

# **PROJECT PROFILE FOR KANDMOOL (ROOT-BASED SNACK)**

## **PROCESSING IN UTTARAKHAND**

### **1. INTRODUCTION**

The forests and slopes of Uttarakhand are home to a rich diversity of wild edible roots and tubers, traditionally known as “Kandmool.” These include species like Pindalu (Colocasia), Shakarkand (Sweet Potato), Suran (Elephant Foot Yam), Kachalu, and lesser-known forest tubers consumed by local communities and tribal groups. Traditionally foraged during lean agricultural months, these roots have sustained hill diets due to their nutrition, medicinal properties, and ability to grow in low-input conditions. However, the commercial potential of Kandmool remains vastly underutilized, especially in processed snack form.

By converting these perishable roots into shelf-stable snacks such as chips, dried slices, crisps, or flour-based nibbles, entrepreneurs can create a high-value product from underexploited biodiversity. The processing reduces post-harvest loss, increases shelf life, and enables distribution to markets far from the point of harvest. A Kandmool snack unit also supports rural livelihoods by enabling decentralized collection and income generation for forest-dwelling and SC/ST communities, especially women-led SHGs.

Root-based snack foods are gaining traction in urban wellness markets due to their low glycemic index, high fiber content, and gluten-free properties. Products like air-fried chips, root crisps with Himalayan salt, or sweetened slices with jaggery cater to conscious snacking trends. Therefore, a micro or small-scale Kandmool processing unit aligns with the goals of agro-ecological entrepreneurship, forest-based economy revival, and indigenous food branding in Uttarakhand.

### **2. INDUSTRY OVERVIEW**

India’s snack industry is one of the fastest-growing segments in the food processing sector, currently valued at over ₹35,000 crore, with a projected CAGR of 12–15% over the next five years. Within this, the demand for “healthy snacks” made from natural, traditional, and gluten-free ingredients is steadily increasing. Root-based snacks like sweet potato crisps, taro chips,

and mixed root fries are being featured in premium retail outlets, café menus, and online wellness stores.

Uttarakhand has significant potential in this segment due to the availability of diverse tuber species across its middle and high-altitude regions. Many of these roots are naturally pesticide-free, and some—such as Suran and Kachalu—have documented digestive and anti-inflammatory benefits. Tribal food knowledge, local harvesting techniques, and traditional recipes offer a unique base to develop authentic, value-added snack products. However, most of this potential remains uncommercialized due to lack of processing units, standardization, and branding.

The Government of India, through schemes like PMFME (under Atmanirbhar Bharat) and ODOP, is actively promoting millet-based, forest-based, and traditional snack units. In Uttarakhand, the Devbhoomi Udyamita Yojana (DUY) encourages women and tribal groups to set up micro-enterprises based on local biodiversity. Kandmool processing aligns well with this trend, especially if integrated with local Van Panchayats, forest cooperatives, and SHGs for backward linkages.

### 3. PRODUCT DESCRIPTION AND APPLICATIONS

The key products of a Kandmool processing unit include a range of snacks derived from wild and cultivated root vegetables. These include:

- **Kandmool Chips:** Thin-sliced, either fried in local mustard oil or air-dried, made from taro (Pindalu), Suran, sweet potato, or yam.
- **Kandmool Mix Crisps:** A mix of root slices (e.g., sweet potato + suran + kachalu), lightly spiced or salted.
- **Dried Slices for Cooking:** Vacuum-dried slices of Kandmool, packaged for household or institutional use.
- **Sweet Jaggery-Coated Roots:** A traditional sweet snack made by boiling roots and coating them with thickened jaggery syrup.
- **Root Flour-based Crackers or Sticks:** Gluten-free options using powdered dried roots.

The application of these products spans retail, institutional, and tourism channels. They can be sold as packaged snacks at local markets, fairs, and health food stores. Wellness-conscious consumers seek alternatives to potato chips, and Kandmool crisps offer a heritage-based, nutrient-dense option. In addition, schools, hostels, eco-resorts, and pilgrimage centers can offer these as local specialties. The dried slices also serve hill communities during monsoons or winters when fresh vegetables are scarce.

These products cater to vegan, gluten-free, and indigenous food niches. Labeling can highlight terms like "forest-foraged", "no added preservatives", and "traditional Himalayan snack", which add consumer trust and price premium. Online channels and tourist packaging can further expand reach.

#### **4. DESIRED QUALIFICATIONS FOR PROMOTERS**

Promoters of a Kandmool snack processing unit need not possess formal degrees but must demonstrate practical understanding of local forest produce, food safety, and small-scale processing. Ideal candidates include rural youth, SHG members, or tribal entrepreneurs with knowledge of forest-based collection or traditional culinary practices. Prior training in food hygiene, preservation, or dehydration techniques is a significant advantage, especially in ensuring quality and shelf-life.

Since many Kandmool varieties have seasonal availability and unique handling requirements, the promoter should be adept at planning procurement calendars, managing drying/frying schedules, and maintaining records of sourcing. Those familiar with Van Panchayat regulations and community harvesting norms will find it easier to build sustainable supply chains. Familiarity with basic food certification requirements like FSSAI licensing and labelling is essential.

In addition to operational skills, the entrepreneur should possess a mindset for branding, digital marketing, and rural enterprise development. Since Kandmool-based products appeal to niche urban markets, having a grasp on packaging aesthetics, pricing strategy, and social media promotion is helpful. Promoters supported by DUY or PMFME can access training from KVKs or Food Tech Institutes on topics like dehydration, vacuum sealing, and HACCP practices.

## 5. BUSINESS OUTLOOK AND TRENDS

The outlook for Kandmool snacks is highly promising given the rise in demand for ethnic, functional, and minimally processed snacks. Urban consumers are increasingly turning away from factory-made, additive-heavy snacks toward natural, region-specific options. Root-based snacks—especially those made without synthetic preservatives—fit neatly into the emerging “slow food” and “farm-to-plate” movements. The market is also influenced by a revival of Ayurveda, which recognizes roots like Suran and Kachalu for digestive benefits.

In Uttarakhand, the opportunity to brand snacks as “Van Utpaad” (forest produce) adds authenticity and storytelling potential. Tourism circuits—like Char Dham, Jim Corbett, Nainital, and Ranikhet—are perfect zones to pilot sales through kiosks and hotel tie-ups. As consumers seek novelty in gifting and travel experiences, Kandmool snacks can serve as edible souvenirs. Eco-conscious packaging and ethical sourcing further improve appeal.

The government’s push for forest livelihood-based microenterprises, women-led startups, and value chain development means that Kandmool snacks are well-aligned with policy trends. Over the next 3–5 years, such ventures can expand from community-level SHG kitchens to district-wide clusters with cold storage, solar dryers, and e-commerce distribution. With proper R&D and branding, Kandmool products can even penetrate export markets interested in traditional, functional Indian foods.

## 6. MARKET POTENTIAL AND MARKETING ISSUES

The core markets for Kandmool snacks lie in Tier 1 and Tier 2 cities where wellness-driven consumers are experimenting with regional food. Delhi, Dehradun, Lucknow, and Chandigarh provide early adopter zones. Platforms such as Amazon, Flipkart, and health food aggregators also support direct-to-consumer models. Locally, the tourism sector, fairs (melas), and government exhibitions (e.g., ODOP, SARAS) are fertile ground for testing the product.

However, marketing Kandmool-based snacks presents unique challenges. Many consumers are unaware of the term “Kandmool” or associate it with uncultivated, unfamiliar forest food. Awareness campaigns must include sampling, stories of community sourcing, and health messaging. Price positioning is also tricky—being handmade and low-scale, Kandmool chips

may cost more than mass-produced chips, which could deter volume sales if not positioned correctly.

Another constraint is year-round supply. Some roots are available only during monsoons or autumn, requiring drying or cold storage to ensure year-round production. The key is to maintain consistency in taste and shelf-life without chemical additives. Packaging must meet safety standards, and attractive design is essential to gain shelf visibility. Collaborations with state forest departments, tourism boards, and DUY branding initiatives can help bridge these gaps and position the product as a local wellness brand.

## 7. RAW MATERIALS AND INFRASTRUCTURE REQUIRED

The key raw materials are a mix of cultivated and wild edible roots including:

- **Pindalu (*Colocasia esculenta*)**
- **Sweet Potato (*Ipomoea batatas*)**
- **Suran (*Amorphophallus paeoniifolius*)**
- **Kachalu (*Arbi* species)**
- **Yam, Koorka, or local hill tubers**

These should be cleaned, peeled, sliced, and then either dried, fried, or processed into flour or syrups. Additional materials include mustard oil (for frying), jaggery (for coating), natural preservatives like lemon or tamarind, and food-grade salt/spices. Eco-friendly packaging like paper pouches, jute packs, or PET containers with resealable lids are required for retail sale.

The infrastructure required includes:

- A tuber cleaning and peeling area
- Cutting and slicing station
- Food-grade frying or drying station (solar dryer, vacuum dryer, or dehydrator)
- Spice mixing and flavoring unit
- Packaging and sealing section
- Testing zone for quality checks (moisture, oil absorption, shelf stability)

The unit should be housed in a 600–800 sq ft area with ventilation, fire safety, clean water supply, and electricity. Solar dryer integration can reduce recurring energy costs. Local bamboo or stone construction is encouraged to maintain temperature naturally and reduce energy load.

**Table 1: Raw Material and Infrastructure Requirements**

Component	Specification / Quantity	Remarks
Root Vegetables	800–1,200 kg/month	Procured seasonally from SHGs, FPOs, or forest gatherers
Water	800–1,000 liters/month	For cleaning, peeling, boiling
Mustard Oil	40–50 liters/month	For hygienic frying of chips
Jaggery / Spices	20–25 kg/month	For flavoring or sweet snacks
Solar Dryer / Dehydrator	Capacity: 20–50 kg/batch	To dry root slices
Frying Kadai / Machine	2–3 deep fryers (20L capacity each)	Stainless steel recommended for hygiene
Vacuum Sealer	For packing in 100–200g packets	To extend shelf life
Labeling Unit	Manual / semi-auto	For retail compliance
Built-up Area	600–800 sq ft	Must include storage, wash, process, pack zones

## 8. OPERATIONAL FLOW

The Kandmool snack unit follows a structured yet flexible operational flow tailored to the seasonality and perishability of roots. Since most roots have high moisture content and are prone to spoilage, quick processing post-harvest is essential. The steps below outline the typical production cycle from procurement to packaging:

## **1. Procurement and Cleaning**

Roots are procured from local SHGs, farmers, or Van Panchayats, depending on the variety and season. Immediately upon arrival, they are sorted for quality, rejecting any with fungal spots or excess rot. Accepted roots are washed thoroughly with potable water to remove soil, debris, and any microbial contaminants. A second rinse with turmeric or salt water may be done for additional sanitation.

## **2. Peeling, Slicing, and Pre-Treatment**

The cleaned roots are peeled manually or with a peeler machine. They are then sliced into uniform thickness (1–3 mm) using a manual or semi-automatic slicer. Some varieties like Suran or Pindalu may be parboiled or soaked in tamarind or lemon water to reduce itchiness or bitterness. For sweet variants, the slices are steamed and then coated with jaggery syrup before drying.

## **3. Drying or Frying**

The pre-treated slices are either sun-dried, solar-dried, or dehydrated for shelf-stable versions, or shallow/deep-fried in small batches in stainless steel kadhais using mustard oil. Salt, chili, turmeric, and other spices are added post-drying/frying as per flavor variant. Consistent temperature control is crucial to avoid excess oil absorption or spoilage.

## **4. Seasoning and Packaging**

Dried or fried slices are allowed to cool and are then passed through a seasoning drum for even coating. The final product is packed into 50g, 100g, or 200g packs using a vacuum sealer or zip-lock pouches. Proper labelling includes batch code, date, ingredients, shelf life, and FSSAI details. For premium variants, resealable kraft paper pouches or eco-containers are used.

## **5. Storage and Dispatch**

Finished products are stored in dry, cool, rodent-free racks before being dispatched to stores, exhibitions, or through online orders. For longer shelf-life, some batches may

be nitrogen-flushed and stored in insulated boxes. Cold storage is generally not required post-processing unless jaggery-based or moist variants are produced.

### Flow Chart of Operational Process:

1. Root Procurement
└─► Quality Sorting & Washing
└─► Peeling & Uniform Slicing
└─► Pre-treatment (Boiling / Soaking / Coating)
2. Drying or Frying Process
└─► Flavoring and Seasoning
└─► Cooling & Inspection
└─► Vacuum Packing & Labeling
3. Storage and Distribution
└─► Delivery to Retailers / Exhibitions / Online Orders

## 9. TARGET BENEFICIARIES

The Kandmool snack processing unit is designed to directly benefit the following target groups:

### 1. Women-Led SHGs and Van Panchayat Collectives

These groups can serve as aggregators, foragers, or processors. By involving women in peeling, drying, and packaging, the enterprise generates local employment and builds community income streams. It also helps preserve indigenous knowledge of root identification and preparation.

### 2. Youth Entrepreneurs under DUY or PMFME

Trained youth from forest-fringe villages can manage operations, branding, and digital marketing. The project becomes a launchpad for sustainable food startups in the hills, encouraging reverse migration and rural entrepreneurship.

### 3. Marginal Farmers and Forest Dwellers

Many tribal or forest-margin communities collect roots seasonally but lack market



access. This unit creates a stable buyer network, enabling cash flow during lean periods and encouraging preservation of traditional agro-biodiversity.

The model promotes inclusive, biodiversity-based entrepreneurship. As it scales, it can be converted into a rural snack brand with decentralized collection and centralized packaging.

## 10. SUITABLE LOCATIONS IN UTTARAKHAND

The most viable zones for setting up Kandmool snack units include mid-altitude and forest-adjacent districts such as:

- **Pauri Garhwal** (e.g., Pokhara, Thalain)
- **Rudrapur** (e.g., Ukhimath, Jakholi)
- **Bageshwar & Champawat** (with access to tribal tuber varieties)
- **Almora & Nainital** (forested belts near Jageshwar, Betalghat)
- **Pithoragarh** (for high-altitude root variants)

These regions already host SHG networks, minor forest produce collectives, and eco-tourism activity. Proximity to collection zones, low transport needs, and existing ODOP linkages make these locations ideal. Blocks with KVKs or Food Processing Training Centres should be prioritized for ease of capacity building.

## 11. MANPOWER REQUIREMENT

A Kandmool snack unit typically operates with a lean team but must ensure high standards of hygiene, quality, and productivity. The core staff includes production workers, a packaging assistant, and a part-time marketing/admin support. During seasonal procurement (monsoon and autumn), additional helpers may be hired on daily wages to manage root handling.

Key roles are:

### 1. **Production Supervisor** (1 person)

Responsible for coordinating operations, overseeing hygiene, managing workers, and ensuring process efficiency. Must be trained in food safety.

Monthly Salary: ₹18,000

2. **Processing Assistant(s)** (2 persons)

Handle washing, slicing, drying, frying, and flavoring. Skilled in using fryers or solar dryers. Should maintain cleanliness and consistency.

Monthly Salary: ₹12,000 × 2 = ₹24,000

3. **Packaging & Labelling Assistant** (1 person)

Manages portioning, weighing, sealing, and labeling. Should understand packaging types, expiry coding, and quality checks.

Monthly Salary: ₹10,000

4. **Sales & Admin Assistant** (Part-time)

Handles order-taking, stock records, basic marketing communication, and outreach.

Monthly Salary: ₹6,000

5. **Seasonal Workers (on call)**

2–3 workers for 3 months annually at ₹8,000/month for collection and cleaning.

**Table 2: Manpower Requirements and Annual Cost**

Position	No. of Staff	Monthly Salary (₹)	Duration	Annual Cost (₹)	Responsibilities
Production Supervisor	1	18,000	12 months	2,16,000	Operations, hygiene, team management
Processing Assistants	2	12,000	12 months	2,88,000	Root prep, frying/drying, cleaning
Packaging Assistant	1	10,000	12 months	1,20,000	Weighing, sealing, labelling
Admin/Sales (Part-time)	1	6,000	12 months	72,000	Orders, records, outreach
Seasonal Workers	2–3	8,000	3–4 months	72,000 – 96,000	Root sorting, collection, loading
<b>Total Annual Cost</b>	–	–	–	₹7,00,000 – ₹7,50,000	Approx. based on scale and peak season needs

## 12. IMPLEMENTATION SCHEDULE

The unit can be fully operational within 10 months from project approval. Given the seasonal availability of Kandmool, planning the setup timeline around the monsoon-harvest months is key.

#### Month-wise Schedule:

Timeline (Months)	Key Activities
Months 1–2	Land/site selection, FSSAI application, layout design, equipment quotes
Months 3–4	Civil work, equipment purchase and installation, water/electricity setup
Month 5	Recruitment and training of core team, packaging trials
Month 6	Procurement tie-ups with SHGs / forest groups, trial batches
Months 7–8	Full-scale root procurement and production (aligned with harvesting)
Months 9–10	Launch in local markets, fairs, tourist spots, and digital marketing outreach

### 13. ESTIMATED PROJECT COST

The capital cost depends on whether the unit purchases solar dryers or electric fryers. A typical small-scale unit will need an investment of ₹10–₹13 lakhs, inclusive of first-year working capital.

**Table 3: Estimated Project Cost**

Component	Estimated Cost (₹)	Remarks
Equipment & Machinery	₹3,50,000 – ₹5,00,000	Slicer, dryer/fryer, sealer, labeling unit
Infrastructure Setup	₹2,00,000 – ₹2,50,000	Civil work, water/electric lines, insulation
Packaging & Branding	₹1,00,000 – ₹1,50,000	Label design, eco-pouches, logo
Working Capital (Year 1)	₹4,00,000 – ₹4,50,000	Salaries, root procurement, oil, spices

Component	Estimated Cost (₹)	Remarks
<b>Total Estimated Cost</b>	₹10,50,000 – ₹13,50,000	Based on scale and packaging type

## 14. MEANS OF FINANCE

The unit can be financed through a combination of personal investment, credit, and government subsidies.

### Sources of Finance:

- **Promoter Contribution:** ₹2–3 lakhs (approx. 20% of total cost)
- **Bank Term Loan / Mudra / PMEGP Credit:** ₹5–7 lakhs
- **Government Subsidy (DUY / PMFME):** 35–50% capital subsidy (up to ₹5 lakhs)
- **Convergence with NRLM / ODOP:** Additional support for SHG-run units

Loans under PMFME are collateral-free for projects under ₹10 lakhs and provide interest subvention of 3–5%. DUY beneficiaries may also receive handholding for DPR preparation and branding.

## 15. REVENUE STREAMS

Kandmool snack products offer diverse revenue streams through multiple product variants, packaging sizes, and sales channels. The primary income is from retail sales, but institutional buyers, bulk orders during tourist seasons, and online platforms offer significant upside.

### Primary Revenue Streams:

#### 1. Retail Packaged Snacks

100g Kandmool chips (salted, spiced, or sweet) sold at ₹40–₹60 depending on flavor and packaging. Sales through local stores, fairs, tourist stalls, and wellness outlets.

#### 2. Mixed Tuber Combos / Gift Packs

3-flavor combo boxes (e.g., Pindalu + Sweet Potato + Suran) priced ₹150–₹200 for 300g with premium wrapping. Ideal for gifting and exhibition sales.

### 3. Online & Direct Orders

Custom packs delivered via WhatsApp, Instagram, or e-commerce aggregators.

Higher margin per unit due to direct consumer reach.

### 4. Institutional/Bulk Sales

Sales to cafés, homestays, hotels, and government-run outlets (e.g., KMVN/GMVN) at ₹200–₹300 per kg.

### 5. Value-added Flour or Sweets

Limited batches of Suran flour or jaggery-coated sweet root snacks during festival months.

**Table 4: Revenue Streams Estimate**

Product Type	Unit Price (₹)	Estimated Annual Sales (Units)	Estimated Revenue (₹)	Remarks
Kandmool Chips (100g)	₹50	50,000	₹25,00,000	Core product; seasonal volume varies
Mixed Combo Boxes	₹180	5,000	₹9,00,000	Premium gifting line
Bulk / Institutional Packs	₹250/kg	3,000 kg	₹7,50,000	Eco hotels, SHG stores, fairs
Online Direct Sales	₹60	8,000	₹4,80,000	Via WhatsApp, Instagram, exhibitions
Jaggery-Coated Roots	₹30/pack	4,000	₹1,20,000	Festival sweet seasonal variant
<b>Total Revenue Estimate</b>	—	—	₹47,50,000 – ₹55,00,000	Depending on scale & market presence

## 16. PROFITABILITY STREAMS

In the first year, the unit is expected to function at 40–50% capacity, generating ₹18–₹25 lakhs in revenue with a modest net profit of ₹2–₹3 lakhs. From Year 2 onward, as brand presence

improves and bulk buyers engage, net profits could rise to ₹10–₹15 lakhs with better capacity utilization and packaging efficiency.

### Key Profitability Drivers:

- Local raw material sourcing reduces transport cost
- Minimal preservatives & small-batch production allow premium pricing
- Festival & tourist sales provide high-margin seasonal boosts
- No cold storage required post-processing, reducing fixed cost

**Table 5: Profitability Estimate**

Year	Revenue (₹)	Expenses (₹)	Net Profit (₹)	Margin (%)
Year 1	₹18–25 lakhs	₹16–22 lakhs	₹2–3 lakhs	10–12%
Year 2	₹35–45 lakhs	₹25–35 lakhs	₹8–10 lakhs	20–25%
Year 3	₹50–55 lakhs	₹35–40 lakhs	₹12–15 lakhs	25–30%

## 17. BREAK-EVEN ANALYSIS

The break-even point is expected within 16–20 months if the enterprise maintains consistent supply, retail presence, and secures at least one institutional buyer. With direct sourcing and in-house processing, per-unit costs remain manageable.

**Table 6: Break-Even Calculation**

Parameter	Value (₹)	Remarks
Fixed Annual Costs	₹7,00,000 – ₹7,50,000	Salaries, packaging, utilities
Avg. Selling Price	₹50 per 100g pack	Mixed pricing for different SKUs
Break-even Volume	1,50,000 – 1,60,000 packs	Approx. 12,500 packs/month
Break-even Revenue	₹30–₹32 lakhs	Achievable by Year 2
Estimated Time to BE	16–20 months	May reduce with DUY subsidy support

## 18. MARKETING STRATEGIES

A focused marketing approach is essential to educate consumers about Kandmool and position it as both a heritage and health snack.

### Local and Regional Marketing:

- Organize tasting booths at local haats, yatri niwas, fairs, and district exhibitions.
- Collaborate with SHG outlets and rural mart stores for shelf space.
- Brand as “Van Bhojan” or “Himalayan Root Snack” to build cultural connect.

### Urban and Online Marketing:

- Launch WhatsApp Business Catalogue and Instagram storefront featuring farmer/forest stories.
- Partner with wellness food influencers, organic stores, and conscious gifting platforms.
- Highlight labels like “Gluten-Free”, “No MSG”, “Slow-Fried in Mustard Oil”.

### Institutional Marketing:

- Approach GMVN/KMVN, eco-resorts, and schools for consistent orders.
- Participate in DUY/ODOP/PMFME stalls at trade fairs and buyer-seller meets.
- Collaborate with tourism boards for kiosk placement or branding inclusion.

## 19. MACHINERY REQUIRED

**Table 7: Machinery & Equipment List**

<b>Machinery / Equipment</b>	<b>Capacity / Specification</b>	<b>Estimated Cost (₹)</b>	<b>Purpose</b>
Root Washer & Peeler	Manual/Semi-Auto	₹40,000 – ₹60,000	Cleaning & peeling roots
Slicer	30–50 kg/hour	₹25,000 – ₹40,000	Uniform slicing

<b>Machinery / Equipment</b>	<b>Capacity / Specification</b>	<b>Estimated Cost (₹)</b>	<b>Purpose</b>
Solar Dryer / Electric Dryer	20–30 kg/batch	₹80,000 – ₹1,50,000	Drying root slices
Deep Fryer (SS body)	20–30L	₹50,000 – ₹80,000	Frying salted/spiced chips
Seasoning Drum	Manual / Motorized	₹15,000 – ₹30,000	Flavoring snacks
Vacuum Packing Machine	Table-top or foot-seal type	₹30,000 – ₹60,000	Long shelf-life packaging
Label Printing/Stamping Tool	Manual / Semi-auto	₹10,000 – ₹15,000	Batch, expiry, FSSAI labelling
Total Machinery Estimate	—	₹2,50,000 – ₹4,35,000	Varies with scale and automation

## 20. ENVIRONMENTAL BENEFITS

The Kandmool snack unit aligns with principles of eco-friendly rural entrepreneurship:

- **Zero-Waste Processing:** Root peels and unused tubers can be composted or fed to livestock.
- **Forest-Based Livelihoods:** Encourages community forest management and biodiversity preservation.
- **Low-Carbon Operation:** Solar drying, local sourcing, and decentralized production minimize carbon footprint.
- **Biodegradable Packaging:** Paper, jute, or leaf-based packs can replace plastic if supply allows.
- **Awareness Building:** Educates consumers on underutilized foods and indigenous diets.



## 21. FUTURE OPPORTUNITIES

- **Product Line Extension:** Kandmool laddus, flour blends, or instant mixes for fasting/ayurvedic use.
- **Franchise Model:** SHG-run units across districts under a common “Devbhoomi Roots” brand.
- **Export Potential:** Niche international demand for wild food snacks, especially gluten-free variants.
- **Retail Kiosks:** At airports, temples, and tourism hubs, branded as “Himalayan Forest Snacks”.
- **Institutional Convergence:** Tie-ups with TRIFED, Ministry of Tribal Affairs, and Forest Dept. for scale-up.

### Disclaimer

Only a few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not imply any recommendation.