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## India Today Recent Story: Rice: Food for Thought

1 message

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# Rice: Food for Thought

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Most people think there are two kinds of rice, a handful of coarse varieties and some refined versions like basmati. Wrong. There are actually thousands of indigenous varieties of rice, some of which could ensure permanent food security. Consider this.

- Besariya is a traditional rice variety of Bihar that can survive rising flood waters by growing up to 24 cm a day.
- The Goda variety grown in Jharkhand can survive in a drought-like situation. It grows on highlands where the water run-off is high but matures in barely 60 days, compared to the 90 usual varieties take.
- In Orissa, there are varieties like Dhullaputia that go into a kind of hibernation for as long as 15 days when submerged by floods and emerge when the waters have receded, alive.
- Kali Muri or Kora Poot varieties in Orissa can repel cattle because of the fine spikes on them.
- Boro in eastern Uttar Pradesh is sown in riverbeds and harvested by boat.



Farmers growing traditional varieties of rice.

Indeed there are traditional varieties of rice for each soil type, topography, temperature and some that can survive without any rain, unlike the hybrid varieties. Yet the Government and agriculture departments insist on promoting hybrids. Says Professor B.N. Singh, director of research, Birsa Agriculture University, Ranchi: "Hybrids are more drought-tolerant as they have a deeper root system," adding in the same vein, "They are made drought-resistant by using genes from traditional varieties."

The result is that drought-resistant and flood-resistant traditional varieties of rice are only grown in the largely inaccessible fringes of Jharkhand, Orissa and Chhattisgarh where wild rice varieties first originated. The fact that traditional farmers in these areas remained isolated from the green revolution, and thus to the more widespread high-yielding varieties, was actually a blessing in disguise.

By default, the farmers here ended up preserving an enormously rich biodiversity in rice as they cultivate on the premise of risk minimisation, depending on the nature of their land holdings and its water-holding capacity. This means they get a stable yield compared to hybrids which are more prone to erratic rain patterns. This isolates them from government policy pegged on yield maximisation.

That may be advantageous for farmers when weather conditions are positive but it also means using land and water in an unsustainable manner by excessive use of chemicals as inputs, apart from high fluctuations in rice production figures. As the experience in the original green revolution belt of Punjab, Haryana and western Uttar Pradesh now shows, excessive use of chemical fertilisers and



pesticides, an essential input for success of high-yielding hybrid varieties, has led to soil degradation and water pollution.

Now it seems the Government is all set to compound that problem. The official position as articulated by Dr D.C. Bhandari, director of the National Bureau of Plant and Genetic Resources, is that despite there being traditional varieties of rice that are responsive to adverse climatic conditions, the Government would rather incorporate "these specific adverse handling characters in the high-yielding varieties of rice than encourage traditional varieties grown in some pockets for self-consumption".

Last month in the Capital, the Union Ministry of Agriculture organised a workshop on rice promotional strategies for 2010-11. The action plan clearly promotes coordination with private seed companies. About 10 per cent of the land under paddy cultivation in Jharkhand is presently devoted to hybrids, seeds which are made in laboratories by cross-fertilising rice varieties. They are, however, genetically unstable and farmers cannot save seeds for future use.

In fact, it is only the NGOs that are making efforts to save traditional varieties of rice. Suman Sahai, founder of Gene Campaign, which has opened community-run gene banks across the state of Jharkhand, believes that only nature's technology can meet the needs of humanity. She regrets that "there is no government scheme that encourages protection of biodiversity. There cannot be long-term food security without preserving biodiversity."

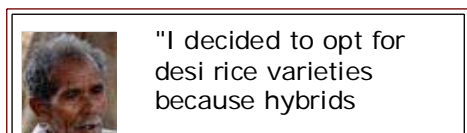
At Gene Campaign's community-run gene banks across Jharkhand, farmers are lent seeds of various varieties of rice according to their land profile. After harvesting, they have to return three times the amount of seed back to the bank so that it can be dispensed to more farmers. They have a collection of more than 1,000 varieties of seeds most of which were about to be lost. "The idea is to make farmers the custodians of seed varieties and thus biodiversity," says Sahai.

There is no clear estimate of the number of rice varieties, but Dr Robert S. Zeigler, director-general of the Manila-based International Rice Research Institute (IRRI), says: "I would guess that the number will fall between 1,00,000 and 2,00,000. That is, by the way, an enormous diversity that offers rice breeders and farmers great scope to improve the crop." The preservation of biodiversity is not all about preserving genes in cold storage. India already has a large collection of rice in its national gene bank, which even scientists find difficult to access. Most of that collection is duplicated at Manila's IRRI's facility for safety.

Likewise, a complete copy of IRRI's collection is held in the US by the Department of Agriculture and another complete copy placed in the Svalbard Gene Bank on the Arctic Circle in Norway. Zeigler believes "it is the Government and international communities' responsibility to preserve rice and crop genetic diversity over the long term".

Gene campaign's community-run Master Gene Bank in Manato village in Ranchi district preserves 777 distinct varieties of traditional rice.

<b>The Top Seeds</b>	
<i>A comparison between hybrid and traditional varieties of rice</i>	
<b>Traditional</b>	<b>Hybrid</b>
Developed over centuries by farmers who choose sturdy seeds through a process of artificial selection based on land profile and water availability.	Produced by artificially cross-pollinated plants. It takes generations to stabilise genetically. Therefore, hybrids lose genetic vigour after first crop.
Forces farmers to go to the market for seeds.	Best grains are stored, no dependence on market.
Genetically resilient to vagaries of climate. Hybrid seeds are less sensitive to disturbances in the climatic conditions.	Highly sensitive to changes in rains, temperature and other climatic factors. Since Indian agriculture is mainly rain-fed, risk factor is high.
They do not depend on industrial pesticides and fertilisers. Use land in a more sustainable manner.	Dependent on agricultural inputs like fertilisers, insecticide, etc. The need increases every year to maintain the productivity.
High in glycemic value.	Low in glycemic value.
The farmers sow various varieties of rice depending on land with the	The Government encourages the use of hybrid seeds since its objective is yield



"I decided to opt for desi rice varieties because hybrids

One man who is doing that, albeit quite oblivious to the debate, is Bhajji

demand labour and would cost more."

**Bhajji Maheto, farmer**

Maheto, 78, a farmer with a seven-acre plot in Jaspur village

in Angada Tehsil, an hour's drive from Ranchi. He looks up

objective of risk minimisation.

maximisation.

at the sky (it is June 17) and declares: "It is going to rain today, 10 days earlier than last year." He will now have to make a decision that will dictate whether his family will have enough to eat this year. Like other farmers in the region, Maheto has a land holding of varied profile; only 30 per cent of the land he owns has good water retention capability. More than half of his holding is sloping, so the water run-off is quick and moisture-holding capacity severely limited. He will decide which varieties of desi or traditional rice he is going to sow, bringing into play hundreds of years of accumulated knowledge that has been passed down for generations.

Maheto can opt to sow hybrid varieties of paddy but he has always grown traditional crops and is reluctant to switch to an unknown hybrid, more so if he has to spend Rs 250 a kilo for seed. Lack of education is not why farmers like him are holding out against advanced technology. In nearby Manato village, Kamlesh Bedia, 26, the only farmer in the area who is a graduate with an honours degree from Ranchi University, explains: "High yield varieties require a lot of investment-physical labour and inputs like fertilisers and pesticide that cost dear. In the end, we don't gain much."

And there are risks too. The area being rain-fed, a slight deviation in the rain pattern can ruin the whole crop, as was the case last year when the rains started late. The rice production in Jharkhand saw a fall of more than 40 per cent last year compared to the previous year. "Traditional rice will never fail you. In the worst situation, it will give at least 50 per cent of the produce even in a drought-like situation," he says.

For Hari Krishna Maheto, 35, father of three children, the reason for not sowing hybrids is different. "If you feed on hybrid rice, you always feel hungry and end up consuming 50 per cent extra hybrid rice. Besides it tastes awfully bland," he says. Traditional rice has a high glycemic index and some varieties are good for diabetics.

Ages of practice of paddy cultivation has given it a cultural dimension and ensures nutritional security for the farmers. The water-logged paddy fields also support aquatic life: fishes, frogs, crabs and snails. By the time the paddy is ready to be harvested, so are small fishes and crabs which supplement protein intake. They survive because farmers use no chemicals in the field.



"Some of the traditional rice varieties are not found anymore. I miss the aroma of Kala Namak rice."

**Shandan Bakhala, villager**

Additionally, post-harvest some 15 varieties of vegetables are planted in the same plot. Shandan Bakhala, 95, a resident of a village in Jharkhand, reminisces about spinach varieties that she grew up eating and are no more available, as well as varieties of rice that have been lost. She particularly misses the aroma of the Kala Namak rice, the legendary paddy variety of eastern Uttar Pradesh.

Technology, however, has its own momentum and reasoning. With the Government determined to promote high yield varieties to fill its collective rice bowl, traditional farmers in isolated pockets face a tough time not only in preserving their traditional seed varieties, but also their way of life and even survival.

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