

> Perspective: The Uphill Struggle of Hill Farmers

> A Greenhouse for the Bengal 'Paan'

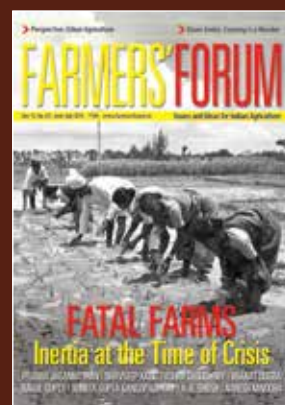
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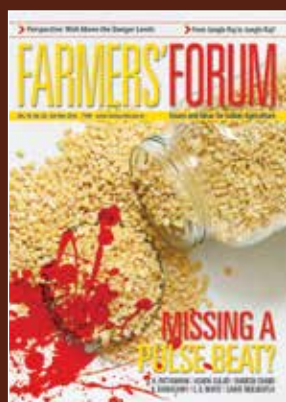
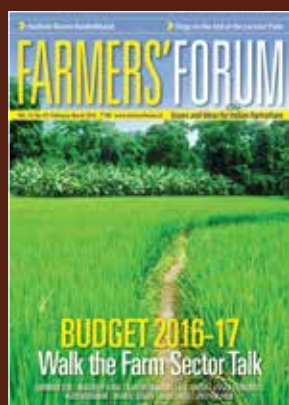


LEADERSHIP QUESTION WHO IS IN CHARGE OF THE FARM ECONOMY?

BHARAT DOGRA | SOUMIK BANERJEE | ANUPAM PAUL | M RAJSHEKHAR
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KHICHDI ECONOMICS:

When Farm Policy is Designed to Fail

If indeed the disruptive and failed demonetization exercise — now being dismissed as a temporary setback for the government because of implementational failures, even by sycophants — is a thing of the past, there are very real structural issues plaguing the system that can be ignored only to India's peril.

There is, however, a message in the government economists' stout defence of the demonetization even though their arguments were so thoroughly exposed and discredited by the entire experience, particularly in the farm sector. Many minds in these echelons of the policy-making society stay rooted in ignorance; they continue to defend the indefensible and sustain the problems, as are evident in the Indian agriculture space.

The aftermath is that farmers are out on the streets agitating even as programmes of the government that were supposedly designed to double farmer incomes have failed to take off. One is not questioning the intent of the Prime Minister but the futility of the 'one-shoe-fits-all' policy for the farm sector. The Pradhan Mantri Fasal Bima Yojna (PMFBY) is a classic case where the best intentions of the policy-makers got muddled in the policy fine-print.

The PMFBY is designed to provide crop insurance where the central government shares part of the premium, subject to conditions. To receive the central government share, the state has to walk the dotted line, come hell or high water; whether the region be rain-fed or irrigated; whether the cropping density be less than 50 per cent or upwards of 200 per cent. Such inbuilt policy rigidities for addressing farm sector turmoil are destined to self destruct.

The e-Nam, the electronic trading platform for ushering in market reforms, similarly, exists only on paper. The central government incentive of ₹75 lakh for each e-Nam connected mandi has not resulted in any actual transactions. The Karnataka government's electronic trading platform is more vibrant than that of the e-Nam's but the centre's egoistic attitude is bent on stifling it rather than facilitating it to flourish.

Meanwhile legerdemain flourishes. States like Haryana log in all Food Corporation of India (FCI) purchases as e-Nam transactions that enable favour-seeking economists and journalists to sing peans of transformative change. However, no economist citing dubious data can avoid being held accountable in farm sector conversation and such thought leaders often stand exposed and condemned for wilfully fabricating fake news. This is not a little curious

**STATES LIKE
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TRANSACTIONS!**

ALLOW STATES TO: DESIGN CROP INSURANCE SCHEMES WITH CENTRAL CONTRIBUTION TOWARDS PREMIUM; HAVE OWN ELECTRONIC PLATFORMS FOR TRADING COMMODITIES

because it is clearly possible to make mid-course corrections and get the policies back on track.

A case in point is the manner in which the government accepted the roadblocks generated by the Goods and Service Tax (GST) and undertook a course correction by notifying 288 changes in the original GST in four months. Even so, other major changes are awaited. What forced the issue with the GST was the vocal trade and commerce space while the farm sector is virtually devoid of strong vocal chords. For both these troubled farm sector policies there are simple solutions though, provided the centre is prepared to respect the principles of federalism.

All that is needed is to allow each state to design its own crop insurance scheme and still be entitled to the central government contribution towards premium. Similarly, the e-Nam can work if every state is allowed to have an electronic platform for trading of commodities, with inter-operability with other systems. Technology is an enabling mechanism if policy does not use it as a stifling one. Federalism too is a strengthening concept unless it is broken in spirit.

The obvious worries about the way the Regional Economic Comprehensive Partnership (RCEP) for trade within Asia has been shaping up is another case in point with the issues of different Indian states not being adequately taken on board by the Indian position. The suggestion from knowledgeable quarters that the central government should not negotiate international trade treaties on agriculture commodities without the consent (not just the anaemic consultations engaged in) of state governments was shot down on the plea that the Constitution of India placed trade negotiations under the purview of the central government even

though agriculture was in the domain of the state governments. The catastrophic import of this dichotomy has already dawned on affected farmers.

The problem is that states, either innocent of these emergent contradictions or too financially dependent — and thus meek — to challenge these decisions, surrender both their sagacity and their entitlement when the central government concedes unhindered import of agriculture commodities that drastically hits market realizations for Indian farmers. If nothing else, this necessitates a restructuring of the funding ratio in the Rashtriya Krishi Vikas Yojna from 60:40 to 80:20, where central government contribution rises to 80 per cent. This means that it bears the major financial brunt of its policy inadequacies, especially when they trample on farmer incomes.

Additionally, the states should demand that the central government set a floor price for farm produce, where the centre alone will shell out the shortfall between the floor price and the market price and the states will not be penalized for fallout of policy not sanctioned by them. Another way of addressing the imbalance is by devaluation of the rupee but the Reserve Bank of India is obviously huddled in counting the de-notified old currency notes to look beyond its nose.

This is not to say that the states are epitomes of knowledge as far as the farm sector is concerned



Photo: Pixabay

or that their governance and delivery mechanisms are anything significant to set store by. For a government that preaches digitization, there is need to inject some fillip into its work and even for Parliament to mandate that all inter-government work become paper-less with blockchains created.

There is an equally strong case for a fresh look at the devolution of funds to the states in a federal structure by the 15th Finance Commission and how this affects the farm sector in different states. The abiding woe is that there are no farmer representatives on the Niti Aayog nor were there any in the former National Advisory Council (NAC) of India or anywhere where farm policy is made. Such wanton disregard for understanding farmer issues can only lead to situations where farmers commit suicide by the droves.

The recently concluded 'World Food Day' extravaganza of the food processing ministry, reportedly saw investments for more than ₹100,000 crore signed. The only lasting impression, however, was of the Guinness World Records feat of for cooking 918 kg of *khichdi* at the event; probably because no intelligent soul was convinced by the propaganda. Healthy though the *khichdi* is as a basic meal for the Indian masses, what is not so healthy is the *khichdi* that the government makes; one of the most telling examples being the converging of the food processing ministry with that for agriculture and farmer welfare.

Come 2019, there is no doubt the such policy anomalies will drive the farms into a state of furore that will engulf the establishment. If saving the day or even keeping the long night at bay be the intent of the government, a change in leadership of the farm sector may be in order and the efficient Nitin Gadkari be given charge of this most crucial combination. There should be limits to expectations, by even a charismatic leader, of public support grounded in the farmers' much belied hopes of *ache din*.

The Prime Minister could hardly be naive enough to believe in his own successful media outreach. Yet, sometimes, one is beguiled by one's own sense of greatness and chooses to listen to economists of one's choice. The problem is when these experts stop listening to the people, the people stop believing them. If the central government continues to perform like Nero playing the fiddle while farmers commit suicide, one fears that the ground under the government's feet will turn into quicksand. ●



Photo: Pixabay

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05



Ajay Vir Jakhar
Editor

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To the Editor

Time for an ICAR revamp

Sir,- Apropos of your editorial, "Lessons Not Delivered; Not Learnt", (*Farmers' Forum*, August-September, 2017), I endorse your position that the ICAR should be revamped and that it is time to consider if the institution has played its assigned role over the years or has become an extension of the bureaucracy. Your 10-point areas of concern is well taken but the government should really address the issue of profiteering with education. This is to be taken up with the same sense of urgency that other personal initiatives of the Prime Minister are considered. Your suggestion that a regulatory measure be legislated on the lines of what Punjab has done should be taken seriously.

Narender Singh

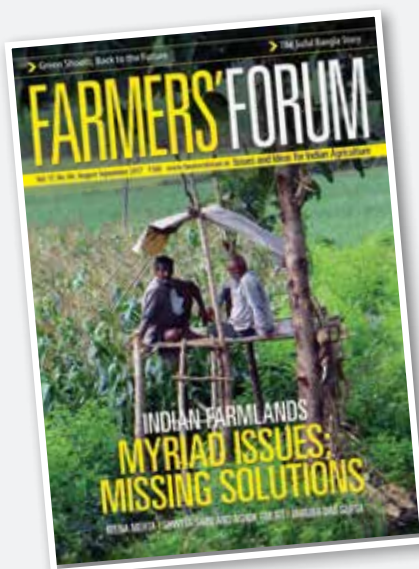
Jhajjar, Haryana

Lessons from Zero Budget Natural Farming

Apropos of Reena Mehta's Greenshoots, Back to the Future: In search of lost indigenous seeds (*Farmers' Forum*, August-September, 2017), how amazing it is to revisit Subhash Palekar's decade and a half old experiment with 'Zero Budget Natural Farming'. The shocking loss of genetic diversity largely due to government policies can only be reversed by wise policies and actions to repair this damage. It is important that the message be read in the right quarters because getting back to our roots is critical for Indian agriculture.

Minhas Pande

Chhattisgarh



Too Complex for Quick Solutions

Your cover story, based on the government's Economic Survey II, on "The anatomy of agrarian stress; or the absence of it?" (*Farmers' Forum*, August-September, 2017) deserves serious attention given that it exposes several chinks in the farming armour. The farm sector uncertainties owe themselves to an increasingly diverse and often unknown causes that multiply the farmer's woes. It needs a strong combination of a wise practicing farmer and intelligent bureaucrats to understand the complexities and work out solutions.

Medhavi Sudhir

Madhya Pradesh

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the earlier issues.**

Sufal Bangla

The Sufal Bangla Story by Dhruva Das Gupta (*Farmers' Forum*, August-September, 2017) is inspiring. It is good to know that a state government supported initiative seeks to create an effective and long-lasting relation between the farm producer and consumer that rests on assurances of quality and good health. I think the messaging to farmers to focus on quality, which will be monitored at the procurement centre and if found up to mark will fetch a fair price, is an excellent one. Other states should look at this experiment that uses technology to drive quality.

Aniket Singh

New Delhi

Policy shortcomings

It was interesting to note the positions taken by Shweta Saini and Ashok Gulati, 'Are Indian Policies distorting agri Prices?' (*Farmers' Forum*, August-September, 2017). There is no gainsaying that 85 per cent of Indian farms, cultivating around 44 per cent of the country's area, are small and marginal and probably these farmers have valuable domain knowledge but know little else of other vocations. Policy has to focus on them but does not. For the big-farmer community too, there are too many created issues with policy makers oscillating the between bans and restrictions on the one side and playing ducks and drakes with free trade on the other.

Jaipal Yadav

Alwar, Rajasthan

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**COVER
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Farmer Movements as Harbingers of Change

Bharat Dogra

“We want to build an India where the farmer can sleep without worry and in peace... (knowing) they will earn double their current incomes by 2022 (the 75th year of India’s independence)”.

— Narendra Modi, Independence Day 2017¹

“There is a great new determination among the peasants to ask for what they see as their fundamental right. It is not about loan waivers alone. It is not about relief but justice. It is about produce and pricing, work and wages... And this in a situation where statistics are being manipulated to show a decline in farmers’ suicides against the testimony of actual corpses”.

— P. Sainath²

The Sikar farmer is not sleeping; he is quieter though. His agitation had its own story to tell in recent months for it was suddenly no longer his agitation. Every segment of society, from students to small traders; from autorickshaws to anganwadi workers; from small time pump set dealers to kirana shops; they stood shoulder to shoulder with him as he demanded remunerative prices for produce and wanted to attract undiluted attention to the sheer

A couple of months prior to the Sikar movement, Mandsaur, in Madhya Pradesh, had erupted. Demonetization had broken the proverbial straw on the camel’s back as the rural economy – land markets, credit networks, procurement and crop prices — went for a toss and the farmers went on the rampage with the firing squad after them.

“We have no leaders. Leaders can be intimidated or compromised... No one tells us, ‘do this’. Our friends say, ‘We are doing this’, and we decide if we

In Sikar, Rajasthan, small trade, earlier content with its margins, even when the farmer got fleeced, joined the farmer ranks for this segment too was feeling the corporate pressure

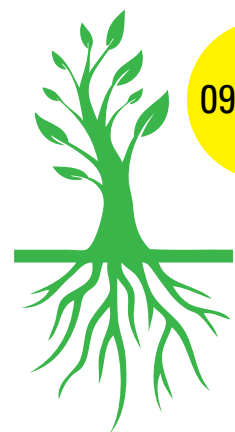
economic mess that the Indian farmer in general found himself in.

This, in the centenary year of the Champaran movement, is significant. For the first time, in Sikar, Rajasthan, small trade, earlier content with its margins even when the farmer got fleeced, joined the farmer ranks for this segment too was feeling the corporate pressure. So were others in different parts of the country.

Gopalkrishna Gandhi hit the nail on the head: “The agitation in Maharashtra and Madhya Pradesh facing violent repression including police firings and preventive arrests, is not about loan waivers alone. It is about agriculture’s place in the life our country, equity’s place in the life of our agriculture and farmers’ place in the world of equity”³.

want to participate...⁴”. This statement is significant as well. If Champaran succeeded in taking on the British and the landed gentry, it was because of the enormously powerful leadership provided by Gandhiji and his group, comprising stalwarts of the day, who commanded enormous pan-India respect. That seems to be the missing link in the current series of farmer protests across the country. Farmer movements in India are said to be as fragmented as its farm holdings.

Farm sector rumblings preceding the Sikar riots were audible months ago at Kuntamba village in Ahmednagar, Maharashtra with farmers wondering what had happened to the promise to implement the Swaminathan report, which proposed a minimum support price ensuring a 50 per cent return on farm inputs.



¹ <http://www.livemint.com/Politics/iSbyhldDSgJd8T8JhmLC8H/Connecting-farmers-to-markets-is-a-priority-says-Narendra-M.html>

² <https://thewire.in/146200/farmers-protest-drought-loan-agriculture-maharashtra-mp/>

³ <https://thewire.in/146200/farmers-protest-drought-loan-agriculture-maharashtra-mp/>

⁴ <http://www.hindustantimes.com/india-news/mandsaur-stir-was-run-on-whatsapp-how-social-media-created-a-new-indian-farmer/story-frlpN6rnRIVMFkOgbs2tLK.html>

Earlier, there was the headline grabbing farmers' agitation in Tamil Nadu, featuring cultivators who took their agitation to New Delhi's Jantar Mantar complex, brandishing skulls, walking naked and stuffing rats into their mouths to draw attention to their demands. The farmers had threatened to eat their own faeces if officials did not respond quickly. For seven months the farmers have agitated, weathering attacks and arrests.

Farm debts, courtesy relentlessly increasing costs of purchased inputs — seeds, fertilizers, pesticides, machinery — alongside dropping farm gate prices have entrapped the Indian cultivator in a negative economy out of which no government seeks to find deliverance, even as corporate interests slowly enmesh themselves into the sinews of Indian agriculture and perpetuate the vicious cycle of debt.

Add to this the plight of the woman farmer. "Only 13 per cent of women in the country own the land they work on. The farms are never in their names — women are never referred to as farmers, the term being limited to men. The term that usually goes around for women is 'farm worker'.

Only 13 per cent of women in the country own the land they work on. The farms are never in their names. Women are never referred to as farmers

Complement that with the other mind-boggling statistic — 60-80 per cent of all farming work is done by women — and the dismal state of affairs becomes 100 per cent lucid⁵."

"Farmers and farms are in crisis. Loss of topsoil, loss of dignity, loss of livelihood and behind all this, the absence of someone like Jayprakash Narayan to speak of their agony, of the injustice of the pricing system, the purchase system, the profit system, nationally, non-politically, but passionately, is what the agitation is about. And to compound the crisis is a new zulm — the preventive arrests of farmers and farmers' leaders", says Gopalkrishna Gandhi.

The question is: is the rather significant mobilization by farmers' movements, having an impact. In the yesteryears, the farmers had a voice that had been reduced to a feeble one in the wilderness in recent times along with the accentuation of the economic crisis of farmers.

- Will farmers' movements play an increasingly

important role in changing farm policies in ways, which are genuinely beneficial for sustainable livelihoods of farmers?

- Can India foresee an even wider role of farmers' movements and their immense mobilization capacity for bringing wider justice based socio-economic change in the country?
- What are the lessons that legendary farmer movements have left for the current generation with their successes?

The colonial rule had demolished livelihood sources of farmers at various levels. These exploitative and disruptive policies were resisted by several tribal uprisings in the nineteenth century. Several rebellions were led by feudal chiefs but peasants provided the main strength of these uprisings of courage and resistance in various parts of the country.

In 1783, the peasants of Rangapur and Dinajpur districts of Bengal revolted against the tyranny of Debi Singh, the revenue contractor, who flogged peasants at will. When a civilized appeal to the authorities did not work, Dinajnarin, a peasant

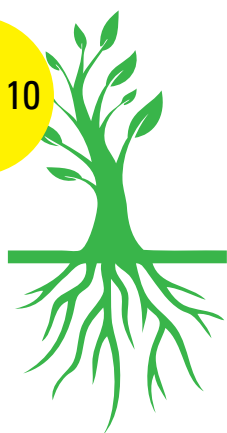
leader led a revolt that saw the farmers form their own government that deprived the British sarkar of revenue and the government suppressed the revolt with great difficulty. It needed the might of the British forces to quell this revolt⁶.

In 1831, the Mundas of Chota Nagpur (now in Jharkhand) revolted against the new British policy of farming for outsiders and the revenue and judicial policies. Once again it was met with the full wrath of the empire. The famous indigo agitation against exploitation by colonial planters that spread to a large part of Bengal in 1859-60 was yet another instance in point. In the west, Poona and Ahmednagar districts of Maharashtra witnessed an important agrarian movement in 1875.

Amongst the most famous interventions against exploitation was that of the indigo planters in Champaran (Bihar) in 1917 (See box Page no. 12). The success was owed to leadership and strategy and followed by another resistance led by Mahatma

⁵ <https://thewire.in/177094/hard-realities-woman-farmer-in-india/>

⁶ <http://www.historydiscussion.net/articles/peasant-and-tribal-movements-during-british-east-india-company/2081>





Gandhi in Kaira, Gujarat, against the forcible collection of land revenue in a year of crop failure. As the freedom movement was broadened to move beyond urban elites and draw in more and more peasant masses, the space for farmer and peasant movements grew and very important leaders like Sahjanand Saraswati emerged to take forward the mobilization of farmers.

In the post-Independence period, various political parties realized the importance of having farmer organizations allied to them and, when in opposition, these organizations played the role of demanding pro-farmer policies. Kisan Sabhas allied to left parties could often play a confrontational role with more continuity, although not in states in which their own political parties were in power! There is, however, no “face” of the farmer movement leadership in contemporary India.

There have been some remarkable names, Sharad Joshi, Bhupinder Singh Mann and Mahendra Singh Tikait, the latter remembered for his spectacular Delhi Boat Club rally in 1988, with some five lakh farmers from western Uttar Pradesh occupying the stretch from Vijay Chowk to India Gate. Delhi’s power elite held out until the stench became too much to bear and, after a week, the Rajiv Gandhi government bowed to his 35-point charter of demands that included higher prices for

sugarcane and the waiving of electricity and water charges for farmers.

In recent years, the increasing neglect of farmer interests is only matched by the growing corporate and international seed company interests. Anger and resentment have been brewing among farmers but somehow governments have managed to cover up their overall neglect of real problems of farmers by paying lip sympathy and announcing some high publicity pro-farmer steps accompanied by media blitz. The underlying causes of rural stress and farm sector distress remain unaddressed.

The farmer uprisings were only to be expected with 200 farmer organizations pressing their demands over different crops and for different agro-climatic zones. They have become more determined farmers and are organizing huge mobilizations. How the recently formed All India Kisan Sangharsh Coordination Committee (AIKSCC), a pan-India body of farmers’ union shapes up remains to be seen though.

Current day movements have been dramatic: from spilling milk and vegetables on highways to seemingly consuming dead rats, soil and urine at Delhi’s Jantar Mantar, to filing a complaint with the government for weather forecasts gone wrong⁷. These may be well merited because getting television coverage is one route to getting governments to take note.

⁷ <http://www.ecologise.in/2017/08/26/farmer-movements-india-changing-course/>

Vivekanand Mathane, a social activist from Maharashtra, is in the midst of mobilizing farmers and organizing them for satisfactory solutions to their problems. He is deeply involved in making detailed presentations of their demands and tells Farmers' Forum: "Today there is an awakening of farmers in most parts of the country and they are coming forward to voice their problems because there is really an economic crisis and they genuinely need to get a better price for their produce and this economic demand is uppermost in their minds for good reason".

He points out that alongside there are other issues like ecologically protective farming, reducing costs and cottage scale industry to broaden the livelihood base in villages as very important. "Some coordination of various farmers movements is progressing well. This growing unity is encouraging but actually we need much more

Champanan!

The colonists forced tenant farmers of Champanan to grow indigo on a portion of their land as a condition of their tenancy. With the Germans coming up with a chemical substitute for indigo, the demand fell and the farmers were released from the pressure. The outbreak of war meant that chemical dyes ceased to arrive and tenant farmers were once again forced to grow it again with some landlords serving as lackeys for the Raj, using strong-arm tactics. Mahatma Gandhi was invited to visit Champanan, which he did on April 10, 1917, to launch the Champanan Satyagraha, assisted by such eminent lawyers as Brajkishore Prasad, Rajendra Prasad, Anugrah Narayan Sinha, Ramnavmi Prasad and others, including J. B. Kripalani.

They not only organized the farmers to fight for their rights but for the overall emancipation of the villages. Gandhi's arrest on charges of creating unrest and orders for him to quit the province saw thousands of people protesting and rallying outside the jail, police stations and courts demanding his release without a shred of violence. The court relented and Gandhi continued to organize protests and hunger strikes against the landlords, ultimately leading to the end of indigo cultivation under the 'tinkathia' system with farmers getting more control over what they chose to farm and get better compensation.





Photo: Pixabay

No one following the news can be unaware of the farmer's woes though these troubles are not at the centre of national discourse

broad based and wider unity to achieve our aims. Much more remains to be done", he concedes.

No one following the news can pretend to be unaware of the farmers' woes though these troubles are not at the centre of the national discourse, which is curious. Farmer dissatisfaction is a political time bomb and a matter of India's prospective food insecurity. Yet there is no indication that fundamental causes of such prolonged stress are being analysed. Discussions and announcements seem to veer around compromises and short-term relief like loan waivers.

This is not to say that short-term relief is not important. Steps that immediately reduce the burden and stress of farmers, even to some extent, are welcome, particularly at this time of unabated crisis, much of it caused by bad policy decisions compounded by adverse weather conditions in parts of the country. The bigger worry is that the farmer movements themselves urgently need to acquire vision beyond short-term relief. This longer-term and broader vision should be related to the direction of future farm policy.

In addition, farmers' movements and organizations also need to think about ways and means of making themselves more broad based and inclusive so that they can emerge as the true voice of rural India. Only then will they be in a much stronger position and their voice will be heard with more respect. Some 'do'ables point themselves out. They are around inclusivity and latitudinous movements; giving them a sharp environment focus; shifting attention from production to producer; addressing wider global issues around farm produce trade, genetically modified food, global warming and climate change.

- Broad base the movements by providing adequate space and representation to women. Women play a very important role in agriculture in India. Often, more than half of the farm work is done by them if all the agricultural operations during the year are covered. If related activities like dairying are included, the contribution of





Farm worker migration hurts both labourer and farm owner interests. Farmers cannot find workers in season while local workers travel far, working in oppressive conditions

women will increase. Greater presence of women will be an added strength during negotiations too by providing moral and physical might to these movements.

First hand experience in several field situations informs one that hard working women are more committed to eco-friendly, cost-reducing and self-reliant technologies and their presence can help in the all-important task of finding alternative solutions to the farming crisis.

- Make movements inclusive even otherwise. Bring farm workers within the fold of a broader movement of the peasantry on the basis of equality with respect and genuine regard. Farm workers toil the most for minimal remuneration. They are poorly organized and their problems are not heard.
- Indiscriminate mechanization has led to huge loss of work opportunities for farm labour. The

promise of giving a little farmland to them has been forgotten and the land reforms agenda has been abandoned. They have no place to go with reduced work and no land. Farmers and their organizations have not given due attention to this.

The result of such neglect is farm worker migration on a large scale that hurts the interests of both the labourer and the farm owner. Farmers have difficulty in getting workers while local workers travel to work in oppressive conditions leading to a complex socio-economic problem. Such migrations are not good for the village community either and strategic moves must be made to bridge this growing alienation so that farmers and farm workers can come closer to a mutually helpful and caring relationship.

On this basis of justice and equality farm workers too can become an integral part of the farmer or the peasant movement. The farmers' movement



Photo: Pixabay

Jaiprakash!

Some 27 years earlier, in 1966-1967, Bihar and eastern Uttar Pradesh had been through a similar trauma. No rains and so no water, no crops. No crops and so no food, nothing to sell or even to eat. Dry shards of land, thirsty rib-cages of cattle and, worst of all, parched human mouths. Not monsoon failure, nor drought, but those dreaded two syllables in Hindi – a-kaal and two in English – fa-mine. Indira Gandhi, as India's new prime minister sensed the inadequacies of the government machine. After some weeks of indecision and prevarication, she saw that relief needed not just credit but credibility. The turbine of inspiration, determination and action in Bihar was Jayaprakash Narayan. Belatedly but clearly, she saw that drought relief, under his oversight, would stay clean and so work credibly. His non-official, all-party Bihar Relief Committee was consequently made the independent supervisor of all government relief operations and coordinator. — Gopalkrishna Gandhi in "The Indian Farmer is Protesting About Much More Than Loan Waivers (<https://thewire.in/146200/farmers-protest-drought-loan-agriculture-maharashtra-mp/>)

should accept the principle that, wherever possible, farm workers should get at least some farmland with other forms of assistance initially to help them to cultivate it.

- Focus attention on the most vulnerable and disadvantaged farmers: the landless farmers who lease in land but do not get any help or compensation at the time of crop failure on account of adverse weather condition though they have to make pay the lease rentals.
- Focus attention on the tribal farmers facing very acute problems of land and forest grab amongst others.
- Focus attention on the critical state of the hill tract farmer or those in the vast Himalayan region that get little or no recognition.
- Focus attention on the chronically and seriously flood-affected, waterlogged or river-eroding areas that too have distinct problems that need to be highlighted.
- Focus attention to farmers rendered vulnerable due to rising sea levels; in the Sundarbans for example. The specific interests of these distinct segments of the farm sector need to be woven into

the overall farm sector agenda for remunerative prices and easy access to fair credit. Only this will make any farmer movement truly inclusive.

- Farmers' movements will be playing their most constructive and valuable role if they give adequate attention to finding eco-friendly, sustainable and very low-cost alternatives to the existing dominant, very high cost and ecologically ruinous technologies. Farmers themselves are in the best position to take up this challenge. Several interesting and inspiring examples from various parts of the country are available for learning. Many elderly farmers from various areas can tell about the location specific traditional wisdom of the area.
- Young innovators from villages need special focus as well. There is a lot of work to be done in collecting diverse varieties of seeds from those areas and those farmers from whom these are still available. Farmers' movements should clearly declare their support for self-reliant, very low-cost and eco-friendly methods.
- Focus on creative solutions; weaving together 'sangharsh' (struggle) and 'nirmaan'

(constructive work). Demands for remunerative prices and better insurance coverage should be combined with constructive activities like collection and conservation of traditional seeds and bio-diversity, water and moisture conservation, increasing green cover in the form of protecting indigenous species of trees and pastures, saving traditional breeds of farm animals, resisting liquor and drug addiction and opposing the dowry system.

- Finally, there is need to focus attention on the system that allocates credit to the farmer but allows the funds to be funnelled out to manipulators of the system.

Farmer communities that have kept these issues in mind have achieved successes over a broad spread of villages and people. While all these activities are useful in themselves, they also empower the movement with moral strength to carry forward its struggle for justice in difficult and adverse conditions.

On a far more global scale, farmer movements have to focus on global warming, climate change, the impact of the global seed lobby and of genetically modified crops. The two latter issues are increasing the domination of a few multinational companies or other huge agribusiness interests over farmers and farming in India. They have to be countered by scientific evidence.

There has been some mobilization of intellectual and scientific opinion for confronting the extremely powerful and resourceful forces that are trying to ensure the approval of commercial cultivation of GM food crops in a big way. On this front, farmers' movements have huge struggles ahead of them in the very near future.

The issue of dumping and indiscriminate imports is another major one demanding wider efforts to protect the interests of Indian farmers in international trade and at the World Trade Organization. There should be clearer understanding of such issues so that any efforts or moves to sacrifice the interests of farmers at the international level can be firmly and quickly opposed.

Climate change is already a major catastrophe facing mankind with fast-spreading impact. Farmers' movements can play an important role not just in climate change adaption but also in mitigation. The focus on mitigation should be to see Indian farmers work with global movements to secure funds, knowledge and guidance on how to push the agenda forward in India.



Photo: Pixabay

Even in normal times the budgetary resources for farming and related activities should have increased but the case for this becomes even stronger in times of climate change. Farmers' movements should carefully monitor centre, state and local budgets to understand and ensure that they get justice in terms of budgetary resources and that the resources allocated get used by the farm sector.

Currently, issues such as remunerative prices, indebtedness and loan waivers, problems of existing crop insurance schemes and subsidies and such others have been dominating farm sector discussions and negotiations. The critical relevance of these issues is obvious but the longer-term perspective is even more germane to farm sector sustainability.

The immediate business is to ensure that the farmer does not starve, which he is bound to unless he earns more than he spends on producing the crop. He is not, which is why he is in debt. Yet, as Yogendra Yadav, founder, Swaraj Abhiyan, points out: "It is not farmers who are indebted but the entire nation, which is indebted to them". This is



50 farmers from Nindar village, on the outskirts of Jaipur, buried themselves neck-deep to protest against the Jaipur Development Authority's move to acquire their land for a housing project

something that those offering doles and promises do not respect.

Prime Minister Narendra Modi's Independence Day speech⁸ talked of the farmer, of foodgrain output, of his crop insurance scheme, of markets but, Yogendra Yadav said that he was "a disappointment for farmers since there was not even an acknowledgement that they are in distress and (at times) forced to commit suicide".

Who then will lead the farmer? Despite the emergence of the All India Kisan Sangharsh Coordination Committee, the movement has not really entered public consciousness as it should.

There are political leaders who know little about farming and farmers who know little about impacting policies.

Between these two negatives, the Indian farmer stays crushed by fate and government. At the time of writing, some 50 farmers from Nindar village, on the outskirts of Jaipur, kept themselves buried neck-deep for the third consecutive day to protest against the Jaipur Development Authority's (JDA) move to acquire their land for a housing project. They call it "zameen samadhi satyagraha (land burial satyagraha)"⁹. ●

With research inputs from ARG Syndication.

⁸ <http://www.livemint.com/Politics/iSbyhldDSgJd8T8JhmLC8H/Connecting-farmers-to-markets-is-a-priority-says-Narendra-M.html>

⁹ <http://indianexpress.com/article/india/unique-protest-against-land-acquisition-rajasthan-farmers-bury-themselves-neck-deep-4874015/>





**CASE
STUDY**

**ODISHA'S MUSTARD-
RAPESEED STORY**

Time for a Yellow Revolution

Soumik Banerjee



Swarms of honeybees come to our rapeseed field as we do not use any chemicals”, says a cheerful Felicita Topno, excitedly showing us around. She and members of the Shanti Group in Kankerjora village (Gram Panchayat: Kusumura, Sundargarh district, Odisha) are marginal farmers but remarkably enterprising ones.

Orissa’s Sundargarh district, located in the north-western edge of the state, bordering Chhattisgarh and Jharkhand, has an undulating terrain with vast inaccessible forests interrupted with torrential rivers – Brahmani, Ib and Koel. The district is home to a number of tribal communities – Oraon, Kisan and Gond. The Shanti Self Help Group (SHG) was initiated by 45 women, primarily marginal farmers, in 2013. The objective was community farming in scale with shared inputs, labour and income among members.

Felicita and friends took irrigated land on lease and tried out the System of Crop Intensification (SCI) in rapeseed (also called System of Mustard Intensification-SMI) in rabi of 2016 and got a bumper harvest of 2.96 MT/ha; a yield that is three times the yield under conventional practices.

The System of Crop or Root Intensification (SCI/SRI) aims to achieve higher production at a lower expenditure on land, labour, capital and water through simple changes in crop management practices. SCI practices help farmers to unlock the latent potential that are inherent in the crops and the soil biota.

The practice follows four simple principles:

- Establish young and healthy plants, nurturing them to significant root establishment and associated shoot growth
- Give each plant more space to grow above and below soil by reducing plant population
- Enrich soil with organic matter and keeping it well aerated to support root growth and beneficial soil biota
- Judicious use of water to favour plant and soil microbial growth.

The group carried out SMI intercropping with potato and garden peas in 10 decimal (0.04 ha) with organic inputs of farm yard manure (FYM), liquid manures (Jeevamrit) and botanical pest repellents (10 leaf extract) to get 120 kg rapeseed (2.96 MT/



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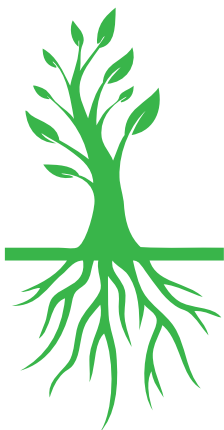
Baidehi Kaudi of Brahmanmara Sprays Daspatri Ousadh (Bio-pesticides) on mustard in village Beheradihi

Felicita and friends leased irrigated land and used the System of Crop Intensification for rapeseed in rabi, 2016, and got 2.96 MT/ha; three times more than average

ha), 80 kg potato (1.97 MT/ha) and 30 kg garden peas (0.74 MT/ha).

SMI practices were introduced in the village in 2015, when Mahargi and Jaganath Kaudi took initiative following a training session organized by Centre for Integrated Tribal & Rural Development (CITRD), Sundargarh and Jacob Nellithanam from Richarria Campaign. CITRD also arranged for the seeds of RP-09 (a variety of Brassica carinata/Karan Rai) obtained from Jharkhand.

Mahargi and Jaganath Kaudi transplanted 15 days old seedlings in a square grid of 60 cm, which was followed by four interculture operations using dryland cycle weeder, application of Jeevamrit and 10 leaves extract every fortnight. The dryland weeder not only removed the weeds but also aerated the soil and increased its porosity for water absorption.





Shanti Kullu of Shanti Women's Collective (Group) has grown mustard with potato in SRI method in village Kankerjora

Being a water scarce area, the farmer couple prudently used farm residues for mulching as well as sowed onion seedlings in between two rapeseed plants to act as live mulch. They also sowed a few maize seeds, randomly acting as bird perches to keep the pests away.

As the crop was maturing, neighbouring farmers constantly asked Mahargi and Jagannath what lay behind this spectacular growth. Was it some new hybrid? Was it some new fertilizer?

After 130 days from transplantation, two scientists from Krishi Vigyan Kendra (KVK) Sundargarh were invited to carry out crop cutting and yield estimation. The scientist duo was baffled by the unbelievable yield of 145 kg from just 10 decimal land (3.58 MT/ha); this was thrice the local yields under conventional methods. In the ensuing 2016-17 rabi, the farmer couple intercropped potato, peas and radish in their SMI plot by further increasing spacing and got spectacular yields of 7.4 MT/ha for potato, 2.47 MT/ha for peas and rapeseed respectively.

About 65 farmers including Felicita Topno and her group also tried out SMI in their lands along with intercropping and got a bumper harvest of rapeseed and vegetables. All this not only provided them with cash income but also supplemented their household food and nutrition needs.

Jaganath Kaudi is more than happy. "If one gets better harvest by using low-cost inputs following SMI principles, why should one go for high-cost seeds, fertilizers and such other inputs? A good number of farmers have shown interest in taking my seeds and follow SMI methods to get more yields at less cost. The only task we undertook was timely care with hard work".

A similar path-breaking yield of 4.27 MT/ha has been reported by Reena Devi of Barkana village in Gaya district (Bihar). A number of farmers were facilitated by Preservation & Proliferation of Rural Resources (Pran). Kalawati Devi of Bijjharria village obtained 5.73 MT/ha, facilitated by the Agriculture Technology Management Agency (Atma) in Umaria district (Madhya Pradesh). SMI Trials held at the Directorate of Rapeseed-Mustard Research, Bharatpur (Rajasthan) also showed yields of 3.47 MT/ha in 2013-14.

A World Bank Evaluation Report of Bihar in 2013, had talked of an average increase in oilseed production by 50 per cent using SMI with almost doubling of profits (being raised by 93 per cent). Adoption of SMI practices can surely bring back the yellow revolution in rapeseed. ●

With inputs from RAVI KAMAL – CITRD, Sundargarh (Odisha)



THE ORGANIC APATANIS

Arunachal's Wonder Rice-Growers

Anupam Paul



The story could not be more arresting! “Ngunu Apatani hii ayu hokii ajee ho anedi

ali la aso la mildu, halyang atan ka abu ake mi alii mapa ajee miidu”, says Kalung Aka of Apatani Valley in Arunachal Pradesh. Translated in English this Apatani sentence reads: “We Apatanis have been

doing fish-cum-paddy culture in Ziro valley for more than a century and we do not use any external organic input in the fields”.

While farmers in the rest of India are tormented by increasing fertilizer cost and the need for more chemical fertilizers, these simple Arunachalis serve as an eye opener. Arunachal Pradesh is the largest state in India’s northeast, its forests still lush green, despite the very active timber merchants. It is amongst the top biological hotspots in the world. Of a geographical area of 83,743 sq kms, the state has 68,757 sq kms under forest cover, dotted with rich flora and fauna.

The altitude varies from 150 meters in Pasighat to 6,500 meters in Bomdilla, with the climate ranging from warm humid tropical to cold. The temperature at Tawang goes down to -14°C in January. In Pasighat and Itanagar it goes up to 33°C in May and June, providing the state with a range of agro-climatic regions.

Most tribes of Arunachal rely on wild edible foods, leafy vegetables, bamboo shoots, tubers and other common vegetables, fish, pork, beef, mutton, chicken, certain kind of snakes, rats, frogs, insects, squirrels, wild boar, birds, monkeys, dogs, elephant deer and mithun (*Bos frontalis* Lam), a kind of wild cow. Hunting and fishing are still in vogue and sacrifice of the mithun is a very common practice specially during their religious rituals. Excess fish and meat is allowed to dry in the kitchens of their bamboo homes. They are placed over a special iron net or a wooden pole five feet above the fire. The meat or fish so preserved is used later.

Modernization is catching up with the tribes and many families use gas burners and live in pucca houses that have replaced their traditional bamboo homes. Most do not drink milk except in tea. Some Buddhist tribes use milk for making ghee and butter. Sugar cane is commonly grown in the North Siang district. They also grow fruits like crab apple, recently introduced kiwi, orange, alubokhra (plum), mango, pear, peach, banana,



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pine apple and papaya. The main crops of the region are paddy, maize, millet, wheat, potato, chili, ginger, pulses, oilseed, sugarcane, fruits and other vegetables. Tribes like Noctas, Wanchos of Tirap district have a rich traditional knowledge base for agriculture and practice slash and burn farming in what is called *Jhum* cultivation. The Arunachali's staple food is unparboiled rice and millet.

Basically there are two types of cultivation: *Jhum* (shifting cultivation) and wet paddy cultivation during monsoon months, from May to October, because of the lay of the land, climate, slope of the terrain and rain fall. *Jhum* is common in all of the northeast. During the dry season, the natural vegetation on the hill slopes is left in the open to be dried. The vast tract of land is thus cleared out without any shade of tree and shrubs. Large piles of leaves fall on the ground and serve as the main source of organic matter. Later, the dried leaves and twigs are burnt during the last week of December. The ash serves as a source of potassium. It also kills the unwanted plants (weeds). This initial process for shifting cultivation is common all over the world in the appropriate ecosystems.

Human civilization began with tilling of land for agriculture and it is one of the oldest sustainable

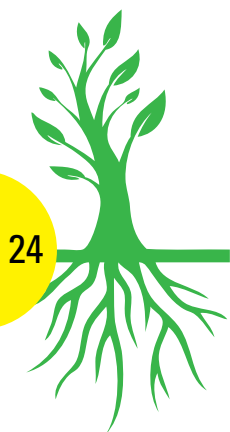
method of crop production. The choice of crops varies with season and climate and, indeed, tribals across the country follow their own styles. The Dongria Kondh tribe of Niyam Giri Hills of Orissa, for instance, prefers drought-resistant crops for its slash and burn cultivation.

After cleaning the land, the *Jhum* practitioners do not go for ploughing the entire land like all other conventional agricultural practices. In order to stop soil erosion they dibble the soil at specific intervals and put the various suitable seeds for mixed cropping. Mono cropping or growing of a single crop is not allowed in *Jhum*.

During the first year of *Jhum*, various water prudent crops like millets and maize are broadcast. For other crops like sweet potato, pumpkin, tapioca, arum, yam, zinger, brinjal, tomato, bitter gourd, some medicinal plants, leafy vegetables, sesame and such others are sown using the dibbling method.

The tribes thus grow more than 20 crops in a year and the system is not aligned to any conventional concept of single crop/double crop field or multi-crop fields of agriculture followed in the plain and flat land. A year or so later, the land reverts to the old *Jhum* field and they grow paddy in the kharif season. After that *Jhumias* leave the place in search

The farming communities of Arunachal Pradesh follow traditional agricultural practices. Rice is commonly grown during monsoon season (wet rice) and the Arunachalis grow rice on almost flat land in Pasighat at the Zero valley



The only *Mishang pyaping* variety has been introduced from *Nishing* tribe. *Apatani* rice varieties are divided into the following categories.

Apatani Rice Varieties			
Groups	Characters	Varieties	Remarks
<i>Emo</i>	Late varieties, Grown in lower terraces, yield is higher	<i>Empu Ahre, Empu Emo/Ahre-haso Ponko, Empu hath, Radhe emo, Eylang emo</i>	<i>Empu Emo/Ahre-haso Ponko</i> is the most common variety followed by <i>Empu Ahre</i> and <i>Empu hath</i> being early and late varieties respectively. <i>Empu hath</i> is the most productive one. <i>Emo</i> means rice grain.
<i>Mipya</i>	Early maturing, cultivated at the periphery of the village	<i>Kogea mipya, Zee mipya, Pyate mipya, Pyare mipya, mipya</i>	There are early, late, awned varieties, but <i>Emo</i> varieties are dominating
<i>Pyaping</i>	Medium duration	<i>Tepe pyaping, Pyapu pyaping, Zeepe pyaping, Mishang pyaping, Itu pyaping</i>	Maturs in between <i>Emo</i> and <i>Mipya</i> , not awned, the area is less than <i>Emo</i> variety but more than <i>Mipya</i> , <i>Pyapu pyaping</i> is the most popular one

Early maturing rice varieties are transplanted on the upper terraces and late maturing varieties are in lower terraces, close to villages.

There are three types of paddy fields namely *Jaibee-aji*, the marshy agricultural fields keeps no water during fallow period; *Pitang-aji* fields need water during fallow period to keep the moisture in the fields; and *Midang* is kept for raising seedlings.

Economics of Cultivation for an Ideal Situation				
Items	Cost of Cultivation (Rs/ha)	Production Kg/ha	Sale price(Rs)	Monetary Profit (Rs)
Rice and Finger Millet (on bunds)	41,000	Clean rice 1,125 kg Millet 10 kg	38,000.00	
Fish fingerlings (carp)	1,000	200 kg	40,000.00	
Total	42,000		78,000.00	36,000.00

Cost of cultivation is rising due to higher labour cost. However, rice and fish yields can be increased by adopting some low-cost agro-techniques. Catfish farming too will increase profit. Fish output is dependent on good management, weather and depth of water. The region needs suitable initiatives to perpetuate and protect the heritage and appropriate interventions for augmenting production levels.

of another field with vegetation. Meanwhile, the *Jhum* field restores itself with new vegetation.

There are certain misconceptions about this mode of cultivation. Owing to ever increasing population, pressure on land, there is greater demand for food even from subsistence level farming. Earlier, *Jhumias* could choose not to return to the same place where they did *Jhum*. On an average, the cycle was 10-20 years. The gap is greatly reduced now to two to three years. Repeated *Jhum* cultivation on short fallow rotation leads to several ecological imbalances like soil erosion, depletion of greenery and the area under *Jhum* is greatly reduced now.

The big plus is that application of chemical fertilizer is below 50 kg/ha and use of pesticide is much lower than in northern and western states of India. Arunachal has formulated a policy for

organic farming in 2016. The idea is to go organic the Arunachal way.

Conventional practices like rice, jute, cotton, sugarcane or wheat-based cropping programmes or pre kharif, kharif and rabi crops, do not apply here as the farming communities of Arunachal Pradesh follow their traditional agricultural practices. Rice is commonly grown during monsoon season (wet rice) and the Arunachalis grow rice on almost flat land in Pasighat. At the Zero valley the Apatani tribe, in the main, grows terraced rice. It lives in the Hari Basti of the valley and is one of the most advanced agricultural communities in Arunachal Pradesh. There is no *Jhum* cultivation here.

Fish-cum-paddy culture, earlier very common in low lying rice fields of West Bengal, Bihar, Kerala and in Bangladesh, is now virtually lost because of overuse of pesticide and fertilizer. The

farmer is thus deprived of a cheap and good source of protein, especially where rice is the staple food. Rice is poor in protein content but can be fortified with fish and pulses. Remarkably, people here continue with this integrated system of fish-cum-paddy culture; “Ajii Nguyi” in the pristine, terraced land of Ziro valley. There are no any chemical fertilizers, pesticides and modern rice varieties. This integrated fish-cum-paddy culture with some systematic low-cost intervention gives the highest productivity and monetary return of wet land rice ecosystem that cannot be matched by any form modern rice cultivation; HYV or hybrid.

I am greeted by Kalung Aka, an Apatani, who takes me over his 2.5 acres of fish-cum-wet paddy cultivation with early maturing rice *Are Sakhe Emo* and the late maturing *Elang pyaping* rice variety. *Emo* means rice grain. I also meet Gyati Hanya of Hari Basti in his wood and bamboo home. He has a one-acre fish-cum-paddy culture field. He laments that the area under fish-cum-paddy culture is decreasing day by day due to urbanization.

The Apatani valley is like a terraced basin, surrounded by bamboo and other forest species in Lower Subansiri district. Nearly 50 per cent of the land in the valley is under fish-cum-paddy culture. Unlike the *Nishis*, *Hill Miris* and *Solung* tribes practicing *Jhum* in other parts of the district, the *Apatanis* do settled agriculture and maintain kitchen gardens in every household. The *Apatanis* mainly practice this unique paddy-cum-fish culture in terraces managed by unique water distribution system.

This was taken up by fishery department during 1965-66 on an experimental basis and it has become a boon in the *Apatani* plateau, ushering in the “Blue Revolution” in the entire state. The system has been recommended to the Unesco for being declared as a World Heritage Site. The *Apatanis* grow more



than 15 traditional bold rice varieties like *Payeti Emo*, *Radhe Emo*, *Mishang Emo*, *Empu*, *Tipe*, *Pyana*, *Pyatii mipya*, *Ji mipya*, *Elang mipya*, *Empu hatii emo*, *Empu are emo*, *Are hatii punko emo*, *Elang emo*, *Lalang emo*, *Are sakhe emo*, *Ji emo (enkhe emo)* and such others.

Early maturing rice varieties named *mipiya* are transplanted on the upper terraces and late maturing varieties are in lower terraces, close to villages. The work on preparing seedlings starts from March in seed beds called *midding* and is coupled with celebration of *Kaji Midu*, a preparation of dried pork and rice. Land is prepared even earlier, preparation of land starts from end-February or the first week of March, when the farmers repair bunds, plug rat holes and plough the land.

In the terraced main field, they transplant 40-45 days old rice seedling between the last week of April and first week of May. This is the *Haling Lyche* period. The upper terrace receives forest washes containing adequate plant nutrient, minerals, microbes needed for supplying nutrients to the rice plant. The water from upper terraces reaches the lower terraces and so

Rich Human Content

Arunachal Pradesh is rich in its human content with 110 Mongoloid tribal groups of which 25 major groups speak in an Indo-Burmese dialect while between tribes they are even heard to speak in hindi. Apart from the major tribes as *Adi*, *Aka*, *Mishi* and *Mishing*, there are the *Apatani*, *Chikum dui*, *Deoni*, *Jingro*, *Mishmi*, *Ran*, *Singpo* and others. Their women are hardworking, undertaking various agricultural activities, working the fields and selling of produce in the market.



Post harvest, the fallow terraces are allowed to be grazed on. Usually, not even organic matter is used. Algae grown in the rice fields and fish droppings maintain the fertility of the soil

on. The excess water in the terrace flows gently to the lower terraces without eroding soil through specially designed channels at the edge of the terrace, fitted with bamboo basket, to catch fish and to prevent them to go to other terraces.

The terraces gradually slant inwards to prevent soil erosion. However, proper levelling of terrace and making of drainage channel reduces soil erosion. Except under heavy rain, there is minimal nutrient loss through soil erosion is very less. However, lower terraces are more fertile than upper terraces. The size of the terrace at higher slopes is smaller being 235 m² and around 2740 m² in the lower slopes.

As the water stays in the terraces during the transplanting season (*Haling Lyche*), the farmer releases fish fingerlings of common carp, silver carp in 1.5 feet of water. Climate change has altered

rainfall patterns. Earlier, when the rainfall pattern was perfect, they would release fish fingerlings supplied from Assam even before the rice transplantation. They do so even now if there is adequate rain prior to transplanting. As the land is already prepared they transplant after releasing the fish.

As the temperature does not rise above 30°C-33°C, the fish survives well in this shallow water. The farmers dig pits in terraces that hold more water when there is scarcity of water in the terrace, where the fish take shelter for their survival. There is zero use of fertilizer and pesticides in the fish-cum-paddy culture. Nature provides the fish with ambient conditions to thrive in the terraced farm, where it feeds on algae growing at the base of the rice hills and insects that come to the rice fields.





The Apatani does not transplant rice with uniform spacing to get optimum plant population. The primary aim is to collect fish. At the first intercultural weeding, associated plants are collected as vegetables

In July, the *Apatanis* start harvesting fish and supply it to the Zero Valley market. The entire population of Zero valley depends on *Apatani* valley fish between June and October. The width and height of the bund varies according to size of the terrace, gradient and shape. They are around 2ft x 4.5 ft wide and six inches to two feet high. The bunds are well maintained and sown with finger millet. Notably, the *Apatani* does not transplant rice with uniform spacing to get optimum plant population. The primary aim is to collect fish. The first intercultural weeding operation is done during the first week of June and a lot of associated plants are collected for using them as vegetables. Soil

becomes aerated to promote crop growth. This is mostly done by women.

Fish-cum-paddy culture reduces insect pests as fish takes the rice pests and farmers do not face any insect pest problem.

The second phase of intercultural operation (*Aru Hoadu*) is done in first week of August and the crop starts maturing from end-September. The farmers start controlling of water from upper reaches to dry up the paddy fields and all the family members in groups keeps constant vigil to ward off birds, rats and wild *mithun* and such predators. During October (*Ent Pullo*) they start harvesting paddy.



Making Bear

Rice and millet beer, served slightly hot, is very popular. It is also served to non-tribal guests. The process of making beer varies from place to place and from one tribal group to another. For food, most like boiled food using minimum oil. Rice or millet is boiled with vegetables, particularly leafy vegetables. Pulses are not used. Vegetable soup is very popular as is a dish made of rice or millet powder, which is made into a paste with hot water, spread in layers and baked over slow fire. The Arunachali enjoys this with dry and green chili, fish and meat.

The grain yield is not very encouraging at nearly 2 ton/ha and there is a scope of increasing the grain yield with some agronomic manipulation. As usual, farmers of Ziro valley do not have proper documentation with regard to yield and monetary profit. However, the mere rice yield is not important, they calculate the total productivity of land including fish. An old estimate of 2005 states that they get monetary profit of ₹10,000/ha in 2005. The average yield of rice varies; 2-5-3 ton/ha and of rice 300-400 kg/ha.

After the harvest, the terraces become fallow and are allowed to be grazed on. Usually, not even organic matter is used. Algae grown in the rice fields and fish droppings maintain the fertility of the soil. During the rice growing season, cattle is not allowed to roam. However, most people do not have any cattle shed in their house.

There are several agriculture festivals in Arunachal Pradesh like *Myoko*, *Murung*, *Tamu*, *Metri*, *Chandii* and *Yahung* and *Dree*. The *Apatanis*

follow a long cycle of agricultural rites and festivals. It begins with sacrificing domestic fowls, animals and eggs at different times, starting from the sowing to the harvesting periods to ensure a bumper yield of crops in the year.

Dree is performed during every crop-growing period and *Yahung* just before the harvest. It is a colourful agricultural festival, celebrated on July 5 every year in hope of a bumper harvest and with prayers to fend off food scarcity. The farmers distribute the first vegetable of the season, the cucumber. The word *Dree* comes from *Apatani* word *Diri* meaning “purchasing or borrowing of food items when in scarcity or to add to the existing stock in anticipation of storage”. There is a simple religious ritual of *Abotani*. The earlier *Apatanis* practiced it to please their god and ward off harmful insects and pests. Now-a-days many cultural, religious and sports activities are arranged during the festival that is celebrated all over Arunachal Pradesh. ●

How Malaysian Palm Oil Fires the Patel Agitation in Gujarat

M Rajshekhar



Dhirubhai a middle aged groundnut farmer in Gujarat is in dire straits. He can no longer recover his investments on the groundnuts that he grows on three acres of land along the Junagadh-Verawal Road in Gujarat. In a good year, he grows 100 kg of groundnuts (peanuts) for every ₹4,000 he invests.

The minimum support price for peanuts is ₹4,400 but the government officials buy only from “vyapari aur mota rajkarmi” (traders and big farmers). Smaller farmers like him sell to private oil mills at very low rates. Last year, he got just ₹3,500 for every 100 kg of groundnuts; lower than both his investment and the minimum support price.

In recent years, one of the biggest surprises in Gujarat politics has been the agitation by Patidars, the landowning dominant caste group also known as Patels. Lakhs of Patidars staged protests in 2015, asking for job reservations. Underlying the protests, however, was anger over the dwindling returns from agriculture; groundnut in particular.

The crop has played an important role in the



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nowhere as profitable as before. Fishing in these troubled waters are rising edible oil imports; especially palm oil.

Of the 100 kg of groundnuts that Dhirubhai harvests, the husk and oilcake fetch just ₹800. The most valuable byproduct of the crop is edible oil. Since 2000, however, the share of groundnut oil in India's edible oil market has fallen from 15 per cent to one per cent, while that of palm oil has risen.

In this period, successive governments at the centre have slashed import duties on palm oil, produced largely in Malaysia and Indonesia. In 2005, India levied an import duty close to 80 per cent on crude palm oil. By 2008, it was down to zero. It has risen to 15 per cent since then but groundnut oil manufacturers say the damage has been done.

Dayabhai Thumar, the owner of Shreeya Peanuts, a firm near Rajkot that supplies groundnut oil to Patanjali and peanuts to Snickers, said low import duties have tilted the price advantage towards imported oil. Bharat Mehta, the head of Solvent Extractors' Association, which represents Indian oil

Lakhs of Patidars protested in 2015, asking for job reservations. Underlying the protests was anger over the dwindling returns from agriculture; groundnut in particular

community's rise, said sociologist Achyut Yagnik. Originally from north Gujarat, the Patidars travelled southwards to Saurashtra, where the princely states engaged them as tenant farmers. After the land reforms in 1956, they became landowners and gradually moved from cultivating millets like bajra to groundnut.

Yagnik said that the surplus generated by the cash crop helped the community expand into agro-industries like dairy farming, oil and flour mills, engineering industries producing equipment for farmers and other manufacturing businesses like ceramics and pumps. In other words, groundnut was one of the pillars supporting the Patidars' emergence as one of the most powerful caste groups in Gujarat.

In recent years, however, this economic scaffolding has weakened. Not only the small farmer, Gujarat's small and medium sector is in trouble as well; as is the state's milk revolution story. Groundnut, as Dhirubhai illustrates, is

producers agreed. India's dependence on imported edible oil has climbed from three per cent in 1992-93 to 75 per cent, he said.

Palm oil constitutes the largest chunk of imported edible oils. It is cheaper than other edible oils because of higher per acre yields. With 7.5 per cent import duty, said Thumar, a litre of palm oil costs half the price of groundnut oil. That explains why the market has swung towards palm oil and why Dhirubhai gets a low price for his groundnut crop.

In some ways, this is the story of all oilseeds in India. “When 60 per cent to 70 per cent of the edible oil is imported and just 30 per cent to 40 per cent is domestically produced, the imported oil will set the price”, said a leader of the Bharatiya Janata Party in Dhar, Madhya Pradesh, on the condition of anonymity.

Dhar is part of the Malwa region, which saw massive farmer protests this summer as soyabean, which yields soya oil, sold at ₹70 per kg, far lower than the minimum support price of ₹105 per kg.





Dhirubhai grows groundnuts in Gujarat

Photo: M Rajshekhar

Rapeseed sold at ₹55 per kg despite a minimum support price of ₹67 per kg. In Punjab and Haryana, mustard fetched ₹3,100 per quintal, well below the minimum support price of ₹3,700.

Farmers are not the only ones hurt by palm oil imports. The industrial complex producing groundnut oil has suffered too. Saurashtra had as many as 1,400 oil mills, said Ukabhai Patel, a former president of the Saurashtra Oil Mills Association. The people who controlled the trade were known as the telia rajas – the oil kings. In the 1980s and 1990s, they were so powerful that it was said they determined who would be the chief minister of Gujarat.

Today, as many as 500 oil mills have closed, said Patel. Those that remain survive by adulterating groundnut oil with palm oil, or passing off palm oil as groundnut oil, added Thumar. This rebounds on the farmers, further depressing demand for groundnut.

Why have successive governments set the import duty on palm oil so low that domestic oilseed growers cannot even get the minimum support price for their crop? None of the commonly advanced answers make much sense.

The foremost reason cited is inflation targeting. Since edible oils are an important part of the Indian diet, some argue the government needs to ensure they are available cheaply. Abhijit Sen, a former member of the erstwhile Planning Commission, however, pointed that in the Wholesale Price Index, edible oil has a share of just 2.6 per cent. Within that, palm oil has a 1.7 per cent share and groundnut oil has a 0.05 per cent share. These are low weights, he said. “Even if the price of oil

doubles from ₹50 to ₹100, it will add 2.6 per cent to the price index. It might be high under some circumstances but not all the time”.

Another explanation offered for low import duties are the norms of the World Trade Organization that restrict import barriers by countries. Dinesh Shahra, the managing director of Ruchi Soya Industries, said that in the mid-2000s, United States successfully challenged India’s imposition of a 300 per cent duty on soya. Sen pointed out that the ruling was not binding on other oils. “Around the same time, we had a discussion with the Malaysians to bring down palm oil rates but even that was more of an assurance than a treaty”, he said.

Another possibility, that import duties were kept low to offset high global prices does not hold either. As the chart below shows, even when international prices were falling, the duty was not revised. Said Sen: “We tried to get this changed many times but the government would say ‘inflation will rise’. Which is a weak answer”.

This slash in import duties is all the more puzzling because it undermined India’s drive to become self-sufficient in oilseed production. Back in the late 1980s, India’s foreign exchange problem





Photo: M Rajshekhar

The directorate of groundnut research in Junagadh, Gujarat

was worsening. Since edible oil was the second biggest commodity that the country imported, the government began to push for greater self-sufficiency in oilseed production, said Sanjiv Phansalkar, a former faculty member at the Institute of Rural Management in Anand, Gujarat. It launched the technology mission in oilseeds in 1986.

What was also needed to get farmers to sow more oilseeds was price stabilization. For this, the National Dairy Development Board was asked to replicate its milk co-operative model for the oilseeds sector – initially, for rapeseed and groundnut. As M.V. Kamath wrote in ‘The Milkman from Anand’, the biography of Verghese Kurien, the board’s founder-chairman, the idea was to loosen the grip of Saurashtra’s oil mills, which underpaid farmers. Remunerative prices, it was felt, would increase the number of farmers sowing groundnut. Accordingly, in 1989, the NDDB launched the edible oil brand Dhara.

The initial results were good. Between 1984-89, average annual production of groundnut stood at 6.59 million tonnes. That climbed to 7.81 million tonnes between 1989-94 and 8.1 million tonnes between 1994-99. The oilseeds mission also led to an increase in the production of other oilseeds from 12 million tonnes to 25 million tonnes, said Mehta. Then came the first setback. In 2001, Prime Minister Atal Behari Vajpayee reduced the import duty on palm oil after a trip to Malaysia.

Till the 1980s, the groundnut oil value chain in India had been an uncomplicated two-step affair – farmers grew the crop and oil mills crushed it. In the





Photo: Pixabay

Earlier farmers wanted high prices and telia rajas low-priced groundnut. Eager to reduce their dependence on local production, refined oil makers now want crude edible oil import

last 25 years, this chain has lengthened. Oil refining companies came up. They processed crude oil, not oilseeds, to produce refined oil. The sector also saw the entry of palm oil exporting countries like Malaysia and Indonesia and importing companies like Adani Wilmar, Cargill and Bunge.

Players in this value chain had conflicting interests. In the old days, farmers wanted high prices while the telia rajas wanted to buy groundnut at low rates. Now, eager to reduce their dependence on local production, refined oil makers wanted India to import crude edible oil. Vajpayee alluded to them while announcing his government's decision to lower the import duty. "We shall do so in a way that would safeguard the interests of our farmers and yet facilitate import of Malaysia's palm crude for our underutilized refineries," he said.

The reduction in import duties had a terrible impact on the farmer co-operatives. With imported palm oil flooding the Indian market, the prices of domestic oilseeds and the income of farmers fell. "Vajpayee ne ek push mein satyanash kar diya (In one stroke, Vajpayee brought about destruction)," said B.M. Vyas, a former managing director of the Gujarat Cooperative Milk Marketing Federation. Many farmers switched to cotton. The average annual groundnut production between 1999-2004 came down to 6.1 million tons.

A second wave of import duty reductions began after the Congress-led United Progressive Alliance government came to power in 2004. Import duty on crude palm oil was gradually brought down from 78 per cent nil, where it stayed till 2013 before rising to 2.5 per cent, 7.5 per cent and to 15 per cent now. Between 2004-14, average annual groundnut production stagnated at around seven million tonnes.

Sharad Pawar headed both the ministries of agriculture and food supplies under the UPA. As outlined in an article in the Economic Times, Pawar's 10 years at these ministries were marked by



Oil refiners process crude oil, not oilseeds. Enter palm oil exporters like Malaysia and Indonesia and importers like Adani Wilmar, Cargill and Bunge

a steady concentration of economic power among a few companies in every commodity and a surprising amount of flux in India's export-import policies¹.

K.V. Thomas, the minister of state in both these ministries between 2009 and 2014, said that he did not know why the import duties were slashed. "Our policy is always to help the farmers. We were trying to take a balanced view [between] farmers and refineries", he said. It was a disingenuous answer. For most of his tenure, import duty on crude palm oil stood at 0 per cent, which was against the farmers' interests.

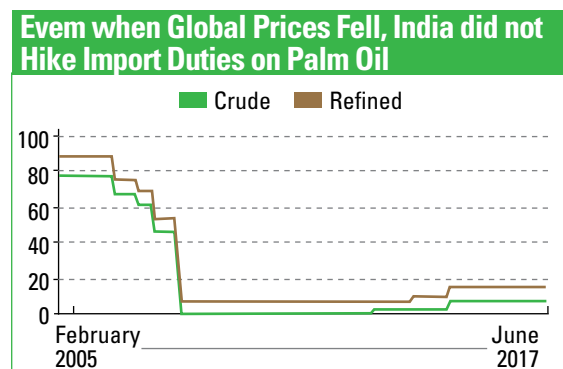
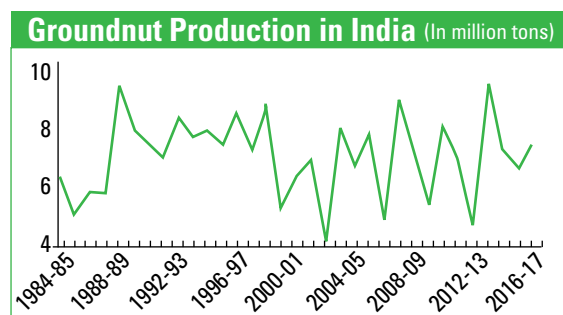
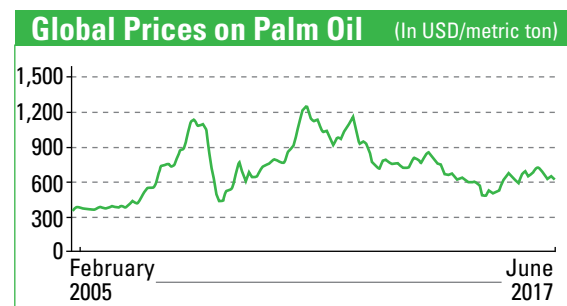
Today, India is the largest consumer of imported edible oil in the world. Edible oil is the third largest item the country imports; worth ₹70,000 crore a year. While India first began by importing crude palm oil from Malaysia and Indonesia, over time, the imports of refined oil have risen. According to a Reuters report², refined oil accounted for just 3.6 per cent of India's total palm oil imports in 2006. This rose to 31 per cent in 2016-17.

More imports of refined oils protect the refining industry in Malaysia and Indonesia, increases the financial value of their exports and helps a handful of large importers like Adani Wilmar, Bunge and Cargill. It hurts Indian millers who have asked for a higher duty differential between imported crude oils and refined oils. Before the new rates were

announced this year, Mehta said: "We want a 20 per cent import duty on crude and 35 per cent on refined". Instead of a differential of 15 per cent, the government only increased the differential from 7.725 per cent to 10 per cent.

A clinical look at India's edible oil policy shows how government policy has failed to focus on farmers and skewed to the needs of the biggest player in the value chain. At one time, policy was influenced by the telia raj. As their star dimmed and the refiners stepped in, the government obliged them by enabling crude oil imports. Under the UPA, government policy further tilted in favour of select large companies that were importing refined oil and exporting countries like Malaysia and Indonesia. They were "always trying to shape policy", said Sen. In contrast, "the farm lobbies were not very effective."

In that sense, palm oil follows a larger trend in India. Government policy, said Sen, protects large sized input producing companies at the cost of a larger pool of small companies making finished products. In Surat, for instance, the textile industry has been adversely affected by the government's decision to impose an import duty on Chinese yarn but not on finished Chinese fabric.



¹ Pawar has not responded to Scroll.in's questionnaire about the edible oil import duty cuts. This article will be updated when he responds.

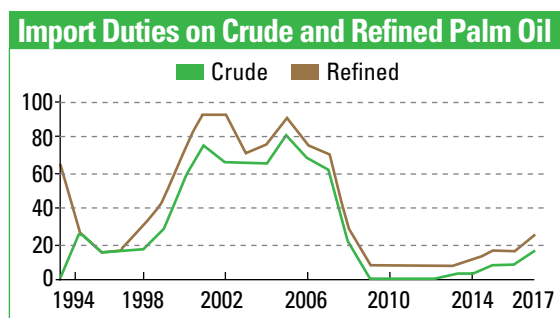
² <https://in.reuters.com/article/india-palmoil-imports/indias-refined-palm-oil-imports-to-fall-as-duty-change-makes-crude-palm-cheaper-idINKCN1AY0LA>



At the back of an edible oil packet marketed as groundnut oil is crucial information: this is actually palmolein oil

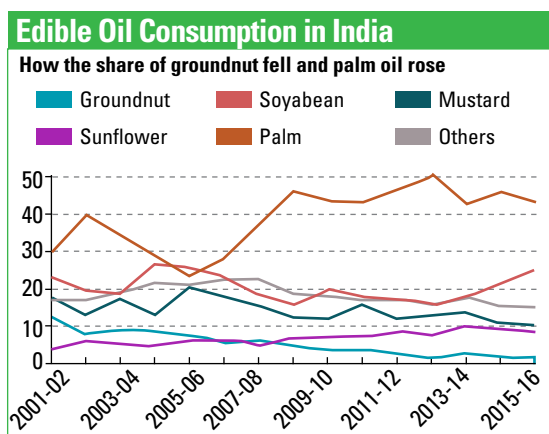


Photo: Madhu Reddy



Source: Indexmundi: GGN International, Rajkot

Note: Duty on crude oil was reduced to ₹46.5 and then to ₹20.6 in 2008, Duty on refined oil was reduced to ₹54.08 and then to ₹28.33 in 2008



Source: GGN Research, Rajkot

Small and medium garment factories buy domestic yarn from a handful of domestic producers at higher rates than what is internationally available, while cheap Chinese fabrics entering India put pressure on their selling price. Even in the case of edible oils, a handful of large importers of refined oil have gained at the cost of oil millers and farmers like Dhirubhai.

Where does India go from here? One view is that the country should increase the import duty on palm oil to make oilseed cultivation more remunerative again. Others, like Shahra, feel the country should boost domestic palm oil production but this proposal has ecological implications.

Another view, expressed by Phansalkar, is the country should exit groundnut cultivation entirely. With an estimated daily consumption

of 30 gm of edible oil per person, he said, the countrywide demand for edible oils now stands at about 14 million tonnes a year – double of what India produces domestically. To increase domestic production, India will have to allocate more land for oilseed cultivation, which will clash with the need to grow more pulses. “Pulses are harder to find from the global markets while edible oil is easier to obtain,” Phansalkar said.

If, however, policy makers believe the answer lies in more imports of palm oil, the government must communicate this to the domestic oilseeds industry and help groundnut farmers like Dhirubhai make the transition to other crops. ●

This is an edited version of M. Rajshekhar's article published in Scroll.in on October 4, 2017.

INQUIRY

**PUBLIC PESTS;
PRIVATE PROFITS**

Farmer Killing Pesticides

A. K. Ghosh

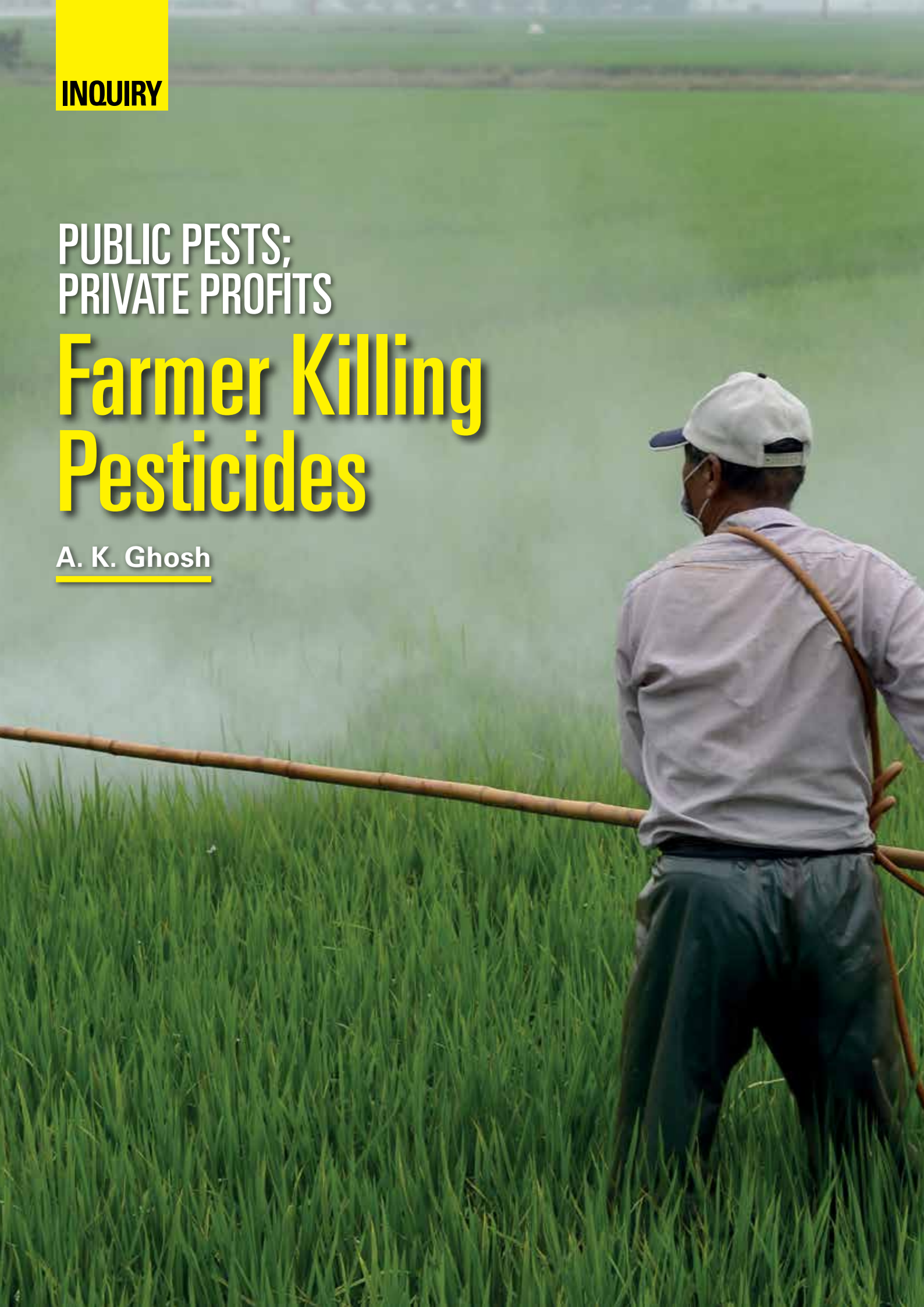




Photo: Pixabay

Indian agriculture has undergone a paradigm shift since the green revolution in late 1960s. The magic of the green revolution was based on a concoction of High Yielding Seeds (HYV), greater use of chemical fertilizer and chemical pesticides with copious water for irrigation. This formula did work for some years but gradually the side effects of chemical agriculture became obvious. Punjab was ranked first among all states in agricultural productivity but, over the years, has acquired the dubious distinction of having a train to Rajasthan carrying farmers suffering from cancer. Most of them are victims of the excessive chemicals used in agriculture. Rajasthan offers cheaper cancer treatment.



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The Indian pesticide industry boomed over the decades but few scientists seem to be aware that registration of pesticides in India has a very weak regulatory regimen compared to standards imposed in the west. The best reported story is about India allowing 'Endosulfan' for years even when it was banned in the western world. The DDT, the miracle chemical that drove Rachel Carson to write 'Silent Spring', was banned in more than 100 countries but India took a middle path of allowing DDT in public health vector control programme even while banning it in agriculture.

The country has experienced many strange events. Media reports have sometimes pointed out the serious effects of indiscriminate use of pesticides but, public memory being short, the pesticide industry has flourished. The permission to market branded pesticide demands a long, time-consuming study involving phytotoxicity, effects on fish and mammals, carcinogenicity apart from other aspects. Yet there was only one dependable government laboratory in Faridabad for the entire country and there were hardly any totally dependable laboratories in the private sector with national accreditation.

In the absence of dependable data, many multinationals produced data generated elsewhere for the Indian authorities for interim permission to market the product. That chemical molecules can behave differently under different geographical condition was never a point of consideration.

Persistently toxic pesticides, marketed by pesticide companies, have easy entry into the vast Indian rural landscape. It is shocking that India allows at least 51 pesticides that are banned elsewhere (*Business Line*, December 7, 2016). This, according to a submission of government of India to Delhi High Court on December 7, 2016, was allowed on the basis of recommendation of an expert committee, as per information from the Ministry of Agriculture.

India has 85 per cent of its farmers in the small or marginal category many borrowing to buy the poison. Obviously, taking loan from money lenders at two per cent interest per month (24 per cent annual) is a regular phenomenon. This is despite the fact that the Nabard is supposed to offer such loan at eight per cent interest per annum.

Why do the farmers go to money lenders? They do so because such loans are hassle free, say Nabard officials. Think about such helpless farmers buying pesticides trusting the publicity from the most toxic pesticide for use in combating pests of cotton in Maharashtra! The consequences of such a process of

under the scanner are Profenophos 40 per cent + Cypermethrin four per cent EC, Fipronil 40 per cent + Imidacloprid 40 per cent EC, Acephate 75 per cent SC, Difenthirothion 50 per cent WP and Monochrotophos 36 per cent SL¹.

A few years back, the government of India, with assistance of World Bank, launched a programme called National Vector Borne Disease Control Programme (NVPDCP); the purpose was to train people engaged by the Public Health Department on how to handle DDT more safely; what gears (mask, head cap, gloves) should be used for spraying DDT in the household; what precaution should be taken to cover all edible substances before DDT is sprayed within the household; also how and where the residual DDT solution should be disposed off safely. DDT is a banned pesticide in more than 100 countries but is being manufactured by the government of India for mosquito control.

Do the farmers need safety orientation on how to safely use pesticides in the field and what precautionary steps should be taken before, during

At least 50 cotton farmers died after spraying the pesticide and a staggering 800 farmers were hospitalized; some were blinded with pesticide drops accidentally getting into eyes

pesticide registration and marketing have never been so shocking. At least 50 cotton farmers dropped dead after spraying the pesticide (obviously approved by government of India) and a staggering 800 farmers were hospitalized; some were blinded with pesticide drops accidentally getting into eyes.

Media report also indicates that the minister for farmers' welfare has not said a single word by way of sympathy or explanation. Farmers are aware that political parties need farmer votes and want an answer from the minister; they believe that the companies selling such pesticide should be banned and the demand for increased compensation for tragic death of farmers is also growing louder.

On October 21, the *Hindustan Times* reported "Just nine days after the Maharashtra government ordered a SIT investigation into the deaths of over 30 farmers due to pesticide poisoning in Yavatmal and adjoining districts, the state government may also ban five major pesticides for 60 days. The five pesticides that have come

and after the spraying of pesticide in the field? If at all, will the 'Krishi Vigyan Kendra' take the responsibility of training farmers in each block? Even if all these ideas are accepted, allowing such deadly toxic pesticides to be sold in vast rural India, demands serious introspection with reference to the long-term impact on farmers' safety and health.

The issue at hand is that the concerned authorities must be held responsible for gross neglect of public interest. Only strong action can deter such callous use of deadly chemicals. In this case, in Yavatmal district, Maharashtra, farmers were advised by the private seva kendra, run by pesticide sellers, obviously with support from the manufacturer. After the debacle, the minister in charge of agriculture, Maharashtra called for investigation and the 'National Human Rights Commission' (NHRC) called for an independent report, say media reports of October 10, 2017.

Probing further, one can find another link between the current tragedy and introduction of GM cotton in Maharashtra. It was advocated that

¹ <http://www.firstpost.com/india/yavatmal-farmer-deaths-maharashtra-govts-move-to-ban-five-pesticides-for-60-days-not-enough-say-experts-4159875.html>

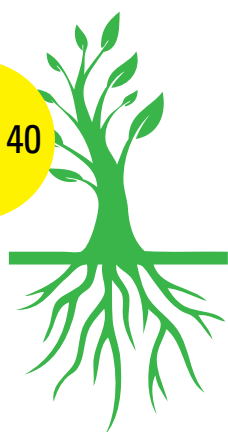




Photo: Pixabay

genetically modified cotton seed would provide more yields and will be resistant to cotton bollworm, the commonest cotton pest. There could hardly be a better offer! How come then that cotton bollworms are back with a vengeance and the private pesticide company agents are advocating the use a deadly mixture of pesticides to combat bollworms. Farmers believed them; there was no intervention from state agriculture extension services and pesticides sprayed above six-feet tall cotton, somehow affected the farmers spraying them and they started falling sick and dropping dead.

A compensation of ₹200,000 has been announced for each life lost. Death cannot be compensated but the state government is desperately trying to put up a brave face by adopting usual exercise of enquiry, fact finding and compensation. The point remains that such tragedies will continue to occur unless the entire process of pesticide registration is checked without political interference.

The Krishi Vigyan Kendras must play a proactive role here. Billions of farmers, without proper education, toil hard to feed and clothe India. A handful of powerful people, without care for human lives, still control the vast pesticide regime in India. Do they also control the government of India? Hopefully not. ●

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The Uphill Struggle of Hill Farmers

Madhu Dogra

The night had fallen and it was raining heavily. Sitting at our home in the hills of Himachal Pradesh we were worried that as we had not been able to venture out in the pouring rain all day; our vegetable supply had been completely exhausted with nothing left to cook in the night or in the morning.

Just then the door bell rang and Het Ram appeared as a saviour. He had brought a huge basket containing a little bit of most seasonal vegetables. The vegetables were obviously fresh from his small farm. There were also a few flowers that he gifted to our granddaughter, refusing to accept any payment for these. He then suddenly remembered something and dug his hand deep into a bag, bringing out an exceptionally huge okra as a surprise for the child.

- This is just the kind of delightful personal touch that one can get only from personal interactions with a farmer and not from the market. As we prepared a hot cup of tea for Het Ram, we



MADHU DOGRA is a freelance researcher, involved with publishing socially relevant books and preparing community library book sets

our younger days, particularly to visits of Chipko movement areas in the Tehri Garhwal district. There were activists who understood the problems of these villages having undertaken long foot-marches or padyatras in these areas.

They helped us to meet several hill farmers, particularly women farmers, who play a more important role than men in farming and animal husbandry related activities in these villages.

With Kunwar Prasun we visited some villages where the Ganga (Bhagirathi) and its tributaries flow in the Himalayan region; this was land of breathtaking beauty. Yet we heard the extremely tragic story of some women tying themselves with a rope before jumping into a river to end their lives. With the increasing loss of forest cover, their lives had become extremely difficult with enforced daily treks to increasingly distant areas to secure their load of fodder and fuel.

Even in villages with a beautiful view of flowing rivers, sometimes we found an acute shortage of

Many Himalayan villages had water springs, small rivulets and beautiful terraced fields that concealed the struggle for livelihood; the large scale distress migration

also learnt that he and his two brothers jointly cultivate their farm in Pathiya village of Solan district. In a single year they grow a diverse basket of many crops including wheat, mustard, maize, tomatoes, ginger, arbi, red beans, several types of green beans, pumpkin, bottle gourd, okra, brinjal, cucumber, other vegetables and beautiful flowers like Rajnigandha and Nargis. However, behind the idyllic setting of his Himalayan farm, there is serious trouble brewing.

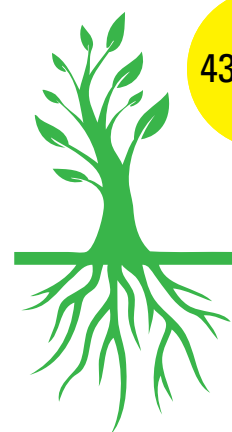
- Rainfall patterns have been changing and there is more unseasonal rain. Crops may not get rain when they most need it but receive torrents when rain is not welcome in the farms.
- As forests have dwindled, more wild animals find their way to farms, destroying crops grown with hard work of several months within a few hours. While the terraced Himalayan fields look idyllic from afar, the farmers hear a harsh tune.

While listening to Hetram's increasing farming problems on this rainy night, our memory went back to our several visits to villages of Garhwal in

drinking water. Kunwar Prasun explained this in the context of one village after another. They had water springs, small rivulets and terraced fields; they looked beautiful to passing tourists but the struggle for livelihood was so acute that large scale distress migration had already become a reality. This has intensified since. Some villages are almost emptying out as far as young men are concerned.

Senior Chipko activists and eminent Gandhians, Sundarlal Bahuguna and Vimla Bahuguna, told us that the farming and overall livelihood crisis of the Himalayan villages was directly linked to deforestation. Hence the task of saving and nurturing forests was the most pressing priority for protecting the sustainable livelihoods base in the area. The call of the Chipko movement increasingly came from this position. In several places, villagers — women in particular — responded sincerely to this call and the felling of auctioned trees could be stopped at several places.

However, even more trees started being cut on a very large scale for various projects like the





Indiscriminate construction and deforestation destabilized the fragile hills that started crumbling, leading to damage from landslides. Beautifully terraced fields were destroyed

Tehri dam project despite official reviews that had warned against the high hazards of the Tehri dam project. It also became clear that a very large number of hill area farmers would be displaced by projects the beneficial impacts of which had not been clearly worked out.

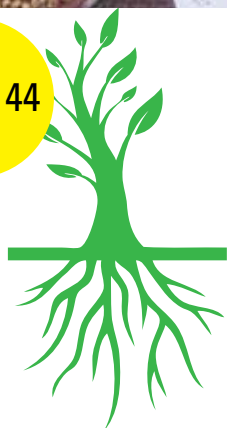
The indiscriminate construction work along with deforestation destabilized the fragile hills that started crumbling all too frequently, leading to increasing damage from landslides. Several beautifully terraced fields were lost to disasters and displacement in recent years. This led to several struggles against large-scale displacement related to hazardous projects of dubious utility.

It was in the course of one of these struggles that an activist, Vijay Jardhari, became greatly concerned about the emerging threats to traditional mixed farming systems being propagated as 'backward' by officials. They were pitching for replacing these traditional systems with monoculture of just one new crop like soyabeans (not the local types but the commercially suitable varieties linked to the international marketing system).

Jardhari decided to oppose this as he was sure about the highly beneficial role of the traditional mixed farming systems like barah anaja in which one crop supported the other and nutrient needs of the soil and the nutrition needs of people were satisfied by growing several crops — millets, legumes, oilseeds, grains, spices and such others — together. In these efforts he was joined by Kunwar Prasun and both these leading activists were encouraged by their mentor and former school teacher 'Guruji' Dhum Singh Negi.

We remember several afternoons, sitting with them and several farmers, trying to understand these issues. Sudesha and Ranjana of Rampur village were two women farmers with whom we discussed these issues for hours.

We realized from these discussions that while protecting biodiversity is important in all agriculture zones, the role of hill agriculture is of crucial importance for protecting biodiversity because of the great differences in conditions in different altitudes, even at short distances from each other that can nurture a great deal of biodiversity.





We also realized that local farmers and other villagers had the best capability of understanding and protecting this biodiversity. One can say this not just for various long-settled farmers but also for various nomadic pastoral groups. It was equally clear that chemical fertilizers and pesticides cause greater damage in hilly areas, where water sources, for instance, can be polluted more easily and it is difficult to find alternative sources here.

The need for organic farming is, therefore, greater here. However, the government has to take several policy initiatives and help the people in their efforts to make this widely accepted and adopted as a sustainable livelihood base.

Recent efforts of various governments reveal some well-intentioned initiatives but there are problems in terms of hill farmers adequately benefiting from them. Hill farmers are small farmers and cannot afford costly certification procedure for organic produce. So solutions have to be found in keeping with the needs and conditions of hill-farmers.

We also realized in the course of these conversations that agriculture cannot be taken up in isolation from other pressing problems of Himalayan villages. Due to the widespread ecological ruin, these villages have

L to R:
Traditional
pulses and beans
diversity, Araku
valley, Andhra
Pradesh

Native millets
pulses and paddy
varieties

become increasingly vulnerable to several disasters. Thus climate change threats have become more severe on account of other more localized aspects of ecological ruin. There were other aspects around sociological ruin too.

Women farmers in particular emphasized was the need to reduce liquor consumption drastically. There have been several big anti-liquor movements in the Himalayan villages in which women played a leading role but given the overall thrust of recent socio-economic and cultural changes, the impact of such forces has been declining.

Besides, farming apart several forest-based sustainable livelihoods have a special role to play in hilly areas, particularly the Himalayan region. Hence a new paradigm of development has to be evolved for the Himalayan region in particular and for other hilly regions as well. It must be more protective of the environment but also more responsive to the need for social reform.

It is within this wider paradigm change that the agenda of hill area agriculture needs to be placed: protective of bio-diversity; supportive of sustainable livelihoods of farmers; based on eco-friendly, low-cost, self-reliant farming. ●

Inputs from BHARAT DOGRA.

A Greenhouse for the Bengal 'paan'

Aditi Roy Ghatak

Corners of many urban offices, especially of the sarkari type, sport little tiles on the walls with images of Indian deities in the public areas. The idea is to get visitors to refrain from adorning them with a red liquid, squirted dexterously from their mouths. This is the ubiquitous paan spit; that the maintenance personnel shudder to contemplate and which makes other visitors squirm.

Published figures that say some 20 million people consume paan in the country seem understated. Everyone loves an occasional paan. In villages, where paan, betel leaf/betel-vine grows, it is liquid gold. It certainly is so, for the many paan growers in the Sagar islands, at the western part of the Indian Sundarbans, between the rivers Hooghly and Muriganga, at the southern tip of state of West Bengal. The state accounts for two-thirds of the betel leaf production in the country. The *Bangla paata* is slightly spicy and is considered good for digestion.

Sagar Dweep (island) is gloriously beautiful countryside; resplendent in all its greenery; tantalizing in its unique formation; its isolation, its legends and myths; its history of settlement with the British having the mangroves cleared out for human habitation. It is also amongst the remotest parts of the country, accessible courtesy a launch ride over a 3.5 kilometer expanse of water.

The river does not look so wide though but the launch takes around 40 minutes to travel from Lot No 8 at Kakdwip to Kochuberia on Sagar. Jyotindranath Roptan, the elderly launch master explains that the tide is not high enough and the launch must move slowly lest it get stuck in the shoals underneath. The river does not have deep waters. Yet, there is the enormous environmental vulnerability of the region with rising sea levels.

The year 2009 Aila was particularly devastating for poor paan farmers. They seem to have bounced back in Sagar though. Over the years, Ghoramara, the island that one can see to the



There are around 200 ha under betel-vine in Sagar (published figures). The island has around 4,500 betel leaf farmers who own some 6,500 betel-vines



kilometers from the ferry ghat at Kochuberia on the Hooghly and about a couple of kilometers from the sea. The waters lose much of their salinity here and become fit for the paan growers. There we come across Bijan; in his early fifties; growing paan in his roughly 7,000 square feet 'bawroj'. He has no land under paddy.

Paddy and other *rabi* crops apart, the farmers plant chilli and betel leaf as cash crops. Chilli is more popular but paan cultivation has increased considerably. From the time we land at Kochuberia, we espy the paan 'bawroj' in large numbers through the thick foliage lining the impressively well-metalled roads.

Says Anupam Paul, assistant director, Agriculture, at the Fulia Agricultural Training Centre, West Bengal, "The southern part of Purbo (East) Midnapore district, Sagar Island and Kakdwip block of South 24 Parganas are the home of the *mitha paata* variety (sweet leaves) due to slight salinity in the soil. The area under this variety has declined over the years due to disease and pest problems that cannot be handled by pesticides and chemical fertilizers. However, many farmers have reverted to the *Bangla paata* because it is tolerant to various disease especially leaf rot, called *Angari* in Bengali. The *mitha paata* tastes sweet and has more essential oil. It finds bigger demand especially from north India and fetches a better price".

The water is not saline at the Hooghly end of the island and paan takes to the soil. Closer to the sea, little paan grows. Not all paan grows in the bawroj though; there are parts of the country following the 'open' system cultivation as well. Around 200 hectares of land are under betel-vine cultivation at Sagar, to go by published numbers. The island has some 4,500 betel leaf farmers who own some 6,500 betel-vines. These figures may not be accurate because no

left of Sagar (the two form the Sagar block), has suffered even more seriously from sea water intrusion that has shrunked the island to a fourth of its size and taken a toll of the once lucrative a betel leaf cultivation.

Sagar too has suffered because of the advancing sea waters; the much revered Kapil Muni's ashram¹, where some 12-15 lakhs pilgrims assemble after taking a holy dip at the confluence of the sea and the river, on the occasion of 'makar sankranti' in mid-January, has thrice been swallowed by the sea waters. It is the fourth avatar of the ashram that is the current centre of pilgrimage.

Much of the Sagar Island still has sweet water though and the betel 'bawroj' (berejas or shaded bamboo enclosures) thrive today. A 'bawroj' serves as a greenhouse of sorts for the rather sensitive plant. The shades of evening are falling fast on the villages of Gangasagar on the sea; some 30

¹ The hermitage of Rishi Kapila; the temple in his honour was built in 430 A.D.

one believes in the need for statistical correctness in an unorganized sector produce, never mind its contribution to national income and employment.

Professor P. Guha, professor of agriculture and food engineering at IIT Kharagpur² talks of India sticking to traditional methods of growing paan on about 55,000 ha with an annual production worth about ₹9,000 million. On an average about 66 per cent of such production comes from West Bengal “where it is cultivated on about 20,000 ha encompassing about 4-5 lakh ‘bawrojes’ employing about the same number of agricultural families”³.

Bijan is embarrassed because we cannot enter the ‘bawroj’; the soil is too mucky. It has been raining in Gangasagar and the soil is perfect for the paan. There are some 30 paan varieties grown in Bengal and two at Bijan’s ‘bawroj’. Bijan explains that the plant’s primary stem grows up to a meter long before becoming creeping stems with heart-shaped leaves. He can train the plant to be a climber or serve as ground cover. He does both and each has a different taste.

A betel garden can be set up on a three decimal plot. A farm of 10-15 decimals can provide considerable net profit for a family of five; that too for 10-30 years

Most of the local paan is exported out of the island because the paan grown here is too strong for local consumption. “It gives a kick; produces heat”, says a bystander. These exports are good for the local economy and fairly well organized; the paan traders assemble after sundown at the launch ghat to ship out their produce because paan cannot withstand heat.

Much has been written about paan no longer being a lucrative proposition. Bijan is happy with the produce in his little ‘bawroj’ though. Curiously, w h e n

asked how much he earns from the paan, he talks about the entire area and its total earnings. It needs some discussion for him to understand that the question was how much of a monthly earning paan gives him. He, finally, consults the little group that has gathered around and comes up with ₹5,000 a month. Is that enough? I ask. Without a second’s hesitation, Bijan says: “Yes”. A self-conscious smile constantly hovers on his lips. Bijan has a family of five.

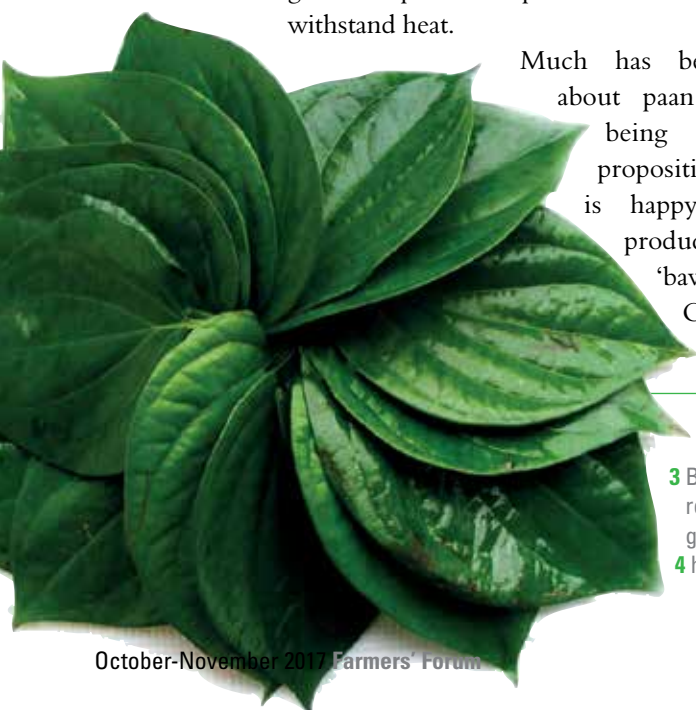
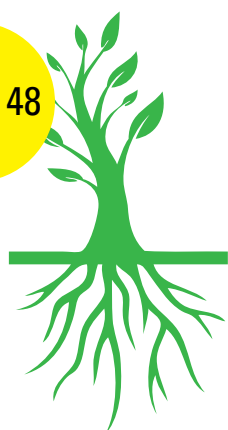
“Certainly, he needs to do other things”, I press on, pointing to the shuttle with thread around his neck. Bijan, smiles. He weaves fishing nets and he is working on the yarn, even as we speak. Fishing is the other big industry here. Then there is work under the MGNREGA, making roads or filling up low-lying lands round the year, he says. Enough to put food in the mouths of his household, never mind the increasing cost of production. Bijan does not seem to resent his straitened circumstances; he has not known better; one suspects.

Prof. Guha says betel farms are “household banks” and an excellent cash crop for small and

marginal farmers, despite high input needs⁴. A betel garden can be set up on a three decimal area (a decimal is 0.004 hectares). A farm of 10-15 decimals can provide considerable net profit for a family of five, that too for 10 to 30 years. Prof. Guha has researched the crop and its productivity.

Bijan is using the spindle almost subconsciously as he talks to us but is not confident about his numbers; nor is he a glib talker. Others prompt him. A betel greenhouse needs bamboo sticks, sometimes available at subsidized rates. One finds many homes making or storing stacks of such sticks at Monsadeep, another village that we visit the next afternoon. They are expensive to buy in the market.

The ‘bawroj’ also needs cane and jute sticks and an average one may cost around ₹15,000 to construct,



² Betel Leaf: The Neglected Green Gold of India; P. Guha; E-mail: pguha@agfe.iitkgp.ernet.in

³ Betel Leaf: The neglected green gold of India. Available from: https://www.researchgate.net/publication/228624984_Betel_Leaf_The_neglected_green_gold_of_India [accessed Oct 07 2017].

⁴ <http://www.downtoearth.org.in/coverage/too-costly-to-grow-33173>



one learns. Some farmers hire labour to work on them. It is painstaking work, plucking each betel leaf at the right time, with the right length of stalk with the leaf and left on the vine; irrigating the soil when the water dries up and applying fertilizers and maintaining the ‘bawroj’.

The initial cost of cultivation of betel vine, including construction of a ‘bawroj’ may be about ₹1-2 lakh/ha at the minimum during the first year that may come down to about ₹0.5-0.6 lakh/ha in the subsequent years and a minimum net profit of ₹0.5-1 lakh/ha/year or more (₹5.02 lakh/ha/year in one case as reported by ICAR, 2000) is not an unexpected value from a well-established farm, though the figures may vary, points out Prof. Guha.

Says Anupam Pal, “Truth to tell, betel vines, *mitha paata* and *Bangla pataa* and such others can be grown with virtually no application of fertilizer or pesticide and all the pests and diseases problems are manageable with organic means. The only reason farmers are tempted to use chemical inputs is to get larger leaves, leading to higher

Paan profits

“It is estimated that about 20 million people derive their livelihood directly or indirectly, partly or fully from production, processing, handling, transportation and marketing of betel leaves in India, which includes about 5 million workers from West Bengal. The crop provides a national income to the tune of ₹6,000-₹7,000 million every year and at the same time it also provides an income of ₹800-1,000 million to the state of West Bengal. The Railways earn about ₹100 million every year from transporting betel leaves from West Bengal to different parts of India like Bilaspur, Cochin, Gondia, Gandhinagar, Hyderabad, Jabalpur, Jalgaon, Katni, Nagpur, New Delhi, Raipur, Srinagar, Trivandram. The leaves are also in great demand in several other countries... leaves worth about ₹30-40 million are exported to the countries like Bahrain, Canada, Great Britain, Hong Kong, Italy, Kuwait, Nepal, Pakistan, Saudi Arab and many other European countries...”

— Prof. P. Guha

yield within a very short period of time". The bawroj using chemical fertilizers and pesticides for quick return does not survive beyond five to six years. The organic bawroj is productive for 30-45 years but the profits reaped in five years can be large enough to start a new one. Moreover, the keeping quality of organic leaves are better than chemically grown vines, he explains.

One learns that by and large paan growers have been using organic manure, cow dung, vermin compost and oil cakes of mustard, groundnut and neem seeds. Reportedly, post Aila some paan farmers switched to chemical fertilizers to reduce costs and reap quick harvests that chemical fertilizers apparently enable.

"Statistical data of betel leaf is still scattered and messy while its agronomy remains to be a matter of personal experience gained through traditional farming practiced generation after generation", says Prof. Guha. It is this knowledge that has empowered the Sagar Island farmers to reap happy harvests because paan needs delicate nurturing and is grown only in a subtropic climate but under greenhouse conditions with humidity of 40-80 per cent and temperature between 15°C and 40°C. The soil must be well watered but not water logged.

Anupam Pal explains the 'do's and 'don't's. "One has to be absolutely clean when entering a 'bawroj'. As the vine grows in an artificial structure, it needs special care with regard to its growth, disease and pest and the paan mistry (village expert with fair knowledge of vines) provides his expertise to the farmers for some monthly or yearly fees. The mistry is given new *dhotis* and *gamchhas* at the time of his first appearance or during the inauguration of a new 'bawroj'".

The problem is that the paan mistry of today sometimes recommends a cocktail of pesticides in higher doses for quick cure of some disease. Pesticide dealers also press them to recommend their pesticides. This fails in most of the cases as the pest and disease become resistant to pesticides. There is no mechanism to check

Sundarbans!

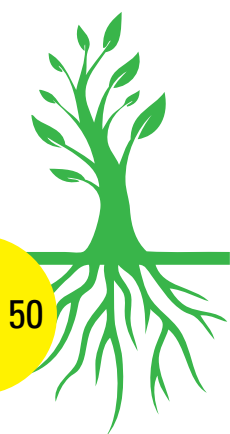
The Sundarbans are the world's largest protruded deltaic region; where the Ganges and the Brahmaputra river systems meet the Bay of Bengal; sprawling over 26,000 sq. km. in West Bengal and Bangladesh. The region has the largest single stretch mangrove of vegetation. The Indian part of Sundarbans (9,630 sq. kms) lies between the estuary of the Hooghly in the west, Ichamati-Roymangal in the east, the Bay of Bengal in the south and the imaginary Dampier-Hodges line in the north and spread over the districts of 24-Parganas North and South in the state of West Bengal, comprising 102 islands. Of these, 48 islands are under the forestry department, 54 islands (about 5,430 sq. kms) were reclaimed as human habitat zone with agricultural land. Originally covered with thick mangrove forest, from 18th century onwards they were cleared for human habitation.

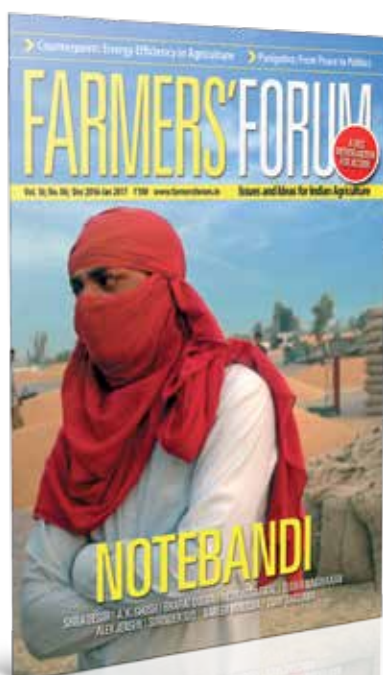
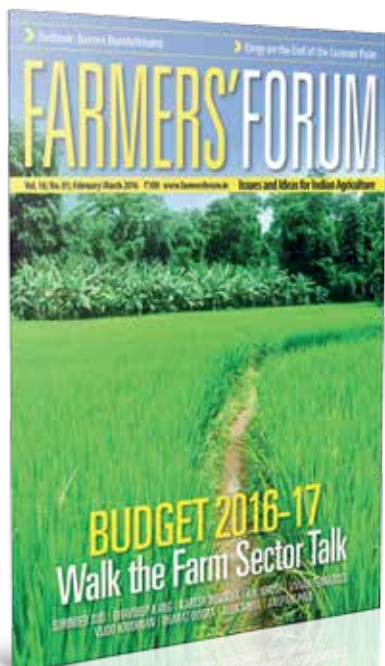
the pesticide residue in pan. The locals red flag the need for professional support and credit flow. Hopefully, the state government will focus on agriculture extension services for the paan farmers and ensure reasonably bank credit because paan farming is well worth the while.

Paan is a cash crop that is "neither dependent on exports nor an urban consumption only and can yet be easily marketed. For the marginal farmers whose labour resources are under employed, betel leaf cultivation on a portion of his holding provides a means to put his under-utilized labour to productive use enabling him to make ends meet. For the farmers, it can be a good supplement to the field crops to take up diversified farming", point out Sayan Ghosh and Asit Maiti⁵.

For the rest of the paan consuming world, it is not just an excellent mouth freshener but a leaf that finds a place of honour in all religious festivals and all social occasions; be they marriages or shraadhhs (funerals). ●

⁵ Sayan Ghosh and Asit Maiti; Betel leaf Cultivation - A Potential Crop for Sustainable Income; An In-depth Study on Economy of Betel leaf Cultivation and Marketing with reference to Nadia District, West Bengal, India





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