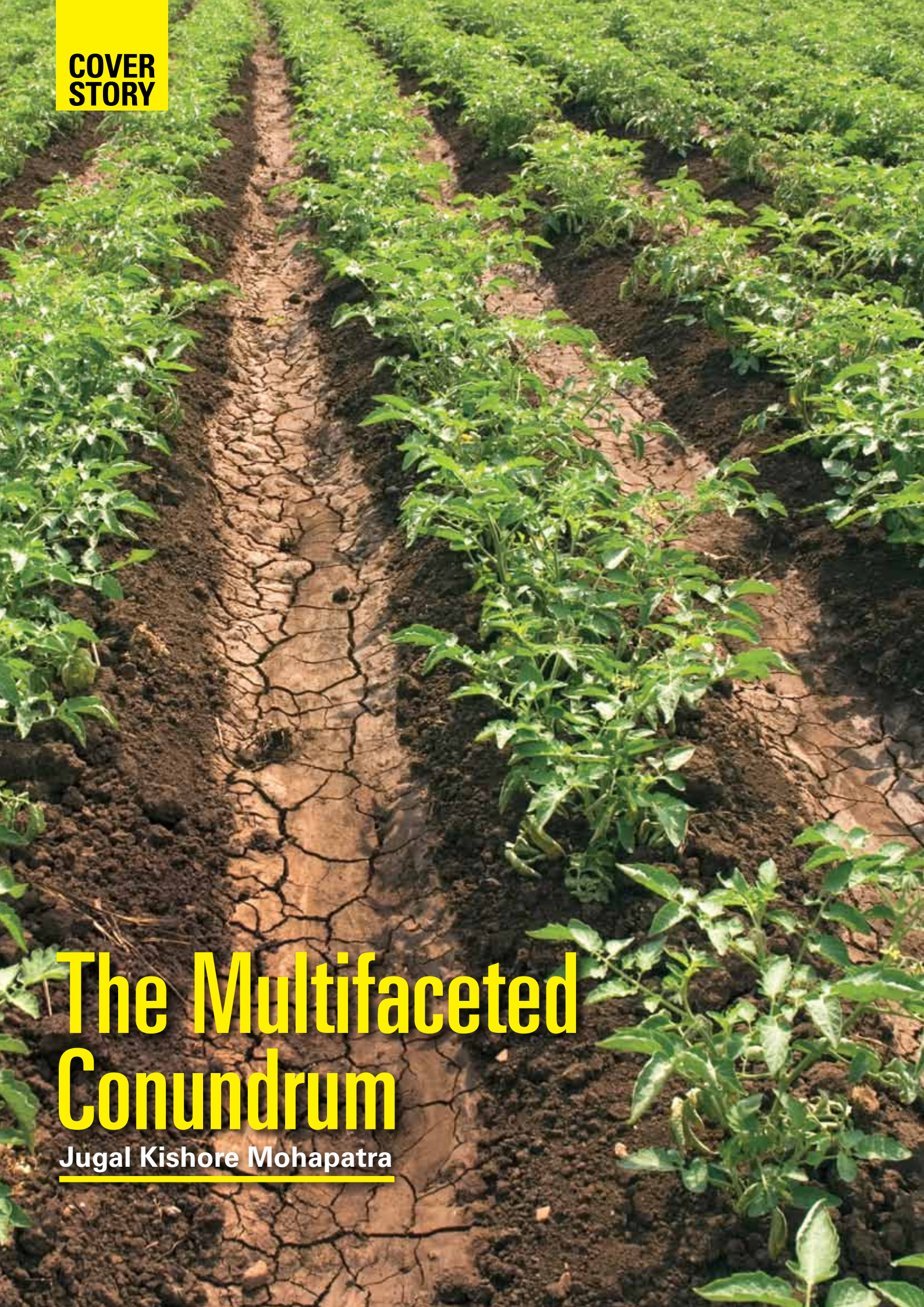
COVER STORY



The Multifaceted Conundrum

Jugal Kishore Mohapatra

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JUGAL KISHORE MOHAPATRA
Secretary, Department of Fertilizers, Ministry of Chemicals and Fertilizers

Prior to every budget session of Parliament, business newspapers, in particular, are rife with reports about fertilizer subsidy being wasteful expenditure and of the need for cuts. Why should India have fertilizer subsidies of the magnitude of ₹70,000 crore that amounts to one per cent of India's gross domestic product. This is the kind of question that dominates debates.

The first question that needs to be asked then is: should India have a fertilizer subsidy of this size? Is it justified and, as an economist would like to ask, is the subsidy merited? Is it beneficial for the economy? If the answer is yes, the second question would be: is it the desirable quantum of expenditure on fertilizer or is it excessive compared to the needs of the sector? If not, what is the right quantum? Should there be a case for slashing it or increasing it? What is the issue?

Third, one needs to ask: does it benefit the farmers? In fact, there was a prevalent view in the late seventies and the eighties that the subsidy reaches industry and the farmers do not benefit from it. Is that the right perception and how much of the subsidy does the farmer actually get? Or, how much of the subsidy goes to the producer? The fourth question that may be asked: is it a progressive subsidy; is it benefiting the farmers with low incomes compared to those with high incomes or is it regressive? The fifth question is with regard to the policy of having different ways of subsidizing different fertilizers – inorganic and chemical. It's also important to ask if it is leading to a balanced use of fertilizers that the soil health demands. The sixth question: is the country achieving optimum production or optimum output?

These are some of the questions bothering the country and every time people talk about reforms they invariably think of reforming fertilizer subsidy. There is a domain of study called industrial organization that has received recent recognition because its chief architect received the Nobel Prize this year. Jean Tirole is known to be an excellent modeller of industry though one wonders if even he would find it easy to model something as complex as the fertilizer industry and the fertilizer business.

It is as if the winds of the 1991 liberalization have bypassed this segment of the economy. This brings one to the last question: Is there a case for deregulation of the industry for the benefit of the farming community? ●

COVER STORY

FERTILIZER INDUSTRY
Everyone's Punching Bag

U. S. Awasthi

The fertilizer industry, which has supported agriculture and farmers in some way or the other, is everyone's punching bag. It is not considered a good industry to invest in, which is why it gets no investment. It has changed from a sunrise to a sunset industry over the span of my career. The finance ministry is not interested in giving it any more money and the media has never been interested in farmers and the fertilizer industry's plight. The low participation of the private sector denudes it of all interest for the media. Academicians lack updated information and data about the industry. Those who have made a career of this industry have to deal with every punch thrown at it.

U. S. AWASTHI
Managing Director, IFFCO

For example, while there is talk of a ₹80,000 crore subsidy, the actual figure is ₹1,20,000 crore. Where does the ₹40,000 crore of subsidy come from? Can there be a subsidy that is not backed by funds? IFFCO, a co-operative company, is the largest producer of fertilizers. Even in exceptionally good years, its profit is 1.5 per cent after tax. Generally it is no more than 0.5 per cent. How can a company survive on such abysmally low profits? Like the textile mills that have closed down, co-operative and fertilizer industries are on the verge of closing down.

One reason is that no quick decisions are taken in India; the administration does not want to take decisions. In fact, the first good thing the National Democratic Alliance (NDA) government did after

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Some areas need drip irrigation, some fortification of boron, zinc or sulphur. When there are different types of soil in the country, the rationale for only one kind of central subsidy is puzzling

coming to power was to close down the Planning Commission. There was need for centralized planning in the early years of Independence. Today, when every state and district is capable of planning for itself why should there be one policy on subsidy for the whole country?

The result is disparity in fertilizer consumption across the country. Some areas need drip irrigation, some fortification of boron, zinc or sulphur. When there are different types of soil in the country, what is the rationale for only one kind of central subsidy? Even the fertilizer industry says that it does not want subsidy. Some people allege corruption and inefficiency in this sector without knowing that there is an online fertilizer monitoring system in place by the government of India where one can log in for information about the stock, nutrients, raw material. Details like transport and selling price too can be tracked here. When everything is monitored then how can someone accuse us of corruption and inefficiency? Pointing fingers without detecting the source of corruption leads to wasting investigating agency resources.

The actual price for urea is ₹5.30 per kilogramme

and the government offers a subsidy of ₹20,000 crore on it, while even salt is sold at ₹12 per kilogramme and is more expensive. Is this right? Those saying that the Nutrition Based Subsidy (NBS) policy was incorrect need to consider that when it came into existence, a dollar was worth ₹40. It is now around ₹65.50. The cost of urea has risen because of this. Was it in our control?

Thereafter there was a continuous decrease in the subsidy without increasing the price of urea. That happened because the government wanted to subsidize the private sector that produces urea at the cost of ₹50 per kilo. Efficient organizations like IFFCO ask for NBS in urea as the cost of production is less than the international cost. What is happening instead is injustice to domestic manufacturers who produce 20 lakh tonnes of urea.

It is important to apply NBS to urea as has been advocated time and again. The government can also rationalize subsidies so that those who want extra urea can purchase free market urea. The *Economic Survey* last year said that there was an additional 50 lakh tonnes of imported urea consumed in farming. This should be questioned.

It is also said that overuse of nitrogen is good for farming without seriously analysing its impact. Nitrogen first leaches and then contaminates ground water. Nitrogen must be used according to the need of the plant and there should be research on using the nitrogen present in the atmosphere. The old system of crop rotation and use of bio fertilizer must be revived. IFFCO has always strongly advocated the usage and mixtures of bio fertilizers like cow dung with a little urea. In India the soil is called the "mother" but is not taken care of. Yet everyone expects a good harvest.

In Punjab and Haryana there are reports of burning the farm because of labour shortage. Should one burn the house one lives in? If there is a shortage of labour one can use the rotavator with farm-produced bio fertilizer. Farmers overuse urea because of its low prices and then say that the land is addicted to urea. People must be made aware about these issues.

Farmers overuse urea because of its low prices and then say that the land is addicted to urea. People must be made aware about these issues

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We are told that the market price of a bag of urea is ₹700 and is sold at ₹300 to farmers with ₹400 as a subsidy. The government spends more money on import than what it gives to the domestic industries. India is the only nation that subsidizes fertilizers and the urea is smuggled to Bangladesh, Nepal, Pakistan and Afghanistan. The cheap supply of urea not only destroys land but also increases fiscal deficit and encourages illegal activity.

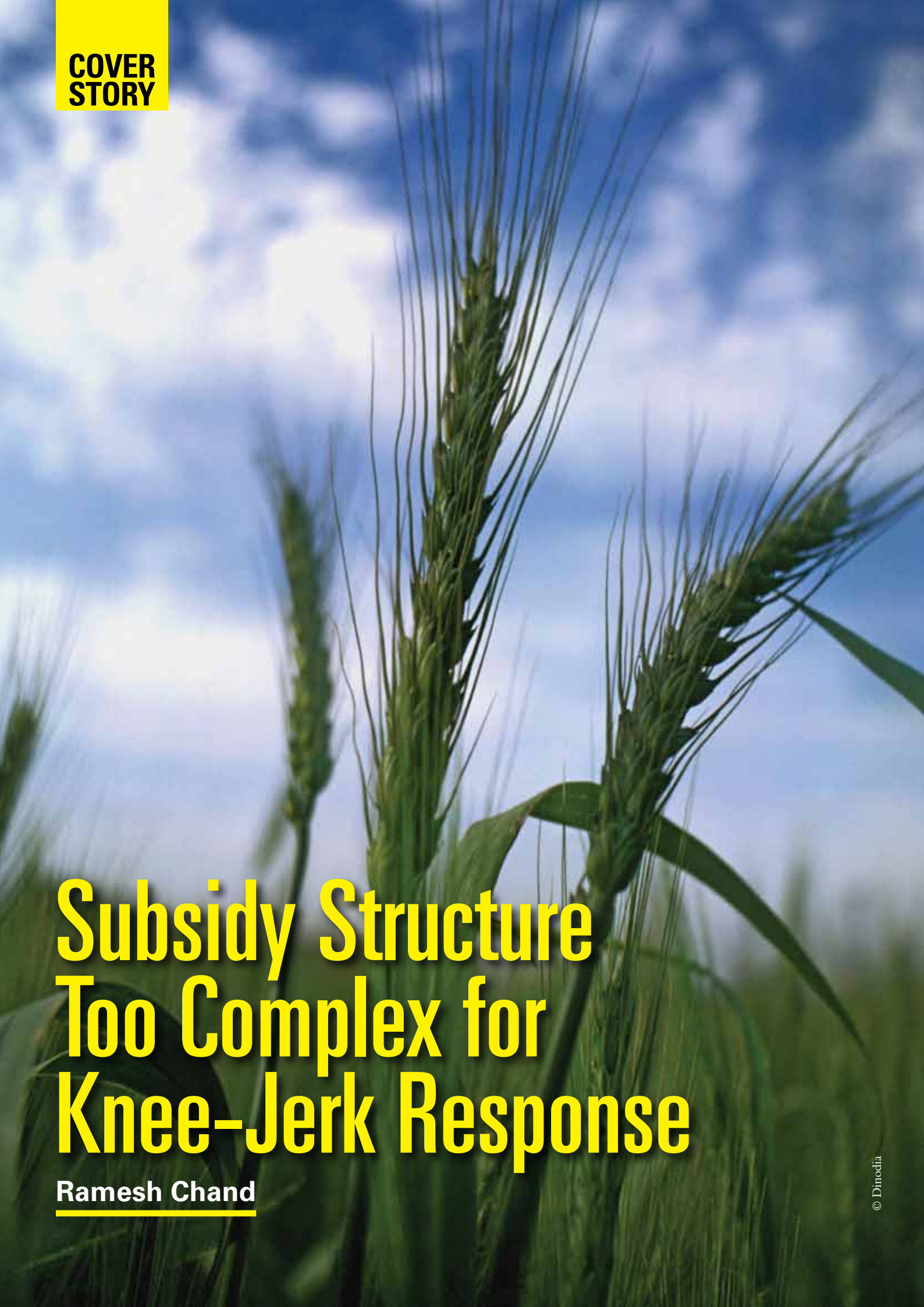
In an age of the internet and information technology why cannot direct subsidy in fertilizers be provided when it can be done for LPG, old age schemes and education? The Kisan Card can be used as a smart card. At the press of a

button money is transferred automatically to the millions of account holders in seconds and can be swiped to purchase fertilizers. This will also help farmers determine how much subsidy they are getting for phosphate or potash. While the information is provided on the bags, not many farmers read it.

Consider the situation from another angle. The land available for farming and the irrigated land is almost equal in India and China. Yet, China uses four times the fertilizer that India uses. It was once the world's largest importer of fertilizer and is now its biggest exporter. Yet chemical fertilizers have environmental consequences: India produces 20 lakh tonnes of urea but in five years China produced 70 lakh tonnes from one coal-based plant, with corresponding emission of carbon di-oxide and impact on global warming. The floods in Jammu and Kashmir this year and the Hudhud, Phalin cyclones are a consequence. India imports this fertilizer and pays China scarce foreign exchange.

The important thing is to change mindset. The government cannot subsidize everything. Indians want subsidy under MGNREGA, free food and free fertilizer. Only if subsidy is rationalized and becomes affordable will these deliberations be deemed successful. As someone serving the fertilizer industry for 47 years, I feel like a bonded labourer that the government, corporates and media take for granted. Hopefully, the new government will change this. ●

COVER STORY



Subsidy Structure Too Complex for Knee-Jerk Response

Ramesh Chand

Fertilizer issues are of two types. One at the macro level or policy formulation level and the other at the farm level. The importance of fertilizers is well known; in fact, fertilizer, seed and water are the three things that are primarily responsible for the performance of the agriculture sector.

RAMESH CHAND
Deputy Director General (Education), Indian Council of Agricultural Research

The performance of the Indian agricultural sector is generally viewed through growth rates in output. The trend in growth rates of fertilizer usage is the mirror image of the trend in growth rate in output. Whenever fertilizer growth rate goes down, agriculture growth rate also goes down. If the fertilizer useage picks up, the agriculture sector growth also picks up. The closeness is between production performance and use of fertilizers is so strong that one cannot afford to take fertilizer usage lightly. *Chart 1* shows the importance of fertilizers in shaping India's agri growth history and trajectory.

Fertilizer policy is based on perception and the available literature though many fertilizer-related perceptions are not well formed from the scientific point of view. One must clarify such perceptions because of the influence they have on policy. It is said that the optimum mix of N, P and K in fertilizer is 4:2:1 as stated in the *Economic Survey*, the most reliable government document. It repeatedly says that the N, P and K ratio has deviated from 4:2:1, ratio leading to losses.

Is that position correct? Also, is it correct to say that the desirable mix of nutrients in fertilizer is 4:2:1 or does it not matter? Second, is this imbalance adversely effecting crop productivity and, if so, where it is happening? What are the situations under which it causes adverse effects and those under which the imbalance will not affect adversely? The Indian agro-diversity makes for different situations in different states. Third, does the subsidy mainly benefit the large farmers and leave the small farmers untouched? Fourth, will reducing subsidy on urea promote optimum use? Fifth, since subsidy benefits industry and not farmers, will only direct cash to farmers benefit them? Sixth, should fertilizer subsidy be given on a per hectare basis and not on usage basis? These are the issues and perceptions that influence policy.

Consider the 4:2:1 norm. How has it been determined? How much of N, P and K should be used depends on four factors: the soil fertility status; the crop being grown; the productivity being taken into account; the method of fertilizer application. To go to the first norm: where did this 4:2:1 come from and is there a scientific basis for it?

Research shows that there is no document that explains the basis of the 4:2:1 ratio. It emerges that during the fifties, some fertilizer trials were done in which wheat and rice responded much better to N than they did to P and K. Based on this, someone coined this NPK term and suggested that more nitrogen is needed than phosphorus and more phosphorus fertilizer is needed as compared to potassium fertilizer. Somebody then quantified that information and used it as a guideline for anchoring the production policy.

No document explains the basis of the 4:2:1 ratio. Some fertilizer trials were done in the fifties when wheat and rice responded better to N than to P and K and the NPK term was coined

Experiments conducted thereafter showed considerable deviations from the norm. While the norm was valid in alluvial soil, it was not in laterite soil; while it could be valid in Punjab-Haryana soils, it need not be valid for eastern India. These results led to a questioning of the norm but no one came up with an alternative to 4:2:1.

Research provides no answers to this confusion but there are studies by the Indian Institute of Soil Sciences, Bhopal, that consider district level soil productivity in a limited manner and may provide some pointers to the right way. We examined what should be the optimum level as against results of those studies of 4:2:1, of the 1950s vintage. The data shows considerable changes over time in cropping patterns; increase in area under wheat, the different percentage share of rice, the changes in area under fruits and vegetables and we have tried to work out what the actual use of fertilizers in the state is and what the desired level should be.

Each state was divided into two categories, rainfed and irrigated areas and the larger states into

more agro climatic zones. Rajasthan was divided into three agro climatic zones. Each agriculture university produced the package of practices, specifying the optimum level of N, P and K for various crops: like nitrogen required was 50kg/acre, optimum phosphorus was 25kg/acre and optimum potash was 25kg/acre. Those recommendations from all the agriculture universities in this country for irrigated conditions and for rainfed conditions were then multiplied by the respective area under various crops both under irrigated and non irrigated conditions.

Thus estimates of the requirement of N, P and K for every state were worked out and considered to be the norm for fertilizer. It was then compared with actual usage and a lot of variance was found statewise. The recommendations vary state wise with the cropping pattern: a state with a larger pulse area requires much less nitrogen than one with a higher area under cereals. *Table 1* shows what was obtained after considering the state wise data on use of NPK from 2010 to 2012. Andhra Pradesh used more than the required quantities of both nitrogen and phosphorus but 20 per cent less than the required quantities of potash. Chhattisgarh fell short in use of nitrogen and nitrogen deficiency is of greater concern than potash deficiency. Five states made excessive use of phosphorus and 16 fell short of the recommended norm. *Table 2* summarize these findings.

Andhra Pradesh used more than required N and P but 20 per cent less than required K. Chhattisgarh fell short in use of N, five other states made excessive use of P, 16 fell short of the norm

In Andhra Pradesh, farmers use 65 per cent more nitrogen than is desirable; in Chhattisgarh they use 35 per cent less nitrogen than is desirable and so on. Six states in this country make excessive use of nitrogen fertilizer, mainly urea. What emerged is, first, a need to reduce use of nitrogen in Andhra Pradesh, Bihar, Jharkhand, Assam and Punjab and increase the use of nitrogen in all other states. Second, to reduce use of phosphorus in Andhra Pradesh, Gujarat and Tamil Nadu, sustain it in Karnataka and increase it in other states. Therefore, talk about a national-level balance could be misleading. There has to be a state-level fertilizer policy.

Policy makers need to be informed about the different status in different states so that there is a policy whereby deficient states get the excess used by other states and there is an actual comparision of desired and usage norms. The aggregation of the research results showed that 4:2:1 was not the right norm, which was closer to 2.6:1.4:1, which could be the national level norm, on the cropping pattern for the past three to four years that were taken into consideration.

The purpose of determing the 2.6:1.4:1 norm was to arrive at an optimum level that one could try to reach and not something that was based on the 1950s knowledge to acquire some understanding of this imbalance and then address it.

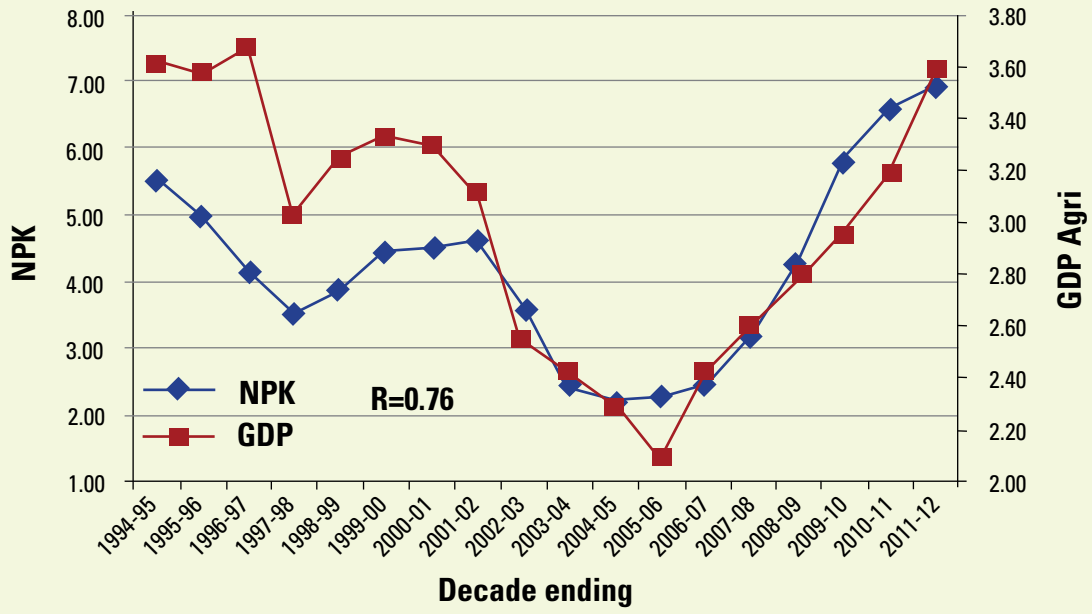
Assume that the optimum dose is 120 kg nitrogen, 80 kg phosphorous and 40 kg potash per hectare and that this has been recommended by an agriculture university while the farmer applies 80 kg of N, 40 kg of P and 20 kg of K. This would mean that the farmer is using six times of what the norm for N is and two and half times of the norm for P. Does this norm mean that the use of nitrogen should be curtailed? No; in such a situation there is need to promote more nitrogen even if P and K are not increasing. Thus imbalance matters only if some nutrient is used in excess of norm.

There are other issues like chemicalization of the soil that the research came up with. After consulting all available studies the conclusion was that one should not worry about the optimum ratio but about filling the deficiency. The gap between what is required and what is used in each category should be filled even if that makes the imbalance more adverse because what matters is whether or not one is applying the right dose; not so much the ratio.

In a situation like Punjab and Haryana, for instance, if the optimum fertilizer application is being exceeded, there is need to reduce N from 150 kg to 120 kg. There are states where the current mix is harmful and those where it does not matter.

Consider the case of potash. India imports potash and there is a deficit at the national level in almost all states. The first question is related to use, the next is related to subsidy. The subsidy is offered because

Graph 1: Growth Rate in NPK Use and GDP Agriculture Since 1985-86



Fertilizer use matters a lot for agriculture growth
Fertilizer price matters a lot for use of fertilizer and
Subsidy matters a lot for price of fertilizer, and thus output level and growth

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Table 1: Normative and Actual Use of NPK 2010 to 2012

State	Normative Use (Th tonnes)				Actual Use (Th tonnes)			
	N	P	K	Total	N	P	K	Total
Andhra Pradesh	1,186	701	491	1,887	2,000	1,036	409	3,445
Assam	123	90	70	282	147	54	75	277
Bihar	691	369	244	1,304	934	273	120	1,327
Chhattisgarh	503	301	210	1,015	327	169	63	559
Gujarat	1,310	474	474	2,259	1,246	479	158	1,882
Haryana	812	341	204	1,964	1,013	359	46	1,417
Himachal Pradesh	83	43	33	158	33	11	11	55
Jharkhand	82	50	41	172	99	40	11	159
J & K	95	57	29	182	72	36	11	120
Karnataka	1,054	661	647	2,362	1,060	687	360	2,107
Kerala	224	161	342	726	118	61	90	268
Madhya Pradesh	1,110	1,202	460	2,773	979	698	106	1,783
Maharashtra	1,782	1,193	676	3,652	1,670	1,092	555	3,317
Odisha	304	171	170	646	327	160	86	573
Punjab	952	376	235	1,562	1,387	414	61	1,862
Rajasthan	1,391	779	136	2,305	887	398	32	1,317
Tamil Nadu	688	276	303	1,266	661	292	284	1,238
Uttarakhand	162	75	51	288	118	30	12	160
Uttar Pradesh	3,221	1,440	1,091	5,751	3,046	1,046	242	4,334
West Bengal	1,454	795	798	3,047	764	502	348	1,614
Others	121	87	78	286	27	13	7	48
All India	17,348	9,641	6,784	33,889	16,916	7,852	3,084	27,861

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The 1960s subsidy was given at a time of great food shortage and India wanted to increase food production at any cost. We knew it would not happen unless farmers used inorganic fertilizers

it is believed that it would encourage output, which will be desirable for the country. The 1960s subsidy was given at a time of great food shortage and India wanted to increase food production at any cost and knew that it would not happen unless farmers used inorganic fertilizers. Producing food was then a far bigger problem than the subsidy related to it.

To look at an analogy, if free electricity is provided in a water-logged area and used to pump out the water, the subsidy will have a positive externality because a waterlogged area has been coverted into a fertile one; or the electricity has been used for irrigation or malaria has been reduced in the area that was waterlogged. However, the subsidy should be related to the outcome if its rationale is to be served.

This volatility in prices is a major issue for the farmer; prices for diammonium phosphate (DAP) and single superphosphate are something one day and ₹20 per kg higher the next and more the day after, leading to a totally uncertain environment, which is affecting the farmer's investment. The nutrient based subsidy has thus brought in volatility and affected the NPK balance, deteriorating in favour of N.

The question is what happens to food security if fertilizer subsidy is removed. Number crunching suggests that if India decides to abolish entire fertilizer subsidy, food production will decline by 15 per cent. If India produces 260 million tonnes, it will produce only 210 million tonnes. This is not something that the country

Graph 2: Price and Subsidy per Kg of NPK

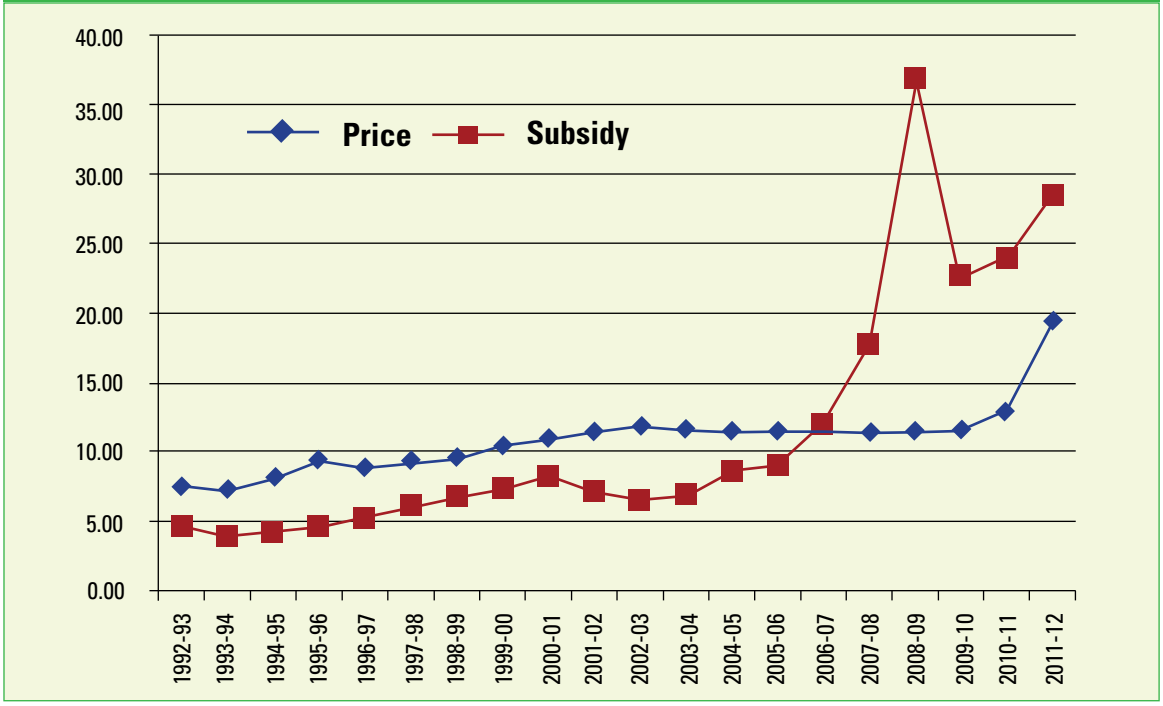

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Table 2: Actual and Normative Ratios of NPK TE 2011-12

	Actual Ratio			Normative Ratio		
State	**N**	**P**	**K**	**N**	**P**	**K**
Andhra Pradesh	4.4	2.3	1.0	2.4	1.4	1.0
Assam	1.9	0.7	1.0	1.8	1.3	1.0
Bihar	6.8	2.0	1.0	2.8	1.5	1.0
Chhattisgarh	5.3	2.7	1.0	2.4	1.4	1.0
Gujarat	6.9	2.8	1.0	2.7	1.0	1.0
Haryana	19.6	6.9	1.0	4.0	1.7	1.0
Himachal Pradesh	3.0	1.0	1.0	2.5	1.3	1.0
Jharkhand	7.2	3.3	1.0	2.0	1.2	1.0
J & K	6.2	2.7	1.0	3.3	2.0	1.0
Karnataka	2.6	1.7	1.0	1.6	1.0	1.0
Kerala	1.3	0.7	1.0	0.7	0.5	1.0
Madhya Pradesh	8.9	6.1	1.0	2.4	2.6	1.0
Maharashtra	2.9	1.9	1.0	2.7	1.8	1.0
Odisha	3.8	1.9	1.0	1.8	1.0	1.0
Punjab	21.2	6.5	1.0	4.1	1.6	1.0
Rajasthan	25.1	11.2	1.0	10.3	5.7	1.0
Tamil Nadu	2.2	1.0	1.0	2.3	0.9	1.0
Uttarakhand	10.2	2.6	1.0	3.2	1.5	1.0
Uttar Pradesh	11.1	3.9	1.0	3.0	1.3	1.0
West Bengal	2.0	1.3	1.0	1.9	1.0	1.0
Others	4.0	1.7	1.0	1.6	1.1	1.0
All India	5.0	2.4	1.0	2.6	1.4	1.0

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can afford. Thus while subsidies are becoming a serious concern and there is need to peg subsidy at 'x' per cent of the GDP, there can be no knee-jerk response to the issue. One can perhaps look to peg the subsidy at no more than two per cent of the GDP.

Second is to raise fertilizer prices at least as much as the increase in the prices of agricultural commodities. In fact this was a good option when prices of agricultural produce were rising after 2005. In that period I think it was possible to raise prices by 30 per cent without letting the real prices of fertilizer increase, as the real agricultural prices were rising. In the next 10 years this option may not be there as there are projections that international agricultural prices will not rise as they have been rising in the past.

There is need to consider various options that will make the fertilizer subsidy more efficient but there is no doubt that the subsidy is helping the farmer though it is not clear how much the three sections (the fertilizer seller, the fertilizer users farmers and the ultimate consumers of agricultural produce) are being benefitted.

There is also a misperception that it will benefit farmers more if subsidy is given to the farmers directly instead of the industry. What happens if the farmer is paid a subsidy. The cost of a bag of urea is say ₹700, the farmer pays ₹300 and the difference of ₹400 goes to industry. If the subsidy now going to industry is paid to the farmer, he will be first be required to pay ₹700 and ₹400 that was earlier going to industry will go to the farmer's account someday. The farmer will have to pay initially and given the administrative complexities this may not work

Table 3: Trend in Level of Subsidy

Year	Fertilizer subsidy (₹ Crore)	Value crop output (₹ Crore)	Subsidy as per cent of V C O
1992-93	6,136	178,656	3.43
1993-94	4,916	204,874	2.40
1994-95	5,769	236,606	2.44
1995-96	6,735	256,696	2.62
1996-97	7,578	302,745	2.50
1997-98	9,918	319,587	3.10
1998-99	11,596	370,365	3.13
1999-00	13,244	382,832	3.46
2000-01	13,800	373,766	3.69
2001-02	12,595	406,247	3.10
2002-03	11,015	386,485	2.85
2003-04	11,847	452,537	2.62
2004-05	15,879	458,496	3.47
2005-06	18,460	523,389	3.56
2006-07	26,222	586,146	5.72
2007-08	39,990	681,605	7.64
2008-09	96,603	756,975	16.48
2009-10	61,264	858,808	8.99
2010-11	62,301	1,051,894	8.23
2011-12	70,199	-	-
2012-13	65,974	-	-
2013-14	65,972	-	-

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Photo: Indranil Biswas

KEY TAKEAWAYS

- Overall level of fertilizer use in India is lower than norm, lower than major countries.
- Need to promote fertilizer use to maintain tempo of growth in output.
- Need to correct imbalance in fertilizer use only in a few states.
- Imbalance is not an issue in most of the states.
- Imbalance needs to be corrected not by reducing "N" but by increasing P and K.
- Making urea costly v/s making P and K cheaper.
- Fertilizer subsidies benefit all categories of farmers.
- Per hectare benefit of the subsidy declines with increase in farm size.
- Rather than removal in one go (shock) the policy should be:
  - Containing subsidy (fertilizer).
  - Raising fertilizer price consistent with output price.
- Policy changes like NBS with fixed level of subsidy and leaving price free (MRP), highly injurious to farmers when source price is highly volatile.
- In such situations policy should be: variable subsidy and stable price for the user farmers.

smoothly unless there is some other mechanism, which again may involve complications.

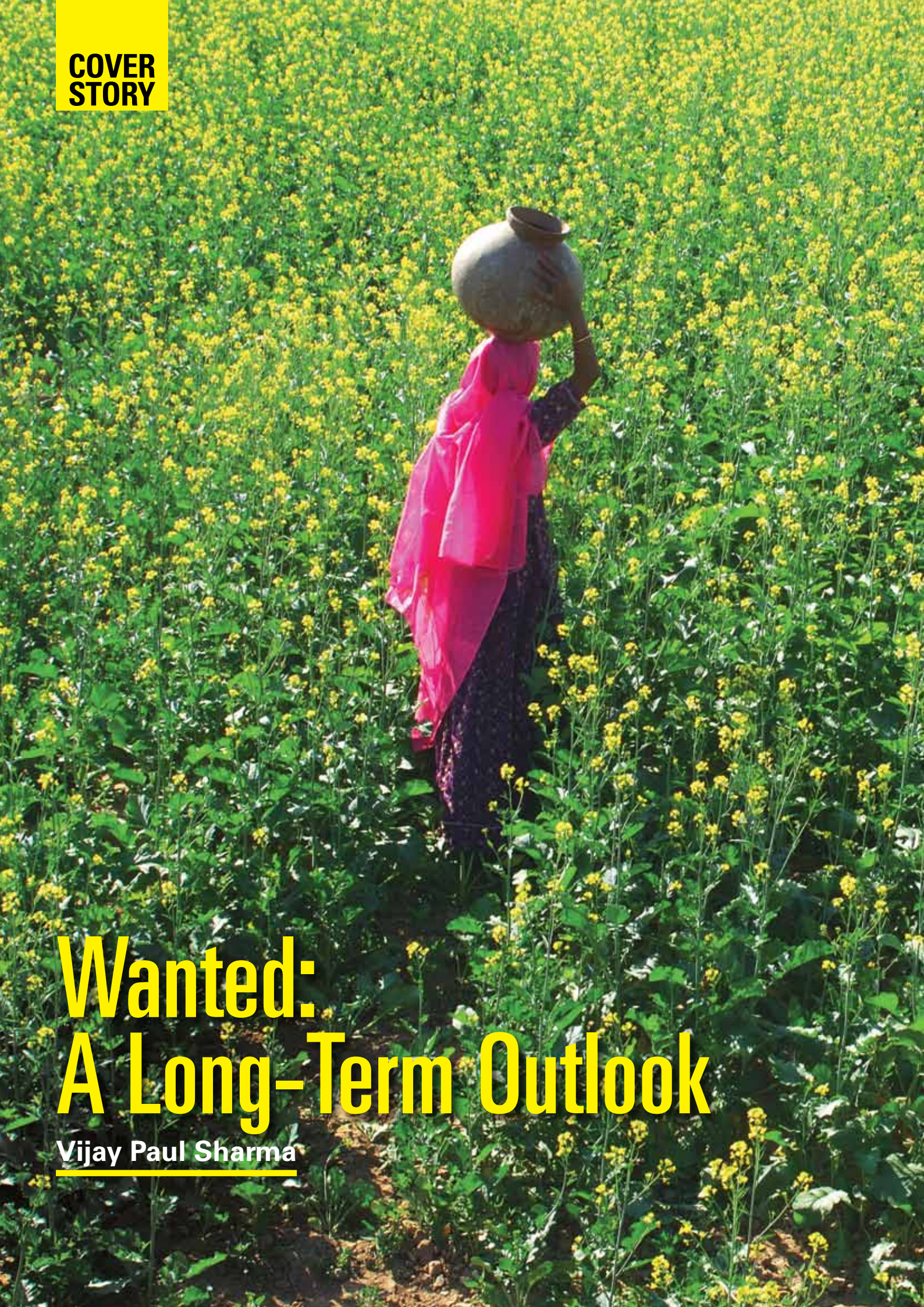
Another proposal often made is paying fertilizer subsidy in cash to farmers on a per hectare basis. This does not become a subsidy but an income support and the first adverse impact will be on fertilizer usage that will certainly go down because the farmer will decide how to use the money. Two, if fertilizer prices increase due to inflation the farmer may not get corresponding compensation and fertilizer use and subsidy may get totally delinked, adversely affecting production.

The other misperception is that subsidy mainly benefits the large farmer and not the s mall farmers. The actual data shows that benefit per hectare is more at small holdings as compared to the large farmer because small farmer making higher use of input than the large farmers. Research shows that fertilizer use is inversely related to size of holding.

These are complex issues and no knee-jerk response will serve the purpose. ●

Data shows that benefit per hectare of susidy is more at small holdings than at the larger ones because small farmer makes higher use of input. Research shows that fertilizer use is inversely related to size of holding

COVER STORY



Wanted: A Long-Term Outlook

Vijay Paul Sharma

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There are two important issues that are debated in political circles and reflected in the media and in academic circles. First, who benefits from the subsidy: the farmer or industry; is it the large farmer or small farmer; is it the subsistence or commercial farmer? Second, were there to be a complete or partial withdrawal of fertilizer subsidy, what would happen to farming and food security.

The policy responses to these and other questions also need to be understood over the long term in which various factors come into play. Over the last decade and a half there has been a mismatch between domestic fertilizer consumption and production, with production stagnating for some 20 years, leading to a high dependence on imports. Such imports are typically from volatile markets and have led us to question whether the country should be exposed to such volatility.

There is also the question around the national average figures of fertilizer use that conceals the vast regional variations and the kind of imbalance in fertilizer use that varies from state to state or, within a state, from one region to another. The NPK ratio of 4:2:1 too has been held sacrosanct without factoring in the regional variations. Also, India's fertilizer consumption touched 28 million tonnes in 2010-11 followed by a slight reduction but the big gap between domestic consumption and production has led to concerns about India's import dependence and amount of subsidy.

Graph 1 shows the increasing gap between production and consumption and *Graph 2* shows that the average Indian consumption of fertilizer per hectare (160) is much less than countries like Pakistan (180) or Bangladesh (298), which means that there may not be a major problem in terms of excessive use of fertilizers. However, for a country as large as India there is a need to consider a disaggregated picture, featuring districts for fertilizer usage. For example, one could look at the number of districts where fertilizer consumption is consistently higher than 200 kg.

Even in the last decade, particularly in the early part, there were almost five districts using

more than 200 kg of fertilizer per hectare. This number increased to 135 districts, which is about 25 per cent of the districts. Thus there is a cause of concern amongst the high user districts about excessive fertilizer use but equal concern amongst the low fertilizer consuming districts. In the late eighties about half of the districts were using less than 8 kg and though consumption has increased, even today, between 17 per cent and 18 per cent of the districts use less than 50 kg/hectare.

Policy must address the excessive fertilizer use that adversely impacts land and water resources. It must also improve fertilizer consumption at the bottom districts, typically in the eastern part of country, where there is huge potential for increasing agricultural production. Lack of technology and proper inputs have been stymying production growth there. Irrigation and quality of seeds are amongst the other factors that must be considered in a more composite approach rather than looking at fertilizer in isolation.

The first major policy distortion dates back to early 1991 as a part of macroeconomic reforms. Under this policy potash and phosphorus were partially decontrolled while nitrogen was kept under control. The price of N was more or less the same while that of P and K increased dramatically. Similarly, in 2011-12, the nutrient-based subsidy scheme led to manifold increase in the prices of phosphate and potassium fertilizers while the price of urea remained more or less the same. In 1991-92, the NPK ratio that was 6:2.9:1 became 9.5:3:1 and the government realized how subsidy improved the NPK ratio that had become balanced in the latter part of the last decade.

Table 1: All India Plant Nutrient Consumption Ratio

Year	N	P_2O_5	K_2O
1981-82	6.0	1.9	1
1991-92	6.0	2.9	1
1992-93	**9.5**	**3.2**	**1**
2000-01	6.8	2.6	1
2002-03	6.5	2.5	1
2008-09	5.3	2.3	1
2009-10	4.3	2.0	1
2010-11	4.7	2.3	1
2011-12	**6.7**	**3.1**	**1**
2012-13	**8.2**	**3.2**	**1**
2013-14	**8.7**	**3.4**	**1**

Partial decontrol of fertilizers in 1991 & 2010

In 2011-12, the policy decision to decontrol P and K (urea still under control) shifted the NPK ratio from 4.7:2.3:1 to 6.7:3:1 and in 2013 preliminary estimates show that it is going to be 8.7:3.4:1. Thus policy decisions must keep their long-term impact in mind. It also indicates that farmers are more responsive to price changes and if there is increase in the price of a particular product farmers will reduce its consumption.

Prices have changed in an unexpected manner. For example, diammonium phosphate (DAP) went up from ₹9,350 per metric tonne (pmt) to about ₹26,000 pmt and without the subsidy it would be between ₹35,000 pmt and ₹39,000 pmt. Is that affordable even for large farmers? If fertilizer price is ₹40,000 pmt, no one will find it profitable to buy it. Potassium too has seen almost the same story and touched ₹38,000-₹9,000 pmt in 2012-13.

One factor that has been ignored in all this debate is that of secondary nutrients and there is a considerable deficiency of some of these micro-nutrients. Fortunately micronutrients like zinc andboron have been covered by policy that must also consider organic fertilizer must be debated in the public domain and in media.

The debate around fertilizers, unfortunately, suffers from angularities of the various participants; there are activists and others too who put out points of view that are not supported by empirical evidence but impact policy, which is very unfortunate. There was also the debate started in early nineties by Ashok Gulati, following a study in the mid-nineties by Gulati and Anil Sharma, making three basic assumptions.

They compared domestic and international prices. During the nineties, India did not import much fertilizer, particularly urea, being almost 100 per cent self sufficient. China too was not importing large quantities. When India and China enter the market, prices shoot up. During the nineties, urea prices were at the bottom and Gulati and Sharma

Table 2: Market Power of Global Fertilizer Companies

Company	Market Power		
	N	P	K
Yara	+ + + +	+ +	–
Mosaic	+ +	+ + + +	+ + +
Agrium	+ + +	+ +	+ +
Potash Corp	+ +	+ +	+ + + +
Kali & Salz Group	+ +	–	+ +

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If one considers the top fertilizer companies, one notices strong cartelization of N, P and K and a very close relation between international prices and imports by India

compared those prices with the domestic prices. The difference calculated as subsidy goes to the manufacturer. Their assumption was that urea prices would be in the range of ₹100 to ₹200 (that would be the ceiling price). However, urea prices went up to ₹550 and even more.

Their second assumption was that the global fertilizers market was competitive and there was no cartelization. That was incorrect because this industry is highly concentrated. The third assumption was that India would not have an impact on international prices, which is again incorrect. Whenever India enters the world market, prices shoot up. Thus they started a debate on the basis of assumptions that were not valid.

There is again a misperception about subsidy going only to the large farmers and commercial farmers. If one considers the top fertilizer companies, one notices strong cartelization of N, P and K and a very close relation between international prices and imports by India. During the mid-nineties, India did not import and the international prices were very low ($20 pmt). India started importing from 2004-05 and prices moved up.

Thus India has a very significant impact on international prices and this is not only true in terms of fertilizers but also in terms of sugar. When India enters the international market, the price of sugar shoots up. That happened in the case of wheat

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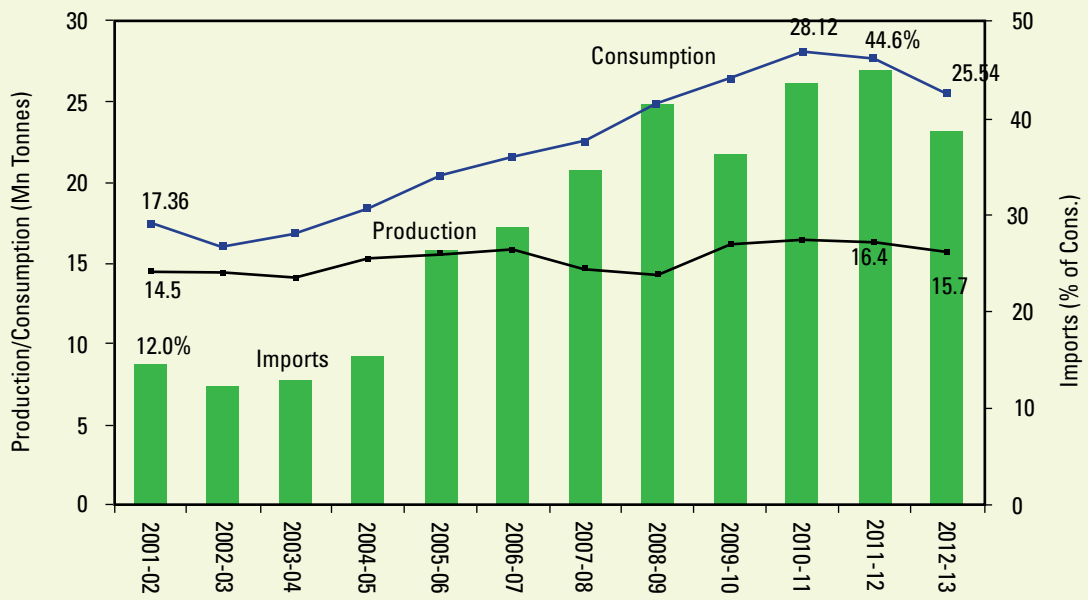
The top 10 states consume about 85 per cent of the fertilizers implying high concentration. In terms of crops, rice, wheat, sugarcane and cotton consume about 80 per cent of fertilizers

too in the last decade. One cannot then assume that India does not have any effect on the international market. In fact, it helps to see self-sufficiency as an option instead of looking at imports as an option as most of the economists will argue.

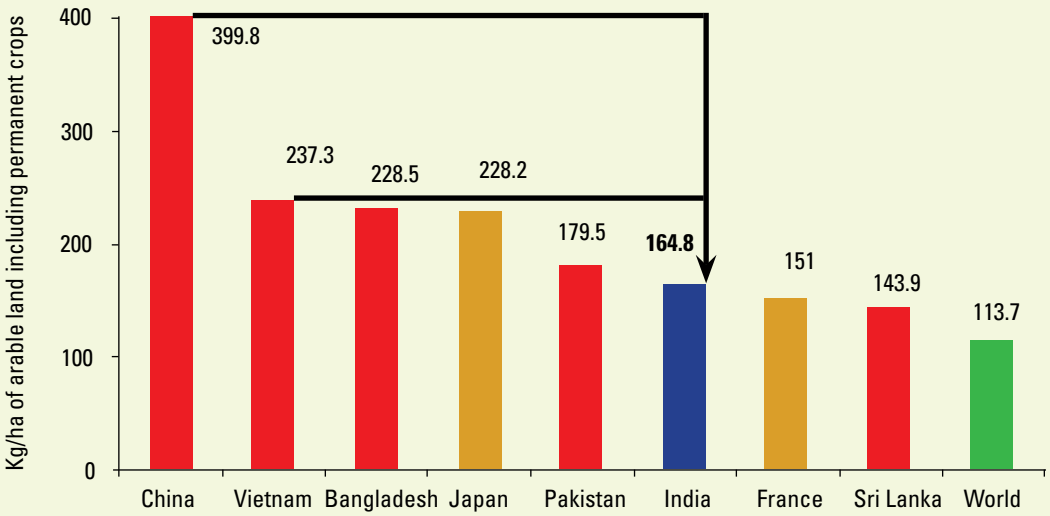
There is also a high degree of concentration in fertilizer use; the top 10 states consume about 85 per cent of the fertilizers implying high concentration. In terms of crops, rice, wheat, sugarcane and cotton consume about 80 per cent of fertilizers. Not all are large farmers; there is large concentration of small and marginal farmers in all the states. Similarly, in terms of crops, all farmers do not grow rice and cotton. The main question here is about the effect of fertilizer prices on small farmers.

As far as fertilizer consumption in different categories for the past 15-20 years is concerned, the marginal farmer uses 140 kg of fertilizers per hectare whereas the large farmer uses only 68 kgs per hectare, showing that the density of input used is much higher for small farmers. This indicates that the subsidy per hectare to smaller and marginal farmers is much higher than that for large farmers and that it makes sense to have some kind of subsidization in terms of area. Indeed, the marginal farmers' share of the

Graph 1: Increasing Gap Between Production and Consumption



Graph 2: Relatively Low Fertilizer Use in India

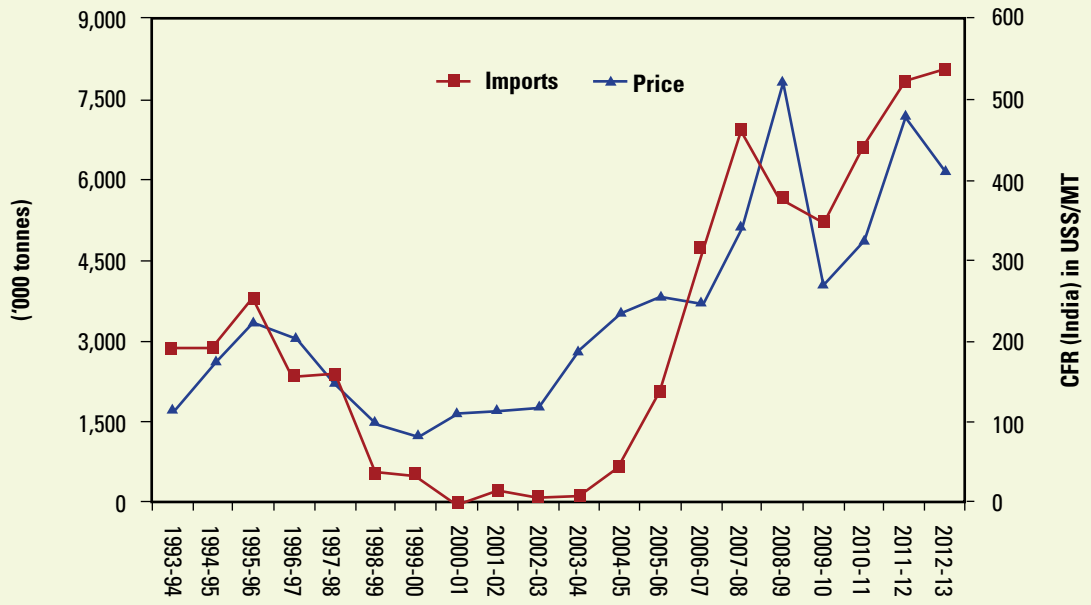


cropped area is 25 per cent but they consumed about 29 per cent of fertilizers. Similarly, small farmers have 21 per cent of the cropped area but account for about 25 per cent of the fertilizer consumption.

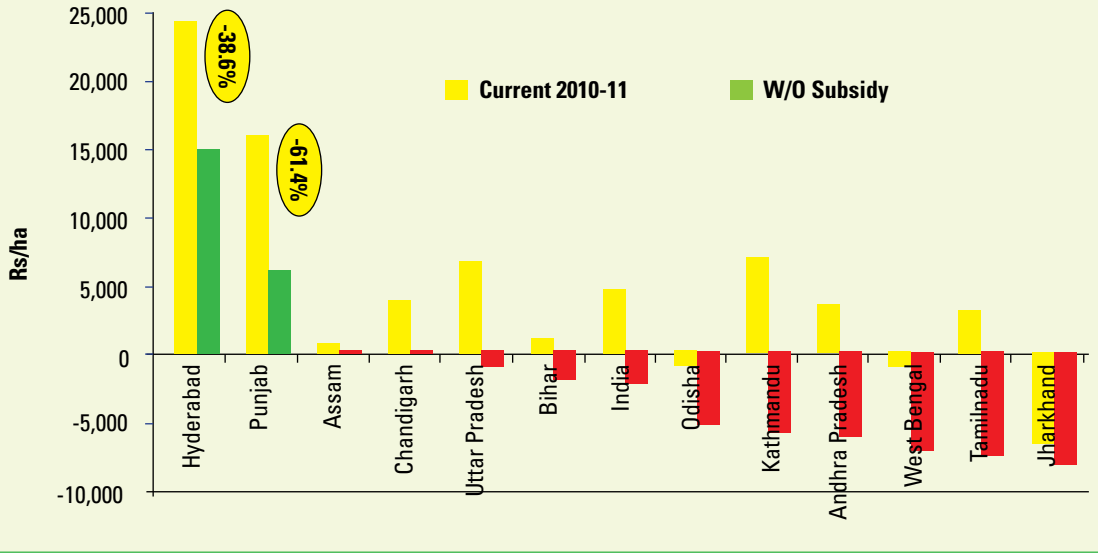
The rationale behind direct transfer of subsidy to the farmers is not very clear. One, the basic argument is around leakages and unless the level of corruption in the industry is addressed it would be very difficult to make a difference. Second, how would informal tenants who have no legal rights to land be taken care of? Third, how would farmers take care of their working capital that will increase three to four times without a subsidy on fertilizers? How do they deal with this working capital constraint? Would farmers be expected to pay and then collect reimbursement? Also, what would be considered as the real price of fertilizer that keeps on changing every quarter? These are practical issues.

A complete withdrawal of subsidies, as Ramesh Chand has said, will lead to a five per cent reduction in food production that, in turn, will have an impact on international markets. Also, in the case of rice, wheat and coarse cereals in some states like Punjab, Haryana, Bihar and Jharkhand farmers will have

Graph 3: Urea Imports & International Prices



Graph 4: Fertilizer Subsidy and Net Income from Paddy



Source: Computed from CACP (2012)

negative net incomes. Why will farmers cultivate any of these crops? They would rather depend on the National Food Security Act and get cereals at ₹3, ₹2 or ₹1. These are some of the larger issues around fertilizer prices and subsidy.

Of course, there are valid questions about the unsustainability of the subsidy given the financial crisis and problems with funding the subsidy. There is also the need to address the growing gap between domestic production and consumption; the increasing dependence on imports; and market volatility because the fertilizer subsidy does play an important role in terms of making farming profitable. It improves productivity and reduces cost of production.

There are other flawed arguments as well: one suggests is that if fertilizer prices are increased, farmers can be helped by higher procurement prices. What this ignores is that not all farmers sell in the market. Large farmers are either self-sufficient or are net buyers from the market. The implication of a fertilizer price hike would be that farmers will cut back on fertilizer use because not being sellers or being net buyers of

The withdrawal of subsidies will make farming in some states less profitable and and many other states will find it unprofitable

food, the higher procurement prices would be of no help.

Also, subsidies are concentrated in a few crops and a few states. They benefit the small and marginal buyers more. The withdrawal of subsidies will make farming in some states less profitable and and many other states will find it unprofitable

As far as containing the subsidy burden is concerned, one option could be better targeting or rationing. This means going in for dual pricing but dual pricing is never successful as it encompasses administrative hassles and could lead to corruption. Rationing seems to be a better option and can be effective once land records become effective. If one needs only three bags of urea or DAP, one need not buy four to five bags and the actual need will be linked to land for which there are records. This may be a better option.

In any event, the rationale is not very clear and the idea will be difficult to implement. Ramesh Chand talked of certain states making excessive urea use and some states less. Haryana, Tamil Nadu and Andhra Pradesh are the states

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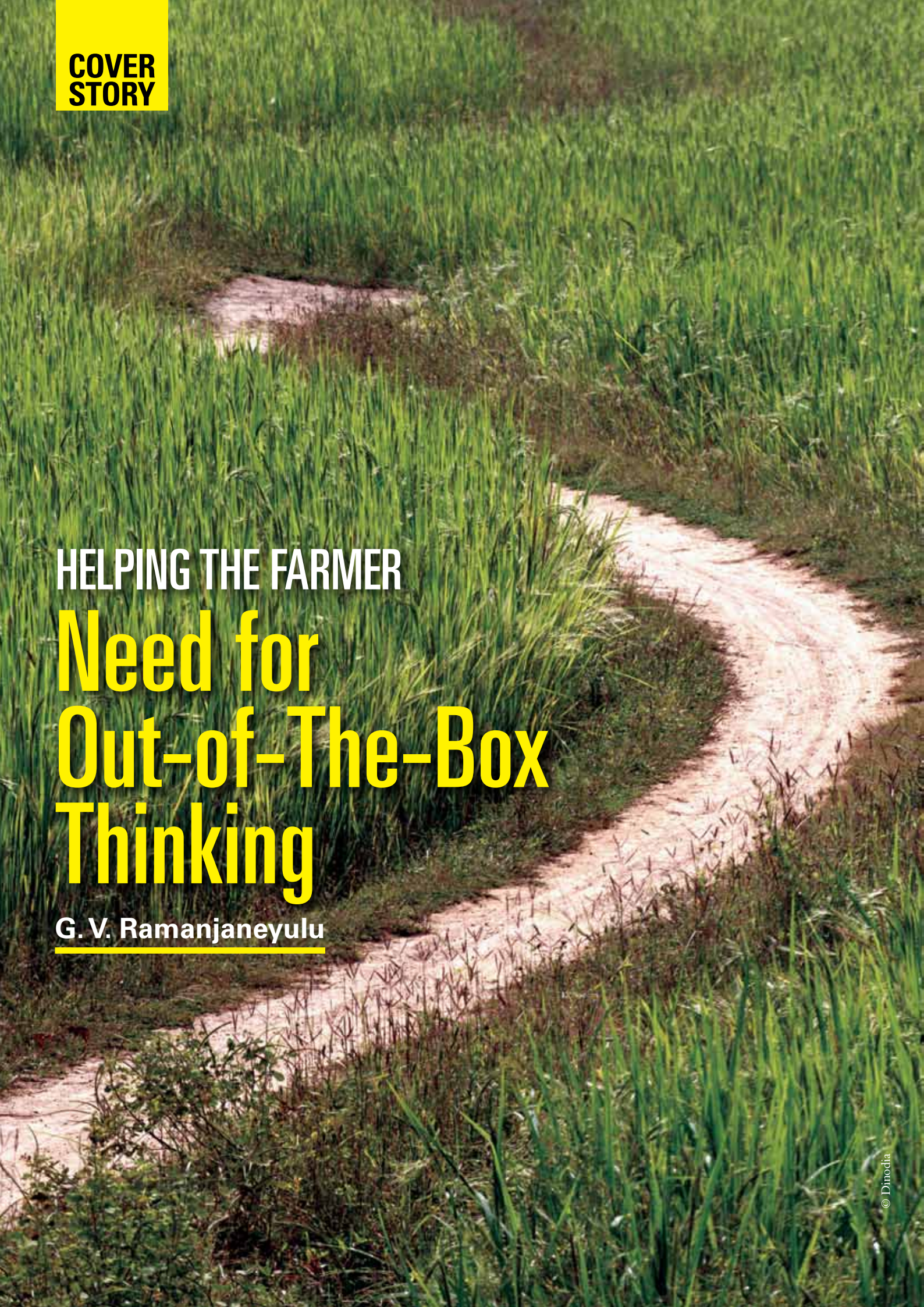
with excessive use of fertilizers and where there is need to rationalize fertilizer prices. One workable suggestion is that the profit from the increased urea prices be used to subsidize P and K to bring about some balance in fertilizer use. There is also need to step up domestic production and there must be a consistent policy; not an off and on kind of policy. Policies should have a 15 to 20 year perspective. ●

COVER STORY



HELPING THE FARMER

Need for Out-of-The-Box Thinking

G. V. Ramanjaneyulu

Just as there is the industry perspective on fertilizer, so is there a farm perspective. Farmers ask the same question. On the one hand you fix prices and when on the other, the cost of production increases, you do not subsidize it. Fertilizer subsidy began in the situation where the actual fertilizer subsidy had to take the cost factor into account. Since food has to be affordable, food prices are regulated and input costs are subsidized. Over the years this issue has evolved in a haphazard fashion and decisions are based on a very fragmented approach.

G. V. RAMANJANEYULU
Executive Director, Centre for Sustainable Agriculture, Secunderabad

When the burden of fertilizer subsidy on the government increases it tries to reduce it without considering its impact on the fertilizer industry or the impact on the farmers. Since 2010 fertilizer prices have increased almost two to three times as far as phosphorus and potassium fertilizers are concerned but the prices of agriculture commodities have not increased commensurately. The government should take a holistic approach while determining the pricing mechanism.

The other issue is around a decrease in the organic matter in the soil and its impact in terms of decreasing the productivity factor of chemical fertilizers, which is not being considered. The fertilizer response in the 1960s-1970s was much higher than it is today. Likewise, in the 1960s and 1970s, the soil organic matter was higher and the response was also high. One needed to apply NPK, but then all other nutrients were available. This has been coming down because only externally bought chemical fertilizers are being used. Farmers using their own resources were never supported. The total subsidy scheme should be actually for increasing the soil health and soil fertility and not about using chemical fertilizers alone. There was great hope when the Nutrient Based Subsidy was to be extended to organic fertilizers. Eventually, it was never extended.

Likewise, phosphorous or potash fertilizers subsidy should have been extended to organic fertilizers because of the low phosphorus presence in Indian soils. Whether that can meet the entire needs of the plant and crop or not is another issue but one must start moving towards something as critical as this: rationalizing subsidies so that soil organic matter can also be improved.

When the burden of fertilizer subsidy on the government increases, it tries to reduce it without considering its impact on the fertilizer industry or the impact on farmers

The question about India's low fertilizer use has been a longstanding one. There is also need to look at the regional variations in use. Andhra Pradesh has the highest fertilizer consumption in the country at 251 kg per hectare. Within Andhra Pradesh, there are four districts, East Godavari, West Godavari, Krishna and Guntur, which probably account for 60 to 70 per cent of that consumption. The chilli farmer in Guntur, for example, uses twice the quantity used by Godavari farmers. There is an imbalance in use certainly at the field level. How that will be addressed is a very important issue.

Agriculture is a very location specific industry so no universal policy will work. Nor will technology, pricing or subsidies determined across the board work. It costs something like ₹2,100 per quintal to produce rice in Andhra Pradesh as per the state government estimation and minimum support price (MSP) is fixed as ₹1,400. Obviously the Andhra Pradesh farmer is subsidizing the consumer by ₹700. What does one do in such situations? Therefore the need for location specific solutions and policies.

Increasing soil organic matter can help the country get rid of two problems; the first being deficiency in micronutrients. If the entire country is mapped with respect to the micronutrients deficiency, almost every region will be found highly deficient. Around Hyderabad, the soil is deficient in iron and zinc and people who consume food produced there suffer from anaemia and zinc deficiency. How does one address this important issue other than by restricting oneself to chemical fertilizer subsidies?

Many farmers in Maharashtra, Andhra Pradesh and other places have shifted to organic farming. It is not only because it is fashionable or it realizes a better price but also because farmers realized that their soil was getting damaged. Yet the agriculture research universities do not appreciate the seriousness of the problem. There is no shift

in discourse towards this problem. What are long-term fertilizer price forecasts? Why is there no change in policy based on these? The farmers invested their own funds in organic fertilizers. If one buys fertilizer one gets around ₹1,200 as subsidy but if one make one's own compost and uses one's own labour and resources one is not subsidized. How can the country have a policy that can also help such farmers? The farmer's own resources and labour are never factored in to costs. The costing mechanism in the CACP (Commission on Agricultural Costs and Prices) data shows that farmer's labour costs are not considered rationally, thus undercutting the costs. How does one support the farmer's own resources and labour? Unless these issues are addressed, the problem is not going to be solved.

There is also the question of high energy use in chemical fertilizers and the need to get away from it in the long run. There is need to think of non-conventional sources of nutrients when one is talking about non-conventional sources of energy. People say that non-conventional sources of nutrients and organic farming are inefficient. Well it all depends on the farmer's own knowledge. Yet no investment has been made in improving technology. No agriculture university has possibly worked on this? Not even one per cent of the investments on total agronomic research has been made on organic farming in this country. The results of such investments can only be seen after the investment has been made.

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Not even one per cent of the investments in India on total agronomic research has been made on organic farming. The results of such investments can be seen after they have been made

The Andhra Pradesh experience is that the shift towards alternative models is more knowledge-intensive and farmers should adopt the alternatives only after understanding their own resources. Farmers will shift if proper investments are made and Andhra has the outstanding example of achieving a 50 per cent reduction in pesticide per user. This data is from the agriculture census on the government of India's website. Other states like Maharashtra, Gujarat or Karnataka, which adopted similar cropping patterns have not showed any decrease in the use of pesticides. Thus with more investment and competent extension activity, farmers can understand and make a rational shift towards these practices.

High nitrogen use is certainly a serious issue; there is an increase in sucking pest problems across all regions. The incidence of brown plant hopper in rice is increasing due to the use of nitrogen. It is happening because of the current subsidy mechanism that makes urea cheaper than the other nutrients.

The final question is about paying the subsidy directly to the farmer. It is a good idea and should be extended to organic fertilizers. Let the farmer choose what he wants to use. The question is about reaching the tenant farmers in this country. To take an example from combined Andhra Pradesh that has about 40 lakh tenant farmers, only 20 per

cent gets agriculture credit because the tenancy is never recognized. Thus these farmers have no access to institutional credit or any support from the government.

The government of Andhra Pradesh came up with a policy of identifying tenant farmers and giving them a loan eligibility card so that they could then go to the bank and access credit. In this process about 1.5 lakh farmers of the 40 lakh were identified and 1.2 lakh farmers were given the loan. In the Telangana region, the nine districts have about 15 lakh tenant farmers. Of them only 58,000 were given the eligibility cards and of them 11,000 farmers got the total agriculture credit. Of the total ₹23,000 crore agriculture credit given in Telangana, only ₹23 crore went to tenant farmers.

The credit parallel applies to fertilizers when the subsidy is paid directly to the farmer and all farmers need to be identified? This mechanism is very critical. Unless such institutional systems are created and these problems solved, shifting towards direct fertilizer subsidy will not be successful. Restricting the quantity of use is very important. Again the same question on how the farmer and his needs will be identified will arise. They can have access to a suitable support system only when this information is available.

Over the past five to six years the chemical fertilizer usage shows a drop from 2008 onwards in Andhra Pradesh and Karnataka in particular. People ask about the availability of dung and biomass for organic fertilizer but not for chemical fertilizer. Every June-July, in Anantpur, farmers stand in long five kms to six kms queues to get fertilizer. There was a police firing and stampede in Hubli, Karnataka. Given the global situation of rising energy costs and where the costs of phosphatic resources are coming down, how many more years

The corruption issue has been discussed. Illegal sale of the fertilizer and subsidies meant for the farmers through the complex fertilizer factories is just one example

can the world exploit the same level of phosphatic reserves? After 50 years, it may not be very economical and a shift may become imperative.

How does one make the shift? How can government policies drive the shift? How can the dialogue be expanded beyond chemical fertilizers? How can the farmer really benefit after these discussions? What about the complex fertilizer issue? Andhra Pradesh has somehow more number of complex fertilizer factories, which not many realize. Almost every political leader has two or three complex fertilizer factories. These came up when the subsidy started coming in after 2010 and the agriculture minister had three or four units himself. These plants buy the subsidized fertilizer, mix it with others and sell it. How government policies can drive the shift is thus very important.

The corruption issue has repeatedly been discussed and even when culprits are caught they manage to get away. Illegal sale of the fertilizer and subsidies meant for the farmers through the complex fertilizer factories is just one example. There were three or four brands with the same composition.

There is also a strong case for driving a change towards organic farming and getting at least 50 per cent of the farmers to shift to organic farming. How will that be achieved? The government should bring in a soil health or soil fertility policy and also the nutrient subsidy scheme that should be rationalized and reach the people who actually need it. ●

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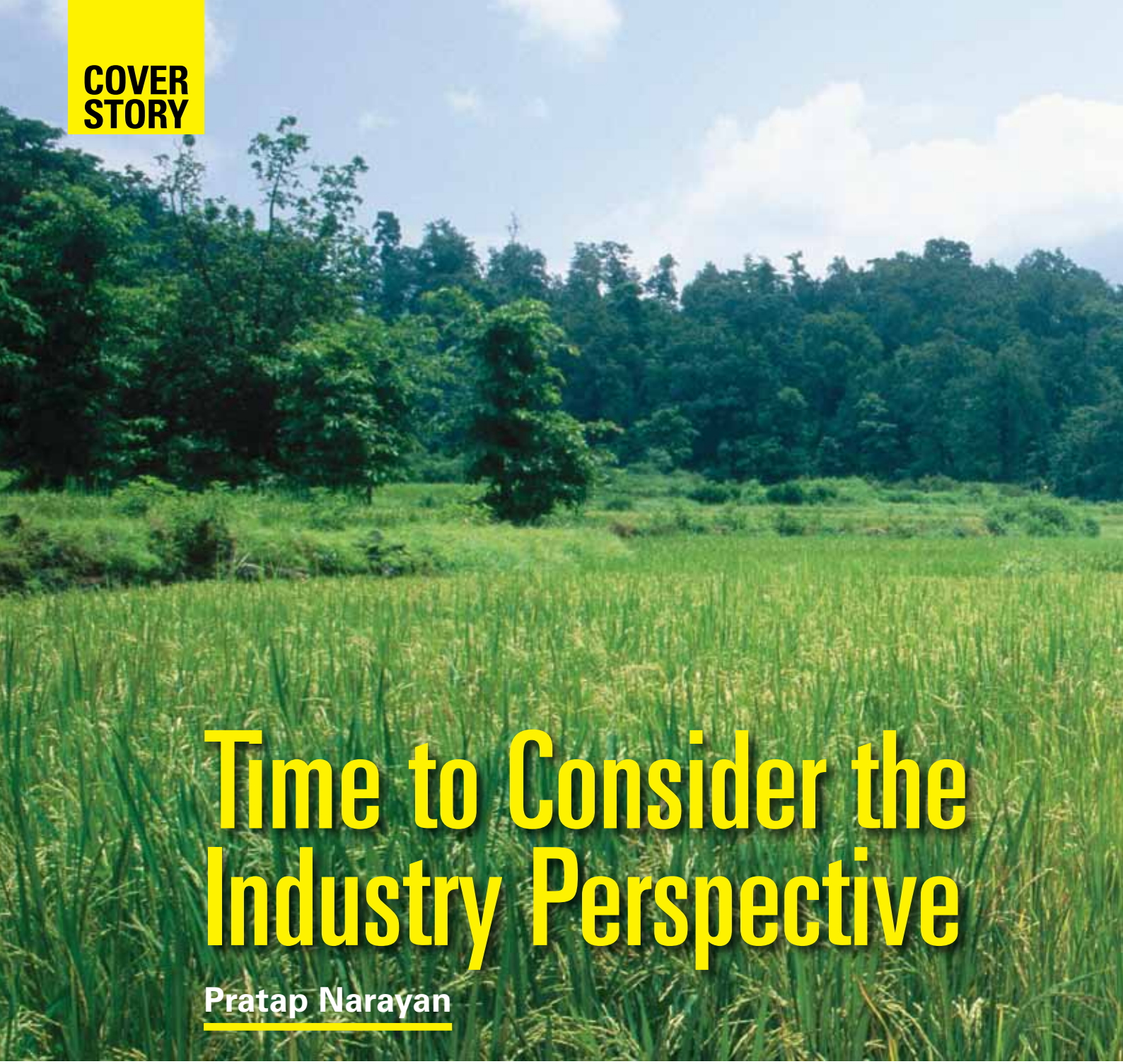


Time to Consider the Industry Perspective

Pratap Narayan

In all the talk around fertilizer costs and subsidies, what is often forgotten is the case of the fertilizer industry. Yet the industry, producer of this commodity, has a very important standpoint to convey. Indeed, there are three parties involved in the context of fertilizers: farmers who can afford some price; the government which may or may not be able to afford the subsidy; and industry, which survives only by staying viable. Of these three interests, one can pursue any two at a time. If the farmer cannot afford cost-based price, the government has to intervene and provide subsidy. If the government cannot provide subsidy and industry has to stay viable the farmer has to pay the full cost. Urea, today priced at ₹5,300 per tonne will be sold at ₹18,000 per tonne. There is no magic formula whereby the farmer does not pay full price, the government does not subsidize and industry stays viable.

PRATAP NARAYAN
Former Director General, Fertilizer Association of India

As far as industry is concerned, as someone transferred from railways to fertilizers in 1978, I see the foundation of past years being shaken now because there is a lack of understanding of subsidy. During the decades of 1960s and 1970s, afflicted by food shortage, India lived on PL 480 imports, in what was called the ship-to-mouth existence.

That was when it became essential to increase farm production by using high yield seeds.

In the 1970s the increase in oil prices led to the cost of fertilizers increasing and a consequential decrease in consumption. The entire industry was hit by low demand. The government then decided to fix fertilizer prices at a level that the farmers could afford and pay the difference between the cost of import and the reasonable cost of production and distribution in India, as the subsidy. As far as supply was concerned, the rates for import or distribution would be determined separately and the difference of the two would be given at the source.

This subsidy was started with phosphorus, not urea, because of the increased prices of imported rock phosphate and sulphur. The government decided to control prices of urea and to provide subsidy of ₹1,250 per tonne for phosphate. The question then was who should get the subsidy? C. Subramaniam, Minister for Food and Agriculture from 1975 to 1977, said that subsidy would be given through the industry to reduce the cost of administration and avoid leakage/malpractices inherent in distributing subsidy to millions of small farmers spread over 6 lakh villages. This was later extended to nitrogen also.

The results of the subsidy were visible after 20-22 years. For example, the nitrogen production increased from 1.86 million tonnes in 1976-77 to 10.87 million tonnes in 1999-2000. Likewise, the

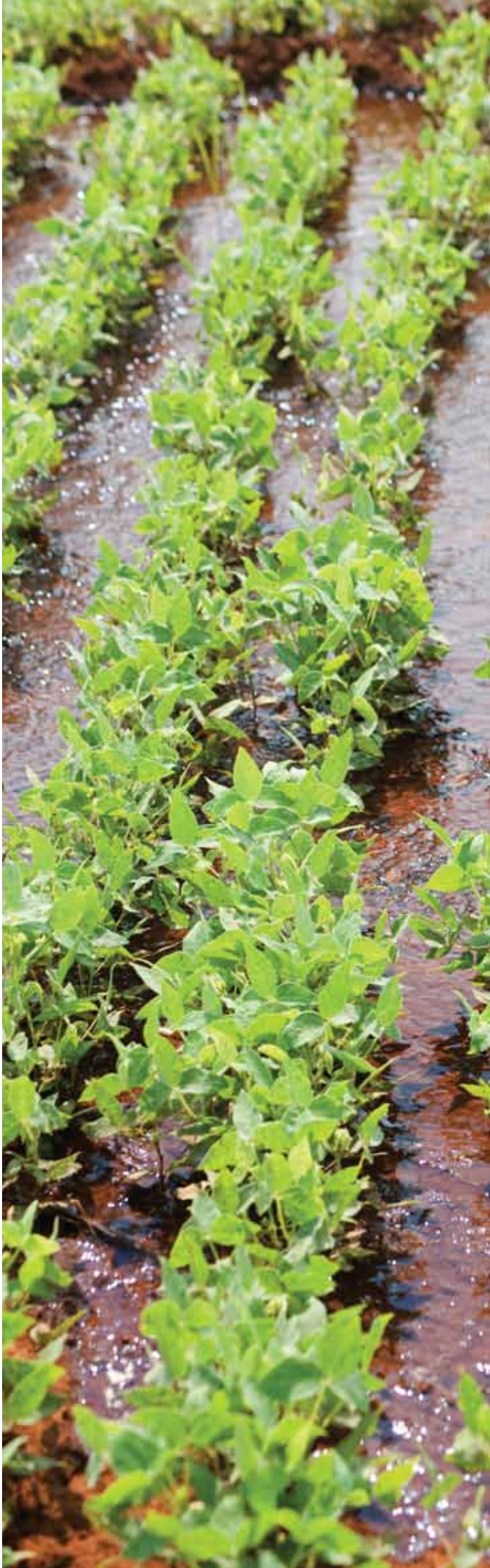
nutrient consumption increased from 3.4 million tonnes in 1970s to around 18 million tonnes in 1999-2000. Food production went up from 111 million tonnes to 209 million tonnes. India became self-reliant in food and extricated itself from the hand-to-mouth existence. In this success lay the downfall.

People forget why this subsidy was started. The government, instead of reducing the subsidy gradually, made it permanent. Then, making a wrong move in 1992, the government announced decontrol of phosphatic and potash-based fertilizers. As one working with the Fertilizer Association of India and associated with Prataprao Bhosale Parliamentary Committee, I was informed that it was proposed to reduce the price of urea by 10 per cent and decontrol phosphate and potash. I advised him not to decontrol anything because of the need to balance the three nutrients. I urged him to not to decontrol phosphate and potash that had prompted the subsidy initially and if something had to be decontrolled, it could be urea. The government did not pay heed and realized its mistake within a fortnight. Then, as a solution, the government decided to provide ₹1,000 per tonne of diammonium phosphate (DAP) and muriate of potash (MOP) to the state government for direct transfer to the farmer.

As a result supply was disrupted. There was no state machinery to distribute the subsidy among the farmers. Later, the state governments met industry representatives and asked them to reduce the price so that government could transfer the subsidy to their accounts. As a result, the nitrogen consumption increased considerably while that of P and K decreased, causing the imbalance. The new government in 1996-97 gradually increased the subsidy of NPK which led to some correction.

The artificial changes in urea adversely impacted industry and no new plants have come up over the past 15 years. This has increased dependence on imports of much costlier urea. People citing calculations of Ashok Gulati say that 52 per cent of the subsidies go to industry and remaining 48 per cent to the farmers. I cannot understand how, if the sale price is fixed for industry as well as costs are also fixed by the government, where is the question of industry being beneficiary of subsidy.

If 52 per cent of the subsidy had gone to the industry it would have been somewhere else. People have arrived at these numbers by taking the import parity price saying that in case of price lower than



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Setbacks from ad-hoc decisions

Instead of periodic adjustment in farmer price in line with increased consumption and inflation to control subsidy, ad-hoc decisions have been made:

- In August 1992, sudden decontrol of phosphatic and potassic fertilizers was announced removing subsidy and reducing urea price by 10 per cent, a sure prescription for skewed consumption of nutrients.
- Within few days, flat subsidy of ₹1000/MT of DAP and MOP and proportionate on NP/NPK was reintroduced to be given directly to farmers by state governments. Initially, states refused to implement it but, when forced, had again to depend on the industry to reduce prices as determined by them and claim subsidy.
- This led to distortions, as states had neither expertise nor inclination about reasonable industry pricing, and inordinate delays in payment. Consumption of P and K declined from 3.321 MMT and 1.361 MMT in 1991-92 to 2.669 MMT and 0.909 MMT in 1993-94.
- With GOI deciding in 1996 and 1997 to significantly increase concession, fixing reasonable prices and pay subsidy directly to industry, consumption of P and K increased to 6.506 MMT and 3.313 MMT respectively in 2008-09.
- In respect of urea also, several adverse features introduced like progressive increase in capacity utilization norm, tightening consumption norms mopping up benefit of improved efficiency even with retrospective effect, grouping of the plants based on feedstock and vintage to introduce common pricing in a highly heterogeneous industry and then legislating payment either on normative cost or actual whichever is lower.
- This rendered industry totally unattractive; no new plant commissioned, only minor investment in de-bottleneck and revamp.
- Increased dependence on much costlier imports.
- Basic factors responsible for increase in subsidy not tackled i.e. inadequate adjustment in farmer price of urea and galloping increase in the cost of inputs/services.

import parity the benefit of subsidy would go to the farmer but for price higher than import parity it would go to industry. What was forgotten was that the exporting countries had gas at less than a dollar per million British thermal units while India had gas and naphtha fuel oil at much higher costs. It is not appropriate to compare the rates.

The second error was in working with a price at a time India was self-sufficient and did not have to import. Whenever fertilizer imports increased so did the subsidy and that continues. Policy makers agreed to reduce subsidy but did not take all the factors into account. The figures show that the price of urea increased only from ₹4,830 to ₹5,360 between 2002 and 2012 whereas the cost of naphtha increased from ₹45,000 per tonne to ₹58,000 per tonne. How could costs be recovered without increase the subsidy.

Likewise, the price of imported raw materials and intermediates, which are paid for in dollars, multiplied due to the depreciation of the rupee. Increase in railway freight charges also impacted on industry. However, one is sticking to the same price of urea and crying that the subsidy is unaffordable. This also gives rise to the totally incorrect assumption that India has enough of a buffer and is self-sufficient. There are other considerations too. The per capita availability of cereals and pulses has decreased; the Indian poor cannot afford foodgrain even at these prices. Compare India's and China's production of nitrogen: India's 12 million tonnes per annum is way lower than China's 41 million tonnes. From being a bigger importer than India, China is today amongst the leading exporters.

India's satisfaction with its annual phosphate production of 4.37 million tonnes should be compared to China's 14 million tonnes. India's consumption of nutrients is 165 kg per hectare of arable land while China's is around 400 kg per hectare of arable land. All this has resulted in improved productivity in China. India's current total production of cereals is 305 million tonnes while China's is 525 million tonnes. The difference in yield per hectare is 2,800 kg to 5,700 kg. To say that India overuses fertilizers is plainly wrong.

People usually say that the benefit of subsidy goes to the rich farmer, those owning more than 10 hectares. Only one per cent of the farmers own more than 10 hectares and 64 per cent own less than a hectare. It is a misconception that rich

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Neither poor farmers nor suppliers gain from subsidy

- Feedstock and other input/service suppliers (mainly government owned) who have been given freedom of pricing and benefit from increased subsidy, besides various taxes and duties.
- Of the three parties involved (resource poor farmers, industry and government), any two interests can be taken care of:
  - (i) If farmers cannot afford cost-based price and industry has to be viable, there is no alternative to government giving subsidy;
  - (ii) If the government can not afford subsidy and the industry has to remain viable, farmer having to pay the cost-based price; and
  - (iii) If the farmer cannot afford cost based price and the government cannot afford subsidy, no alternative to industry (including import) being rendered unviable.
- There is no magical formula under which the farmer does not pay cost based price, the government does not subsidize and the industry/import also remains viable.

Real beneficiaries of subsidy are input and services suppliers like oil companies that guzzle subsidies and make huge profits. Both subsidies and taxes are being increased

farmers consume more fertilizer. Instead, statistics show that the marginal farmer uses more fertilizers because of absence of mechanization, irrigation facilities and lack of technological knowledge. The rich farmer has technology, mechanization, irrigation facilities and fertilizer is a minor input.

In any case, when the maximum selling price is fixed, if rich farmers are not susbsidized how will the country get its surplus? It does not come from the marginal farmers who consume the bulk of their own produce. The increase of procurement price would lead to the increase in food subsidy and take food out of the poor consumers reach.

It is said that Indian industry is very inefficient. Gulati's figure that 52 per cent of the subsidy goes to industry is incorrect but is cited everywhere. Any effort to show what the Indian industry's efficiency, capacity and such attributes is dismissed as the gold-plating of plants. To go by two criteria of efficiency in energy consumption per tonne of production (that cannot be manipulated), the figure for Indian gas-based plants is 8.29 gcal per tonne of ammonia. The developed countries from where technology is imported consume more. The second criterion is water consumption that has been lowered by 50 per cent from the figure in the nineties. To say that Indian industry is inefficient is far from the truth.

To add another dimension to this discussion, the real beneficiaries of subsidy are input and services suppliers. As shown earlier, oil companies guzzle a lot of subsidies and make profits of thousands of crore. On the one hand we are increasing subsidies and on the other hand we are increasing taxes. For instance, gas price is inclusive of royalty, tax, and import duties. These taxes come back to the public finances but only the fertilizer industry has to face the backlash. The point is that is no

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magic formula whereby the farmer does not pay full price, the government does not subsidize and industry stays viable.

The other thing of import is that farmers are subsidized across the world. In developed countries like European Union, Japan, USA, export is subsidized by giving high income to farmers holding large farmlands. The advocates of viable industry say that imports will solve industry's problems. What option does industry have?

There are two solutions. First; if government does not want to give subsidy, it should set industry free and if it wants to give subsidy it can provide it directly to the farmers. The important thing is for the government to free industry. It is very important that it seriously address the issue by bringing urea under the Nutrient Based Subsidy scheme for NPK ratio. Or else it should increase the price so that the subsidy is reduced slowly.

Industry viability is linked with reasonable cost of production. Containing subsidy artificially increases the cost of main inputs. The unrestrained increase in subsidy due to higher taxes and duties and one does not understand why India is going in for unnecessary taxes and duties when it is providing subsidies. Farmer price for the product should be regularly adjusted in line with inflation.

Reviving the Fertilizer Industry Coordination Committee and restoring the post of Executive Director, Fertilizer Industry Coordination Committee, is of utmost importance. It is also time to adopt a rational policy and give up ad-hoc measures and take certain measures to address the adverse consequences of high subsidy on production and consumption of nutrient. ●

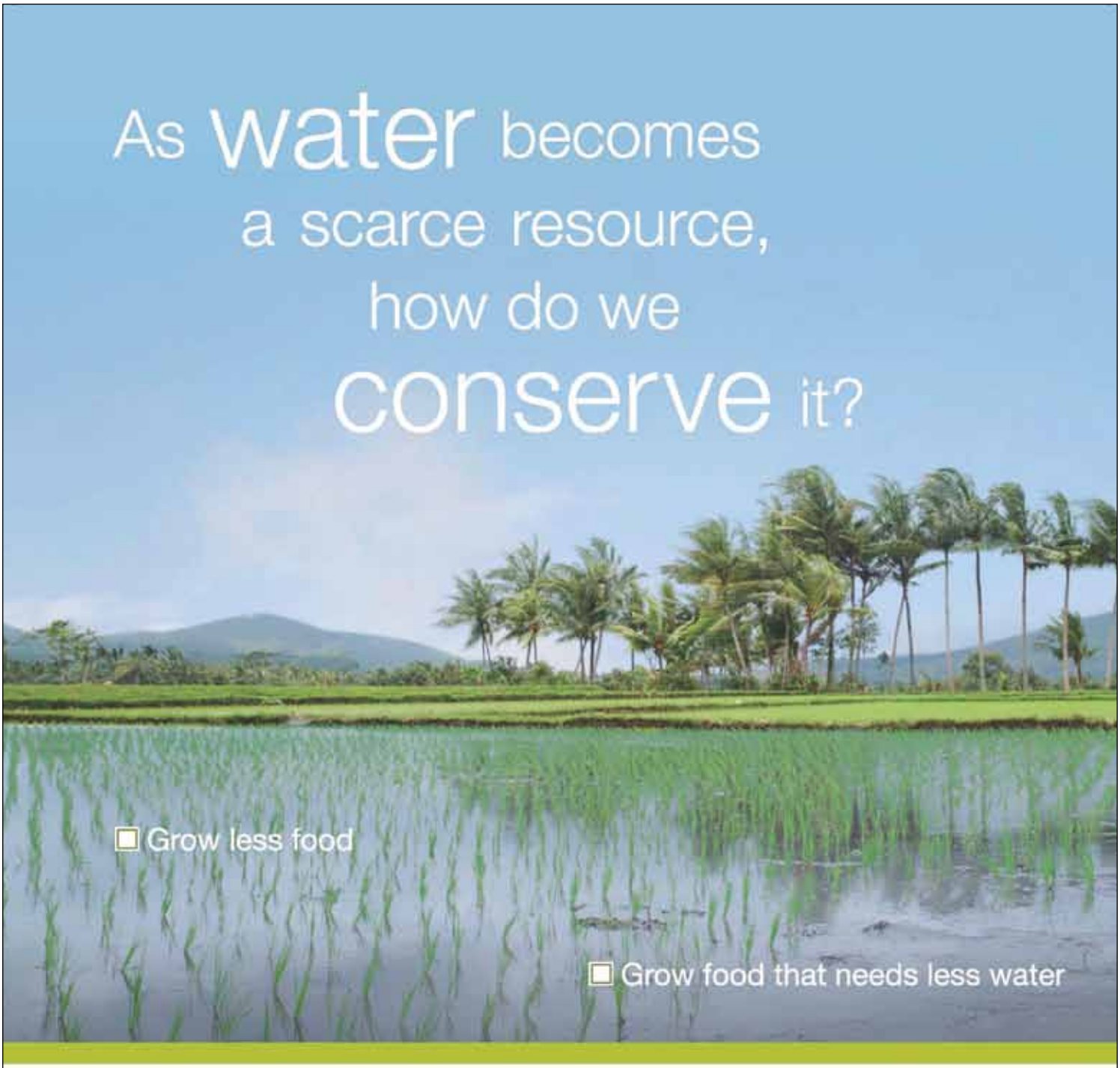
Way forward

Government has to choose one of the two options:

(i) If it cannot afford fertilizer subsidy, it should free the fertilizer industry of all controls. The industry should be given complete freedom to fix its price based on free market forces. If necessary, farmers can be subsidized directly.

(ii) If the view is that prices of agricultural commodities and consequently of main inputs like fertilizers have to be fixed at affordable level, conducive pricing policies should be adopted taking into account the following fundamentals:

- The farmer price of different products should be fixed on a rational basis in order to promote balanced use of nutrients for increased agricultural productivity. If NBS has to continue, urea should also be brought under it.
- The viability of the industry should be ensured by restoring subsidy based on the difference between reasonable cost of production and distribution and the farmer price fixed by the government.
- In order to contain subsidy, the artificial increase in the cost of main inputs (mainly feedstock and utilities) should be reversed.
- Unnecessary taxes and duties on inputs for fertilizer production (or import of finished product) must be eliminated.
- Farmer price of fertilizer products should be regularly adjusted in line with inflation in cost of production and distribution.
- The role of the Fertilizer Industry Coordination Committee in respect of industry pricing should be restored.



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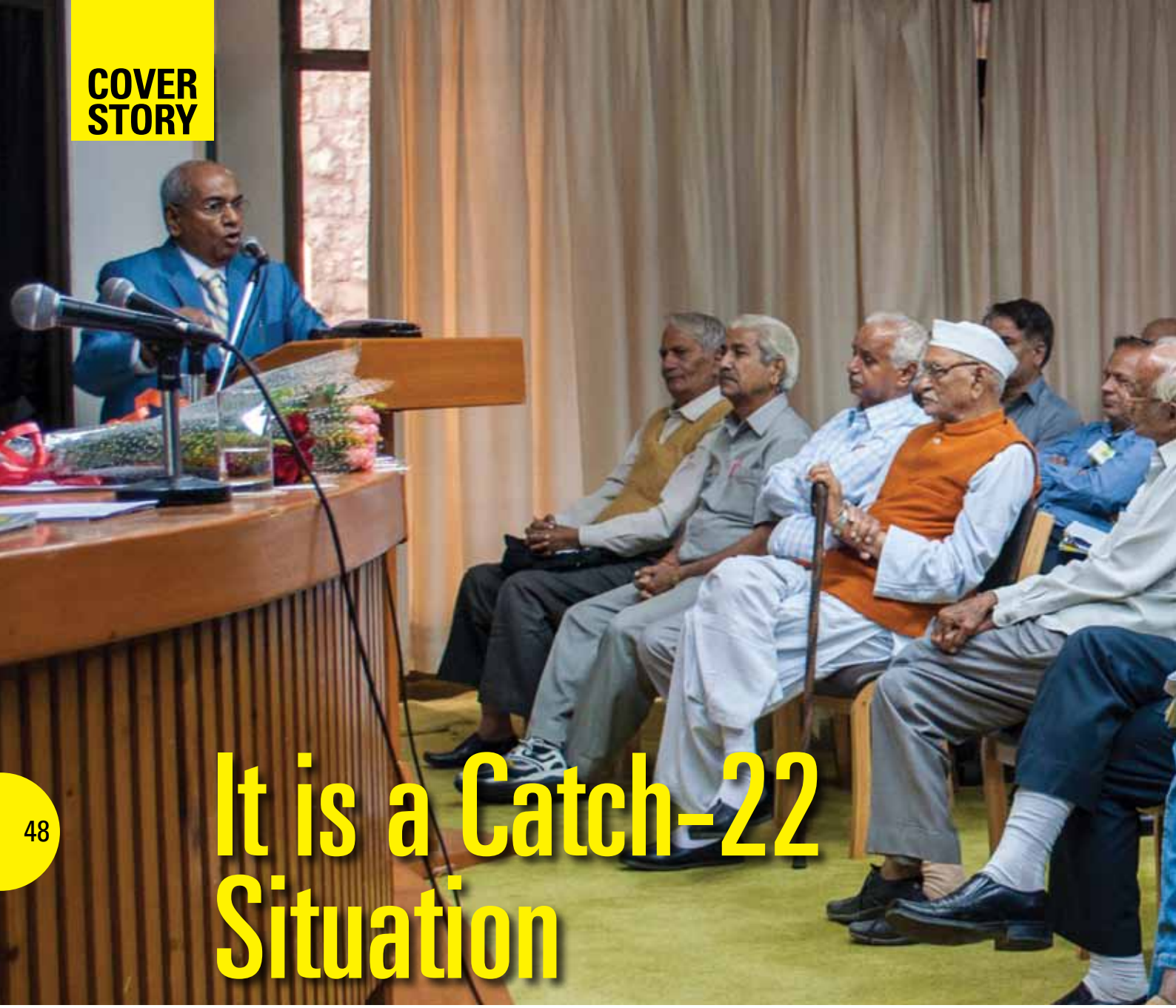


It is a Catch-22 Situation

We need to eat; for that we need to farm and use fertilizers. If we do not use fertilizers, food production will be halved. If there is no subsidy the farmer will die and there will be no one to produce food... What does one do in such circumstances when the government cannot afford to fund the subsidy?

S.P.S. TOMAR

Former Area Manager, IFFCO and a farmer

Three parties are involved in fertilizer subsidy; farmers, government, and industry. The government has already said that it is unwilling to provide subsidy due to lack of funds. The fertilizer industry has shown loss in its balance sheets and said that units are closing down. The third, the poor farmer, does not have any balance sheet or an audience. He has no option but to commit suicide. I am saying this thing because I am from the fertilizer industry and a farmer and also a post graduate in agriculture. I have all three experiences. The important thing is the need to eat every day; for that we need to farm and use fertilizers. If we do not use fertilizers food production will be halved and if there is no subsidy the farmer will die and there will be no one to produce food. This is a Catch-22 situation where we want farmers to survive so they ensure the country's food security but we cannot subsidize them.

One of the speakers said you cannot provide

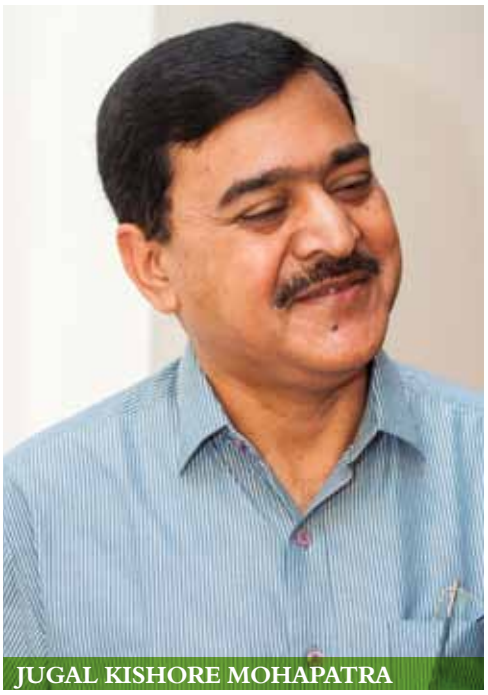
subsidy directly to the farmer. What is the way out then? Also land has become 'sick' due to overuse of fertilizers and urea. It is also leading to pollution affecting fruits and vegetables resulting in the prevalence of diseases like cancer and diabetes. The only way out is to increase use of organic matter. The government must provide bio fertilizers, which is also cheap. Another way is Integrated Plant Nutrient System (IPNS). What needs to be remembered is that one cannot stop using fertilizers as it will lead to a drop in production. On the other end is fertilizer overuse that will lead to poisoning of land.

There are two kinds of farmers; marginal, accounting for more than 90 per cent and rich landowners. Real farmers are those whose income is dependent on agriculture. If the subsidy is to be reduced for the poor farmer, the only option is to utilize the abundant waste in the country that can be converted into bio and chemical fertilizers. It will save thousands of crores in subsidies. The outskirts of every city and village have waste dumps that should be used to produce fertilizers and ease the burden on the government and farmers and leave the soil healthier. It is high time that the government looked into this.

RAM CHANDRA CHAUDHARI

Dairy farmer and Chairman, Ajmer Dairy

I want some light on the percentage of the subsidy provided by the developed countries on urea, the comparative Indian figures and the cost in rupee terms. The comparison will give us insights into the percentage of subsidy given to the various sectors. Is it also possible to do a satellite survey of the arable land of the country for the better data on the crops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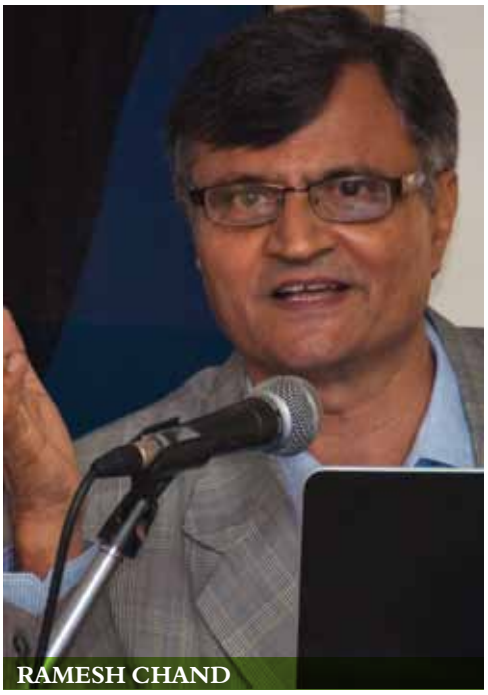

RAMESH CHAND


VIJAY PAUL SHARMA

that can be sowed and the amount of urea and fertilizer to be used? The government can transfer the subsidy to the bank on the basis of this data.

PARANJOY GUHA THAKURTA: I would like to inform you that one economist calculated that every cow in Europe gets enough subsidies to travel the world in the business class of an airplane.

UTTAM GUPTA:
Former Chief Economist with the Fertilizer Association of India
Prof. Sharma, you mentioned about the practical difficulties in implementation of the direct cash transfer to the farmers because of the 130 million farmers. We got a contrarian view from U.S. Awasthi who was very authoritative and confident that it could be done. Finance Minister, Arun Jaitley also claims that there is an excellent financial architecture under the Jan Dhan Yojana that can transfer the subsidies to bank accounts. Would you maintain that even with advanced technology it cannot be implemented? Would you like to elaborate on your reservations on this?

VIJAY PAUL SHARMA: I would like to begin by answering the question on urea pricing. The cost of imported urea is much higher than that of the type produced in India, which means that Indian industry is very efficient. The MRP, however, is fixed at ₹5,300 and domestic cost of production is about ₹12,000 to ₹13,000 per metric tonne and import price varies from ₹18,000 to ₹26,000 per metric tonne.

I have not studied subsidies in other countries. Crop lining is a very good concept that helps one to decide on the amount of urea that a crop needs but ultimately what prevails is the farmer's individual decision. This decision is also influenced by the market rate of the crops in the previous years and the expected rate in the coming year. The prices fall in the case of excess production. Even with the technology how does one utilize it to convince farmers on the desired cropping pattern?

RAM CHANDRA CHAUDHARI: The government can open soil testing labs in every district to give recommendations of the NPK and micronutrient.

VIJAY PAUL SHARMA: The government of India's soil testing labs analyse both macro and

The cost of imported urea is much higher than that of the type produced in India, which means that Indian industry is very efficient. The MRP, however, is fixed at ₹5,300


PRATAP NARAYAN


G.V. RAMANJANEYULU


U.S. AWASTHI

Punjab and Haryana do not have problems as they have tenancy records, but states like Madhya Pradesh, Andhra Pradesh and Karnataka have no land ceiling or land records

micronutrients but it will take some time to open them all across India.

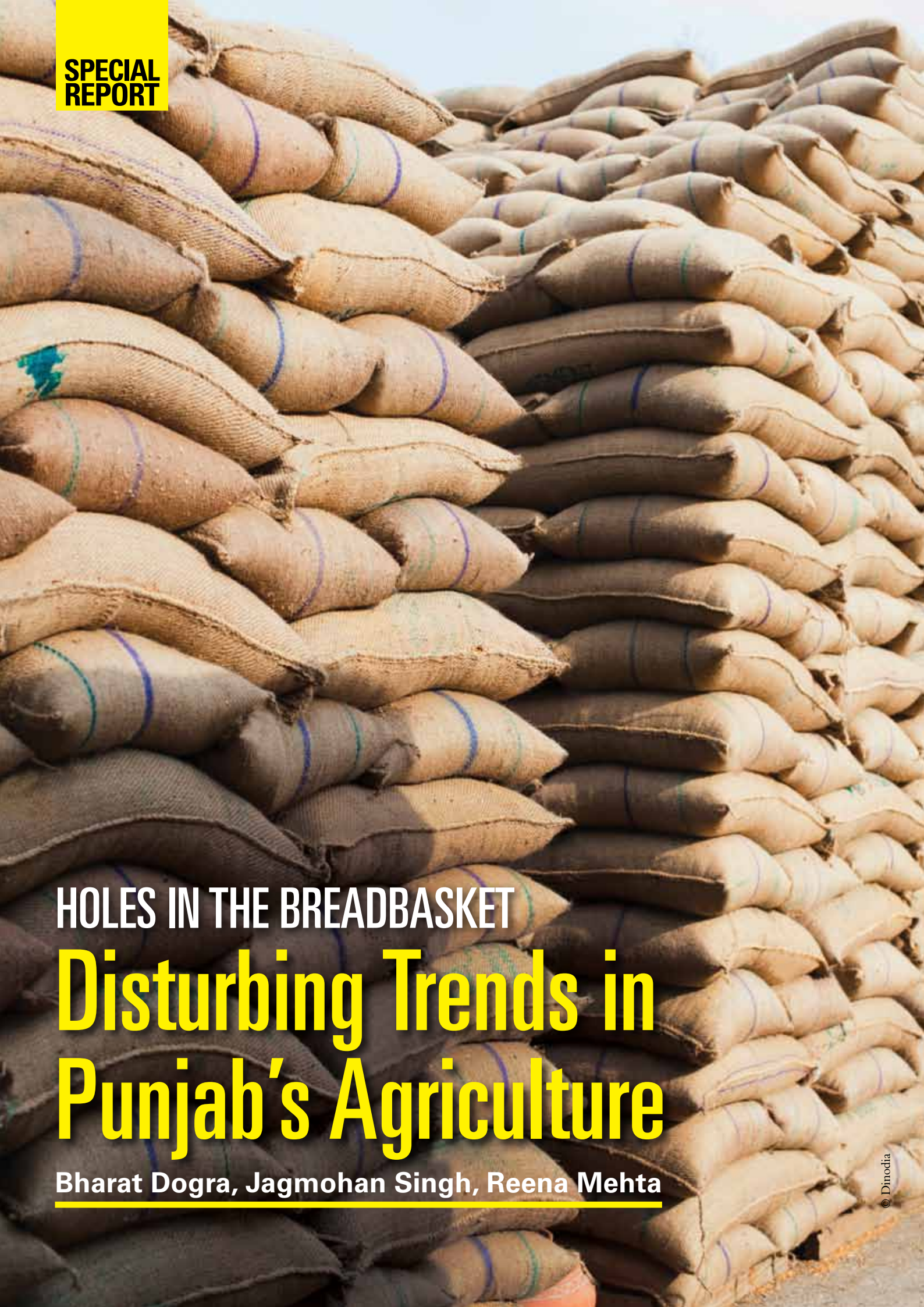
UTTAM GUPTA: What is baffling is that the finance minister as gone on record that it will be done. He was talking about fertilizer as well.

VIJAY PAUL SHARMA: Not fertilizer subsidy.

AJAY JAKHAR: The question is not whether you want to provide fertilizer subsidy to the farmers. The question is why is there no subsidy for soluble fertilizers? The government says do not use more fertilizers but I want to use only soluble ones. If government does not increase the price of the subsidy proportionate with market price, the farmers will suffer losses. We are in favour of direct transfer of subsidy in cash form to farmers but for that a minimum criteria should be met by the government. I think the Jan Dhan Yojana will help the government get accounts credits and land reforms in the coming years. Punjab and Haryana do not have problems as they have tenancy records, but states like Madhya Pradesh, Andhra Pradesh and Karnataka have no land ceiling or land records. These issues need to be sorted out as soon as possible. Having a technology and using it are two different things. Lastly, the discretion to use subsidy in buying a urea or cow dung fertilizer should be left to the farmers.

PRATAP NARAYAN: I would like to say two things on direct subsidy. First, at what stage would the farmer receive the subsidy: before purchasing the fertilizers or after? If before, can one assure that the farmer will spend it on fertilizer and not on his other needs? Second, if subsidy is provided after purchasing the fertilizers what is the need for it? If a farmer can buy it, why should the government provide the subsidy? The question is not as simple as this. Will the bank transfer subsidy for free? Even if banks charge one per cent of the amount, it would be a staggering figure of say ₹7,000 crore for the total subsidy of ₹70,000 crore. Even this cannot stop the leakages. My argument is that subsidy should be provided to the gas companies and one must ensure that they give the fertilizers. Otherwise one is increasing costs, while reducing the price and saying that the government will not subsidize. ●

SPECIAL REPORT



HOLES IN THE BREADBASKET

Disturbing Trends in Punjab's Agriculture

Bharat Dogra, Jagmohan Singh, Reena Mehta

BHARAT DOGRA
Journalist writing on development, environment and human rights

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Independent researcher and writer

In recent times newspapers in Punjab have been frequently carrying a number of worrying headlines on the agricultural sector. Here are some of these:

- Study confirms 1,700 farmers' suicides in two districts,
- Decline in water table in 75 per cent of land area,
- Alarming increase in indebtedness of farmers,
- Punjab train renamed as 'Cancer Express' by local people.

Clearly there are serious problems in the farm sector in a state that is called the breadbasket of the country, growing 20 per cent of the nation's wheat 11 per cent of its rice and 10 per cent of the cotton crop.

An additional reason why the situation demands concern is that Punjab's Green Revolution model is eagerly followed by other states. Agricultural problems that first became more visible in Punjab are likely to appear sooner or later in other areas where the green revolution technology is spreading in a big way as well.

A report *State of Environment Punjab* published by the Punjab State Council for Science and Technology, Chandigarh has drawn attention to the inability of additional inputs (particularly chemical fertilizers) to provide expected increase in productivity. More specifically this report notes: "The Green Revolution technology had put great pressure on the ecological system of the state, leading to a fall in the level of ground water table, soil resources deterioration and environmental pollution from farm chemicals. Thus, the initial prosperity that the farmers achieved is diminishing at a very rapid rate."

Partial factor productivity of NPK in Punjab has also dropped from 80.9 in 1966-67 to 16.0 in 2003-04. Hence, the report says, "farmers in the state have been applying higher and higher doses of major nutrients, especially nitrogen for sustaining adequate production level... Organic carbon content has been reduced to very low and inadequate levels in the state, because of very low or limited application of organic manures and non recycling of crop residues."

This trend is very worrying as it is bound to appear sooner or later in all areas where very high reliance has been placed on chemical fertilizers, pesticides and other agri-chemicals for increasing farm production. High dependence on heavy and unbalanced use of chemical fertilizers depletes the fertility of land. Chemical fertilizers cannot enhance the soil's organic matter that is the key to fertility.

Heavy reliance on chemical fertilizers ultimately leads to a situation where more and more of these have to be used just to maintain the existing yields at rising costs. This is precisely what appears to have happened in Punjab at a relatively early stage. For example, during the five years from 1977-78 to 1981-82 use of chemical fertilizers in Punjab increased from 4,65,000 tonnes NPK to 8,12,000 tonnes while the yield for the major crops increased only moderately or stagnated.

Worse, chemical fertilizers are much less suitable for tropical climate and soil compared to temperate areas. Here their contribution to pollution as well as long-term damage to soil fertility is much more. The contribution of earthworms in maintaining soil fertility is also much higher in our country and the agri chemicals have been very harmful to them. Chemical sprays also destroy some other friendly insects. The deeper root growth important for preventing any deficiency of micronutrients has also been hampered due to the formation of pan by chemical fertilizers.

Punjab grew a wide diversity of crops using time respected crop rotations and mixed farming systems. These were able to exist in compatibility with local soil, water and climate conditions so that even after hundreds of years of cultivation there was no

Green Revolution technology put great pressure on the ecological system and led to a fall in the groundwater table of Punjab. It polluted the soil with farm chemicals

heavy stress on soil and water. However, the Green Revolution technology started creating stress for soil and water within just one or two decades. Loss of biodiversity and narrow genetic base of crops brought by the green revolution technology led to greater vulnerability to heavy damage from diseases and pests, in turn requiring heavy use of hazardous chemical pesticides and other agri chemicals.

As the quoted above says: "Over intensification of agriculture over the years has led to water depletion, reduced soil fertility and micronutrient deficiency, non-judicious use of farm chemicals and problems of pesticide residue, reduced genetic diversity, soil erosion, atmospheric and water pollution and overall degradation of the rather fragile agro ecosystem of the state."

Indeed, in its race to produce more, Punjab "has been overexploiting its land and water resources by changing traditional cropping patterns and resorting to high input agriculture (instead of low input, ecologically friendly farming practices) with higher demands of water, nutrients, energy, etc. By lowering cultivation of legumes and switching over from organic to chemical fertilizers, the soil is deprived of natural replenishment of both, micro and macro nutrients leading to lowering of its productive potential", the report says.

The Punjab Agricultural University (PAU), Ludhiana, has analyzed more than 1,80,000 soil samples during 1981-1992 and reported: "78 per cent soils of Punjab were low (<0.4 per cent SOC) in organic carbon, 21 per cent medium (0.4 per cent -0.75 per cent SOC) and 0.5 per cent high (>0.75 per cent SOC) in soil organic carbon. The districts of Bathinda, Faridkot, Sangrur, Hoshiarpur and Amritsar had more than 80 per cent samples in low categories."

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Lowering cultivation of legumes and switching over from organic to chemical fertilizers deprives the soil of both micro and macro nutrients lowering its productive potential

- Data analysis by the Punjab Agricultural University (PAU) reveals that within a very short period 1981-86 to 1996-2001 the number of soil samples in low phosphorous (P) increased from 45 per cent to 71 per cent. The exploitive green revolution technology has rapidly depleted several precious micronutrients. A survey conducted in 1990 by PAU had revealed that 49 per cent of soils in the Punjab was deficient in zinc.
- The consumption of chemical fertilizer increased more than eight times in 35 years from 213 nutrient thousand tons in 1970-71 to 1,694 nutrient thousand tons in 2005-06. Punjab consumes about 17 per cent of total pesticides used in India.
- A comparison of per hectare usage of pesticides with other Indian states indicates that Punjab (923 g/ha) easily leads other states reporting high pesticide use such as Andhra Pradesh (548 g/ha) and Tamil Nadu (410 g/ha).
- At present there are 4,77,000 tractors, 6,24,000 thraeshers and about 13,000 harvesting combines in Punjab. As per information provided by Punjab State Farmers Commission, the state has double the number of tractors it requires.

The worst impact is that Punjab's farmers', including small and marginal farmers, have been relentlessly pushed into high-input, high-cost agriculture. The high-cost agriculture has proved very burdensome for farmers, particularly small farmers. Their costs have arisen steeply also because of the steep fall in water-table as a result, of among other factors, of adopting highly water-intensive cropping patterns and crop varieties. According to the *State of Environment* report, "Out of 137 blocks of the state, 103 blocks are overexploited…On an average the water table has receded at an annual rate of 55 cm across the state."

Rising costs and relatively stagnant yields have led to a serious survival and high indebtedness for many farmers, particularly small farmers. A 2014 study of Punjab's small peasantry by Sukhpal Singh and Shruti Bhogal titled 'Punjab's Small Peasantry – Thriving or Deteriorating?' states: "Punjab's farmers are reeling under debt. Of the sampled farmers, 88 per cent had an average debt of ₹2,18,092 per household. The amount of debt per hectare was inversely related to farm size. It was the highest among marginal farmers (₹1,70,184), followed by small farmers (₹1,04,155), and other farmers (₹44,069)."

The authors of the report explain: "Indebtedness approaches bankruptcy when a loan is more than two or three times a family's annual income, which is close to acute/extreme stress. It was found that this was inversely associated with farm size. About one-fourth of marginal and 12.12 per cent of small farmers were under acute stress, compared to 3.39 per cent of other farmers. Households also face a severe debt crisis when the loan is more than what the family earns in three years. About 14 per cent marginal and about nine per cent small farmers were in this category, against 2.43 per cent of other farmers."

The extreme distress of farmers leading to their suicide is also highlighted in the 2012 report of the Punjab Agricultural University with a title

'Farmers' and Agriculture Labourers' Suicides Due to Indebtedness in the Punjab State'. According to the report: "The increasing distress of farmers has unfortunately also led to thousands of suicides. A census survey on suicides conducted in the most affected six districts namely Bathinda, Sangrur, Mansa, Barnala, Moga and Ludhiana revealed that 3,507 farmers committed suicide in these districts during the period 2000-11. Out of these suicides 74 per cent were committed due to economic distress and indebtedness. 80 per cent of these suicides were by small farmers cultivating less than five acres of land. The average debt in such cases was ₹2,34,541."

It is further highlighted by Ranjana Padhi in her 2012 book *Those Who Did Not Die – Impact of the Agrarian Crisis on Women in Punjab*. According to the book: "The extreme distress suffered by families of suicide and attempted suicide victims also comes out very vividly and tragically in the interviews conducted by Ranjana Padhi. Her findings of interviews conducted with 136 respondents from such families revealed that over 70 per cent had resorted to death by consuming pesticides." In these interviews:

- Loan pressure was reported by 79 per cent of the respondents as the major cause of suicide.
- Harassment by the loan agency (*arhtiya* and bank recovery agents) was mentioned by 48 per cent of the respondents as a cause.
- Non-payment of crops by arthiyas was mentioned by 14 per cent of respondents as a cause of suicides.

This study revealed the worsening landholding situation of the families of suicide victims. Landholding size has decreased. Landlessness has also increased. Many such families have been forced to sell their land.

Agricultural fields have been reduced to monocultures of a few crops with a very narrow genetic base while a huge variety of traditional seeds and crop varieties incorporating the wisdom and efforts of several generations of farmers have been displaced from fields and in the absence of any large scale efforts to preserve them this invaluable heritage may be lost forever.

The *State of Environment* report also states that "Prior to the green revolution, 41 varieties of wheat, 37 varieties of rice, four varieties of maize, three varieties of bajra, 16 varieties of sugarcane, 19

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Another report in the *Tribune* filed from Bathinda states: "Yet another year has passed but the number of patients boarding from here the infamous 'cancer train' to Bikaner in Rajasthan for the treatment of the disease has increased, as the Punjab government has so far failed to take remedial steps. Besides cancer, other diseases have also taken roots in the area because of contaminated groundwater. The disease is not only confined to Bathinda but has also over the years spread its tentacles in the entire Malwa belt consisting of the districts of Muktsar, Faridkot, Moga, Barnala, Mansa and Ferozepur, where the patients were fed up of 'hollow promises' of the Central and the state government. The area has emerged as the epicentre of the disease and has come to be known as the cancer belt of Punjab."

Perhaps the most disturbing aspect of recent social changes in Punjab relates to an unprecedented increase in various kinds of substance abuse particularly drug addiction. A recent study by the Guru Nanak Dev University in Amritsar suggested that as much as the 70 per cent of young Punjabi men is hooked on drugs or alcohol.

All these factors taken together reveal a disturbing picture of Punjab's agriculture. The available

Apart from the stress and distress experienced by farmers, the future outlook is grim because of colossal damage already caused to the basic resources of soil and water

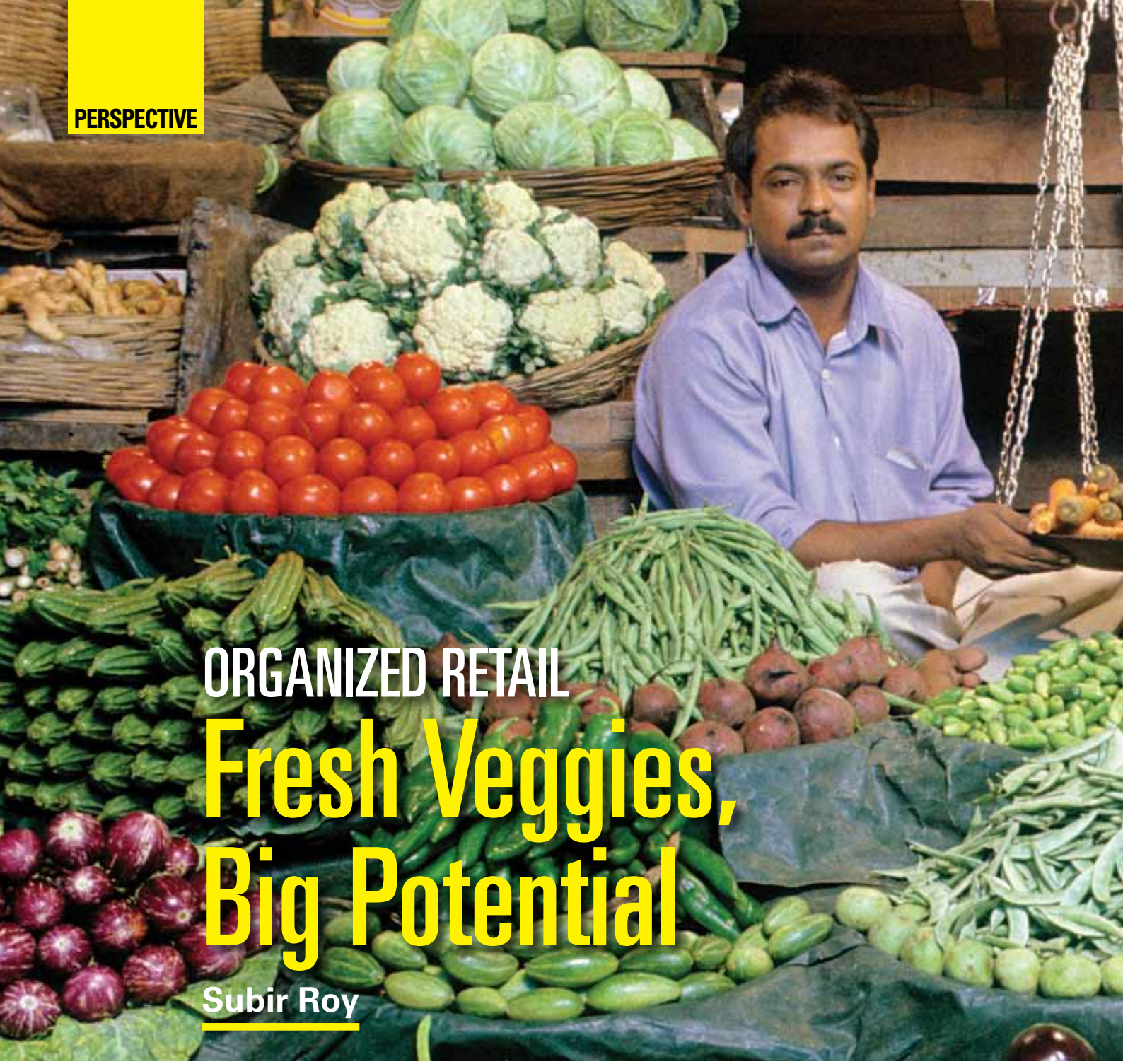
species/varieties of pulses, nine species/varieties of oil seeds and 10 varieties of cotton were reported to be in use in Punjab and propagated through pure line selection by various workers. However, the number of varieties in use by farmers has decreased since then."

At the same time serious and new health problems have appeared in Punjab's villages which have been increasingly related to the high use of agri-chemicals particularly pesticides and pollution of water and soil by these agri-chemicals as well as industrial affluence which flow across many villages in drains and streams.

As the *Indian Express* reported recently: "Confirming Punjab government's worst fears, a door-to-door survey of the health department — covering almost 98 per cent of the state's population — has found that the incidence of cancer in Punjab is higher than the accepted national and the international average".

statistics indicate that over 15,000 farmers and farm-workers are likely to have committed suicide in Punjab during 2000-14 largely due to indebtedness related factors. Apart from the stress and distress experienced by farmers, the future outlook is grim because of the colossal damage already caused to the basic resources of soil and water. All this points to the need for re-examination of the existing pattern of agricultural development in Punjab.

Punjab should now follow the agro-ecology approach so that farming methods are in harmony with the protection of environment, particularly the conservation of soil and water. Such an approach should be better equipped to provide low cost, low risk alternatives to small farmers. Besides, direct linkages between farmers and consumers can be encouraged by linking various urban colonies to specific villages from where farmers can bring organic food to specially designated markets for such produce. ●



ORGANIZED RETAIL

Fresh Veggies, Big Potential

Subir Roy

There is an increasing awareness of the usefulness of fresh vegetables and strong medical opinion that they should occupy a prime position in our diets. As the middle class in cities does not have much leeway in changing its lifestyle, the need to at least follow the right kind of diet is now high on its agenda. This is coupled with the fair degree of purchasing power that it can bring into play. This is the picture on the demand side.

SUBIR ROY
Senior Journalist

Come winter, there is an abundance of fresh vegetables in large parts of the country. The easy supply makes for modest prices. Under ideal conditions, supply should be able to respond to the demand and make farmers happy round the year. The irony, however, is that farmers and consumers are almost never simultaneously happy. Abundant supplies and modest prices usually mean that farmers are unable to get a proper price for their produce.

However, when for various reasons – poor rains, attack by some pest or simply because it is not the right time of the year – supply falls short, farmers do get a better price but always a fraction of what the consumer has to pay.

There is a third angle to all this – the need to mitigate and reverse the process of climate change. For this it is necessary to use as little of fossil fuels

as possible and reduce the consumption of energy in transportation. Hence the imperative need to keep the "carbon footprint" of nearly all that is consumed low.

Thus, even if fresh vegetables can be transported over long distances and consumers are able to pay for the transportation, such long transportation or high carbon footprint should not feature in the accepted business model governing the supply and consumption of fresh vegetables.

There is the fourth element. Rapid urbanization and spread of urban sprawls, which is leading to skyrocketing of peri-urban land prices, is increasingly posing a threat to farm land in the vicinity of urban clusters. It is again imperative to grow most of the fresh vegetables that a city consumes near it but the land for it is rapidly disappearing.

This dilemma was highlighted in the impasse over the Tatas' proposal to build a car factory with a full complement of ancillary industries in the vicinity of Kolkata at Singur, which is also a very fertile agricultural area. The Tatas chose the location for, among other reasons, its proximity to the large urban centre of Kolkata. This ensured that executives living near the factory with their families would have an urban conglomerate with all its facilities and conveniences within easy driving distance.

Conversely, an undeveloped area several hundred

kilometres from the city would have very affordable land prices for industry promoters but it would be difficult to get executives with good resumes to live there with their families. A city like Jamshedpur, where the Tata's steel plant is located, has all the modern amenities but it has been a hundred years in the making.

Irrespective of the the politics that drove the agitation, it certainly offered a difficult choice to make. A decision had to be made about the need to develop industries and urban areas with all amenities and at the same time grow enough vegetables not too far from such urban areas. This might ensure the right kind of sustainable development in terms of both climate and lifestyle.

As if this were not enough, against this backdrop there is a depressing agricultural reality. Most farms are small and getting smaller. Fairly small farms can be highly productive but most of them in India are not for a variety of reasons. The primary one is that farmers, not being educated enough to absorb the best farm practices, while extension services are not adequately available in most areas, there is nothing to pull up backward farmers by their bootstraps.

Then there is the cardinal reality that the younger generation in most farming families would rather take a paid city job than continue to live on the land and farm it. This reality was brought home to me during an interaction with coffee planters in Karnataka. They were all prosperous but admitted that but for the largest and the most successful among them, they could not foresee their families remaining hands-on planters when the baton was passed on to the next generation. Particularly piquant was the position of a planter who admitted, between rounds of drinks at the club in Chikmagalur with impeccable British origins, that his wife, who was a gynaecologist with a successful practice in Bangalore and was a weekender at the plantation, earned more than he did.

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There is the cardinal reality that the younger generation in most farming families would rather take a paid city job than continue to live on the land and farm it

Of all the problems besetting farming in India, perhaps the most significant, particularly for the usually small farmers who grow fresh vegetables, in the state of marketing of their produce. The vast majority of farmers do not get more than 30 paise out of every rupee that the consumer pays. As for the consumer, the uncertainties impacting his wallet are astronomical.

The price differential between winter and other times of the year can be as high as three times. The *baingan* (brinjal) that costs ₹20 per kilogramme in winter could cost ₹60 or more off season. The enormous fluctuation in the prices of vegetables is not restricted to perishables but also extends to those that can be at least partly stored like potato, onion and tomato but that is another story that needs to be addressed separately.

Where does a solution lie? There is no one solution. Solutions will vary according to local realities. It is also necessary to see the limitations of some of the solutions touted more often. One is food processing. Extending this in regions and with vegetables that lend themselves to it will certainly make a difference to farm incomes.

The potential of this solution to make a

difference in farm incomes is increasingly getting limited though, as dietary advice moves further and further away from processed foods. There will always be a demand and market for junk foods like tomato ketchup and fritters or potato chips but the future of processed foods, which invariably need the addition of preservatives, is limited.

Another often-touted solution with a limited, though not non-existent future, is cold chains. These do make it possible to transport fresh farm produce over longer distances and stored for longer periods, thus adding to their marketing potential. Again, as concern for energy conservation grows, the desirability of expending large amounts of energy, which is mostly non-renewable, in either transportation or for refrigeration, will, if anything, decline over time.

One paramount area of action must be in improving farm productivity and practices. Farmers' education and guidance will go a long way, as will farmers' ability to access better seeds. There is also an imperative need to protect farms from industrial pollution whose chances are high in peri-urban areas. Countering fly ash from a nearby thermal power plant or water polluted by industrial discharge has to be given the highest priority.

There is also the need to come to grips with the issue of organic farming. The demand for organic foods is growing but slowly and there is a cost involved both in terms of time and money in getting an area to shift to organic farming. The need to minimize, if not eliminate, pesticides residue in farm produce cannot be questioned. A realistic goal today, embracing the entire farming sector, however, needs to be to reduce as much as possible the havoc caused in farms by industrial intrusion (toxic waste and residues) without making the organic agenda a general one. Meanwhile, the niche market in organic foods can grow at its own pace.

Another paramount need is to get marketing right. The entire future of farming, not just of fresh vegetables, hinges on it. Farmers' co-operatives is a great idea and any number of individual successful efforts can be found. The effort to promote such efforts must continue but something more needs doing. There are both a micro and macro solutions that need to be pursued.

The micro solution – in the sense of something that has to target individual farmers – is to rid him of one of his greatest handicaps. He is hurt perhaps the most in the area of price discovery. He does not know which price is prevailing where it affects him the most. He can be helped the most in this area through mobile telephony (with the use of the ordinary cellphone) and through social media. The farmer has to be able to get almost daily messages in a language he understands on key prices prevailing in markets that matter to him the most.

Over time blogs and Facebook can become vital additional channels. It is here that social entrepreneurs among India's innovative techies can play an enormous role that will not be philanthropic but bring returns over time. A constantly updated blog or website for a local area can become a must see for local farmers and attract its own type of advertising.

The macro revolution in fresh vegetables marketing that is waiting to happen is the role that can be played by organized retail. With the impediment of the monopoly of APMC (Agricultural Produce Marketing Committee) yards giving way and private yards on the way, two things will and are happening. One is that the existing APMCs can (some of them are already doing so) reform themselves and try to become useful to farmers.

The farmer should get daily messages regarding key prices prevailing in the markets that matter to him the most. They should be available in a language he understands

The other solution – by far the one with the highest potential and still mostly waiting to happen – is organized retail setting up its own supply chain so as to take control of the entire fork-to-farm stretch. Contract farming, purchase agreements with farmers before a crop is sown, help to farmers in terms of better seeds and knowledge inputs have to form the base. The produce, once harvested, has to be sorted, graded and shipped to the stores, while still fresh, where a brand and customer base can be built up and served most profitably.

A conversation with an executive at one of the large national retail chains reveals that though they have the size to invest and deep enough pockets to wait for a return, they do not have much of an inclination. They mostly procure from *mandis* (wholesale markets) or through agents and purchase contracts for crops with farmers are rare.

All large retailers do bits and pieces of the supply chain but no one does the entire thing. The reason why chains are slow in this area is that margins are small and unpredictable. The one reason why they still have one foot in this business is that being a known outlet of quality fresh vegetables at competitive prices is a unique way of ensuring daily customer footfalls.

Some chains have got into the business of branding and offering exotic vegetables and imported fruits but this is addressing a niche and not mass market. For their part, consumer looking for fresh, affordable vegetables should not look for off-season stuff. They have to go for only what is in season to get the best value and quality.

There is an enormous market for fresh vegetables in urban India waiting to be developed and it is only organized retail that has the means and the size to do it. A few online retailers in fruits and vegetables in Chennai and Bangalore have made a beginning but they are too small to do anything other than procure from *mandis*.

The key to giving the consumer what he wants lies in engaging with the farmer in a way that can change his life. In east Kolkata, for example, the Eastern Metropolitan Bypass has farmlands/*bheris* of the East Kolkata wetlands stretching out on one side and the city on the other. Few cities are so close to sources of fresh vegetables and fish as Kolkata is. Within less than a kilometre from my house is a crossing where every morning gathers a dozen or so of *reris* (carts) loaded with fresh vegetables being sold at bargain prices. Farmers come from several kilometres away pedalling these bicycle carts to bring their produce to the edge of the city.

The freshness of the produce, the moderate price (lower than in any proper city market) and the crisp winter air makes it a joyful experience to buy vegetables. I often end up buying more than I should and keep wondering why this business opportunity staring us in the face is yet to galvanize entrepreneurs who want to change the rules of the game. ●

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Sugar is Sweet, Sugarcane is Not

Ajay Vir Jakhar

Making jaggery (gur)

The year 2014 is coming to a cold and foggy close. It is December 23; observed as 'Kisan Diwas' (Farmers' Day), the birth anniversary of the late Prime Minister, Chaudhary Charan Singh. We travel to village Kakripur a part of the Baghpat in Uttar-Pradesh, his *karam bhoomi*. I can figure that even though his legacy still lasts and fond memories of the farmer leader have not faded, there is no one to carry it forward. Farmer unity lies scattered as farmers are split on caste lines and by the interplay of the forces of multi-party panchayat politics.

The road from Bhagpat to Shamli is as bad as it can get. It has potholes in equal measure as India's farm policy. Uday Veer Singh of the Maharaja Surajmal Education Society is taking us to visit Umesh Pawar, 45, who grows sugarcane and sells it to the Ramala Co-operative Sugar Mills Ltd..

Umesh Pawar tells me the price of cane is same as last year's: ₹280 a quintal, albeit with a caveat that mills can pay ₹240 now and the remaining ₹40 later. Except for the Ramala Co-operative Sugar Mills Ltd, no other mill pays on time. Others, like Malakpur Sugar Mill and Titawi Sugar Mill, private sugar mills, have not paid farmers after receiving the harvest from the last season.

Uday Veer informs me that "Malakpur Sugar Mill owes over ₹200 crore to farmers and Titawai ₹166 crore. This can only happen when the state government is in league with the private sugar mill owners". Most other mills too have not paid on time and there is no provision for interest on late payments.

The issue of sugarcane pricing too remains unresolved with the Rangarajan Committee's recommendations not accepted in practice. The problem is that no effort has been made to take farmers into confidence when framing policy. Policy dictated by the industry is adopted by the government for the industry's convenience. Yet, the cane commissioner, an important instrument of the state government, is equally responsible for the well-being of the farmer and industry.

A farmer is only allowed to sell his cane to a particular sugar mill only. He is at the mercy of this sugar mill owner in perpetuity for accepting his cane and paying for it on time. Over the years, industry has been so busy greasing palms of leaders for short term gains that now it stands troubled and is looking towards policy-led expediency.

Umesh says that sugarcane variety normally used is No. 150 or No. 767. Newer varieties have not been adopted in a large measure. Yields of 50

quintals per acre (five bighas make an acre) are considered good. Considering the quality of soil, favourable weather and abundant water, the farmers should get at least 70 quintals per acre. Extension advice is non-existent for small, illiterate farmers. Earlier there were 'Kisan Sahayaks' to help farmers. The government has supposedly advertised for the post of the 'Sahayak' now.

Sowing can be done in May, after wheat is harvested. Sugarcane can also be sown later in September, along with mustard, when pest attacks are less frequent given that the weather is dry. It takes nearly 18 months for a good harvest though. The method of planting sugarcane has changed drastically. Earlier neighbouring farmers would get together and plant sugarcane for each other free of cost in an informal co-operative operation called *dangwara*. The farmer on whose field sugarcane was being planted only provided food.

All that has changed now. The cost for planting cane is ₹5300 per bigha. Sowing is done on ridges. Machine sowing has not caught fancy of the farmers as yet because even with machines they need three people. The cost of hiring a tractor with a rotovator for one field operation is ₹250 per bigha.

At the time of sowing Umesh uses 10 kgs of DAP, six to seven kgs of urea and two kgs of zinc. He also applies two tractor trollies (around 20 quintal each) of cow manure per bigha. Earlier cow manure was available from animals kept at home but now these now need to be purchased. Farmers hardly keep oxen and even number of milch animals per family has fallen from four to one.

There is great quantity of spurious DAP being sold in the market. There is no black marketing of urea but farmers are forced to buy other agriculture inputs with a 50 kg bag of urea. This amounts to nothing less than black marketing of urea. The rate of urea in Uttar Pradesh is ₹324 per 50 kg bag that is far more than ₹267 per 50 kg bag in Punjab.

There is a problem of wild animals like the wild boar. One needs to go to the block development officer (BDO) to get permission to kill the animals. Once the BDO gives permission, one needs to get it verified from the Sub-Divisional Magistrate (SDM). It is a cumbersome process and no one seems to know anyone in the area who has gone through the process in recent times.

Harvesting sugarcane has become a very expensive proposition and the cost can vary from ₹30 to ₹35 per quintal. Normally, a couple of people can harvest around 18 quintals of sugarcane per day. Labour inflow from Bihar to work on the farms has slowed down. I asked the farmer if it was due to development in Bihar in the last decade. He seemed to be sure that there was no development in Bihar but that MGNREGA jobs there were stopping the traditional labour force from migrating in search of work. He rues that people do not want to work on the farms anymore.

Another issue for farmers is getting sugarcane accepted at the sugar mills in time. Sugar mills give each farmer small slips of paper called *parchi*. Normally, the mill gives a *parchi* for 15, 30 or 45 quintals. *Parchi* is only given to the farmer two days before the date and time he is supposed to deliver cane to the sugar mill.

Farmer Shri Umesh Pawar (in white *kurta*) along with Shri Uday Veer Singh (in blue coat)

Farmer unity lies scattered as farmers are split on caste lines and by interplay of the forces of multi-party panchayat politics

Farmers often prefer to sell sugarcane to jaggery (*gur*) making units for ₹180 per quintal, which is 33 per cent cheaper than what the mills pay for two reasons. First, jaggery units pay cash and accept immediate delivery. Second, if the farmer manages to harvest the sugarcane in time (harvesting depends on the *parchi*), he can sow wheat. A delayed harvest means that he cannot sow an additional crop. The mills make more money from buying the same sugarcane if they purchase it in the later

Farmers should be consulted on policies that affect them

months. Mills pay on the basis of the weight and sell the processed cane that depends on the sugar content. In the later months, the weight of the cane is lower because the water content drops while sugar content remains same.

Umesh is also sceptical about enzymes being sold by shopkeepers to farmers for better productivity. I believe it is the lack of extension that has led to this perception. The farmers must not only be sold the product but also be told how and when to use it. According to Umesh, pesticides are becoming "strong", meaning toxic as older pesticides no longer control pests.

There are water woes too. The depth of the tube-well has fallen from 10 feet to 50 feet as the 'Poorvi Jamuna Nahar', the Jamuna canal has not been functioning properly. Supply has improved in the last two years though.

In winter, electricity is available for eight to ten hours and in summers it is available for four hours a day only. When farmers do not pay electricity bills, the electricity company files a police case against them in the police station and arrest warrants are issued immediately. This would not have happened in the time of the late farmer leader, Mahendra Singh Tikait, says Uday Veer. Tikait gave a lot of confidence to the farmers to speak up for their rights. With his departure, farmer hopes are disappearing too.

As usual, other farmers gather and the discussion veers around to social issues. Around 70 per cent of the parents of rural children are uneducated. Farmers are more hard-working than worldly wise and get taken for a ride by political parties. The gathering is also of the opinion that no political parties want farmers to be successful lest they become a political force. It takes effort to bring the discussion back on track of farming issues of credit.

Credit is easily available from banks at 11 per cent. Completing the paper work for a loan takes between seven and 10 days and costs around ₹3,000. Bank managers do not ask for bribes, I am told. Loan for a one to ten bighas farm is called a "small file" and for a farm size larger than ten bighas is called a "big file". The practice is that villagers can access loan from a particular service branch of a designated bank. Villagers of Kakripur have to go to Canara Bank that is six kilometres away. I have not heard this before and I am not sure if this is an informal arrangement between banks or has legal sanction.

Farmers are more interested in telling their tales, of memories and uncertainties. The chant that children are not interested in farming also echoes through the conversation. Lack of economic opportunities is leading to increasing crime in the countryside. An old farmer reminisces that earlier villages were self-dependent and most daily requirements would be met in the village itself. Cobblers, ironsmiths, utensil makers and even cloth makers making *gadda* or *khaddar* (a coarse cloth) resided in the village. With cottage industry dead now, one has to go to the town for everything.

Earlier there was no money but there was happiness now there is money but no happiness. ●

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