Debal Deb and an intrepid band of traditional farmers grow heirloom varieties of grains and cereals, thousands of which are on the brink of extinction.

It is late afternoon when we arrive at Debal Deb’s farm, only to find him napping on a hammock next to his mud house. The sound of a gurgling stream punctuates our deliberations: Should we wake him? The thick forest around us glistens like green gold in the rays of the sun. Hills in different shades of green frame this landscape in Kerandiguda, Odisha. We had driven for 45 minutes, parked our car at a railway crossing and walked through hillsides and forest paths to get here. The nearest train station is Muniguda, a small town in Odisha’s mining belt near Lanjigarh, known for Vedanta’s bauxite mines. Deb’s home is close to the Niyamgiri hills, which Vedanta has been trying to mine. The company’s efforts have so far been thwarted by an active campaign led by tribals living on these hills.
Deb’s trusted aide, Debdulal Bhattacharya wakes him and asks us in. Soon, we are ensconced on a reed chatai, talking over tea and biscuits. The two-room abode is minimalistic with rugs made of reed, a small bed, a couple of framed pictures (made by people Deb encountered on his talks and workshops). In one corner are rows of labelled earthen pots. They hold a treasure trove of rice grains, some very rare, that are on the verge of extinction.

As a light drizzle falls over a long drawn-out sunset, Deb asks Bhattacharya to take out a few hats for us — these are all farmers’ hats he has collected on his travels across India and abroad. Jaunty in a reed hat from the Philippines, he walks us to the adjacent field — a 2.3-acre patch, helmed by hills, that’s pretty much like a Noah’s Ark for indigenous rice varieties. Deb grows over 1,200 varieties to conserve their germplasm in this place he has named Basudha, which means ‘Mother Earth’ in Bengali. All his seeds have come from small farmers across India. Thousands of rice varieties were found in India till the 1960s — over 70,000 were available before the Green Revolution. Today, fewer than 10 varieties make up most of India’s rice production. Deb says some of the species he had collected barely a few years ago can no longer be found. “Sometimes I try to go back to get seeds from a farmer and find that he has died and his son has stopped growing the old species.”

He walks us around the land, pointing out the 2x2m beds in which the seeds are grown and harvested. In order to preserve the genetic purity of the species growing next to each other, Deb has developed an intricate sowing plan. “I follow a spatial isolation of 110m between plots and plant each variety surrounded by ones with different flowering dates. No two neighbouring varieties flower at the same time. Cross-pollination can be minimised by planting species with synchronous or overlapping flowering times.” The label on the earthen pots used to store the seeds clearly mention the name, size and specific characteristics of each variety. There are varieties suited to every kind of climate, soil and water source and tolerant to adverse conditions like drought, flood and salinity. The seeds left over after storage for the next year’s crop go to a seed exchange programme he runs for farmers.

Basudha also serves as a demonstration farm and seed-exchange centre, where the small and wiry Deb holds workshops attended by people from across India and abroad. The topics range from characterising and evaluating different rice varieties to ecological agriculture, alternative energy use, low-cost housing and water harvesting. He teaches ways to maintain genetic parity over decades and prevent cross-pollination. “Farmers used to know all this,” he rues. “I have learnt everything from farmers.”

Deb’s efforts are part of a global movement to conserve agricultural biodiversity before it is entirely lost. Industrial agriculture is responsible for the disappearance of thousands of heirloom varieties of grains and cereals, fruits and vegetables, livestock et al. It is now widely acknowledged that genetic diversity of food systems is essential to grow crops that are resilient to climate change and extreme weather patterns. It is these indigenous varieties that can cope and adapt. Deb, who is also a member of the expert committee on agrobiodiversity at the National Biodiversity Authority (NBA), is a proponent of the ‘food web theory’, which...
aims to establish scientific proof of an overwhelmingly positive relationship between all plant and animal life. He has the required academic chops to back up the ideas. A biologist with a doctorate in ecology from Calcutta University, his post-doctoral research included human ecology of marine and estuarine resource use at the Indian Institute of Science, Bengaluru, and ecological economics at University of California, Berkeley.

His quest to save indigenous rice began in the ’90s when he set up base in Bengal’s Baliatore, Bankura district — a place that served his purpose perfectly as it was well-connected to areas where marginalised, tribal farmers grow rare varieties. Deb would sometimes travel on foot to remote areas in search of folk rice seeds. “These were un-irrigated fields, with no chemical inputs or market-bought seeds.” He shifted to Odisha in 2011 due to extreme and unpredictable weather, and for other reasons too.

In a Facebook post, he recounts an encounter with the forest department while documenting sacred groves and ponds in Bankura. “Amid the plantations of exotic monocultures protected by the State forest department, I discovered an old devatra forest patch surrounded by a tract of protected forest maintained by local Forest Protection Committees (FPCs). This patch of sacred forest was owned by a priest family, and contained about 300 hardwood trees, including a few rare species.” After returning from a trip, Deb discovered that the forest department had felled most of the trees, without informing the landowner. After about five months, when all his letters failed to elicit any response, Deb decided to file a PIL before the Calcutta High Court. The forest range officers were ordered to appear before the court and the media covered the issue. As a counter-move, the forest department filed a case against Deb and Bhattacharya, his assistant at Basudha, for the “illegal transit” of sal poles.

“The implication being that I had felled the trees and then tried to blame the innocent FD staff. Following this, the Calcutta High Court quashed our PIL on grounds that I had been implicated in a criminal suit. Our argument that the PIL preceded the suit, and should be tried on its own merit, fell on deaf ears.” Since then, for 11 years now, Deb has had to appear for the suit every month at the Bishnupur SDJM court, at his cost. Other unsavoury experiences include threats to his family from a multinational seed company and attempts by the Intelligence Bureau to raid his Kolkata home. But he remains undeterred in his work, thanks to teaching assignments in European and American universities, research grants, fellowships in the US, and donations from friends. Any money he gets is used to fuel his interests — farmers’ workshops, travels to collect seed species, fight against genetically modified seeds, and love for Baul music.

A philanthropist gifted him a much-needed lab in Kolkata for his research on local rice varieties. He has found traces of silver in a traditional Bengal variety that he got from a farmer in Birbhum district. “Ironically, it is called Garib Sal (poor man’s rice),” he laughs. “The silver is assimilated from the soil.” He says no other plant species has been found yet to assimilate silver from the soil.
Deb’s seed bank, Vrihi (Sanskrit for rice), is the country’s largest non-governmental folk rice gene bank with seeds from 13 states across north-eastern, eastern and southern India. The varieties embody centuries of accumulated knowledge and the farmers who can work with them are crucial for a sustainable ecological agriculture, says Deb. He gives the seeds free to any farmer who comes to Basudha. So far he has distributed rice varieties to over 1,200 farmers across Bengal, Odisha, Jharkhand, Assam, Bihar, Maharashtra and Tamil Nadu.

“They are the custodians of seeds, and not gene banks run by corporates and governments — those are like morgues! They neglect the process of life by freezing seeds. When you bring out these seeds after 30-40 years, they will have lost major traits of defence. Also, in the meantime, the pests would have evolved. The seeds need to stay in the soil.”

He mentions a flood-resistant rice variety, which he was given by farmers — it grows to 20 ft above the waters. Yet another can grow in submerged conditions. All this knowledge has been garnered from the small farmers who have held on to traditional methods, says Deb. “They are the unknown, unsung and greatly talented scientists of the past... true scientists who observed, recorded diligently and passed on their knowledge to generations.”

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Debal Deb 40 points  year ago

Sorry there are a few factual errors, which I must correct here. (a) The rice varieties that I conserve are not different 'species' - they are 'landraces', or simply 'varieties' of the same species of rice. (b) More than 100,000 varieties - not "70,000 varieties" were available before the Green Revolution. (c) I DON'T "follow a spatial isolation of 110m between plots" - instead, I have developed the 'temporal isolation' method, which is described in the next sentence. (d) My method is adequately described, except "planting species with synchronous or overlapping flowering times." - This should be "asynchronous" flowering times. I have to mention these important errors for the benefit of readers. The rest of the article is very nicely written, with ample kind appreciation to my work. I am very grateful to Ms Anuradha.

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