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Agro biodiversity Initiatives Open Tribal Women's Horizons



Kaliamma Nanjan, 70, sings as she cuts through her farm in Kerala's Western Ghats. She deftly navigates the slopes of Attappady in Palakkad district with the gravity-defying dexterity of a mountain goat. Her silver-grey hair and bright saree vanish as she enters her mosaic-like 3.5-acre farm – her own agrobiodiversity haven.

There is one acre each of paddy, little millet and finger millet, and the remaining area is divided between vegetables for daily use, hyacinth beans, corn, and pulses.

Kaliamma is part of a unique project as a “Master Farmer” with the Kudumbashree Mission to promote and mainstream agrobiodiversity by reviving traditional and sustainable farming practices called *panchakrishi*.

Agrobiodiversity is the sustained management of various biological resources including multi-cropping, trees, herbs, spices, livestock, fish species and non-domesticated resources within fields and forests.

By breaking away from the silo of limiting agrobiodiversity to conservation, the Kudumbashree project integrates increasing farm productivity, boosting nutritional security, and providing market access to tribal communities in remote areas.

Agrobiodiversity to drive away hunger

Kudumbashree, Kerala's programme and network for women's empowerment and poverty eradication with over 4.3 million members, has its hands in many pies. It has floated special projects for tribal women living in the 745 square km Attappady block in Palakkad in 2017.

"These were initiated to address the socio-economic issues faced by the tribal areas," explained Shithish VC, District Programme Manager at Kudumbashree.

"The *panchakrishi* programme focuses on sustainable agriculture and preservation of biocultural diversity, making the farmers self-sufficient and improving market access."

The Western Ghats is an agrobiodiversity hotspot, and in Attappady indigenous methods like *panchakrishi* protect it.

Over 10,000 tribals live in Attappady, with a majority displaced from the farm sector over the years. Land conflict, intensive farming, marginalisation have resulted in

worsening socio-economic indicators including malnutrition, child deaths and food crisis linked to land alienation and the loss of their traditional agriculture in tribal communities, the government has noted. Kudumbashree entered Attappady with a host of projects after malnutrition claimed 58 lives in 2012-2014.

“For this project, Kudumbashree has mobilised its community-based networks and aligned with the Mahila Kisan Sashakthikarana Pariyojana (MKSP), under the National Rural Livelihoods Mission,” Sai Dalvi, District Mission Coordinator in Palakkad, said. There are 192 hamlets and over 840 ha under *panchakrishi* farming, producing pulses, tubers, paddy, millets, and vegetables.

“Government and farmers organisations need to be the base, but the farmers should have the autonomy,” explained Ramanatha Rao, a geneticist formerly with policy and think-tank Bioversity International.

Mainstreaming agrobiodiversity

“We need to pay attention to what farmers want,” said Rao. “Production-oriented agriculture has sacrificed agrobiodiversity and farmer well-being while compromising on environmental protection and nature conservation. For long, we have looked at these aspects disparately, without an integrated approach.”

Mainstreaming involves integrating specific components of biodiversity into other sectors for the generation of mutual benefits, as noted in Mainstreaming Agrobiodiversity in

Sustainable Food Systems published in 2016. However, this isn't a one-size-fits-all approach. Governments, farmer organisations and consumer associations can influence programmes and policies that can combine agrobiodiversity with tourism, conservation, increasing productivity, resilience, climate change mitigation or adaptation, nutritional security, food sovereignty or poverty alleviation.

“Unscrupulous, aggressive utilisation of resources for mass-production of a few staples and monocropping has led to long-term impact on the environment and farmers,” explained Shakeela V., Director, MSSRF Community Agrobiodiversity Centre in Wayanad, Kerala. Over the decades, Wayanad, also in the Western Ghats, has seen intensive production of rubber, pepper, tea and rice.

Shakeela trains small farmers to use traditional agrobiodiversity knowledge and sustainable farming and has overseen the conservation of over 1,000 species of crops, trees and wild plants found in Wayanad. Studies in Kerala show an increase in species number and plant density with decreasing holding size and the total number of plants went up to more than 600 per ha.

There are nearly 5,000-70,000 plant species documented as human food. Of these rice, wheat and maize provide half the world's plant-derived calories. More than 90% of crop varieties and over 75% of plant genetic diversity has been lost since the 1990s as farmers left local varieties and landraces for genetically uniform, high-yielding varieties, according to the Food and Agriculture Organisation. As a result, over 800

million people within the agricultural sector live below the poverty line, the World Economic Forum noted.

Women keep an eye on nutrition

Research has shown that women farmers and indigenous people across the world are at the forefront of agrobiodiversity knowledge and conservation – particularly in small landholdings where they select, improve and adapt plant varieties, manage livestock and have more specialised knowledge of wild plants used for food, fodder and medicine.

Acknowledging the gendered roles in farming is essential to effect any change, Rao noted. Historically, women have focussed on nutrition and health of their families, preferring to plant a variety of crops and foraging for wild and semi-wild plants to meet these needs, he said.

“If I plant only bananas or rice, what will I eat the rest of the year,” asked Poonama, 66, a marginal farmer from Agali block. “I grow as many varieties as possible, so we don’t have to depend on others for food. I rarely buy anything from the market.”



Poonama in her farm.

Agali's women farmers are among the few who have not given up on *panchakrishi*. "Our aim is to find the people who practice this, and make them train the next generation of farmers," Dalvi said.

Poonama, like her neighbours, also has hens, goats and cows to secure her family's nutritional needs. "Even if one crop fails due to a pest attack, poor rainfall or other unforeseen reasons at least another will succeed," she noted.

For instance, this season Kaliaamma's harvest includes 40 kg of paddy, 50 kg of corn, 30 kg of pulses, 15 kg of beans, and over 180 kgs of vegetables. Most of this is saved for her family's use and the rest is sold. Despite recent floods impacting the

yield, there's enough for her family of over ten members to eat. Crops like millets, for instance, are climate-resilient and nutrient-rich.

As global temperatures increase, Palakkad, the rice bowl of Kerala, has also suffered climate variability. Two years of floods were preceded by frequent droughts and water shortages impacting the farm sector. Despite the lower output, *panchakrishi* has so far helped these women mitigate and navigate through the unfolding climate crisis by diversifying their risk and food basket.

The importance of market linkages

As a Master Farmer, Kaliaamma's job is to impart her *panchakrishi* knowledge to younger farmers and students. Her unscripted syllabus includes techniques on staggered multi-cropping of a variety of cereals, pulses and vegetables; reading the weather; assessing soil health; converting the farm waste into manure and balancing the ecosystem of their farm.

However, training isn't enough. In order to bring tribal farmers into the mainstream, the role of farmers organisations in ensuring market linkage is critical. Kudumbashree procures the produce from women's farms for its local community kitchens and for retail sales under the in-house brand Hill Value, representing products from Western ghats.

"Agrobiodiversity initiatives won't work if farmers don't earn," explained Shakeela. "You can't have a disconnect with the market and the supply chain."

Kaliamma is upbeat since urban consumers took to local varieties of millets. “I am assured of selling it, earlier that was uncertain,” she explained.

“Millet prices have shot up from around Rs 30-40 a kg a few years ago to Rs 100-120, it’s because the demand for indigenous food and products has increased. It is an incentive for farmers to produce it. Thereby preventing it from vanishing,” explained Rao. “This is what we call conservation through use.”

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