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Only Ecological Restoration can Lead to a Sustainable Second Green Revolution

Dr. Dhrubajyoti Ghosh on October 1, 2012

Any talk about the multi-crore programme to usher in the second Green Revolution should be prefaced with two questions. Who decided that the country should have a second Green Revolution? Who decided how would it be achieved? This is clearly the most crucial decision involving the farmers of our country but how many farmers have participated in the making of this decision? Given a basic understanding of how the system works, it would not be entirely unfair to believe that not too many farmers were taken into confidence in a decision that may well have been purely bureaucracy driven.

This gives rise to two more fundamental questions. Do we then assume that Indian farmers do not have a perspective on farming worth respecting? Also, is the so-called participatory decision-making process worth no more than its cosmetic use? Yet the very obvious truth is that in no other country could participatory decision-making make as much sense as in India, which has more than 70 per cent of its people engaged with the agricultural sector. Who took the decision though? When was it taken? It could not have been taken all of a sudden. Getting the prime minister to pick up the microphone and hoist another flag of revolution, all green, cannot be an overnight decision. What then is the big picture?

The agribusiness fraternity

Transactions all over the world have mostly been unequal, with the powerful securing more favourable terms for themselves. This history is almost as old as the civilization itself, except that the techniques used by the powerful to get better terms have evolved through the ages. Excellence in knowledge and technology has enhanced this skill to deceive and enabled communicating brilliance to influence, for instance, an Ethiopian mother to collect all her earnings to give a bottle of Pepsi to her little child, believing it to be the best nutrition that she can provide the skin and bone on her lap or even the best substitute for questionable water in her environs.

Agrochemicals and seeds products have reached new heights in terms of deceiving mankind and influencing transactions in favour of agribusiness and almost invariably against the farmer or his only belonging: the plot of land. DuPont along with Monsanto, Cargill and such others are powerful masters of agribusiness, who picked the global agricultural fields as their pasture for profit-making. They had a smooth run and continue to travel the length and breadth of bureaucracies and ministries of all the countries, wherever they are active, including – and especially – the USA, making them do their bidding. There is a

good amount of research on the subject of agrochemical holocaust but this article is not about re-opening that account.

Indo-American friendship

A peep into history is desirable though and might also be revealing. Bret Wallach, in his remarkable book 'Losing Asia: Modernization and Culture of Development' (published Johns Hopkins University Press, 1996) mentioned a Frank Parker, a DuPont veteran, who came to India as the American ambassador's foreign aid advisor. At Parker's urging, India was soon conducting an immense programme demonstrating the benefits of chemical fertilizers. Enter the USA and its influence on promoting the so-called second Green Revolution. The year 2008 was declared by the United Nations as the Year of Global Food Crisis. Global food prices went up by 40 per cent. There were food riots and protests over rising food prices in many countries around the world. A number of analysts considered this to be a consequence of a failed 'Green Revolution' in agriculture. Some analysts, however, saw this as a way to promote genetically modified crops (GMCs), which they said was the new "doubly green revolution" (Mae-Wan Ho, 2008). In the Indian context, however, the Indo-US Knowledge Initiative in Agriculture, in 2005, had already modified it to a 'Second Green Revolution for India'.

Significantly, a report of the West Bengal State Agricultural Commission (2009) on this knowledge initiative, described it as nothing but "a carefully designed strategy by the U.S. based transnational corporations to take over the control of India's food and agricultural sector. Instead of serving the farmers and saving the farming systems as contemplated by the National Commission on Farmers (NCF), the second Green Revolution, presumably based on GMCs and chemical intensive industrial agriculture, has the potential to destroy the socio-economic base of the farming community and ruin our traditional farming systems".
The work on this West Bengal State Agricultural Commission report started on January 15, 2007 and was submitted in March 2009. A total of 256 agricultural experts, 16 universities, five autonomous institutions, five farmers' organizations, five NGOs, 10 research institutions, all district magistrates and sabhadhipatis of the state actively collaborated to produce a 750-page report that provided an outstanding roadmap for the future of agriculture in West Bengal. Understandably, however, the media took very little notice of this seminal work.

There were lessons in history

The country owes a great deal to Bret Wallach who, in his book, articulated the views of Albert Howard, former director and probably the most eminent of the scientists appointed to the early Pusa staff. (Pusa is India's leading and one of the oldest agricultural research institutions). In his last book, An Agricultural Testament, published in 1943, Howard wrote that "the agricultural practices of the orient have passed the supreme test – they are almost as permanent as …. the primeval forest…, the prairie, or… the ocean".

According to Howard (as quoted in Wallach's book) "the principle followed (in modern farming is) based on a complete misconception of plant nutrition and is fundamentally unsound. It takes no account of the life of the soil, including the mycorrhizal association – the living fungus bridge, which connects soil and sap. Artificial manures lead invariably to artificial nutrition, artificial food, artificial animals and, finally, to artificial men and women".

Howard predicted that: “chemical manures will be considered as one of the greatest follies of the industrial epoch. Insects and fungi are not the real cause of plant diseases but only attack unsuitable varieties or crops imperfectly grown”, which again were the result of “the breakdown of a complex biological system, which includes the soil in its relation to the plant and the animal”. This is a history of science that should have been pursued in the research schemes of Indian agricultural institutions.

‘Business-as-usual’ will not work

On April 15, 2008, something unusual happened. Some 401 scientists from 58 countries worked together under the aegis of the World Bank, FAO, UNEP, GEF, WHO, UNESCO, UNDP to come up with a report on agricultural knowledge, science and technology. The report is known all over the world as International Assessment of Agricultural Knowledge, Science and Technology for Development (IAAKSTD/IAASTD). IAASTD has discussed virtually all issues directly or indirectly related to agriculture globally and regionally and focused on a range of non-commodity services of which the ecosystem services are of paramount importance. The report marked the growth in world agricultural production but pointed out that the sharing of benefits has not at all been equitable and the enhanced production has been attained at very high social and environmental costs. Global pesticide related deaths are estimated at 220,000 annually with between 20 lakh and 50 lakh people suffering from pesticide toxicity each year. The lack of diversity in foods and faulty processing are responsible for widespread malnutrition (which includes obesity and over nutrition as well). Most importantly, the report has included an observation on GMO and specifically GM crops, which it considers to be controversial. According to the report, the “assessment of the technology lags behind its development, information is anecdotal and contradictory and uncertainty about possible benefits and damage is unavoidable”. The report recommends a ban on growing GMCs in countries that are centres of origins of such crops in order to prevent inevitable genetic contamination and preserve biodiversity essential for the future of agriculture.

Parliamentary committee rejects GM

A 31-member parliamentary committee headed by Basudeb Acharya took two years to complete a report that recommends stopping of field trials of all GM crops. The report included depositions by 50 scientific institutions, academicians, scientists and agricultural writers. The environment and forest minister, Jayanthi Natarajan, has been quoted in Outlook (August 27, 2012) as having assured that “until there are proper safeguards and a regulatory framework in place, there is no question of lifting the moratorium”. The moratorium was imposed on the commercial release of Bt brinjal seeds in 2010 by the then environment minister, Jairam Ramesh. This battle is far from over though. There are chances of an insidious entry of GM seeds into the market (even if informal) by creating an artificial scarcity of seeds. The farmers are likely to buy GM seeds unknowingly. If this happens, it will devastate the future of agriculture in whatever form it remains as of now.

The first Green Revolution made agriculture dependent on petroleum and chemical industry whereas the second Green Revolution is mainly driven by biotech and seed firms. It seems a kind of confrontationist position will unavoidably emerge between the India-U.S. Knowledge Initiative on Agricultural Education, Teaching, Research, Service and Commercial Linkages (along with the faithful promoters of the second Green Revolution) vis-à-vis the aforementioned parliamentary committee’s decision.

What is happening in West Bengal

Some time ago, a highly publicized International Water Management Institute (IWMI) report upheld and encouraged by the Planning Commission put pressure on West Bengal’s Water Investigation and Resources Development Department to lift the regulatory control over pump sets below 5HP as farmers would not require any permission to install them. It is welcome so far as the reduction of procedural hazards is concerned. The IWMI recommendation, however, suffers from glaring one-sidedness in the backup research that supports this change in ‘policy’.

First, abstraction of groundwater can only be allowed subject to the condition that there is no post-monsoon reduction in the groundwater table, to be ascertained by the State Water Investigation Directorate. Again, one cannot forget that there are contesting reports about the groundwater status. In 2009, the World Bank was reported to have refused to release a fund of Rs 2,520 crore for minor irrigation projects in India. NASA satellite imagery has also shown rapid reduction of groundwater storage in India, The supporting research takes no notice of fluoride pollution, which is looming larger and larger. Fluorosis is the most prevalent groundwater-related disease in India, the most severely affected country worldwide. A total of 20 out of 28 Indian states have some degree of groundwater fluoride contamination. The total population of 201 districts in India with known fluoride contamination is 411.1 million.

India has now adopted WHO guideline of 10 microgram/l as permissible limit of arsenic concentration. On this basis, the number of villages at risk will be 49.7 per cent (Chakraborti, 2009) in place of 24.7 per cent as mentioned in the IWMI report. Planners may do well not to forget that the nine highly arsenic-affected districts of West Bengal are the ones that practice near-intensive to intensive agriculture.

There is greater cause for concern in the recommendation to enhance area under boro paddy cultivation using groundwater source. Rightly, the Department of Agriculture has a policy to reduce area under boro cultivation and conversion from rice to maize is already taking place. In fact, the very perception of a drought this year would not have been there had the state thought more in terms of maize. Agricultural experts see this kind of monsoon as ideal for maize.

It is surprising that both the Planning Commission and IWMI have ignored the fact that massive quantity of water is wasted by the farmers and that much more area can be irrigated by reducing wastage of irrigation water. In 2000, it was reported that out of 273 cubic km of water used for irrigation in India, the actual requirement was only 151 cubic km (Tushaar Shah of IWMI was one of the authors).

Amidst the encircling confusion, there is some light though. The earliest version of guidelines for extending the green revolution to eastern India (Rs 400 crore for Assam, Bihar, Jharkhand, eastern Uttar Pradesh, Chhattisgarh, Orissa and West Bengal) laid emphasis on setting up consolidated 1,000 hectares demonstration centres and using hybrid seeds within the projects. However the agriculture officers and scientists discussed the guidelines and debated the practicality of the recommended guidelines.

Significantly, those plots have been brought down to 250 hectares from a 1,000. There will be no hybrid seeds for the kharif season to start with. Incidentally, West Bengal is not allowing the introduction of GM seeds. No farmer is expected to get seeds that are not tested before distribution even if they are certified. Additionally, weedicide or plant-protection chemicals will be supplied strictly on need-based indent of the local agricultural officers. On the whole, a whiff of fresh air seems to have started blowing in the agricultural stewardship of the state.

As a keen observer of ecosystems, one knows the basic principles of ecosystem management. If an ecosystem is so seriously damaged that its functions and services are no longer available in a manner so as to continue its sustainability, the first imperative is restoration. How does one restore the agricultural ecosystems of West Bengal damaged by the overuse of agrochemicals? The initial agenda must be to ensure the return of the earthworms. Thereafter, the fish that used to grow in the paddy fields, which also provided free protein for the rural children of West Bengal, lost over the past few decades because of the excessive use of pesticides, should re-appear.

Villagers know how inextricably the phenomenon of losing fish in the paddy field is linked with the declining health of their children but not a single study or research is available linking these two. It reminds us the story of Mullah Nasiruddin, who was found searching something in his courtyard. His wife enquired what was he searching for. He said it was the key that he had lost in his room. This was nothing surprising, he explained. After all, he could only search for it in a place where there was sufficient light and not in the darkness of the room. Mullah Nasiruddin knew the driving force of agricultural research in our country. Getting back the earthworms or fish in the paddy fields will be excellent acts of ecological restoration. They are just a few examples of the initial things that could be done. Restoration has to be accepted as a challenge to help the farmers for regaining the sustainability of Indian agriculture. We may call it the Blue-Green alternative to usher a new response that was visualized by the report of the Commission on West Bengal agriculture. Can West Bengal think ahead and take these steps?