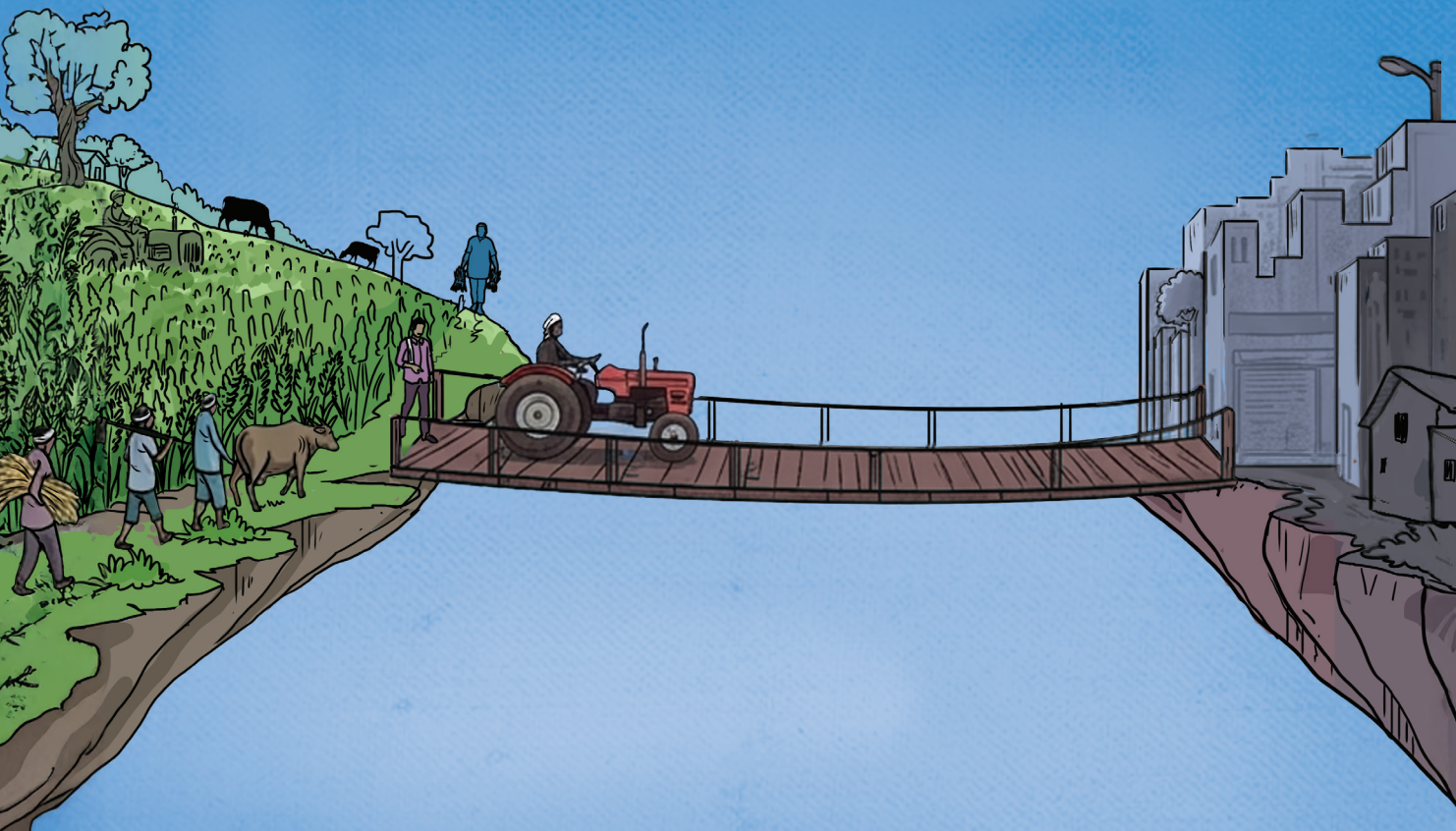




THE AGROBIODIVERSITY ECONOMY

UNLOCKING MARKETS



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INTRODUCTION

India's rich biodiversity and traditional food knowledge provide a strong foundation for diverse, climate-resilient food systems.

Farmers can adapt to drought, heat, erratic rainfall and flooding by diversifying crops and strengthening resilience.

Scaling these approaches requires support.

India is one of the world's 17 megadiverse countries and home to nearly 7–8 per cent of all recorded species on Earth. Communities across the country have extensive knowledge of cultivating, processing, preparing and using diverse species as food. This knowledge provides an important foundation for developing biodiversity-based food systems, particularly in the face of the multiple and intensifying threats to conventional agriculture, such as drought, heat stress, erratic rainfall and flooding.

Agroecological approaches, including promoting biodiversity-based food systems, can reduce these risks by diversifying production, strengthening resilience and better adapting food systems to changing climatic conditions. However, adoption remains fragmented despite government policies and development programmes that promote sustainable and regenerative agriculture.

The crucial next step is to move beyond pilots and isolated practices and create the conditions required to scale these approaches. This will require addressing persistent gaps in funding, governance, knowledge and awareness.

On the ground, a growing number of entrepreneurs are trying to make the leap from promising ideas to viable, profitable businesses. These enterprises bring a wide range of foods to consumers—from diverse traditional varieties of staples such as rice, wheat and legumes to indigenous and locally sourced foods such as bamboo shoots and mahua. By creating markets for these products, entrepreneurs play an important role in connecting biodiversity, livelihoods and consumer demand.

In this report, we speak with 10 such entrepreneurs to understand their business models, marketing, and the factors that have enabled—or constrained—their growth. The entrepreneurs also identify the solutions and policy support they believe could make it easier to build and scale businesses based on biodiversity-rich foods. Together, these experiences offer insights into what is working, where gaps remain, and what is needed to move biodiversity-based food enterprises from isolated initiatives towards a more enabling and scalable ecosystem.

The wide range of crops, wild and cultivated foods, indigenous varieties and locally adapted species all contribute to diverse diets which provide not only the macronutrients but also the micronutrients needed for health. Unfortunately, these ingredients are no longer accessible to most people; in rural areas, knowledge about them is lost; and in urban areas, the ingredients are not available.

Markets need to recognize and value these products. This requires entrepreneurs and enterprises that can aggregate products, develop supply chains, invest in processing and quality assurance, build consumer awareness, and translate the ecological and cultural value of diverse foods into viable market propositions. For farmers, stronger markets for diverse crops and indigenous foods can create new income opportunities and reduce dependence on a limited number of commodity crops. However, developing such markets is often more challenging than creating demand for conventional food products as production is dispersed, volumes are small, supply is seasonal and processing and distribution infrastructure are limited.

The entrepreneurs we interviewed occupy an important but overlooked space between producers and consumers. They can help convert local knowledge and biological diversity into products that meet contemporary consumer expectations while creating economic incentives for producers to maintain diverse crops, varieties and food traditions. The constraints they face can reveal the structural barriers to scaling biodiversity-based food systems. Equally important is understanding which strategies have enabled some enterprises to survive and grow despite these constraints.

CASE STUDIES

Entrepreneurs play a crucial role in connecting diverse crops, indigenous foods and local knowledge with consumers and markets.

By building supply chains, investing in processing and quality assurance and creating consumer demand, they can generate new livelihood opportunities for farmers while supporting the conservation of crop diversity and food traditions.

Scaling these businesses will require an enabling ecosystem.

1. **BAHULA FOODS PRIVATE LIMITED, BIKANER, RAJASTHAN**

<https://bahulanaturals.com/>

Resource person: Aakriti Srivastava, founder and CEO

Tell us about your company and its business model

Bahula is part of the Urmul Seemant umbrella as a collaborative social enterprise ecosystem designed to empower agro-pastoralists in the Thar Desert of Rajasthan. Legally, Bahula is an independent organization with a separate board and separate financials.

Urmul has worked in sustainable agricultural promotion for decades, with livelihoods as one of its many thematic areas. However, there came a point when everyone realized that although these trainings were happening constantly, they would not progress into something bigger, better or serve as a model unless there was a sustainable livelihood link. They needed to integrate market linkages into this work. The decision was to do this through an entity that understood not only the market but also what farmers in the region went through to produce food. Bahula was conceptualized in 2019 in response to this need.

A Raika farmer with his camel



The idea was that many organizations were already doing their part: government agencies were providing funds and policies, NGOs were conducting training, and research institutes were studying food and production practices. The aim was to bring all of them together on one platform that could take food from farm to fork.

At the same time, Urmul had started working with camel herders. According to the 2019 census, the camel population in the country had declined by about 40 per cent over the previous decade. This was of concern as about 85 per cent of the country's camel population came from Rajasthan. The team went deeper into camel-rearing areas to understand why this was happening. It found that camels did not fit well within the government support framework. Camel herders faced veterinary challenges, as well as difficulties accessing water and land. Another major challenge was the lack of market opportunities for their products.

Urmul therefore started researching camel milk as a product and exploring what could be developed around it.

Bahula was launched in 2022 under this overarching definition: a good food company that brings toxin-free food from resilient regions. These are the three pillars under which Bahula works. Good food is food people can trust, backed by transparency in quality and production practices. It comes from toxic-free farms and resilient regions—regions that may not have been endowed with the best natural resources for farming but have continued to provide nutrition to their people.

Bahula operates three product lines. The first is cow milk, specifically indigenous Rathi cow milk. The second is camel milk, and the third is agricultural produce. In the case of camel milk, Bahula makes artisanal cheeses, including fresh and aged varieties, as well as cookies, ghee, chocolates and milk powder. From Rathi cow milk, also referred to as A2 cow milk, it produces Bilona ghee, paneer, mawa, pasteurized milk, dahi, chhaach and a range of other dairy products. In agriculture, Bahula works on two primary products. The first is black wheat, a distinctive wheat variety that is low in gluten and high in iron which is used to make produce flour and daliya. The other product is organic cold-pressed mustard and groundnut oil.

There are a total of 4,000 community members, whom we call agro-pastoralists, associated either through the Bahula Rural vertical, the Bahula Manufacturing vertical or the Bahula raw material sourcing vertical. Our USP is our end-to-end, fully controlled supply chain. Most brands in this space are either manufacturers, marketers or raw material suppliers. We combine all three. Our work starts right

at the soil level. Our farmers stay with us because, at any given point, we are able to pay them a 10–20 per cent premium compared with competitors in the space. With in-house manufacturing, we know exactly what goes into the product. We also help our market partners. For example, if an exporter or importer outside India wants to buy 500 metric tonnes of mustard or groundnut, Bahula can be a one-stop solution.

What is your marketing strategy and what challenges do you face in promoting your products?

This has been the most interesting part of the whole journey. We started with enthusiasm that we would find a market, but when you actually enter the market, you realize the reality. We handle about 5,000 litres of milk per day, of which 4,000 litres is cow milk and about 1,000 litres is camel milk. Initially, we started by selling pasteurized milk pouches. We had cow milk, A2 cow milk and camel milk pouches, which were sold in the nearest markets in Bikaner, the nearest city to us.

Our setup is quite boutique, which gives us an advantage for value-addition space. We had many products but they were not moving in large numbers because we were primarily approaching D2C or B2C categories. We were selling through our website and through some retail channel partners. From last year onwards, we decided to shift and also open up B2B as a space for us.

We currently sell in Rajasthan, the Delhi–NCR region and Bengaluru. For cheeses, we partner with boutique hotels. Many tourist and premium tourist hotels in Jaisalmer, Udaipur and Bikaner keep our cheeses on their breakfast menus. Some also have them on their bar menus. We partner with distributors who supply to hotels. We work with Lots Wholesale in Delhi NCR, for example. In the southern region, we work with another hotel distributor partner, and we also have partners in the Mumbai region. For oils, atta and paneer, we work with Reliance Retail and Modern Bazaar. We also now white-label for other sustainable and conscious brands because we have manufacturing capacity here.

We have realized that sales are the solution to almost every problem. Sell wherever and however you can—individually or institutionally. In the initial phases, what helped us was creating a group of customers who became our daily subscribers. This was in Bikaner itself. Their everyday requirements for milk, ghee, atta, oil, paneer, dahi and chhaach came from us. We created a WhatsApp community group where customers could place orders and we could share information with them. This helped us get very quick feedback if something was not working.

The second point is that B2B is helpful for sustaining operations. Opening up B2B partnerships worked well for us, but we were very careful about whom we sold to. We did not want just anyone to start buying our products. We would carefully conduct a market audit of the brand buying from us: where they were selling, how they were selling, what price range they were selling at and so on. We are a premium B2B supplier. For example, since ghee and cheese are two of our primary products, they do not fall into the regular B2B price categories. A regular B2B supplier would sell ghee for around Rs 450–750 if it is sourced through a cooperative dairy or other small private dairies. Our ghee sells for Rs 1,100–1,300. Customers and brands therefore pay a premium, and it takes time. Of course, the product quality has to hold; otherwise, it is just a story and nothing else stands.

The third point is to market as much as possible. We haven't been very good at this, to be honest, particularly digitally. But digital marketing has been very helpful to many brands in this space that have marketed themselves well.

The fourth is to have a very robust manufacturing and sales team. These are important pillars so that you do not get returns and complaints as often.

The fifth is not to sell for charity. Charity may sell once or twice at most. People are not buying ghee every day so that they can support communities in a rural village; they buy ghee because they like to use ghee. A problem we identified early on with brands that operate as social enterprises is that their main USP becomes the community and the good the product is doing for the community. But that does not sell very well over a long, sustainable period. The product should speak first; the story should come after that, because the product will take you far. These would be the five key points for building a market.

What can governments do to support businesses working with biodiversity?

Very recently, I have been part of a working committee that makes recommendations to the central government on increasing the camel population in India. The National Dairy Development Board (NDDB) hosts it every quarter. One recommendation that often goes unheard is that, from the perspective of market players, if the government builds awareness around a particular product, there is a huge possibility that both the private and cooperative sectors can enter the space and take it forward. Something similar happened with millets. The government put in that effort, and today many companies working with millets are flourishing

because awareness was generated at scale. Even if subsidies are not provided for millets today, the market will continue to work because the product has gained traction.

Similarly, many other indigenous products exist across the country, and camel milk is one of them. Government endorsement—something as simple as a tweet from the prime minister saying that camel milk is a superfood and is good for people with diabetes—could help a lot. Government support in terms of awareness, rather than market support, would be very helpful.

Government support needs to shift from subsidy to market creation. The government can create demand for indigenous products by including them in public procurement, nutrition programmes and government institutions, while investing in consumer awareness, product standards, testing and certification.

Drylands need to be recognized as productive ecosystems, not wastelands. The government should formally recognize pastoralism and dryland production systems in planning and investment frameworks, and create dedicated support for them through mobile veterinary services, access to grazing and water, dryland-specific agricultural extension, and infrastructure for livestock and local produce. Policy should measure these regions for their ecological and economic value, not just agricultural output.

2. KISAANSAY, GURUGRAM, HARYANA

<https://kisaansay.com/>

Resource person: Nitin Puri, co-founder

Tell us about your company and its business model

KisaanSay is a collaborative initiative of farmers and food professionals. The company brings authentic products directly from farmer enterprises across India, in an effort to provide consumers with the best food products and better livelihoods to farmers.

Our business is built on three core pillars that redefine the relationship between farmers and the market: Co-Curate, Co-Brand and Co-Profit. Instead of a transactional buy-sell dynamic, we establish deep commercial partnerships with Farm Producer Companies (FPCs).

Under Co-Curate, we divide responsibilities according to our respective strengths. The supply chain is managed entirely by the FPCs, while marketing, sales and distribution are handled by us. Together, we partner to curate the entire process from farm to consumer. They do what they do best, and we do what we do best.

A farmer in a Kalajeera rice field in Koraput



Co-branding means every product prominently displays the logo of the farmer and the respective farmer group that packed the product on the front of the packaging. For instance, a customer shopping on online platforms such as Zepto, Blinkit and Amazon, or at physical retail stores, will see that our Koraput Kalajeera rice is from Koraput, or that our walnuts are from Kashmir. The back of the packaging includes a QR code with detailed background information.

This co-branding gives farmers a sense of pride, achievement and belonging, as their own names, faces and brand identities are showcased on the pack. This gives them a lot of happiness. In a way, they are also owners of the supply chain, so to speak, and the process is unlike a transactional buy-sell relationship.

Under co-profit, we calculate the combined supply-chain expenses the FPC incurs for raw materials, processing, packaging, labour and logistics, plus our marketing and distribution expenses, including advertising, promotions, and platform costs. Once the product is sold, 50 per cent of the net profit is shared directly with the FPC.

Through this co-profit partnership, farmers are not merely sowing crops, putting them in sacks, and selling them off. They actively process, package and share in the proceeds of the business, effectively becoming owners of the supply chain.

We manage marketing, while they handle production. By focusing heavily on marketing, branding and consumer education, we have scaled our business from Rs 1 lakh to Rs 3 crore per month in just two years—a 300x growth. We currently work with 25 FPCs, but our model is built to scale across the estimated 1,500 active FPCs in India.'

What is your marketing strategy and what challenges do you face in promoting your products?

Our primary challenge is changing consumer behaviour. Consumers are heavily conditioned to eat certain types of food, often believing that what they are accustomed to is correct, while viewing alternative, healthier options with scepticism. Many other companies that started in this space over the last few years have failed to scale because they assumed consumers would buy automatically; they did not focus on educating the market. We succeeded by taking a different approach.

Our marketing strategy relies on the following two main levers:

Online awareness and education: We use social media platforms such as Facebook, Instagram and YouTube, as well as Meta, to reach people and explain why our products are different. A crucial element of this is video marketing, featuring the farmers themselves explaining the quality and origin of their products. To change consumer behaviour, awareness is needed. Social media, the internet, Facebook, Instagram, YouTube and Meta are tools available to reach people and communicate our message.

Offline sampling and experience: While digital media is powerful, videos cannot convey sensory experiences such as taste and fragrance. Consumers cannot truly appreciate why our Gorakhpur Kalanamak rice, natural cardamom or small-sized Kashmiri Mamra are superior without tasting them or experiencing their natural fragrance and qualities such as the higher oil content. If I say my cardamom is good and natural, consumers won't understand until they open the box of cardamom, experience the fragrance and taste it. Therefore, physical sampling at events, stores, and shops is vital to convincing customers of their superior quality.

Once convinced, customers purchase our products across online channels such as our web store, app, Amazon, Blinkit and Zepto, as well as through physical stores. To scale up, you need to distribute through both online and offline channels.

On the backend, sourcing and standardization present their own set of challenges, though we have found great support in existing government infrastructure. We connect with state and non-state actors—such as NABARD, SFAC, the Ministry of Agriculture, the Ministry of Rural Development, State Rural Livelihood Missions (NRLM), Tata Trusts, ICICI Foundation, SBI Foundation and corporate CSR arms—to identify capable FPCs.

We conduct rigorous due diligence and ensure food safety compliance. From there, we handhold the FPCs by training them on Standard Operating Procedures (SOPs), hygiene and professional regulatory filings such as GST.

We also guide FPCs to focus on value addition rather than just raw commodities. Sourcing value-added products increases their margins significantly; for instance, while a raw commodity might return Rs 50 out of Rs 100 to the producer, a value-added product can return Rs 60.

A prime example of this is our recent collaboration with an FPC near Udaipur

through the Rajasthan Grameen Ajeevika Vikas Parishad (Rajivika) programme. They were producing high-quality namkeens using traditional local desi oils, ingredients and spices with clean labels, but lacked market access. We helped them standardize their recipes, refine their packaging and develop their marketing. This is much superior to what is available in the market, which has palm oil, emulsifiers, tartaric acid, colour etc. Our namkeens are like those made at home. In India, every region has its own namkeen variants, and there is a huge market.

What can governments do to support businesses working with biodiversity?

To truly scale the impact of indigenous agriculture and empower farmers across India, the government should launch National Consumer Awareness campaigns to promote traditional, basic and agroecology-compliant Indian food products.

Historically, national campaigns successfully changed consumer habits for eggs (‘Sunday hoya Monday, roz khao ande’). In the case of milk, only people in Punjab used to drink it as a habit. We launched a national campaign for milk, and it is now a habit everywhere.

A similar effort is needed for agroecology-compliant, traditional, basic Indian food products.

For example, India imports approximately US \$2–3 billion (Rs 30,000–40,000 crore) worth of dry fruits annually from countries like the US, Chile, California, Australia and China. Local Indian dry fruits may not always look as uniform, but they are natural and unprocessed, not hybrid or GM, and superior in taste and health benefits.

If the government launched a major festive campaign—such as promoting Indian dry fruits for gifting during Diwali—it could spark an agricultural revolution. Shifting even half of these imports to domestic sourcing would keep foreign exchange within the country, boost farmer incomes and provide consumers with authentic, healthy foods.

We have asked the government for this, but they don’t have a programme for marketing, and it will take a lot of convincing.

‘The second thing to do is to leverage demand signals for sustainable agriculture. When the market sends clear demand signals, farmers respond by increasing cultivation. Three years ago, Gorakhpur’s Kalanamak variety of rice was barely

cultivated. By creating consistent market demand, we helped increase the farmers' price realization by 50 per cent from season to season, which led to a substantial expansion in its cultivation area.

Earlier, a farmer used to get Rs 30–40 per quintal of paddy. As demand increased, the signal increased, people started growing, and the price also increased by Rs50–60. The area under cultivation has increased too. This is because demand and consumption have increased; more farmers have started growing Kalanamak rice.

Crucially, these traditional desi crops are climate-resilient. Kalanamak rice requires far less water than standard varieties, is highly water-resilient, carbon-positive, and does not require chemical pesticides. During rainfall deficits, our Kalanamak rice farmers did not suffer because of the crop's inherent resilience. Promoting these crops solves critical ecological and climate challenges.

Third, FPO infrastructure and marketing support should converge. While there are over 20,000 FPOs in India, we estimate there are about 1,500 highly active FPCs, with average turnovers ranging from Rs 1 crore to Rs 3 crore. If we can help just 1,000 of these FPCs scale to a turnover of Rs 5 crore each, we will create a Rs 5,000 crore rural enterprise network.

Currently, the government has excellent schemes through NABARD, SFAC and rural livelihood missions that fund backend infrastructure and capacity building.

However, there is a lack of structured government programming for marketing and branding. We recommend a policy convergence where the government's infrastructure and capacity-building funds merge with market-facing branding and distribution projects. Synergizing these two halves would allow FPOs to operate in sync with market realities and scale rapidly.

3. BIO BASICS, COIMBATORE, TAMIL NADU

<https://www.biobasics.org/>

Resource person: Sreedevi Lakshmikutty, co-founder

Tell us about your company and its business model

Our interest in diversity stemmed from the work I did with the ‘Save Our Rice’ campaign. Midway through that campaign, we realized that while farmers were enthusiastic about multiplying indigenous seeds, we lacked a clear plan for what to do with the harvested paddy. That led us to hold multiple food festivals using these rice varieties. It became clear that farmers growing these grains was not enough; we had to ensure people actually ate them. This fundamental realization is what drove us to focus on indigenous grains at Bio Basics. It is my involvement with the Campaign and the understanding that we have to consume to conserve agro biodiversity that led us to introducing diversity into our offerings and over the years making that the focus.

In terms of our business model, handling indigenous grains is quite similar to how we manage normal organic grains. The core of our model is that the farmers determine their own remuneration; we do not drive down the prices, making the proposition viable and interesting for them. We then calculate our retail pricing

Indian rice varieties



using a dedicated pricing model we developed, which adds essential costs like the high transportation fees we incur from selling online.

Our primary mission is to convince consumers of the fairness of this price. This stands in contrast to conventional methods that work backward from what elite, urban, and affluent consumers expect to pay, which ultimately forces farmers to optimize their productivity under immense pressure—such as demanding they apply inputs at specific times or use drones. We believe that if society can tolerate our own everyday inefficiencies, we can certainly accommodate some level of imperfection from the annadata (food providers) who work under the sun to grow our food.

We officially launched Bio Basics in 2015, and our focus on crop diversity began to take shape between 2016 and 2017 with the introduction of Rajamudi and a Kerala red rice. Today, we have a dedicated team of about 18 people. We collaborate with 15–20 farmer collectives and 15–20 individual grain farmers. Over the years, individual farmers have formed small collectives, which makes coordination easier and increases their collective value of their crop basket. To manage the immense logistical challenge of keeping varieties separate during processing—such as preventing Kaala rice from mixing with Jeeraka Samba—our farmers have become highly strategic, generally growing only two to three varieties individually or collectively coordinating who grows what across seasons.

Furthermore, we consciously de-risk our operations. We actively encourage our farmers to have multiple buyers, and we maintain relationships with multiple farmers so that neither party is left vulnerable during a difficult season.

We offer diverse grains, including eight to 10 varieties of wheat such as Paigambari, Bansi, Khapli, Pisi, Chandausi, Farma and a black-wheat variety. To prevent unpolished grains and millets from going rancid, we procure freshly milled grain from our farmers every two months instead of taking large milled batches all at once. Even though Bio Basics is not profitable today, our model remains highly beneficial to the farmers, whose continued cultivation is proof of its viability.

What is your marketing strategy and what challenges do you face in promoting your products?

One of our biggest psychological barriers is the prevailing belief that eating healthy means eating boring. To counter this, our marketing strategy actively focuses on the exceptional taste profile of traditional foods. We challenge the notion that organic food lacks flavour, telling consumers, ‘Healthy chodo, yeh tasty hai’ [forget

healthy, this is tasty], because our ingredients are inherently richer in taste. This taste-forward strategy worked wonders with Govindobhog rice; we started by selling just 30 kg, scaled up to 1.5 tonnes last year, and now find traders picking it up directly from the fields for exports and hardly any rice is available for the local organic market.

We communicate constantly about biodiversity through social media, blogs, interviews and videos, sharing recipes and grain pairings. During the COVID-19 pandemic, we successfully collaborated with chefs and influencers to cook with our grains—for instance, replacing Arborio rice in risotto with Wayanad's bold, sticky Mullan Kaima rice. However, the marketing landscape has shifted over the last three years. The influx of social media has valorized food to the point where consumers believe only professional chefs can cook these indigenous varieties, causing them to dine out rather than cook at home, which backfires on our household-adoption goals.

To overcome adoption barriers, we focus heavily on sample-sharing and diversifying our product offerings into multiple variants. For instance, we offer a single red-rice variety in various processing forms: raw, parboiled, unpolished and semi-polished, with different bran percentages (30, 40, 60, 80 and 100 per cent). This allows us to serve diverse consumer needs—such as recommending a 30 per cent bran rice for beginners as it resembles normal boiled rice, or 80–100 per cent high-fibre bran for diabetic consumers. We expand this single variety further into easy-to-use processed forms like poha, vermicelli, flour, flakes and semolina (rava), which significantly increases consumer uptake. Similarly, the ongoing protein trend has greatly boosted our pulses, such as black pulses, which require minimal processing. However, introducing unfamiliar grains requires us to initially absorb substantial stock losses during the first few batches before demand stabilizes.

Our major fresh-produce challenge lies in marketing traditional vegetables and fruits. While we can store and sell grains easily, we sell conventional vegetables like carrots, beetroots and onions in disproportionately high quantities compared to traditional ones; for instance, we sell only about 2 kg of bitter melon a week, mostly to a few senior citizens. Traditional vegetables are rapidly going out of vogue because children refuse to eat them and parents stop buying them. Furthermore, highly perishable seasonal items like jamun, star gooseberries, mangoes and jackfruit face massive wastage, even though we continually share recipes and videos to encourage people to try them.

What can governments do to support businesses working with biodiversity?

First, we must bridge the gap between agricultural biodiversity and public health, treating conservation not as an added cost, but as a critical public health advantage. Given that we are the diabetic capital of the world, promoting unpolished millets, pulses and low-glycemic index (GI) red rices—such as Karunkuruvai and Kattuyanam, which have GIs below 55—presents a direct, natural solution to this crisis.

Second, we must decentralize public food procurement. The current Public Distribution System (PDS) relies on a centralized model that procures only specific rice varieties suitable for massive, centralized mills, entirely shutting out heritage grains. Government policy should instead support local procurement to supply local school midday meals, anganwadis and the Integrated Child Development Services (ICDS) programmes with diverse, highly nutritious heritage grains.

Third, we must actively support and procure pulses to restore both soil and human health. Our farmers currently do not grow enough pulses because they cannot afford to and we do not procure them, leaving our soils denuded. This forces us to import heavily sprayed pulses from Canada and Madagascar, which sit in ship holds for up to two years. We need a basic policy alignment that encourages combining pulses with grains to nourish both the soil and the human body.

Fourth, policy must shift towards consumer education and fair pricing, rather than demanding cheap food at the expense of organic farmers. The weakest links in our value chain are farmers and small, unprofitable organic retailers who have the least financial power. These groups cannot bear the sole responsibility for keeping food cheap. Policymakers should focus on sensitizing the public to the true cost of food and biodiversity.

Fifth, we must address the unintended consequences of procurement policies. For example, in Chhattisgarh, when the government began procuring coarse rice at a high Minimum Support Price (MSP), organic farmers abandoned difficult-to-grow scented varieties like Loktimachi, Badshah Bhog, Neem Phul and Lau Timaachi in favour of coarse rice. Scented rice must yield manifold income to incentivize farmers to continue cultivating it.

Finally, we must valorize heritage scented rices in the same manner as we celebrate traditional handlooms. Scented rices are a key part of our agricultural heritage and should be promoted as premium gifts for official visitors and international guests, much like how Gobindabhog and Tulaipanji have been gifted historically.

4. TWO BROTHERS INDIA FARMS, PUNE MAHARASHTRA

<https://twobrothersindiashop.com/>

Resource person: Satyajit Hange, co-founder

Tell us about your company and its business model

Two Brothers India Farms is, at its heart, an attempt to build a more equitable and sustainable food system by creating a viable market for the way Indian farmers have traditionally grown food.

My brother Ajinkya and I are fourth-generation farmers. We both spent several years in banking before returning to our ancestral village of Bhodani in Maharashtra in 2012. At the time, farming had become increasingly difficult to sustain economically, and we wanted to see if we could approach it differently...by rebuilding soil health, bringing back biodiversity and traditional farming practices, and finding a better way to connect what farmers grow with consumers.

We started very small, initially growing fruits and vegetables on our own farm and selling them through local markets. But we soon realized that simply producing good food wasn't enough. Farmers needed better markets and better value

A farmer showing Khapli wheat grain



realization. So we began moving up the value chain... turning farm produce and traditional ingredients into products such as cultured ghee, wood-pressed oils, flours, jaggery, honey, grains, pulses and other foods, and building a consumer brand around them.

That eventually became our farm-to-families model... working closely with farmers on how food is grown, bringing together indigenous and naturally grown ingredients from across India, adding value through careful processing and manufacturing, and taking those products directly to consumers through our own digital channels as well as marketplaces, retail and international markets. Today, we work with more than 5,000 farmer partners and serve consumers across India and in more than 50 countries.

India has an extraordinary wealth of indigenous crops, seeds, breeds, traditional food practices and agricultural knowledge. Much of this biodiversity survives because farming communities have continued to preserve it. Yet unless there is a viable economic market for these products, it becomes increasingly difficult for the next generation of farmers to continue cultivating them.

That is where we believe a business like ours can play a role. We try to create demand for these ingredients, give them a contemporary consumer proposition, add value and connect them to markets that farmers traditionally could not access.

Our work today is therefore about bringing together three things—healthy soil, economically viable farming and informed consumers. If we can make indigenous and biodiverse foods from native crops such as Khapli wheat, Kalanamak Rice, Waghya Rajma, black beans and desi soybean, traditional turmeric and indigenous Indian bees desirable to consumers while ensuring that a larger share of the value reaches the people who grow and preserve them, we also train farmers in regenerative/organic practices and working through FPCs.

That, in many ways, is the journey from Two Brothers Organic Farms to Two Brothers India Farms—from one 25-acre family farm in Bhodani to building a larger ecosystem around Indian farmers, Indian food and India's agricultural biodiversity. The next phase is about taking that ecosystem to more farmers and more consumers globally, while retaining traceability and the connection to the source.

What is your marketing strategy and what challenges do you face in promoting your products?

When we came back to farming, we initially sold what we grew ourselves—papaya, pomegranate and other fresh produce—through local mandis, roadside markets, farmers' markets and eventually retail stores. Those early years were incredibly important because they put us face-to-face with consumers. We were not sitting in an office trying to understand the customer through market research; we were standing at a stall, talking to people, answering their questions, and listening to what they were looking for.

One of our biggest learnings was that good food does not automatically create its own market. Particularly with traditional or indigenous ingredients, consumers may not know what the ingredient is, why it is valuable, how to use it or why they should pay a premium for it.

So education and creating awareness became a very important part of our business model.

We used our website, social media, farmers' markets, customer conversations and eventually our broader content ecosystem to tell the story behind the food... where it came from, how it was grown, who grew it, how it was traditionally processed and how consumers could use it. Social media, in particular, became an important way of creating interest and driving people to our D2C platform.

The second strategy was value addition. We realized that selling fresh farm produce alone had limitations, especially around shelf life, seasonality and market access. So we started converting farm produce and traditional ingredients into products with a longer shelf life and a higher value proposition—ghee, jaggery, flours, oils, pickles, nut butters, amlaprash, moringa and other pantry products. This allowed us to take something that might otherwise be sold as a commodity and build a differentiated product around it.

There were also instances where we deliberately created demand rather than follow existing demand. For example, when we started growing Khapli, I remember none of our urban consumers had ever heard of this ancient variety of wheat. There were no brands selling Khapli at that time. Similarly, when we began working with farmers producing date palm jaggery, there wasn't a strong consumer market for it in western India. Rather than telling the farmers to grow something else, we decided to educate consumers about the ingredient, its origins and its use. Over time, it became one of our bestselling products. That experience taught us

something fundamental—if an ingredient is important for the farmer and for agricultural biodiversity, sometimes the responsibility of the business is to create the consumer demand around it.

The D2C model then gave us the ability to take this much further. We launched our online platform in the 2017–19 period and began building a direct relationship with consumers rather than depending entirely on conventional distribution. In fact, our first website order was only Rs 413, and in the first month we sold for about Rs 29,000 online. We didn't spend on paid advertising for the first couple of years; we grew largely through word of mouth, social media, direct customer interaction and the strength of the story.

Trust was another critical part of creating the market. When you ask people to pay a premium for food, particularly clean foods or traditionally produced food, you have to give them a reason to believe you. Over time we invested heavily in farmer relationships, certifications, traceability, transparency around sourcing and, more recently, technology that allows consumers to understand the journey of a product from farm to fork.

Our approach to farmers also became part of the market proposition. We don't see the farmer simply as someone who supplies us raw material. Our farmer relationship teams work with farmers on farming practices, soil health, seeds, inputs and other challenges, while helping create more predictable market access. The model has expanded through farmer partnerships and FPCs.

There were many challenges. The first was consumer awareness. A lot of the ingredients we believed in were unfamiliar to urban consumers.

The second was the price equation. Traditional and small-scale production can be more expensive, while the Indian consumer market is highly price-sensitive. We had to explain why the product costs what it does and demonstrate value rather than simply asking people to pay a premium.

The third was scale. Once demand started growing, we had to build systems for sourcing, quality, processing, packaging, logistics and farmer relationships without compromising the principles we started with. As we have often said, the problems grow exponentially as the business grows.

And there was a fundamental challenge around changing the way people think about food. We were not merely selling another brand of flour, ghee or jaggery. We were asking consumers to think about soil, farming practices, biodiversity, traditional knowledge and the people behind their food.

What have we learnt?

If I had to distil the journey into a few lessons, they would be:

1. Don't manufacture demand only from the top down. Listen to what farmers and ecosystems are already offering.
2. Don't expect consumers to understand the value of an unfamiliar ingredient. Education is part of the product.
3. Value addition is critical. If we want indigenous crops and traditional ingredients to support livelihoods, we cannot always sell them as commodities. We need to create products, brands and experiences that capture more of their inherent value.
4. Build the market and the farmer ecosystem together. Creating demand without ensuring supply and farmer capability doesn't work; supporting farmers without creating a viable market doesn't work either.
5. And perhaps most importantly, we learnt that sometimes the most commercially interesting opportunity is not to sell what the market is already asking for, but to help the market discover something it didn't know it needed. This, I think, is particularly relevant to India's indigenous and biodiverse ingredients. If we can turn consumer curiosity into demand, demand into value addition, and value addition into better economics for the communities that preserve these crops and traditions, then the market itself can become an instrument for conservation and livelihoods.

What can governments do to support businesses working with biodiversity?

Based on our experience, the following three things are particularly important if we want agro-ecology practitioners and farmers working with biodiverse crops to earn better livelihoods:

1. Build markets, not just production systems

Many indigenous and biodiversity-based foods already exist, but market access remains limited. Public support for branding, value addition, market linkages

and consumer awareness can help farmers move beyond selling commodities and capture greater value.

2. Support Farmer Producer Organizations (FPOs) and local processing

Small farmers often struggle to access processing, packaging and distribution infrastructure. Investments in community-owned processing units, storage, quality testing and aggregation can make biodiversity-based products more commercially viable.

3. Create incentives for ecological outcomes

Farmers conserving native seeds, improving soil health, increasing biodiversity or adopting regenerative practices generate environmental benefits that are not currently rewarded. Policy mechanisms that recognize and incentivize these outcomes can make agro-ecology economically attractive.

4. Strengthen consumer trust and awareness

Consumers need more information about indigenous ingredients, traditional foods and the people who grow them. Public campaigns, school education and support for traceability and certification systems can help build confidence and demand.

5. Encourage research and documentation

India has extraordinary agricultural biodiversity, but much of the knowledge around traditional crops, food systems and farming practices remains undocumented. Greater investment in research and knowledge creation can help build stronger markets and wider appreciation.

Ultimately, if we want biodiversity to survive, it must also become economically viable. Farmers and communities that conserve biodiversity should be able to earn better incomes from the value they create, and markets have an important role to play in enabling that.

5. ARTOCARPUS FOODS PVT. LTD., KANNUR, KERALA

<https://www.linkedin.com/company/artocarpus-foods-private-ltd/home/>

Resource person: Subhash Koroth, managing director

Tell us about your company and its business model

Artocarpus Foods Pvt. Ltd was established with the objective of bringing greater value and visibility to India's rich biodiversity of food crops, particularly indigenous, underutilized and locally available ingredients. Our approach is centred on identifying nutritious and culturally important food resources that have traditionally remained outside mainstream markets, and developing them into products that are relevant to contemporary consumers.

We work across the value chain—from sourcing and aggregation to processing, product development, branding and marketing. The idea is not simply to sell a traditional ingredient as a commodity, but to create higher-value products and markets around it.

This approach can create better income opportunities for farmers, small producers and communities who conserve and use these crops, while also encouraging continued cultivation and conservation of agrobiodiversity.

Jackfruit tree with fruit



Our business model therefore combines value addition, market development and biodiversity conservation. We see the market as an important mechanism for making indigenous crops economically viable, provided that value is distributed more equitably across the value chain.

We purchase our raw materials from approximately 18–20 farmers, depending on seasonal availability and supply. Each farmer's earnings vary based on the quantity and type of raw materials they supply, so we do not have a fixed average income figure per farmer.

We purchase more than 30 tonnes of jackfruit per month, and this quantity may increase depending on customer orders and market demand. We use the jackfruit to prepare a variety of products, including thermally processed jackfruit pieces, jackfruit pulp, jackfruit nice, jackfruit crush, premium jackfruit pulp and frozen jackfruit pulp.

We prepare approximately 10 tonnes of jackfruit pulp per month. To maintain the pulp's quality and shelf life, we use different processing and storage methods, including thermal processing with hot filling, retort processing, and freezing. These methods help preserve the pulp and ensure that it remains suitable for use over an extended period.

Our jackfruit products are supplied to local customers as well as reputed companies. Our buyers include Hatsun Agro Products, Milky Mist, Cavinkare, Elite, Lazza Ice Cream and Hassan Dairy. We also export our jackfruit products to international markets.

We create awareness about our jackfruit products through direct sales, word of mouth, customer networks, social media, exhibitions and participation in food and agricultural trade fairs. We also build awareness by working with reputed companies and distributors, which helps us reach a wider customer base and promote the quality and versatility of jackfruit products.

Apart from jackfruit, we work with a variety of fruits and ingredients. Our products include mixed fruit, pineapple bits, banana pulp, chikoo pulp, frozen avocado pulp, custard apple pulp, mango pulp, tender coconut pulp and several other fruit-based products.

What is your marketing strategy and what challenges do you face in promoting your products?

One of the biggest challenges with indigenous and underutilized ingredients is that the problem is often not production alone—it is the absence of a developed market.

Consumers may be unfamiliar with the ingredient, its nutritional value, or how to incorporate it into their daily diets. At the same time, farmers may not have sufficient confidence to cultivate it at scale unless there is a reliable market.

Our approach has therefore been to work on both sides of the equation. First, we focused on understanding the ingredient and its potential. We looked at its traditional uses, nutritional characteristics, availability, seasonality and the communities associated with it. This helped us identify where value addition could make the biggest difference.

Second, product development became an important part of market creation. Instead of expecting consumers to purchase an unfamiliar raw ingredient, we explored ways of presenting it in convenient, contemporary and consumer-friendly formats. This helped bridge the gap between traditional food resources and changing consumer preferences.

Third, storytelling and consumer education were critical. For biodiversity-based foods, the story behind the ingredient is an important part of the product. Consumers increasingly want to understand where their food comes from, who produces it and why it is important.

Communicating the nutritional, cultural, ecological and livelihood dimensions helped us create greater interest.

Fourth, we had to build trust in the market. Quality consistency, food safety, packaging, shelf life and reliable supply are particularly important when taking a lesser-known ingredient into mainstream markets. These areas require considerably more attention than they might for established commodity crops.

There were several challenges along the way. The first was consumer awareness. A product can be nutritionally valuable and environmentally important, but that alone does not guarantee demand.

The second was supply-chain consistency. Indigenous crops are often produced in smaller quantities, across dispersed locations and with considerable seasonal variation. Aggregation, quality control and standardization can therefore be difficult.

The third was the cost of processing and market development. When volumes are small, processing, packaging, testing, certification and logistics can make the final product relatively expensive.

Another challenge is that the existing agricultural and food ecosystem is largely designed around mainstream crops and commodities. Indigenous and biodiverse foods often do not fit neatly into existing procurement, processing and distribution systems.

One of our key lessons has been that creating a market for biodiversity-based foods requires more than simply producing a good product. It requires investment in consumer awareness, product development, processing infrastructure, supply-chain organization and storytelling. Another important lesson is that farmers should not be viewed merely as suppliers of raw material. If the market grows, mechanisms need to ensure that producers and communities receive a meaningful share of the additional value created through processing and branding.

Finally, we have learned that patience is essential. Building a market for an unfamiliar ingredient takes time. It requires experimentation, consumer feedback and continuous refinement of both the product and the business model.

What can governments do to support businesses working with biodiversity?

In my view, policy support needs to address the entire value chain rather than focusing only on production.

1. Support for value addition at the local level

There is a strong need for small-scale processing, drying, milling, storage, packaging and other facilities located close to production areas. This can reduce post-harvest losses and enable producers to capture more value locally.

2. Better market linkages and institutional procurement

Government institutions, schools, hospitals, public distribution programmes and other large institutional buyers could play an important role in creating predictable demand for suitable indigenous and biodiverse foods.

3. Recognition of underutilized crops within agricultural policy

Many indigenous crops do not receive the same attention, research support, extension services or market infrastructure as major crops. They should receive greater recognition of their nutritional, ecological and climate-resilience value.

4. Support for product development and entrepreneurship

Small enterprises working with biodiversity-based foods need support not only for machinery but also for product development, food testing, packaging, branding, market research and access to markets. These are often the areas where early-stage enterprises face the greatest constraints.

5. Easier access to food safety and regulatory support

For small enterprises and farmer-led organizations, navigating food regulations, testing, labelling and certification can be expensive and technically challenging. Appropriate technical assistance and affordable testing facilities would be very valuable.

6. Stronger producer organizations and aggregation systems

Farmer collectives, FPOs, cooperatives and community organizations can help aggregate production, improve quality and strengthen farmers' bargaining power. However, these organizations also require professional support for business development and market management.

7. Mechanisms for equitable value sharing

As demand for indigenous ingredients grows, there should be mechanisms that ensure the communities that have conserved and developed knowledge around these resources are not left behind. Market development should translate into better returns for farmers and custodians of biodiversity.

8. Public investment in awareness and consumer education

There is a strong case for campaigns that highlight the nutritional, cultural and ecological importance of indigenous foods. Creating demand is ultimately as important as increasing production.

Overall, I believe India has a significant opportunity to build a new food economy around its indigenous and biodiverse ingredients. Such an economy can simultaneously contribute to farmer incomes, nutritional diversity, climate resilience, rural employment and conservation of agrobiodiversity. The key is to move beyond treating these crops as niche or traditional products and instead recognize them as valuable resources for the future food system.

6. **TARU NATURALS PVT LTD, NAVI MUMBAI, MAHARASHTRA**

<https://www.tarunaturals.com/>

Resource person: Ruchi Jain, founder/CEO

Tell us about your company and its business model

After completing my master's degree, I joined the government and spent four years working on World Bank projects for the Ministry of New and Renewable Energy (MNRE) in Delhi. While travelling across India for these projects, I met numerous tribals and farmers who lacked market linkages, exposing a deeply broken supply chain.

Several personal and spiritual threads came together to inspire the creation of Taru in 2016. My mother is a naturopathic doctor, and I grew up eating traditional foods like ragi and jaggery. We even grow food in our backyard in Mumbai where she grows local trees and seasonal produce. Practicing yoga and meditation also taught me that making an impact on the planet starts from within; if we reduce our internal needs, our physical footprint on Earth naturally decreases. Finally, my mentor, Dr Prabhakar Rao from the Art of Living, taught me the true science of

Manipuri black rice



natural farming. He has saved around 500 indigenous seed varieties, which deeply opened my eyes to the importance of seed conservation. Taru Naturals is my fifth business attempt—I had previously explored solar microgrids, agricultural processing machinery with buyback schemes for produce, and clean cookstoves.

I started in 2016 with a basic B2C model, delivering fresh, naturally grown produce directly from villages to households in Mumbai. However, without robust systems, much of the fresh produce spoiled. To stabilize operations, I pivoted to dry, shelf-stable ingredients, specifically jaggery and turmeric (haldi). I personally wrapped our first 20 kg of Nasik jaggery in yellow chart paper to sell at a local bhajan-satsang. We also began sourcing high-quality turmeric and jaggery powder from Suresh Desai, the pioneer farmer who grew sugarcane organically. We also bought from various tribal and forest producers in our network supporting market linkages by buying and selling.

Our first major breakthrough occurred at the Yellow Ribbon Fair in Pune, where we completely sold out 500 kg of produce. We bagged our first black rice export order for 500 kg from Camellia Panjabi, who runs Michelin star restaurants in London.

To build a sustainable model, I learned from Unlimited India, Powered Accelerator and Women on Wings. These structured frameworks helped us design our Taru Super Farmer model. Today, we have built a community of approximately 500 super farmers. These individuals do not act as landlords; rather, they serve as community leaders, mentors and coaches who oversee other farmers, with each leader overseeing 10–500 farmers. Through this model, we provide stable, month-on-month orders and timely payments. By pruning non-paying clients to ensure financial health, we concluded last year with an annual turnover of Rs 1.5 crore. We are now a profitable, stable business with our own warehouse, factory and accounting systems, directly impacting the lives of 1,200 small-scale farmers.

Our model is about micro detailing. We are a small company, but our model is solid now. We have a good warehouse, good factory, stable staff and stable accounting systems. And now we can scale. It has taken us a lot of time to get here, which a lot of people don't realize.

What is your marketing strategy and what challenges do you face in promoting your products?

Our marketing strategy relies on deep integration and rigorous market mapping. Before we even ask a farmer to grow a crop, we conduct extensive market surveys,

speaking directly with chefs and industry professionals to assess an ingredient's true commercial potential. We actively manage the minute details of the supply chain to ensure quality and commercial viability. This includes ensuring farmers have access to pure seed varieties, providing them with working capital to buy those seeds annually, teaching them to package goods professionally in double-layered gunny bags, and coordinating with Safe Express logistics to pick up produce directly from remote villages. We also conduct three-day training programmes in natural farming, during which we perform biodiversity surveys to discover what crops were historically grown and sold in each region. These training sessions are also where we identify and recruit our community-leading super farmers. Today, our sales are heavily geared toward bulk B2B supply, with 90 per cent of our market consisting of bulk supply to restaurants and corporate buyers, while the remaining 10 per cent is retail driven through our website, Amazon, curated gift hampers and ten partner retail stores.

Despite our successes, we face severe supply chain and marketing challenges, starting with the deep misalignment between Farmer Producer Organizations (FPOs) and urban or international markets. When FPOs and rural communities attempt to sell products, they often do not understand what quality or export standards entail. For example, when exporting black rice to a Michelin-starred restaurant in London, we had to guarantee absolutely zero stones, weevils, husk or cigarette butts, alongside uniform grain size and no mixing of different varieties. Rare ingredients also require intense, delicate agricultural protocols to preserve their market-friendly characteristics. For instance, black rice loses its jet-black color if it is not transplanted at the correct time, and it requires a specialized rolling mill to keep the grain black instead of white or brown. This difficulty is compounded by severe infrastructure deficits in remote tribal regions; for example, Nagaland still lacks a single Sortex facility for rice, which makes crop cleaning incredibly difficult.

Furthermore, manual processing drives up costs and compromises consistency. In highly genuine cooperatives like Mahila Umang in the Himalayas, women manually destone and clean millets, processing only 20–30 kg a day, which drastically increases the final product's cost and affects consistent quality. Sourcing forest produce is also heavily compromised because joint forestry management auctions are plagued by corruption, making it extremely difficult to establish transparent supply chains. In trying to source mahua honey from Jharkhand and Chhattisgarh, we struggled to find a genuine partner group and faced cheating and rip-offs. FPOs and local farmers also struggle with a lack of basic business skills, requiring intensive training in accounting, billing, proper

food packaging and simple professional communication such as notifying clients about availability. Finally, as organic businesses grow, they face a severe scaling versus standardization dilemma: the pressure to meet strict FSSAI regulations often forces growing companies to abandon direct sourcing from small farmers in favor of centralized, industrial manufacturing.

What can governments do to support businesses working with biodiversity?

To drive genuine, structural changes in rural livelihoods and agricultural supply chains, several critical policy interventions are required.

First, government and research institutions must prioritize rigorous market intelligence and mapping because there is currently a total lack of market information on the ground, without which rural producers cannot succeed. We are starting this vegan ghee project and we are looking for groups in Jharkhand and Chhattisgarh. But we haven't found a group yet who can provide good mahua.

State livelihood missions must be actively modified to include supply chain mapping and market intelligence to create meaningful commercial linkages. Which farmer is growing? Where is the collection centre? Are they mixing or not? Do they know about the germplasm?

We must also establish Product Innovation Cells within the Livelihood Mission. Currently, government livelihood melas are flooded with similar products because training programmes lack differentiation, leading everyone to produce the exact same items, like papad. They're making the same papad because Lizzat Papad succeeded. Even after training, everyone does the same production of the same product. There's no innovation. Training needs an upgrade. There's no design colleges involved, industry input is missing. By creating Product Innovation Cells that involve chefs, design colleges, well-travelled industry professionals and Gen Z entrepreneurs with modern packaging ideas, we can inject genuine design and product innovation into these rural enterprises.

Furthermore, policy should heavily prioritize training. Empowering these groups with professional training in branding, business accounting and communication is vital to their commercial success. To reduce manual labor costs and improve quality, the government must support the deployment of inexpensive, localized processing technology, such as providing cooperatives with localized millet-cleaning and sorting machinery. They also need training in accounting and how to make bills. They also need training to be more professional. This is as simple

as picking up a call, even if you are at a wedding, and letting the person know you will call back.

At the start of any agricultural mission, policies must also safeguard genetic purity and germplasm to prevent variety mixing; for instance, the Lakadong Turmeric Mission faced major issues because the turmeric varieties were genetically mixed, highlighting the critical need for pure germplasm banks. We must also reform Joint Forestry Management systems to address corruption in forest auctions and train forest-dwelling tribals in proper primary processing, such as slicing and shade-drying turmeric to preserve curcumin, so they do not lose value by selling raw, muddy goods. Finally, for regions practising diverse agroforestry models—such as growing cacao, vanilla and pepper alongside trees—the government should simplify carbon credit project certification to reward farmers for carbon sequestration and create a powerful new revenue channel.

7. WILD HARVEST INDIA, RANCHI, JHARKHAND

<https://wildharvestindia.com/>

Resource person: Rishabh Lohia, founder

Tell us about your company and its business model

Wild Harvest India is an early-stage social enterprise focused on the ethical harvesting, processing and marketing of food-grade mahua flowers. We seek to shift the perception of mahua from being primarily associated with liquor to being recognized as a nutritious and culturally significant food ingredient.

The company was launched in 2024 and grew out of our work under Ekastha Foundation, an NGO I founded in 2016 to support marginalized communities in rural Jharkhand through education, environmental conservation, music and sustainable livelihoods.

Our work on mahua began in the Jonha region in 2024 with 120 trees and 40 households. Mahua trees are community-owned and are embedded in the cultural and everyday life of communities in the Chota Nagpur Plateau. Mahua flowers have historically been an important famine food because they can be stored for long periods and are available during a leanest period for agricultural crops.

Mahua flowers drying on a machaan



Mahua has suffered from a colonial-era association with country liquor. The Bombay Abkari Act (1878) and Mhwoa Act (1892) restricted the collection, storage and processing of mahua flowers. This history, combined with limited recognition of indigenous knowledge, has contributed to the perception of mahua primarily as an intoxicant rather than as food.

Wild Harvest's intervention began partly in response to problems with conventional harvesting and drying. Traditionally, communities burn leaf litter to make it easier to collect fallen flowers from the ground. This not only results in forest fires and damages leaf litter and soil microorganisms, but also contaminates the flowers collected from the ground. The flowers are hygroscopic—meaning they retain water—and thus need to be dried to be consumed throughout the year. Usually, the flowers are dried by spreading them on the roads, where they become further contaminated and are often exposed to unseasonal rain, which can further reduce quality, resulting in mouldy or blackened flowers that are sold at low prices. These flowers are good only for preparing liquor. While large quantities of mahua are available at lower prices, the quality does not meet the standards required for food use.

To ensure better-quality flowers and support the community, Wild Harvest introduced harvesting nets which can be placed underneath mahua trees to catch the flowers. This reduces the need to burn leaf litter, protect the soil ecosystem, reduces harvesting time and heat stress, and improves the quality and quantity of flowers collected. We have also set up decentralized drying units, where groups of four to five households use elevated platforms, or machans, instead of drying flowers on the ground or roads. In 2025, the company also introduced a dehydrator to increase capacity.

These interventions have helped save more than 34,000 work hours, prevented approximately 5 metric tonnes of mahua from going to waste, and involved around 320 households across nine districts in three states. In 2026, Wild Harvest paid community members up to Rs 80 per kg, which is 100 per cent above the prevailing market price for food-grade mahua.

The company's engagement with communities extends beyond procurement. We noticed that the food-use of mahua was disappearing from many of the communities we worked with: many of the people who harvested it had never tasted it and elderly community members had also shared that they rarely eat it like they used to. We thus started to document indigenous recipes, conduct cooking workshops, encourage communities to retain some mahua for their own consumption, and we

support four self-help groups (SHGs) that have begun making mahua products. It has also collaborated with NGOs, including Pradan and WWF.

What is your marketing strategy and what challenges do you face in promoting your products?

Wild Harvest's marketing strategy is primarily education-led, because of what the company identifies as a widespread misconception that mahua is only an intoxicant. The company aims to demonstrate that mahua is an edible ingredient and to introduce it to consumers in a contemporary, urban context.

Our marketing activities include digital marketing; experiential marketing where we organize and participate in offline events. We have travelled across the country, to many cities to showcase mahua.

The team has visited grocery stores and acted as salespersons for several days to introduce consumers to the product. We have also set up stalls at culinary events, showcasing the ingredient to people who had never heard of it and letting them try it themselves.

Storytelling and publications are essential to our work. We recently published *Mahua Matters* Issue #01, a publication in collaboration with Edible Issues that showcases different dimensions of the tree, its fruits, and its flowers. We also document and cultural significance of the tree through documentaries and documenting indigenous recipes in Jharkhand, Chhattisgarh and Madhya Pradesh in collaboration with Cicada Creations. We have had success in engaging with the community by conducting cooking workshops. We also work constantly with communities to revive mahua within local food systems. The company sees storytelling as an important part of creating a new market for mahua. Its objective is not only to sell the product but also to communicate its cultural, culinary, and community dimensions.

Wild Harvest also sees itself as part of a broader emerging mahua ecosystem. We want to bring mahua to the plate, not just the bottle.

The biggest challenge in increasing sales is low consumer awareness and persistent misconceptions. Consumers at events are wary of consuming the flowers and sometimes ask whether eating mahua will make them intoxicated. This makes consumer education a necessary component of marketing. Another challenge is the absence of an established market for food-grade mahua. High marketing costs are a challenge. The ingredient requires substantial investment in consumer

education and storytelling, while the relatively high cost of good-quality food-grade mahua makes it difficult to break even.

There are challenges in market linkage for community-based value addition. For example, SHGs may produce items such as laddus and pickles, but their ability to sell these products is limited by constraints relating to capital, marketing, geography, customer management and technical food processing.

This means that setting up processing facilities without establishing a market can lead to infrastructure becoming unused. The communities need technical expertise, appropriate recipes and standard operating procedures for food processing and value addition followed by marketability. They need sustained hand-holding.

What can governments do to support businesses working with biodiversity?

When it comes to policy, there's great scope for government intervention to help scale mahua as food.

First, we need standards for food-grade mahua. The majority of mahua flowers available in the market, even for edible purposes, are of poor quality. They're often affected by fungus, blackening, contamination or inadequate sorting and grading, which can create a negative impression of the entire ingredient.

Second, awareness and education campaigns around mahua as food and its nutritional benefits could help larger audiences discover and learn about its nutrition. Traditionally, indigenous communities have recipes for the flower, given to children when they're sick or to pregnant women or new mothers to support fetal development and lactation. We've also found that it has been an important food for workers in the field, as it is calorie dense and nutritious, and provides energy for a day's work.

Third, there's great scope for more research on mahua's benefits. There is limited research on mahua's nutritional benefits and support for academic research in this scope will also help build trust for the flower's food use.

8. OOO FARMS, RAJKOT, GUJARAT

<https://ooofarms.com/>

Resource person: Shailesh Awate, co-founder

Tell us about your company and its business model

Shikha Kansagara and I established OOO Farms in 2017. We started our work with native and heirloom seeds, which are disappearing from India. We see ourselves more as a community or an organization working to conserve and revive India's agricultural biodiversity.

At one time, 21 per cent of the world's crop diversity was in India. Now it has fallen to just 8 per cent. Our farmers used to be excellent, and our selection procedure was one of the best in the world. Because of this, we have such a wide variety, not just for rice or wheat, but even maize, which is not native to us.

At OOO, we search for native seeds across different regions, particularly varieties that are still being preserved by farmers and communities. Once we find them, we conserve them scientifically while maintaining their genetic purity. For example, in rice, we document more than 60 characteristics of a variety from sowing to

An ear of rice grown in Maharashtra



harvesting and post-harvesting to ensure that the variety remains genetically true. But conservation alone is not enough for us. We also want to revive these varieties, which means bringing them back to farmers' fields and eventually to people's plates. Today, we conserve around 4,357 varieties of rice, 550 varieties of wheat, and more than 700 varieties of maize. Every year, these varieties are cultivated again so that they remain alive and available. Over the last eight years, we have distributed around 19 tonnes of seeds to farmers completely free of cost. These varieties aren't just for taste or enjoyment. They were the answer to the difficulties our farmers face, such as floods.

For the last four years, OOO has been a Farmer Producer Company. Before that, it was a proprietorship. The farmers are the owners and decision-makers. They decide what to grow, how much to grow, and what price to set. We do not control them, and if a farmer receives our seed and later wants to sell the produce to somebody else, they have every right to do so. Our model is also designed to protect farmers from market risk.

Whatever quantity the farmers produce from our seeds, we buy the entire quantity. If the market requires only 10 kg and the farmer produces 50 kg, we still purchase all 50 kg. If we can sell only 10 kg, the remaining 40 kg becomes our loss, not the farmer's loss. We have created a separate proprietary entity to absorb these losses so that farmers do not carry the risk.

We also work with farmers to understand the real cost of production. Earlier, farmers would simply look at the market price and sometimes even try to sell below the market price because they felt that it was their own organization. We had to explain that their labour, water, land degradation, crop failure and other risks must all be included in the price. Once these costs are considered, the farmer should decide what price is appropriate. In many cases, the price they receive is three to twelve times higher than what they would get in the regular market.

At present, we sell around 150–200 tonnes of produce a year. We do not have external investors because the kind of long-term investment required for biodiversity does not fit easily into conventional investment models. The initial investment and losses have largely been supported through our own resources. We see these not simply as losses but as an investment in building a completely new market around biodiversity. Someone has to bleed in the beginning because no one has done this before. We took a calculated loss. In our calculations, we also know when this will give profit and when it will become very big. We have designed it that way.

India is already biodiverse by default and we don't have to work too hard on it. Though much has been ruined, a lot is still preserved. The future belongs to biodiversity. Our country lacks the vision to see this. Outside India, entrepreneurship in biodiversity is already starting to emerge. But they do not have a conducive environment. That kind of environment definitely exists in India.

What is your marketing strategy and what challenges do you face in promoting your products?

When we started in 2017, almost nobody knew about native seeds or native grains, and these products were hardly available in the market. If you went to buy rice, you would generally find only a few familiar varieties such as Basmati or Kolam. So our first challenge was not selling the product; it was creating awareness about the product. We tell people what they are eating, what we used to eat, what we have lost, and whether we can bring it back. We explain that every rice variety is different and that every variety has a purpose. Some varieties are steamed, some are used for rotis, some for kanji, and some have traditional medicinal uses. We take this information to consumers and make the products interesting and relevant to them.

We also use nutritional profiling. We conduct nutritional comparisons and communicate the nutritional qualities of different rice, millet and wheat varieties. Sahyadri Black rice has more iron than any other rice—meaning 30 times more iron than the Basmati you eat, or 200 times more calcium in these native rices. The product is therefore not marketed simply as old rice or traditional food. We tell people the story behind the variety, where it comes from, what makes it different, how it can be cooked, and why it is relevant.

Festivals are another important part of our strategy. We organize events such as the Wild Food Festival, where people can see and taste forest vegetables and other foods they may never have encountered before. The festival becomes a space for discussion and learning. People come, experience these foods, and then talk about them with others. Awareness costs money. We do not consider the remaining amount a meaningless loss. For example, we spent around Rs 15–20 lakh on a single Wild Food Festival, while our ticket collection was only about Rs 4–5 lakh. Five hundred people came, experienced the food, learned about it, and will potentially tell other people. That is the cost of creating awareness.

Retail has helped us create a market. For example, Food Square now stocks

around 50 varieties of our rice. We pay the least amount of commission in Food Square; they have never taken such a low commission from anyone else, and they approached us themselves. Even with that minimal commission, we are the second-highest seller of our grains there. Because they have a story, they have a truth, they can tell that truth. They can deliver genuine truth, genuine rice, and genuine millets to the people.

Eight years ago, people did not know these varieties existed. Today, they are available in a mainstream retail environment. Around 80 tonnes of our total annual sales go into the market under the OOO Farms label, and our products have developed a strong consumer base.

The important thing is that we are not trying to sell biodiversity simply because it is fashionable or because it has become a brand. People buy it because they can taste and experience the difference. That is what creates the market. Today, OOO Farms stands in the market, people know us, a lot of turnover is happening. All of this is because people who eat this food can understand that it is very different. Today, our rice is going to homes of businessmen, cricketers and film stars. It goes there because after eating it, the effect, the taste, and the overall feeling after consuming it is very, very different. Even people from lower-income households are buying these products. Around 17 per cent of our delivery addresses are in slum areas. Some of these consumers come from regions where these varieties were traditionally grown. They know the food and actively look for it because they associate it with strength and well-being.

Once farmers become confident about the market, production can grow much faster than our ability to sell. We experienced this with Krishna Kamod rice. One year, around six tonnes were produced, but a major flood destroyed the crop after harvest. We still bought all six tonnes from the farmers, even though it was ruined. The farmers were shocked because they were prepared to throw it away or put it back into the soil. The following year, because they had the assurance that somebody would take care of the crop, farmers produced around 42 tonnes. Our market capacity at that time was only about six tonnes, but we bought all 42 tonnes. We could sell only about six tonnes through our own market and had to sell the remainder through wholesale channels. But that experience created something much more valuable: farmers developed confidence in the system.

We give high prices—anywhere from three times to twelve times what they would get in the regular market—and this is the reason that farmers don't sell to anyone else.

That is one of our biggest lessons. If you want farmers to move towards biodiversity, you have to remove the fear of failure. Farmers will diversify when they know that somebody will stand with them if the crop fails or if the market is not immediately available.

The other lesson is that you cannot expect biodiversity-based businesses to become profitable immediately. Someone has to make the initial investment. We have deliberately taken calculated losses because we know we must build awareness before the market can grow. We have also deliberately kept our procurement prices high because if we start buying from farmers at conventional rates, we would be failing our own concept. We do not have any external investors, and we are supported by our own private funds.

What can governments do to support businesses working with biodiversity?

My request to the government is very simple: please do not interfere unnecessarily in agriculture and food. I am not talking about one particular government; I am talking about governments in general. Farmers understand what to grow. They have been doing this for generations. India was once extraordinarily biodiverse, and our farmers developed thousands of varieties through their own selection systems. When agriculture moved towards monoculture and standardized seeds, we lost a tremendous amount of that diversity. We should therefore create policies that protect farmers' ability to conserve, exchange and cultivate native seeds rather than replacing their knowledge with standardized systems.

We also need to recognize that the farmers who still hold this knowledge are getting older. Many farmers who still know varieties and agricultural practices are over 50 years old. Once they are gone, it will be difficult to recover this knowledge. We need mechanisms that support these farmers and help transfer their knowledge and seeds to the next generation.

Sixty-two per cent of employment in India comes from the agricultural sector. We are the second-largest producer of food grains in the world, one of the largest agricultural forces in the world, and the second-largest agricultural producer in the world, but we contribute only 7 per cent to the GDP. This equation will change when people spend on food.

The government should also create an environment where biodiversity-based enterprises can survive for the long term. Social entrepreneurs working in this

space cannot always provide returns in six months or even two or three years. Biodiversity requires generational investment. Investors need to understand that they may have to wait several years before the market becomes viable. Patient capital is therefore extremely important. There are no angel investors or farsighted investors around. They will ask you for return on investment (ROI) in six months. They will ask for scalability in six months.

There also needs to be better support for farmers against crop failure. In our experience, conventional crop insurance has not provided adequate security to many farmers. We have tried to create that security ourselves by guaranteeing that we will purchase the farmers' produce. If farmers know that someone will take the crop even when the market fails, they become much more willing to grow diverse varieties.

Government policy should also help create markets for biodiversity-based products. These products are often produced in smaller quantities and require aggregation, processing, storage, distribution and consumer education. Farmer Producer Companies and community-based organizations could be supported to perform these functions.

Most importantly, we need to change how we think about food. Agriculture provides employment to a very large proportion of the population, yet farmers capture very little of the value of the food system. People spend money on mobile phones, data, travel, real estate and many other things, but food is often treated as the cheapest possible commodity. If consumers are willing to spend more on good food, and if that additional value reaches farmers, agriculture can become much more economically viable.

India already has enormous biodiversity. We need to protect what is already here, allow farmers to use their knowledge, create markets for these products, and help consumers understand their value. I believe the future is in biodiversity. We still have the seeds, we still have the farmers who understand them, and we still have the opportunity to make biodiversity economically valuable. The challenge is creating the right environment for that to happen.

9. Y NOT FOOD PRODUCTS, GUWAHATI, ASSAM

Website: <https://ynotfoodproducts.com>

Resource person: Kanak LataDeka, founder

Tell us about your company and its business model

In 2019, I started my microenterprise under the name YNot Food Product in Guwahati, Assam. My core vision and the driving idea behind this venture has always been to promote the authentic, traditional tastes of Assam and the wider Northeast—such as our unique pickles, spices and indigenous food products—to every Indian household and eventually to global markets. We focus strictly on utilizing the native vegetables and raw materials found in Assam and neighbouring Northeastern states like Arunachal, Manipur, Nagaland and Meghalaya.

I began this journey processing small batches of seasonal fruits and vegetables alongside three or four local ladies whom I made sure were properly trained in the basics of food processing at the Institute of Food Processing. Today, my team has grown to almost ten permanent, trained employees. I also employ about five or six local women part-time; they are mothers who drop their children off at school and come to work for us for a half-day shift doing processing and packaging. When we receive massive orders, we hire additional temporary workers to manage the load.

Bamboo shoots used as food



Rather than operating in a full-fledged factory, I set up an independent house nearby as our dedicated processing space. As a female entrepreneur balancing my household, my child, and my business, having this processing setup just one kilometre from home is extremely convenient. This processing house is equipped with semi-automatic machinery, including a dryer, a vegetable cutter, a pouch-packaging machine, sealers and printing devices. While we experience seasonal fluctuations due to weather conditions like rainfall anomalies, we are a profitable microenterprise and do not operate at a loss.

Our specialized product line is closely tied to the rich biodiversity of our region. One of our highest-selling products is a natural mouth freshener made from Karbi Anglong ginger, which holds a GI tag. Unlike typical ginger churan, we don't add any masalas; we simply process the ginger with lemon juice and rock salt, then dry it. We also make pickles, olive in brine and specialized garlic-and-king-chilli chutneys using the fleshy, delicious local Indian olives we call julfai.

Fermented and dry bamboo shoot is another high-selling item and a vital summer staple in the Northeast. We source our bamboo shoots directly from local tribal communities who possess traditional expertise in its collection and long preservation process. Additionally, we make an innovative pickle out of banana flowers, which are typically only consumed locally in curries or fried forms. We purchase thousands of banana flowers collectively from local women vendors at weekly markets like the Beltolahaat. To ensure my business survives, we purchase these raw materials in bulk below standard retail rates. For instance, if a banana flower costs Rs 30 in the market, we buy it collectively for Rs 20–22. This bulk-buying system actually benefits the vendors because they get guaranteed, immediate sales. They do not have to wait at the market all day, allowing them to return home and focus on other tasks.

What is your marketing strategy and what challenges do you face in promoting your products?

When I first began marketing my products, I faced incredible struggles. I personally visited small neighbourhood mom-and-pop shops and supermarkets, offering samples of our products to build initial trust. Over time, this grassroots effort paid off, and physical retailers began placing regular orders with us. We eventually expanded our footprint online, listing our products on major national e-commerce and grocery platforms like Flipkart, Amazon, Big Basket and Instamart. Our modern promotional strategy includes conducting free sample distributions at physical supermarkets or specific neighborhoods during weekends. We also run targeted Instagram ads to announce new product launches and to share the

behind-the-scenes stories of how we handcraft our products, which is absolutely vital in this digital marketing era. Although my business website is currently inactive because the domain renewal is pending, I plan to reactivate it with a direct customer payment window by November or December [2026] to drive direct-to-consumer sales.

Scaling our production has brought major operational and market challenges. In our early days, we cut our ginger manually, which gave the mouth freshener a highly refined, attractive look. When I researched and introduced a cutting machine to handle larger volumes and save time, the mechanized cut resulted in a much rougher appearance, which led to initial complaints from our customers. Fortunately, we refused to change our ingredients or compromise the taste, and once customers realized the quality was identical, they accepted the visual change and our sales recovered.

A far more critical and systemic challenge has emerged recently with the rapid rise of quick-commerce platforms like Blinkit. Because consumers can now get orders delivered to their doorsteps in ten to fifteen minutes, foot traffic has plummeted, forcing many supermarkets and local kirana stores in Guwahati to close down completely. This shift has directly affected our sales. Even worse, when these supermarkets shut down, they defaulted on their payments to us. Because we had already paid government GST on those invoices, these closures resulted in a direct, painful financial loss for my business. Transitioning to quick-commerce carries immense entry barriers for a microenterprise like mine. For example, Blinkit charges a flat listing fee of 25,000 per individual stock keeping unit (SKU). For a business that has to pay rent, electricity, and support ten to eleven employees who have been with me since day one, paying such high listing fees with no guarantee of sales is financially impossible. Despite these massive hurdles, I have learned that our strength lies in our authenticity; large corporate quick-commerce giants do not manufacture traditional, specialized items like our king chilli or bamboo shoot pickles, giving us a highly valuable competitive edge.

What can governments do to support businesses working with biodiversity?

Based on my experience navigating this shifting market, several crucial policy interventions and support mechanisms would help agro-ecology and biodiversity-based food practitioners thrive. First, I believe the government must intervene to regulate quick-commerce giants. There should be mandatory listing fee discounts or concessions for local micro-entrepreneurs so we are not entirely priced out of the digital economy. Alternatively, the government could establish a dedicated

intermediary body. This government organization could purchase authentic traditional products directly from local entrepreneurs and use its institutional leverage to list and distribute them through platforms like Blinkit, sparing small businesses from prohibitive upfront listing costs. Furthermore, while there are abundant government-led training sessions, there is a severe lack of practical support on commercial execution. Entrepreneurs like myself need structured, subsidized guidance in high-cost areas such as formal quality testing, professional packaging materials, and strategic sales and marketing.

Finally, policy and promotional frameworks should actively champion our highly underrated, abundant regional crops, which hold incredible commercial potential. For example, we have a massive abundance of *Garcinia* (locally called thekera), which has immense untapped potential to be processed into commercial squashes, juices, or summer powders. Similarly, underutilized crops like elephant apple (outenga) and roselle (tenga mora) deserve dedicated promotional attention. Roselle is especially promising; its bright red colour and nutrient-rich profile make it ideal for teas, pickles, jams and squashes. In developing these market promotion strategies, policies should clearly distinguish between highly intense, aromatic products like bamboo shoot and king chilli—which have a strong aroma and spice profile best suited to specific, targeted regional markets—and milder, highly adaptable products like roselle, olives, and *Garcinia*, which are perfect for pan-India market expansion.

10. MY PAHADI DUKAN, ROORKEE, UTTARAKHAND

<https://mypahadidukan.com/collections/all-products>

Resource person: Himanshu Dua, co-founder

Tell us about your company and its business model

The company was founded in 2021, during the second wave of COVID-19, while the four of us were part of the Naropa Fellowship in Ladakh, an entrepreneurship programme focused on the Himalayan region. The initial idea was to support small Himalayan businesses with good products that were struggling to access markets because of the disruption caused by the pandemic and their limited online presence. We therefore began as an online marketplace—essentially an Amazon for the mountains—connecting small producers from the Himalayan region with consumers. We were trying to bring the Himalayas together.

Over the following two years, the company expanded from Ladakh to nearly ten Himalayan states, from Kashmir to the Northeast, and at one point listed around 450 products from small agricultural producers. In its initial marketplace model, the company did not purchase products from farmers. Instead, it helped producers come online, list their products, develop marketing capabilities, and comply with

Plucking seabuckthorn berries



requirements such as GST and food licences. The company earned a commission on sales, generally ranging from 10 to 30 per cent depending on the product. Lower-value commodity products such as rajma and rice attracted commissions of around 10 per cent, while higher-value products attracted higher margins.

We subsequently realized that the marketplace-only model was not sufficiently sustainable. Although producers were benefiting, the model was not financially viable for the company. It therefore began exporting products internationally, eventually reaching customers in more than 29 countries. In 2023, the company adopted a hybrid model, continuing as a marketplace while also developing its own brand for products that showed strong demand. Products such as dry fruits were brought under the company's own label, allowing it to procure larger quantities directly from its existing farmer network.

The current model therefore increasingly relies on direct procurement. The company purchases products in bulk, often making advance payments to farmers rather than operating on a credit cycle. For example, in Ladakh, we are procuring large quantities of seabuckthorn and hope to procure more than 200 tonnes during the season. We emphasize on paying farmers at or above the prevailing market price in order to secure high-quality products. We also invests in producer communities. For example, we have provided pulping units to farmers in Ladakh, with machinery worth approximately Rs 15 lakh provided to around five farmers, and has supported infrastructure such as a generator set in Spiti. We also focus on community development. For example, we sponsor the Frozen Pangong Lake Marathon.

We have progressively narrowed our product range. We initially experimented with a very wide range of products, including fresh fruits, apples, blueberries, apricots, skincare products and handicrafts. However, the large assortment confused consumers. The company therefore reduced its range and currently focuses on a more curated portfolio of approximately 150 products.

The company has largely used external investment as working capital rather than primarily for marketing. We raised approximately Rs 1.5 crore from Intersection Point Ventures, followed by another round in 2026 of around Rs 3 crore. Since many Himalayan agricultural products are seasonal, substantial working capital is required to purchase the annual harvest upfront—for example, purchasing the entire seasonal stock of a product such as seabuckthorn when it becomes available.

What is your marketing strategy and what challenges do you face in promoting your products?

A central part of the company's market-development strategy has been consumer education. Many biodiversity-based Himalayan products are unfamiliar to consumers, or compete with cheaper products whose quality and origin are not clearly communicated. We therefore try to explain the nutritional, geographical and qualitative characteristics of its products before asking consumers to purchase them. For example, we educate consumers about the nutritional characteristics of Himalayan walnuts and introduce consumers to less familiar ingredients such as rhododendron from Uttarakhand.

The company combines education with digital marketing, influencer marketing and performance marketing. However, our marketing strategy goes beyond conventional advertising. We place considerable emphasis on demonstrating the provenance and authenticity of its products. Products are lab-tested, and the company makes the laboratory reports publicly available. It also produces content directly from farming communities and production regions, showing consumers where products come from and who produces them. Farmers and their communities are therefore positioned as the face of the product rather than the company itself. Content is produced in regions such as Ladakh, Uttarakhand and Kashmir to establish a direct connection between the consumer and the source of the product.

This emphasis on transparency is particularly important because the company is trying to compete with cheaper conventional products. One of the biggest marketing challenges is to convince consumers to pay a premium for products that are tested, authentic and of higher quality. For example in case of turmeric: consumers may be accustomed to purchasing inexpensive turmeric without knowing its quality or composition, whereas the company's lab-tested turmeric may cost several times more. The challenge is therefore not simply to advertise a product but to explain why a biodiversity-based product costs more and what additional value the consumer receives.

Another challenge is the fragmentation of Himalayan production and supply chains. Small farms, dispersed producers and limited infrastructure make aggregation, processing, quality control and transportation difficult. The company often has to travel to production regions, identify farmer groups, build relationships and, in some cases, help establish cooperatives. This increases transaction costs and makes it difficult to achieve the economies of scale available to large conventional supply chains.

Seasonality is another major challenge. Products such as seabuckthorn are harvested during a specific period, meaning the company has to mobilize substantial capital

and purchase stock for the entire year. Poor infrastructure and fragmented supply chains further increase costs. These difficulties can make imported alternatives more attractive from a purely commercial perspective, even when the objective is to promote authentic Himalayan products.

We have remained committed to product authenticity and the original mission, even when doing so is commercially challenging. Entrepreneurs entering the sector may be tempted to substitute products from other regions when local supply is scarce or costly. For example, instead of sourcing Kashmiri walnuts, an entrepreneur might use walnuts from another country because they are more uniform, better graded or easier to procure. Similarly, Chinese seabuckthorn has benefited from more developed supply chains. However, we continue to invest in local processing infrastructure, such as pulping units, rather than abandon Himalayan sourcing.

The key lesson from this experience is that developing markets for biodiversity-based products requires patience, consumer education, transparency and a long-term commitment to the production region. It is not enough to identify a unique product; the entrepreneur must build consumer understanding, establish trust in quality and origin, and simultaneously solve complex supply-chain problems. Staying true to the mission while developing commercially viable systems is particularly important in the food sector.

What can governments do to support businesses working with biodiversity?

The most important policy intervention is to organize the producer side of the market. Although India has numerous farmer groups, cooperatives and government departments working with agricultural producers, information about these producers is often fragmented and difficult for buyers to access. A buyer interested in sourcing a biodiversity-based product from Kashmir or Ladakh may have to travel to the region and independently identify suitable farmers or farmer groups. The government could play an important role by creating accessible databases and platforms that identify producer groups, their products, production capacities and contact details.

There is a need for greater market-price transparency.

Currently, producers and buyers may not know the likely price of a crop until the harvest season begins. Different buyers may offer substantially different prices, making it difficult for companies to plan procurement and for farmers

to understand the value of their produce. A more organized system providing indicative or transparent seasonal prices could help both producers and buyers plan their finances and reduce uncertainty.

A second major area for policy support is quality assurance and certification. Biodiversity-based products often need to be tested against numerous parameters before a company can confidently purchase them. We currently bear the cost of collecting samples from multiple farmers and sending them to private laboratories. In some cases, testing may involve hundreds of parameters, making it a significant cost. Government-supported testing facilities and standardized Certificates of Analysis (COAs) at the producer or cluster level could substantially reduce this burden. Farmers and producer groups could receive quality certification that buyers can trust, while companies would not need to repeatedly test samples from every individual producer.

The sector also needs processing and supply-chain infrastructure. Himalayan producers often operate on very small farms and in difficult geographical conditions, making aggregation, processing, storage and transportation expensive. Government investment in local processing units, cold chains, storage, packaging, transport and other common infrastructure could allow farmers to capture greater value from their products rather than selling raw materials at low prices. Support for producer cooperatives and aggregation centres would be particularly important for biodiversity-based products that cannot be produced through large-scale monoculture systems.

Finally, policy should recognize that Himalayan and other biodiversity-rich regions have fundamentally different production systems from conventional agricultural markets. Small farmers may cultivate one acre or less and collectively form cooperatives or producer groups. Policies designed primarily around large-scale, uniform production may therefore fail to address their needs. Government support should instead focus on collective organization, transparent markets, quality infrastructure, local processing, market access and value addition.

Overall, our experience suggests that policy support should not simply focus on increasing production. It should help build the entire ecosystem connecting farmers → aggregation → quality assurance → processing → branding → markets → consumers. Strengthening these links would reduce the costs and risks faced by entrepreneurs, give farmers greater bargaining power and transparency, and make biodiversity-based food products more commercially viable while enabling producers to earn better and more reliable incomes.

RECOMMENDATIONS

Agrobiodiversity can become an economically viable rural livelihood when enterprises move beyond raw-commodity trading through value addition, local processing, strong market linkages, consumer awareness and fair value-sharing with producers.

Producer-led models such as profit sharing, guaranteed procurement, farmer-set pricing, and price premiums demonstrate how risk and returns can be shared more equitably.

Unlocking the full potential of India's agrobiodiversity economy requires coordinated action on market creation, institutional procurement, consumer awareness, decentralized processing infrastructure, quality standards, capital, risk protection, and biodiversity conservation.

For rural communities, agro-pastoralists, and smallholder farmers across India, practising agro-ecology and conserving agrobiodiversity was an act of subsistence or cultural preservation. However, we need to ensure that ecological stewardship should not be without fair financial returns. The fundamental challenge across India's diverse ecological landscapes is not merely agricultural production, but the severe absence of structured market linkages, value-addition infrastructure and consumer awareness.

To transform agro-ecology into rural livelihoods, enterprises must move beyond raw-commodity trading. By integrating local processing, co-branded farmer equity, consumer education and supply-chain management, the entrepreneurs we talked to demonstrate that agrobiodiversity can become economically viable, provided market value is equitably distributed back to primary producers.

The 10 case studies indicate that producer engagement and risk-sharing are important. For example, the 50 per cent net profit-sharing and co-branding model of KisaanSay is based on a commercial partnership with Farmer Producer Companies. OOO Farms operate on the principle of guaranteed procurement and 100 per cent risk absorption. This is designed to remove the fear of failure for farmers conserving native seeds; the FPC allows farmers to set their own prices (often three to 12 times the market rate) and guarantees 100 per cent procurement of harvested yields. Bio Basics reverses conventional market dynamics where urban retail prices dictate farmer payouts. This company ensures that farmers calculate their own total production costs—factoring in labour and soil restoration—and set their own fair remuneration. The enterprise then adds logistics and operational costs to set the retail price and educates urban consumers on paying fair value. Another model is used by Taru Naturals where community leader farmers (Super Farmers) mentor and oversee groups of 10–500 smallholders. These leaders manage local aggregation, natural farming SOP adherence, and quality control, while the enterprise provides stable month-on-month orders and upfront working capital for pure seeds. Lastly, the social enterprise model used by Bahula Foods is incubated by an NGO ecosystem (Urmul). This model operates as a social enterprise that manages an end-to-end controlled supply chain—from soil management and raw material sourcing to in-house processing and multi-channel marketing, paying producers a 10–20 per cent price premium over local market rates.

Market entry and distribution models are also important as these outline how enterprises generate revenue and scale their market presence. B2B bulk processing and gourmet/industrial supply (Artocarpus Foods, Taru Naturals, Bahula Foods)

focuses on processing raw produce into standardized, shelf-stable ingredients (pulp, crushes, flours, cold-pressed oils, specialty cheeses) to supply large institutional clients, restaurants, hotel chains and dairy/ice cream manufacturers. B2B provides the volume predictability needed to cover high operational overheads. The direct-to-consumer (D2C) model (Two Brothers India Farms) combines farm-level processing with direct digital marketing, social media storytelling, and international exports. Value addition is extremely important in not only preservation of the product but also for increasing profits. The experience of My Pahadi Dukan suggests that transitions to a hybrid model—directly procuring high-demand items upfront from farmers and launching house-branded lines backed by venture capital for seasonal harvests works for both the farmers and the entrepreneurs.

Value addition is most important as help create consumer demand for unfamiliar or neglected biodiversity. Single-ingredient focus and quality-intervention models used by Artocarpus Foods and Wild Harvest India) drives commercial adoption by specializing in a single underutilized or stigmatized ingredient (e.g. jackfruit or mahua flowers). These companies have introduced processing infrastructure—such as elevated drying machans, harvesting nets, or thermal pulping line—to turn a low-value commodity into a certified food-grade ingredient.

Creating awareness and a taste-first marketing model has been crucial to success. Bio Basics, OOO Farms, and Two Brothers India Farms use this approach to overcome consumer scepticism. Their campaigns focus on culinary versatility and nutritional profiling (e.g. highlighting high calcium/iron content in native rices) over generic health claims. They have also used experiential events like Wild Food Festivals as well as chef collaborations, and published laboratory test reports to justify price premiums and build trust.

There are many more learnings from each of the case. We have used these to formulate the following recommendations at the national level:

1. MARKET CREATION AND INSTITUTIONAL PROCUREMENT

- Shift support from subsidies to demand generation: Pivot public funding from passive input subsidies toward active market creation, government endorsements, and large-scale consumer demand generation for indigenous and agroecological products.
- Decentralize and mandate public procurement: Incorporate native grains, low-GI red rices, unpolished millets, and regional produce into local public procurement systems—including the Public Distribution System (PDS), school midday meals, anganwadis, ICDS, public hospitals and official institutional gifting.

- Establish market-price transparency: Provide indicative, transparent seasonal pricing mechanisms to eliminate financial uncertainty for both smallholders and commercial buyers before harvest.

2. NATIONAL CONSUMER AWARENESS AND PUBLIC HEALTH ALIGNMENT

- Launch national awareness campaigns: Execute government-backed national promotional campaigns—modelled after past milk and egg drives—to shift consumer habits toward basic, agroecology-compliant Indian foods and domestic dry fruits.
- Link agrobiodiversity to public health: Position heritage grains, pulses and low-GI rices as natural public health interventions against chronic conditions like diabetes.
- Support consumer education and documentation: Fund public awareness programmes, school curricula, and research into traditional food systems, seed varieties and regional culinary practices to build long-term consumer trust.

3. LOCAL PROCESSING INFRASTRUCTURE, PRODUCT INNOVATION AND FPO SUPPORT

- Invest in localized farm-gate infrastructure: Fund community-owned, decentralized primary processing units—such as mini Sortex plants, millet cleaners, drying machans, cold chains, and storage facilities—close to production centres to reduce post-harvest losses.
- Converge FPO infrastructure with marketing: Merge existing government backend capacity-building funds (SFAC, NABARD, Livelihood Missions) with market-facing branding, packaging, and distribution projects.
- Establish product innovation cells: Set up dedicated Product Innovation Cells within State Livelihood Missions involving professional chefs, design colleges, and industry leaders to help rural groups move beyond generic, redundant manufacturing (e.g. papad).
- Provide practical business execution training: Deliver structured, subsidized training in professional accounting, GST/FSSAI compliance, professional communication, and packaging execution.

4. QUALITY STANDARDS, TESTING INFRASTRUCTURE AND REGULATORY REFORMS

- Set food-grade standards for underutilized produce: Formulate official FSSAI quality and food-grade standards for wild/forest produce, such as food-grade mahua flowers.
- Subsidize regional testing facilities: Establish government-supported testing labs issuing standardized Certificates of Analysis (COAs) at the producer-

- cluster level to eliminate high lab costs for small businesses.
- Regulate quick-commerce entry barriers: Introduce mandatory listing-fee concessions for micro-entrepreneurs on digital quick-commerce platforms, or create a government intermediary body to aggregate and list traditional regional products.
- Reform Joint Forestry Management (JFM): Address corruption in forest produce auctions and train forest-dwelling communities in primary hygienic processing (e.g. slicing and shade-drying).

5. FINANCIAL INCENTIVES, DE-RISKING AND PATIENT CAPITAL

- Incentivize ecological outcomes: Introduce direct financial incentives and rewards for farmers conserving native seeds, improving soil health, restoring ecosystems, and adopting regenerative practices.
- Recognize carbon credits in agroforestry: Simplify certification processes for carbon credit projects in diverse agroforestry systems to create supplementary revenue channels for farmers.
- Enable capital frameworks: Create investment frameworks that provide long-term capital suitable for agrobiodiversity timelines rather than demanding rapid, short-term return on investment (ROI).
- Provide crop failure risk protection: Develop comprehensive market safety nets and guaranteed purchase models to protect farmers against market gluts or climate losses beyond conventional crop insurance.

6. ECOSYSTEM RECOGNITION, KNOWLEDGE PRESERVATION AND PRODUCER DIRECTORIES

- Recognize drylands and pastoral ecosystems: Formally classify drylands and pastoral regions as productive ecological systems rather than wastelands, extending dedicated support through mobile veterinary care, water access, grazing rights, and dryland extension services.
- Protect seed sovereignty and knowledge transfer: Protect farmers' legal rights to conserve, exchange and cultivate native seeds, while setting up formal mechanisms to transfer agrobiodiversity knowledge from aging farmers to younger generations.
- Establish centralized producer databases and germplasm banks: Create accessible public databases mapping FPOs, producer capacities, product availability, and contact details, while establishing pure germplasm seed banks to prevent genetic mixing.
- Promote underutilized regional crops: Develop dedicated promotional policies for abundant, underutilized regional produce (e.g. Garcinia/thekera, elephant apple, roselle) tailored to regional versus pan-India market profiles.

Climate change makes conventional agriculture difficult, so exploring alternatives is imperative. Using local biodiversity as food is one option, but turning India's rich agricultural biodiversity into fair, sustainable livelihoods for rural producers and smallholder farmers is a challenge.

Drawing on ten real-world case studies of social enterprises commercializing underutilized ingredients—ranging from native rices and camel milk to wild mahua flowers and Himalayan produce—this report illustrates how localized processing, consumer education, direct-to-consumer storytelling and equitable profit-sharing bridge the gap between primary producers and urban markets.

The report demonstrates how market innovation can drive both biodiversity conservation and economic resilience.



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