

'In India there were 100,000 rice varieties till the 1980s'

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THIS is the International Year of Millets and millets are everywhere. But far removed from all this high-voltage action, enjoying a quiet spotlight of their own, are traditional rice varieties. Belatedly, they are being recognized for superior nutritional and medicinal values as well as their organic character and the natural agricultural practices by which they are grown.

Communities have over generations grown strains of rice that are red, brown, white or black, but, as consumption goes, they have lost out to the high-yielding and mass-produced white varieties such as Basmati that have come to dominate markets. Long grains are the craze, not short or round ones even when the aroma may be better.

Many traditional varieties would have been lost forever if it weren't for family homesteads that have preserved them. Such conservation efforts, too, would have remained obscure and scattered but for initiatives to document the properties of the strains together with the folklore and traditional practices that surround them. The government, too, collects traditional varieties but doesn't promote them or encourage their cultivation — and for traditional strains to flourish they must primarily exist in the fields.

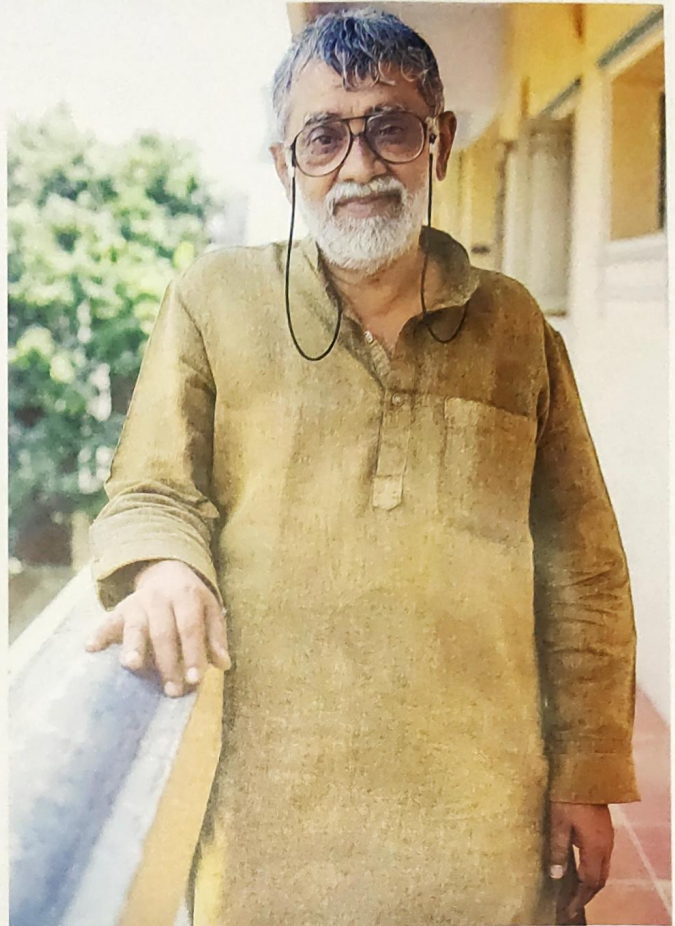
Now, having acquired some visibility, traditional rice strains are also finding niche markets which are appreciative of their unique attributes. They are generally healthier than high-yielding white rice because they don't pile on the calories and spike blood sugar as much. There are also strains which are known to communities for their medicinal properties. In a health-conscious world it is a matter of time before global buyers show up in significant numbers.

Among those salvaging this natural wealth is the Centre for Indian Knowledge Systems (CIKS), a non-profit, which has for over 40 years been working with farmers to learn what they know, help them save seeds and scientifically document dietary advantages they offer.

A.V. Balasubramanian is the founder-director of CIKS. He has an MSc in chemistry and post MSc in molecular biophysics. But it is in understanding traditional knowledge and the study of plant life that he has immersed himself. Additionally, he has been helping farmers set up producer companies.

Civil Society spoke to Balasubramanian on traditional rice varieties, CIKS's work and the opportunities he sees in farming. Edited extracts from an extensive interview:

Q: You have been working on reviving and promoting traditional rice varieties for several years now. How many rice varieties are out there and why do they need to be revived and conserved?



A.V. Balasubramanian: 'There is a growing market for traditional rice varieties'

About 25 years ago, we started by wanting to help farmers cultivate crops, particularly rice, a major crop in our area, sustainably and organically. So we did workshops and capacity-building. Soon farmers got back to us and said, look, until a few decades ago we had a lot of indigenous rice varieties. If only we could get them back it would help us in organic cultivation.

We asked the farmers why. They said there are many rice varieties which have resistance to particular diseases or pests or broad spectrum resistance to various diseases and pests. There are also varieties suited to cultivation in various soil types. Some varieties grow well in sandy soil or clay soil or in saline soil where modern seeds and hybrids don't perform.

We asked how those seeds disappeared. They said until 30 to 40 years ago, they saved part of the rice they cultivated and there was also across-the-fence exchange. The department of agriculture used to provide some traditional rice varieties to farmers.

With the emphasis on high-yielding Green Revolution varieties, the department stopped giving farmers any of these traditional rice varieties. There is a big push for hybrid and modern rice varieties. So traditional varieties have disappeared from the public scene.

We undertook research and we found, like so many things in India, certain things go dormant but very few things disappear completely. We found that a few farmers continued to cultivate some traditional varieties because they either had a saline tract or alkaline soil or sandy soil, or a patch that was susceptible to some pest. So the seeds were available but scattered in different locations.

When we looked into literature we found a remarkable piece of work

by Dr R.H. Richharia, one of India's greatest rice scientists who was at one time director of the Central Rice Institute in Cuttack. He said that in Vedic times India probably had about 400,000 varieties of rice. He estimated that even in the late 1970s and in the 1980s we perhaps continued to have 100,000 rice varieties.

Dr Richharia had a personal collection of close to 15,000 to 20,000 rice varieties in Madhya Pradesh where he retired. Darshan Shankar of the Academy of Development Studies worked closely with Dr Richharia and he helped them collect and nurture 600 such rice varieties.

Q: Why are these rice varieties important?

Because of agronomic reasons. Some are drought-resistant, pest-resistant or resistant to certain diseases or suitable for particular soils. They are also very important for resistance against climate change and disasters.

For example, in 2005, when the tsunami hit Tamil Nadu, thousands of hectares in southern Tamil Nadu went under salt water for 20 to 120 minutes. Once the salt water receded, these lands became unfit for cultivation of modern or hybrid varieties. However, there is a traditional rice variety in coastal areas called Kalar Pallai which grows in saline soil, and gives a modest yield.

We also found another interesting thing. There is a rice variety called Kala Namak, native to the Gorakhpur region of UP. It's an ancient aromatic rice variety that grows well in salty soil. We got samples of Kala Namak from friends in the Gorakhpur region and we started cultivating it. We found it did quite well in tsunami-affected coastal Tamil Nadu. This variety is important for resilience against climate change and for disaster management.

Kala Namak, by the way, is a very tasty variety. It is superior to Basmati except for grain length which is important for global marketing.

Also, while collecting rice varieties, farmers would talk about the nutritional and therapeutic value of such varieties. They would say, this is good for pregnant women or lactating mothers or for convalescence.

But such claims did not have the backing of modern science attestations, though many Ayurveda, Siddha and traditional medical texts corroborated what they said.

So about 10 or 15 years ago, we started modern nutritional testing of some traditional varieties. For example, Neelam Samba is considered good for pregnant women and lactating mothers. We tested it and found its calcium content was very high, consistent with the traditional claim. There are also other anecdotal references that are very important.

There is a *mota* red variety cultivated in Ramanathapuram district of southern coastal Tamil Nadu. People stuck to this variety even though its yield was low and it was *mota*, which in Tamil means coarse. They said it is hardy and will grow even in soil where nothing else grows. Secondly, it is good for lactating women.

A young woman from Kerala who had joined us three months after having a baby used to come to office with a breast milk pump. She tried this *mota* rice and said the quality and quantity of milk she produced was much better and she could assess it.

In terms of culinary properties, some traditional varieties are excellent for making fermented foods like *idli*, *dosa* and *puttu*, a tasty breakfast from southern Tamil Nadu. There are varieties suited for therapeutic uses as well.

Q: How many rice varieties have you identified, conserved and researched so far?

We have been able to preserve 160 traditional rice varieties on our farm. By that I mean they have been cultivated for at least three years or more continuously. We ensure that these seeds are conserved in more than one location so that a tsunami or flooding does not destroy all the seeds in a freak event.

We widely distribute varieties which are becoming popular with consumers. We have a programme where we scale up cultivation of these varieties with farmers and help them reach the market. Last year we scaled up to 5,000 metric tonnes of about 30 traditional rice varieties.

Q: How many acres are you working on? Is it in collaboration with farmers?

CIKS has an experimental farm of 11 acres where we conserve, document and research. We also work with 5,000 to 7,000 families of farmers in nine districts of Tamil Nadu. Sometimes, a farmer takes a variety from us, scales it up, and ties up with a local miller to reach the market. We are fine with that. Our work has momentum. If he has a problem he may come back to us and that's fine too.

Q: Aren't 160 varieties a mere drop compared to what we have lost? You mention a figure of 100,000 varieties. That's a huge loss to the natural wealth of the country...

I'll put it this way: when I say we are focused on conserving 160 varieties, it doesn't mean 100,000 are lost. We are focusing on certain varieties which are important for their nutritional properties, agronomic properties, therapeutic properties and, most important, there is rising consumer interest.

Over the years the National Bureau of Plant Genetic Resources (NBPGR) has collected paddy samples or accessions from thousands of locations across the country. But these seed samples are not available to the ordinary farmer. They are only available to scientists of the ICAR (Indian Council of Agricultural Research). We did protest and say it was unfair.

They said that if you want to deposit some samples of rice varieties with us we can place it in a railway station locker kind of system. We will preserve it with a code number and when you want it you can take it back. That was 15 years ago. They have still not notified the procedure.

'Paddy samples collected by the NBPGR from thousands of locations are not available to the ordinary farmer. They are available to scientists.'

So these collections are out of the reach of the farmer. There are also serious doubts globally and in India about the viability and health of seeds that are stored for long periods in cold storage like liquid nitrogen. Do they evolve naturally? Actually, there is no substitute for maintaining the seed by planting it every season and harvesting it. It must exist in nature.

There are other varieties that farmers have and use. I can go on record and say what the official agency is doing is unethical. A few years ago the editor of *Current Science*, the official journal of the Academy of Sciences, sent me a paper for review saying that a group of scientists had collected dozens of rice varieties from farmers in Karnataka.

After screening they found some of them were drought-resistant. They said they would research and develop varieties which could get intellectual property rights. I asked if they had sought the informed consent of farmers when they collected such samples. If there are commercial benefits how will you ensure they go back to the farmers? There was no reply so this is a grey area.

Q: Are farmers able to find a market and a higher price for their traditional rice like other organic produce?

There is potential in this area but some crucial links need to be re-established. There is a huge growing consumer market in urban and semi-urban areas and rural areas. People feel that there is value to food that is cultivated organically. And there is value for traditional varieties.

The gap is that the consumer wants a steady supply and, secondly, the quality has to be assured. The rice can't have stones and pests and be broken.

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Farmers need access to quality seeds, or seed quality material. Some handholding is needed for cultivation. Secondly, processing, storage and post-harvest facilities are important. The era of hand-pounded rice is over. But when you take traditional rice varieties to the mill, it has equipment that is calibrated for modern varieties. The machinery has to be recalibrated to take in traditional rice varieties. The millowner may ask for 200 or 300 bags to make it worthwhile for him. The farmer faces a challenge if he has to cultivate to scale.

Also, a whole lot of claims are made about organic and traditional varieties. There is fact, fiction and exaggeration. You eat this, your cancer will go away or your kidney disease will disappear. We are trying to do some research based on authentication and documentation to see what we can say with assurance. Wild claims are made by modern science and also by organic and traditional practitioners.

Q: In this arrangement the commercial agent is important to take the farmer to market. Are such interfaces coming up for traditional rice varieties?

We are a non-profit. We cannot be directly involved in marketing or trade. We can only help farmers undertake trading or marketing. The Farmer Producer Organization (FPO) is a new kind of entity. A farmer in the village usually has some experience with a cooperative or a trust because they run temples and *sanghas*. But the FPO is a kind of corporate entity so the farmer has less experience of it.

When the FPO was introduced in Parliament some 20 years ago, the Government of India said that a different kind of legislation was needed. But in the interim they just amended the Companies Act and added a provision so that the FPO could get registered.

Twenty years later there is no separate act and that has some serious consequences. If you have an FPO in Tirunelveli district with 3,000 shareholders, its compliance requirements are the same as for Tata Motors or Sundaram Finance. So there is a big gap in the institutional form in which farmers can do marketing.

Q: What is it you would like the government to do for traditional rice varieties?

Let's be clear, the biggest player in the market is the government. A single stroke of the pen on what is taxed, not taxed, where and what investments need to be made can swing the market this way or that.

For the past 30 years I have been recruiting people with an agricultural background. Every recruit, whether with a B.Sc, M.Sc, Ph.D or diploma in agriculture, has to be educated on sustainable agriculture. It means the entire education system is based on subsidizing agriculture. ■