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Another green revolution

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K P Prabhakaran Nair
Express News Service

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The first green revolution is long dead. The barren fields of Punjab, Haryana and western Uttar Pradesh, the 'cradle' of the first green revolution, are testimony to this. A second is beginning to stir. This time around, it will not be in wheat, but, in rice, the most widely consumed cereal of the world. And it will not be in any of the places cited above but in the east of India. What are the chances that the second will succeed? Will India make the same mistake, as it did with the first one, which was propped up by a massive input of chemicals, pesticides and water?

To be precise, what India witnessed in late Sixties and early Seventies, was not a 'green' revolution — a misnomer coined by an American agricultural scientist

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working for the US Department of Agriculture (USDA), pirated by our own agricultural messiahs, but an unsustainable chemical agriculture, that proved to be a disaster on the environmental front.

A combination of the barren soils of western India, dried up aquifers, excessive chemical loading (in particular with nitrates) which rendered groundwater no more potable, and a vanished biodiversity due to intensive rice-wheat monoculture is the heavy price India paid for the first so-called 'green revolution'.

There is a crisis in rice, both for the farmer battling the unprecedented aberrant climatic onslaught, with untimely rains bordering on severe flooding on the one hand, and severe drought on the other, coupled with escalating cost of cultivation due to steep increases in the prices of inputs and, needless to add, for the government, gripped by the urgent need to ramp up production by at least two million tonnes annually to ensure the nation's food security.

The most vexed question is of water. India is getting to be a highly water-stressed country, thanks to our planners who come up with reams of proposals on paper on water 'management'. A paddy field needs in excess of 2,000 litres of water to produce a kilogram of grain. India has the largest area (44 million hectares) under rice but its productivity is way behind other leading rice producers like China and Vietnam. China, the biggest producer, churns out 193 million tonnes of paddy annually on just 29.2 million hectares, which works out to an average yield of 6.61 tonnes per hectare. India's 3.37 tonnes pales in comparison.

There lies a huge perception gap, between the farmer's search for sustainable livelihood and ecologically sound practices in the face of the climatic uncertainties and dipping water table, coupled with unsustainable chemical-oriented agricultural practices, and the government's focus on industry-promoted solutions to boost rice yield. In Mandya district of Karnataka, paddy farmer Boregowda of Shivahalli village switched to traditional varieties, Coimbatore Sanna and Doddibatha, a collection from his grandfather's times, from the dwarf 'high yielding' Jaya, propped up by a high input technology. Output declined from about 2.5-2.7 tonnes per acre, to about 1.8 tonnes. But he more than made up the loss because he followed organic practices and sold his rice as 'organic rice' for a much higher price. These local varieties had disappeared after the Kannambadi dam brought irrigation to the area. When one switches from the high input technology to low input organic agriculture, initially the yield will drop. But invariably after about three seasons, yield stabilises. Boregowda now harvests about 2.7-3 tonnes per acre, the yield as much or even more than Jaya, and what is more, his rice fetches a much better market price, because it is organically grown and tastes far better than the insipid Jaya. It is the same experience either in far off Koraput in Orissa or Palakkad in Kerala, where the Navarai variety is highly sought after by practitioners of Ayurveda.

The point to be examined is: Can traditional varieties alone meet India's growing food needs? The Planning Commission estimates that the country will require 122.1 million tonnes of rice by 2020, to meet food security norms. At the current 1.34 per cent annual growth rate in rice production, India can hope to harvest no more than 106 million tonnes, leaving a huge shortfall of more than 16 million tonnes.

It is here that the agricultural mandarins in New Delhi are talking about hybrid rice. The country, having made remarkable strides with hybrid rice, is now going full steam on Super Hybrid rice. China started the efforts way back in the Sixties, coinciding with our own green revolution, when the mention of hybrid rice to our agricultural messiahs would have been like teaching Latin to a fourth grader! They were just content with

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importing the dwarf wheat seed from Mexico (courtesy Normam Borlaug), multiplying it and distributing among farmers, and calling it a 'green revolution'.

India needs to tread carefully on the hybrid rice bandwagon. When we transpose the Chinese model, we ought to remember that, by and large, our soils are far less fertile than China's; we have aberrant climatic conditions compared to conducive climate in China. More than 90 per cent of rice fields are irrigated in China (compared to 56 per cent in India, the rest being direct seeded and rain-fed), and Chinese resort to high fertiliser use. If one were to study the spread of hybrid rice elsewhere in the world, the report card is dismal, except for Vietnam, an early entrant to the hybrid technology in 1985, compared to China's in 1964. Japan, another big rice producer and consumer, has practically rejected the technology and confined itself to the usual inbred line technology, as in India. But the most important point to be taken care of is the public-private sector tie-up in hybrid rice seed production. Whereas in China not a single private seed company is allowed, and all the 50 producing seeds are government funded, in India only 15 are government sponsored institutions like the Directorate of Rice Research in Hyderabad. Thirty are private firms. This is an inherent danger, because, once seed production is monopolised by private trade, the Indian farmer becomes a slave to MNCs.

Hybrid rice is riddled with problems. Seed quality is poor, production will add at least `2,000 to the farmer's budget, the shelf life is limited, multiplication facility is inadequate, and to cap it all, there is trade hostility. While continuing with our conventional inbreeding technology, we ought to scout for more native germplasms, which have shown resilience in many adverse environmental conditions like drought, excess salt in soil, submergence due to flooding, which are capturing the attention of farmers in many Indian pockets.

To ensure that we do not abuse our soil or water resources with unsustainable high input technology of chemical agriculture, we could even look at the System of Rice Intensification (SRI), where input use is minimal, both fertilisers, water and pesticide. To make a rice revolution happen, our hugely funded public sector in agriculture must wake up from its current slumber.

K P Prabhakaran Nair is an agricultural scientist

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“ Food shortages have affected almost all Nations. China might have just escaped as earlier reports talked of floods destroying crops in western provinces. Russia we all know, suffered badly due to crop-failure and stopped exports. But what can we do with our Kumbakarnaas in Govt.? I don't how many Kumbakarnaas are there in Planning, Agriculture, Food-processing, Civil-supplies, Infra-structure, irrigation etc., etc. But their long sleeps are going (or, already creating) nightmares and dreams foretelling the impending worsening food-situation; the PDS is a great drain and as Author pointed out, since it serves all across the spectrum of political parties and all and sundry in each and every nook and corner of our country to fatten connected people , this holy cow will continue to eat more of our resources. Who will wake-up those pretending to have gone asleep? ”

By **ASHWIN**
3/10/2011 9:45:00 PM

“ It is a brilliant article by Prabhakaran Nair. There is an urgent need to counter the chemical fertilizers infected lands to organic farming. The depletion of water resources is the result of the disastrous policy pursued by India for too long that the article warns about the inevitable disaster in the making all over India to replicate Punjab, Haryana and Western UP. Not only arable lands have to be expanded, rather made best use of as the article points out India having the largest area under rice [44 million hectares] but having half the yield of china. India should look to Agriculture. ”

By **Jayaraman**
3/10/2011 9:24:00 PM

“ The writer is dismissive of the green revolution despite its contribution to increased production and productivity of food grains. At the same time he is appreciative of Chinese agriculture for its productivity and production although by his own admission China uses a lot of fertilisers and 90% of the rice fields are irrigated. What is good for China is not good for India! He quotes the example of a Mandya farmer whose productivity dropped after adopting organic farming but who made good profit by selling the produce. Will wide spread organic farming feed millions of Indians? By his own example, alas! our country cannot. The writer mentions the planning commission estimate of 122 million tonnes of rice requirement. If all our farmers emulate Mandya farmer, what will be the total production? These things do not add to any logical understanding of the issue. What can funding of public sector do to improve productivity? Bashing private sector is the favourite past time of many left i ”

By **Shivashankar K Nair**
3/10/2011 4:48:00 PM

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