Photo Courtesy: Michael Foley

BIO-ACTIVISM

SEEDS of growth

Dubbed 'backward' because of their resistance to monopolistic barriers, traditional seeds may just ensure India's food security

DEBAYANI BOSE

Bhairab Saini no longer has sleepless nights. The farmer's life changed for the better once he abandoned modern rice varieties for traditional ones in 2004. "I switched over to traditional cultivation in 2004 and am more content and prosperous now than I used to be as a farmer practising the modern organic method of cultivation," says the farmer, who now uses traditional varieties of seeds and looks after a seed bank in Panchal village of Bankura.

Like him, many farmers from different districts of West Bengal — Sunderbans, Birbhum, Bardhaman — and also outside India have taken to this new method of cultivation, 'harassed' by the ill effects of the Green Revolution.

For many who had been clamouring about the positive effects of Green Revolution, Saini's allegations may come as a surprise.

The Green Revolution refers to a series of technology-transfer initiatives (transferring the use of technology to other fields), occurring between the 1960s and the late 1970s, that increased agriculture production across the globe. It celebrated a 'neo-colonial' system of farming, where agriculture was viewed as more of a commercial system than as a means for subsistence.

Norman Borlaug, the Father of the Green Revolution, was credited with saving over a billion people from starvation. He had helped develop high-yielding varieties of grains, expanded irrigation infrastructures, modernised agriculture management and put hybridised seeds, chemical fertilisers and pesticides in the hands of farmers.

"Even though the Green Revolution was hailed as an eternal panacea in ensuing food security, it was actually a myth and, sadly, the awakening dawned late. Environmental scientists, like Dr Debal Deb and me, started looking back on how agricultural practice was sustained before the onset of Green Revolution, and the concept of seed bank was born over discussions on how we could make agriculture more sustainable," explains eminent environmentalist Dr Ashish Ghosh.

Dr Ghosh is currently the director for Centre for Environment and Development, Kolkata, an NGO that played a pivotal role in starting the concept of seed bank in the Sunderbans region of West Bengal.

"At least 7,000 traditional rice varieties were

FLIP SIDE OF USING GREEN REVOLUTION SEEDS

1. The soil loses most of its nutrients
2. Increasing input cost
3. Due to use of chemical insecticides, Punjab has the highest number of cancer cases in the farming community

BENEFITS OF USING TRADITIONAL SEEDS

1. Reduction in input costs
2. Ecological benefits
3. Sustainability of Net Farm Income
4. Nurturing of agro-biodiversity

TRADITIONAL CROPS DO NOT LEAVE SCOPE FOR PROPRIETARY BUSINESS OR MONOPOLY CONTROL. FARM-SAVED SEEDS DO NOT ENTAIL CORPORATE PROFIT, BIG TECHNOLOGY AND GNP GROWTH. SO, TRADITIONAL SYSTEM IS DUBBED AS 'BACKWARD', 'ANTI-DEVELOPMENT' — EVEN IF IT ENSURES FOOD SECURITY

DR DEBAL DEB
ECOLOGIST & RICE CONSERVATOR

available with farmers until 1970. However, scientists such as Dr (Debal) Deb discovered that, by the year 1995, the West Bengal farmers did not have access to 90 percent of the rice varieties once available across 19 districts of West Bengal. This indicated that the farmers had lost all those seeds," says Dr Ghosh, who was a member of the Access Beneficiary Expert Group, National Biodiversity Authority, Government of India.

Before the Green Revolution, Indian farmers used to save seeds and exchange them among themselves. The practice was discouraged post Green Revolution. Instead, they began purchasing from a centralised system of seed trade.

But it was Dr Deb who led the farmers back to their roots and came up with the concept of using a seed bank. He established *Vrihi* (Sanskrit for rice) in 1997 — it was the first non-governmental rice seed bank in eastern India. The concept is based on the principle of local self-sustainability, depending on locally produced seeds of indigenous varieties. Any farmer can use seeds from the bank, not in lieu of money, but in exchange of seeds.

Explaining the importance of traditional variety over Genetically Modified seeds, Dr Deb said, "Traditionally cultivated crop varieties inherit the common genome, and there are no unprecedented, unforeseen hazards. Contrarily, GM crops are created by incorporating 'transgenes' from across generic, even Kingdom barriers. This novel composition may produce novel gene products whose long-term environmental and health impacts cannot be predicted."

Dr Deb was also vocal on how every year billions are spent on developing new transgenic rice varieties just to feed corporate profits. "Every year, billions of dollars are spent in developing new transgenic rice varieties that are claimed to be flood-tolerant, pest-resistant or iron-fortified. That bears testimony to the fact how big technology wastes public money to reinvent the wheel," he said.

He further explained, "There exists a large number of traditional crop varieties that are drought tolerant, flood tolerant or salinity tolerant. There are also many crop varieties that are resistant to pest or disease. There are tens of crop species — including uncultivated food crops — that are tremendously rich in vitamins and minerals. A sane agricultural policy should make these useful crops easily available to the poor."

"Herbicide-tolerant crops are promoted to enhance the sale of the specific herbicide (like Roundup) — manufactured by the same company. Thus, the farmer is bound to the company both for the herbicide and for the herbicide-tolerant seeds. And, this 'ravenous business' goes on in the name of 'food security'," he added.

The traditional seeds also bore fruit after super cyclone Aila swept the Sunderbans and salinised thousands of hectares overnight. Along with a few local varieties, some traditional farmers also sowed three salt-tolerant rice varieties distributed by Dr Deb, which were the only ones to reap any harvest the following winter.

On why cultivation of traditional variety is often discouraged, Dr Deb said, "Traditional crops do not leave scope for proprietary business and monopoly seed control. Traditional, farm-saved seeds do not entail corporate profit, big technology and GNP (Gross National Product) growth. And, therefore, traditional agricultural system is often dubbed as 'backward', 'anti-development' — even if it ensures food security."

A growing threat to this traditional method of seed cultivation is bio-piracy, and environmental scientists are fighting it out so that nature's heirloom does not fall in the wrong hands. "Renowned physicist Dr Vandana Shiva, and other scientists, including me, have spent fortunes to combat bio-piracy.

"One example would be the bio-piracy patent on the fungicidal property of neem oil. After a long legal battle, the European Patents Office has admitted that this patent was 'a case of theft' of traditional Ayurvedic knowledge, and annulled it in 2011.

"There is a long line of bio-piracy patents — from basmati rice, and Indian turmeric, to Naphal wheat, and Monsanto company's recent patent application on a virus-resistant variety of Indian melon," Dr Deb added.

Outside Bengal, NGOs like Navadanya, Deccan Development Society and Green Foundation are carrying on their crusade against genetically modified seeds.

"The major justification for introducing genetically engineered crops is that it will lead to higher production and, so, reduce hunger. However, there is no evidence, in the history of commercialisation of genetically engineered crops, of either increased production or reduced hunger.

"More than 95 percent of acreage under genetically engineered crops is accounted for by four crops — corn, canola, soya and cotton. Cotton, which is grown in India now, is clearly not a food crop and, so, cannot have any imaginable link to solving the problem of hunger," said Dr Vinod Bhatt of Navadanya.

Photo Courtesy: Dr Baby Manoj

INVENTION

SAFETY SYRINGE

According to a 2012 research by WHO South-East Asia Region (SEARO), more than half the injections administered in India are unsafe. According to the research findings 3 billion injections were estimated to be administered annually in India; 1.89 billion were unsafe. Unsafe syringes affect as many as 1 million people in the country, every year, killing 30 percent of the affected. Several factors like medical mafias and lack of public awareness are responsible for the situation. Fortunately a Kozhikode based doctor has developed a new syringe design that may completely eradicate this menace.

Dr. Baby Manoj's auto-disable syringe automatically destroys both the barrel and the syringe after single use, making it impossible to reuse the syringe. A radiologist by profession, Manoj has named his invention 'Peanut Safe'.

WHY 'PEANUT SAFE'?

"When you open a peanut shell you get two seeds, very clean, pure, untouched even by a bacteria. Nature has provided a safe shell for it. Same is the case of our syringe. When you tear open its cover you will get the safest and the purest syringe," he explained.

"Once you have the peanuts, what is left behind is a totally useless shell and skin. Similarly, once you use and disable our syringe what is left behind is mere scrap that cannot be reused as a syringe again. Moreover nutritionists call peanut 'poor man's meat' because of its high nutritional value and cheap price. Similarly, our syringe is a replacement for the complex and costly safety syringes now available in the market. It can be sold at a very low price," added Manoj.

For his invention, Manoj received the 'Best Invention Award-2011' from National Research Development Corporation under Union Ministry of Science and Technology and World Intellectual Property Organisation.

HOW IT WORKS

A protective cap and a special groove created around the needle-connecting hub makes the Peanut Safe syringe non-reusable. After usage, the needle is broken through the groove and it cannot be used again under any circumstance.

In other auto-disable syringes available in the market, only the 'piston' is destroyed after use. It is a minor component that can be easily manufactured to make the syringe reusable. Moreover, the auto-disable syringes can be used only once and sometimes they even fail to function properly at times of need. But Peanut Safe syringe can be used for both blood aspiration and injection on a single patient in a single sitting.

According to Manoj, Peanut Safe not only reduces the risk of the blood transmitted diseases, it also ensures the safety of medical personnel. "An accidental prick, by a needle soiled by the blood of an HIV or Hepatitis patient, can lead to the transmission of these diseases to the medical staff," he said.

Manoj markets the syringe primarily through blogs and YouTube videos. He aims to make the product available to the upper and middle class section at first and then eventually target the poor and lower middle class who are still unaware of its use and importance.

— BY ANKITA BANERJI