

COVER STORY AGRICULTURE

Guardians of the grain



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Over the years we have lost over a lakh varieties of native rice. One district in Odisha is rediscovering some of them

It is a balmy winter morning when I meet Kamli Bataraa, an ebullient Adivasi farmer, at her home in Belugan, in southern Odisha's Koraput district. There is a hum across the village from the threshing of just-harvested paddy. When I ask Kamli about the rice varieties she grows, she reels off 13 names: "Baunsunimundi,

Haldi-dhaan, Gadaakutta, Sapuri-dhaan, Betra-dhaan, Kolarikuji, Laakdikuji, Umriachuri, Limchuri, Asamchuri, Bagurichuri, Mayer-dhaan, Patraa-dhaan.”

As sweet as these names sound, their aromas are sweeter. Cooking and eating scented varieties like Kolaajeera and Kolakrushna, for instance, make for a more pleasurable experience than the ubiquitous hybrids of our daily diets.

“With *sarkaari dhaan*, even if you have three vegetables on the plate, it does not taste that good,” laughs Gomati Raut, another Belugan farmer. “Our *desi dhaan*, you can eat it plain...”

India is rice country: the cereal provides daily sustenance for over 60% of Indians, and occupies the greatest cultivated area. But its primacy belies a darker story of genetic and cultural erosion.



Gomati Raut with the grain from her farm. | Photo Credit: [Chitragada Choudhury](#)

Half a century ago, we had over a lakh rice varieties – a stunning diversity in taste, nutrition, pest-resistance and, crucially, in this age of climate change and natural disasters, adaptability to agro-climatic conditions.

From 60 to 200 days

As eminent rice scientist R.H. Richharia wrote in his 1966 classic *Rices of India*, Indian farmers knew how to cultivate rice with growing durations ranging from 60 to 200 days. There were varieties they grew at sea level, on farms 7,000 feet higher, and on a range of lands in between. Some varieties could grow in 20-50 feet of water. Others could make do with annual rainfall of hardly 25-30 inches. Yet others were saline-tolerant.

Today, much of this biodiversity is irretrievably lost, forced out by decades of Green Revolution **agriculture**, where ‘high-yield’ hybrids and varieties were pushed, with petrochemical inputs (pesticides, herbicides, fertilizers) and associated technologies. Such ‘superior’ varieties are estimated to constitute over 80% of India’s rice acreage.

Koraput is often depicted as a ‘backward’ region. But its vast, undulating landscape has historically been among the world’s leading areas for rice diversification. And even as hybrid varieties have colonised much of India’s paddy fields, Koraput’s loyalty to the local endures.

In the 1950s an official survey found that farmers here grew over 1,700 kinds of rice. And farmers like Kamli are the reason that a sliver of India’s rice diversity still survives.

A grassroots movement in Koraput, with over 1,400 farmer-conservators at its heart, is one of other such groups now trying to safeguard what remains of this genetic-cultural wealth. The effort is anchored by ecologist Dr. Debal Deb, aided by staff from a local organisation, Living Farms.

I first met Deb in 2014, when I travelled to a two-acre common-property farm in southern Odisha’s Kerandiguda village, where he is engaged in a remarkable in-situ conservation of over a thousand heirloom rice varieties, several of them endangered.



Ecologist Debal Deb in his farm | Photo Credit: [Chitragada Choudhury](#)

Close to 200 of the 1,200 varieties in Deb's collection are from farmers in the Koraput region, proof that the villagers have not abandoned their native seeds.

Back from the brink

Noticing how important heirloom rice varieties were for local villagers, and anxious that his collection does not become the last repository of 25 regionally endangered varieties, Deb reached out to some farmers in 2014.

He asked them to grow native varieties and circulate the seeds to other farmers to save them from extinction. He trained farmers in simple techniques to ensure genetic purity.

Today, the number of farmer-conservator households has grown to 1,469 from only 13 in 2014. By reviving seeds, they are also reviving taste, ritual, nutrition and sustainability, attributes waylaid by the obsession with yield. Attributes that make rice more than just about calories and starch.

Dansingh and Kaushalya Gheuria, marginal farmers from the Adivasi community of Bhumias, were among those who began to distribute endangered rice varieties — eight upland varieties — that Deb gave them.

Our seeds give stamina

“Where have our own seeds disappeared, especially those that can grow on *dongar* (upland) land like mine?” asks Dansingh rhetorically, when I meet the couple at their home in Gunduliguda village near the Koraput-Bastar border. “This is why I joined the effort to keep our rice alive, so that we do not lose the little that remains of it.” Today, they grow 12 endangered varieties, cultivating some in small quantities of just two rows each.



Kaushalya and Dansingh Gheuria grow 12 different varieties of indigenous rice. | Photo Credit: **Chitragada Choudhury**

The farmers call these varieties *aamara biyana*, our seeds, or *desi dhaan*, referring to modern varieties as *sarkaari dhaan* or government rice. Several farmers outlined

economic reasons for not abandoning heirlooms. Since hybrids don't breed true, "we have to keep spending money to buy seeds," says Kamli.

"With *desi*, we store our seeds carefully and use them in the next season." Then, of course, there's the question of nutrition and taste. In Jhareikiri village, Krushnachandra Gadaba, who is conserving 12 endangered varieties from Deb's collection, tells me, "Eating hybrids doesn't give us the strength and stamina to work in the fields that *desi* gives us."

Surviving cyclones

There are other reasons why villagers are wary of hybrids. One, they want to stave off the dependence on pesticide to reduce their costs and to prevent the impact of chemicals on soil quality. "Hybrids demand ever-increasing pesticide use," says Duryodhan Gheuria of Gunduliguda village. "Our costs shoot up." Gheuria had flirted with hybrids, and subsequently decided to steer clear of them. He grows four *desi* varieties – Kolamali, Sunaseri, Tikkichuri, Kosikamon – "just like previous generations of my family." After meeting Deb, Gheuria adopted three more endangered heirlooms: Samudrabaali, Raji and Government-churi.

Also, the taller paddy stalks of heirlooms yield valuable by-products: fodder for cattle, mulch for soil, and hay for thatching roofs, unlike the shorter, modern varieties.

Several farmers also say heirloom crops are better suited to unpredictable weather, having adapted over centuries to local ecologies. This also makes them hardier in the face of biotic (e.g. pests) and abiotic (e.g. drought) stresses. Lab-grown varieties in contrast are designed for the routines of mechanised farming, large doses of chemical inputs, and a predictable water supply.

Laxminath and Sadan Gouda, a nephew-uncle pair in Belugan, said that on flood-prone land along a riverbank, such as theirs, modern varieties like MT-1010 and Sanam fared poorly. "They barely grow, pests attack them... we face a world of trouble. But *desi dhaan* like Bahaanimundi, Umriachudi, Haldiganthi, Sapuri grow well, which is why we will never abandon them." Many farmers report that native varieties such as Kolamali and Kaberigandha withstood Phailin and Hudhud, the cyclones that hit Odisha in 2013 and in 2014, better than the modern varieties. And Tikkichuri and Sunaseri, for instance, cope better during droughts or spells of poor rainfall.

An intimate affair

What struck me as I interacted with the Koraput farmers was their intimate knowledge of agriculture and ecology – something rarely acknowledged by modern science or government policy.



A farmer displays the long stalks of indigenous rice | Photo Credit: [Chitragada Choudhury](#)

For example, an announcement made days ago by the Odisha government to promote organic agriculture and “develop traditional agriculture” entrusts the project to a panel of bureaucrats and agriculture ‘experts’, relegating the farmer as always to the role of recipient.

But, as Deb points out, involving farmers and their knowledge systems is key to successful conservation. “Hundreds of rice varieties can’t just be preserved in gene banks. Farmers have to know how to work with them,” he says.

Deb adds that if farmers don’t possess such knowledge, there’s the risk that a lowland variety will be adopted unwittingly in an upland farm, or a drought-resistant variety in a flood-prone area, leading to crop failures.

The gradual erasure of indigenous rice varieties, and the knowledge associated with them, is visible in Badakadamguda village, off the state highway running

through Koraput. Here I meet Arjun Gadaba, who is hard at work under a noon sun, preparing his land for sowing, with a pair of bullocks and a ploughshare.

Going back to basics

Gadaba is clear about what dealt a decisive blow to indigenous rice in his area. “It happened when this came,” he says, pointing to one of the canals of the Kolab Dam, a large irrigation project that brought water two decades ago to the area. “Packets and packets of hybrid seeds followed. People could grow a four-month-duration crop twice a year, with assured irrigation. Slowly our own seeds, the ones my parents knew about, were abandoned.”

Gadaba is now relearning lost practices. Last year, for the first time in his farming career, he cultivated a *desi* lowland variety called Haldiganthi, with seeds from Deb’s collection. He also grew the MT-1010 variety alongside. “But it required buying seeds, potash, urea, pesticide, none of which I needed for the *desi dhaan*,” he says. Sometimes, he needed a bank loan to buy such inputs. “So the profit from any higher yield gets cancelled out,” he says.

Kamli Bataraa



An Adivasi farmer in Belugan, Odisha, lists the varieties of native rice she grows.

Encouraged by his experience with Haldiganthi, Gadaba tells me he plans to now grow Asabali and Lalu this season. Phulmati Sira, a young Adivasi colleague of Deb, promises to bring him these two grains within a week, while the sowing season is still on.

Since 2015, Sira has been touring villages in the block, gathering endangered seeds from farmers – varieties that do not yet feature in Deb’s collection – and expanding the conservator network. “This area had totally abandoned *desi*

varieties,” Sira tells me, as we leave Gadaba’s farm. “But now many farmers are asking for them again. Eventually, it is this that will ensure such varieties survive.”

Having many rice varieties is not an end in itself. As Deb says, “Rice conservation is just a handle to ask ourselves, how do we build sustainability in society?”

The author is an independent journalist.

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