

Project Profile

ROASTED BARLEY



1. INTRODUCTION:

1. Ladakh's Legacy Crop: Barley Reimagined for the Modern World:

Ladakh, India's trans-Himalayan region perched at altitudes above 3,500 meters, presents one of the most unique agro-ecological zones on Earth. Its cold desert environment—characterised by high UV exposure, wide temperature fluctuations, low humidity, and short growing seasons—naturally inhibits pests and diseases, making it one of the few places where organic barley thrives without synthetic inputs. This climatic adversity, combined with traditional farming wisdom, has nurtured heirloom barley varieties rich in flavour, nutrition, and resilience.

At the heart of Ladakhi food culture lies Tsampa a finely milled roasted barley flour that has sustained generations across this high-altitude terrain. Known for its nutrient density, satiety value, and digestibility, Tsampa is consumed in various forms from simple mixes with butter tea to energy-dense porridges and ceremonial offerings.

Why Tsampa? A Superfood Rooted in Tradition

Tsampa is:

High in dietary fiber, aiding digestion and gut health

Low in gluten, making it a gentler alternative to wheat

Rich in complex carbohydrates, providing sustained energy

Naturally fortified with iron, selenium, and B-complex vitamins

Roasted before grinding, enhancing shelf life, flavour, and bioavailability

Traditionally made in local stone mills and clay roasters, Tsampa has long been a symbol of food sovereignty in Ladakh—resilient, wholesome, and accessible. Today, these very attributes make it a promising candidate for global health food shelves.

A Rising Global Demand for Ancient Grains

With growing global awareness around functional foods, traditional wisdom, and sustainability, ancient grains are commanding attention in both health-conscious and gourmet markets. According to Allied Market Research, the ancient grains market—including barley, quinoa, millet, amaranth, and spelt—is projected to grow to USD 12.3 billion by 2030. Consumers are increasingly drawn to:

Gluten-free and minimally processed products

Foods with a clear provenance and traceability

Nutrient-dense alternatives to refined grains

This positions Tsampa as not only a traditional food but also a market-disrupting wellness product, particularly appealing to:

Urban Indian consumers looking for healthy breakfast and snack options

Tourists seeking authentic Ladakhi souvenirs and Himalayan health foods

Export markets interested in high-altitude, traceable superfoods

Ayurvedic, fitness, and wellness brands promoting gut-friendly, energising staples

Project Objective: From Subsistence to Sustainable Enterprise

This project seeks to revive and scale the traditional production of Tsampa by introducing community-level processing infrastructure, modern branding, and market linkages. The goal is to commercialise Tsampa as a premium product while honouring its cultural roots and ensuring that benefits are equitably shared among local communities.

Key objectives include:

Developing a decentralised, farmer-linked Tsampa value chain benefiting over 500 smallholder barley farmers

Establishing local roasting, milling, and packaging units adhering to hygienic, semi-automated processes while retaining traditional quality

Creating branded product lines such as instant Tsampa porridge, Tsampa energy bars, health mixes, and eco-packaged souvenir kits

Promoting Ladakhi barley through its GI certification and storytelling rooted in heritage, resilience, and sustainability.

Strategic Leverage: Ladakh's Branding & Policy Edge

The project is uniquely positioned to benefit from:

Ladakh's Geographical Indication (GI) Tag for Barley, which enhances product authenticity and market protection

Strong tourism footfall, offering a direct-to-consumer sales platform for Tsampa-based souvenirs and health foods.

Policy support under schemes like:

PMFME (Pradhan Mantri Formalisation of Micro Food Processing Enterprises)

ODOP (One District One Product) – Leh District

Ladakh Organic Mission

Tribal and Mountain Agriculture Development Grants

Growing consumer appetite for climate-resilient foods that carry environmental and social value.

Vision: A Climate-Conscious, Farmer-Centered Superfood Economy

By marrying traditional Ladakhi food systems with contemporary health trends, this project envisions a new generation of Tsampa products that are:

Culturally grounded

Nutritionally robust

Environmentally sustainable

Economically empowering

The Tsampa venture will not only help preserve an endangered food heritage but also position Ladakh on the global health food map, building a model for regenerative, high-altitude agribusiness.

2. PRODUCT & ITS APPLICATION:

Core Product: Tsampa (Roasted Barley Flour)

Tsampa is a finely ground flour made from roasted Ladakhi barley, traditionally stone-ground. The roasting process enhances flavour, improves shelf life, and preserves nutrients—making it an excellent source of slow-release energy, ideal for high-altitude living and endurance.

Key Product Offerings:

Traditional Tsampa Flour (Loose & Retail Packs)

- 100% roasted barley flour in eco-friendly packaging
- Available in bulk (1–25 kg) and consumer retail (250g–1 kg)

Value-Added Products:

Instant Tsampa Porridge Mixes (with dried fruits/nuts/spices)

Tsampa Energy Bars (with honey, apricot, or walnut)

Herbal Tsampa Mixes (infused with seabuckthorn, Rhodiola, etc.)

By-Products:

Barley husk and bran for animal feed or compost

Roasted barley grains for brewing or tea blends (Tsampa Chai)

Applications & Target Segments

Daily Nutrition:

Consumed as porridge, drink mix, or flour supplement

Ideal for diabetic and heart-conscious diets (low glycemic index)

Tourism & Gift Retail:

Ladakhi food souvenir boxes for tourists

Heritage storytelling on packaging: "Tsampa from 3,500m"

Wellness & Fitness:

Promoted as a Himalayan superfood for endurance, strength, and gut health

High-fiber, prebiotic, and suitable for clean-label fitness snacks

Institutional Supply:

Midday meals, army rations, boarding schools, monasteries

Packaged dry porridge mix or energy bar variants

Export Potential:

Niche markets in Europe, Japan, and North America

Ayurveda, vegan, and organic food stores

USPs:

GI Certification: Authenticity of Ladakhi barley.

Zero-Waste Production: By-products used for animal feed.

Eco-Packaging: Compostable pouches with Buddhist mandala designs.

3. DESIRED QUALIFICATION FOR PROMOTER:

Agricultural Expertise: Knowledge of barley cultivation, organic certification (NPOP/EU Organic), and supply chain management.

Food Technology Skills: Experience in FMCG product development, shelf-life enhancement, and HACCP compliance.

Market Acumen:

Proficiency in D2C e-commerce (Amazon, Flipkart Organic).

Export documentation (FSSAI, APEDA).
Cultural Sensitivity: Ability to collaborate with Ladakhi cooperatives and monasteries.

Sustainability Credentials: Familiarity with carbon footprint measurement and Fair-Trade practices.

4. INDUSTRY LOOKOUT AND TRENDS:

Global Drivers:

- 30% CAGR in demand for ancient grains (Quinoa, Farro, Tsampa).
- Vegan/plant-based diets fuelling \$15 billion gluten-free market.

Regional Opportunities:

- Ladakh's Carbon-Neutral Goal: Incentives for eco-friendly agro-industries.
- Tourism boom (4.5 lakh+ visitors in 2023) driving demand for authentic souvenirs.

Challenges:

- Limited barley yield (800–1,000 kg/acre) due to short growing season.
- High logistics costs (Leh's aerial connectivity dependency).

5. MARKET POTENTIAL AND MARKETING ISSUES:

Market Segmentation:

Segment	Price (INR/kg)	Volume (Annual)	Revenue Potential
Local (Ladakh)	80–120	5,000 kg	₹5 lakh
Domestic (Urban)	250–400	10,000 kg	₹35 lakh
Export (EU/US)	600–1,000	2,000 kg	₹15 lakh

Marketing Strategy:

Digital:

- Virtual tours of Tsampa-making process via Instagram Reels.
- SEO-optimized website with storytelling (e.g., "From Ladakhi Fields to Global Tables").

Physical:

- Tie-ups with FabIndia, Nature's Basket, and airport lounges.
- Sampling stalls at Sindhu Dharshan Festival and Ladakh Marathon.

Export: Certify via Fair Trade USA and partner with platforms like Thrive Market.

Key Challenges & Solutions:

Challenge	Solution
Seasonal barley production	Collaborate with SKUAST for high-yield seeds
Low brand recognition	Leverage GI tag and Ladakh's tourism branding
Shelf-life (6 months)	Invest in nitrogen-flushed packaging

6. RAW MATERIAL REQUIREMENTS:

Material	Source	Annual Need	Sustainability
Organic Barley	Nubra/Sham Valley farmers	15,000 kg	Fair-price contracts with farmers
Honey	Ladakh Beekeeping Co-op	500 kg	Support local apiculture
Compostable Packaging	EcoPack India	10,000 units	Biodegradable certifications

7. MANUFACTURING PROCESS:

Sourcing & Sorting: Procure barley via Farmer Producer Organizations (FPOs); remove debris using vibratory sieves.

Roasting: Traditional iron kadhai roasting (220°C for 15 mins) or electric roasters for uniformity.

Cooling & Grinding: Stone mills for coarse texture; stainless steel grinders for fine flour.

Blending (Value-Added): Mix Tsampa with dried fruits, nuts, or Ladakhi sea buckthorn.

Packaging: Use automated filling machines + hand-sealed compostable pouches.

Storage: Climate-controlled warehouses (10–15°C) to prevent moisture.

8. MANPOWER REQUIREMENT:

Role	No.	Monthly Cost (INR)	Training Needs
Production Head	1	45,000	Food safety standards (ISO 22000)
Roasting Technicians	4	25,000	Machine operation
Packaging Team	6	18,000	Eco-packaging techniques
Marketing Manager	1	50,000	Digital marketing certifications
Total	12	3,02,000	

9. IMPLEMENTATION SCHEDULE:

Phase	Timeline	Activities	Milestones
Feasibility & Permits	Months 1–2	Market research, FSSAI/GI registration	Licenses secured
Infrastructure Setup	Months 3–4	Workshop construction, machinery install	100% operational facility
Pilot Production	Months 5–6	Test batches, consumer feedback	500 kg sold locally
Scale-Up & Export	Months 7–12	APEDA registration, e-commerce launch	₹10 lakh+ export orders

10. COST OF PROJECT:

Component	Cost (INR)	Details
Machinery & Automation	15,00,000	Roasters, grinders, packaging machines
Raw Material (Year 1)	5,00,000	Barley, honey, packaging
Marketing & Branding	7,00,000	Website, trade fairs, influencer collabs
Working Capital	3,00,000	Salaries, utilities, logistics
Total	30,00,000	

11. MEANS OF FINANCE:

Source	Amount (INR)	Terms
Promoter Equity	10,00,000	33% of total
MSME Loan (SBI)	15,00,000	8% interest, 7-year tenure
NABARD Subsidy	3,00,000	20% subsidy on machinery
CSR Funding (Local Corps)	2,00,000	For farmer training

12. LIST OF MACHINERY REQUIRED:

Machine	Qty.	Cost (INR)	Purpose
Electric Barley Roaster	2	6,00,000	Uniform roasting, 50 kg/hour
Pneumatic Sieve Cleaner	1	2,00,000	Remove stones/impurities
Vacuum Packaging System	2	4,00,000	Extend shelf-life to 12 months
Total		12,00,000	

13. PROFITABILITY CALCULATIONS:

Metric	Year 1	Year 2	Year 3
Sales Revenue	₹50,00,000	₹75,00,000	₹1,20,00,000
COGS	₹30,00,000	₹45,00,000	₹70,00,000
EBITDA	₹12,00,000	₹20,00,000	₹35,00,000
Net Profit (Post-Tax)	₹7,20,000	₹12,00,000	₹21,00,000
ROI	24%	40%	70%

14. BREAK EVEN ANALYSIS:

Fixed Costs: ₹18,00,000 (machinery depreciation, salaries, rent).

Variable Cost: ₹150/kg (raw material + labor).

Selling Price: ₹350/kg (average).

BEP (Volume): $18,00,000/350 - 150 = 9,000 \text{ kg/year}$
 $350 - 150/18,00,000 = 9,000 \text{ kg/year}$

BEP (Revenue): ₹31.5 lakh.

15. STATUTORY/GOVERNMENT APPROVALS:

Approval	Authority	Timeline	Cost (INR)
FSSAI License	FSSAI	30 days	10,000
GI Tag	Govt. of India	18 months	1,00,000
APEDA Registration	APEDA	45 days	25,000

16. BACKWARD AND FORWARD INTEGRATIONS:

Backward:

Establish barley seed banks with SKUAST-Leh for disease-resistant varieties.

Solar-powered irrigation systems for farmers.

Forward:

Launch a Tsampa café chain in metro cities.

Private-label partnerships with global retailers (e.g., Whole Foods).

17. TRAINING CENTERS AND COURSES:

SKUAST-Leh: Diploma in Organic Farming & Post-Harvest Management.

NIFTEM: Advanced Food Packaging & Shelf-Life Optimisation.

Local NGOs: Artisanal Tsampa-making workshops for women's self-help groups.

18. SUPPLIERS:

Core Processes & Matching Machinery:

Roasting:

Traditional: Open pans over fire (manual, low cost, skill-dependent).

Small-Scale Mechanised:

Rotary Drum Roasters: Ideal for even roasting. Look for small capacity (50-100 kg/batch) electric or gas-fired models.

Continuous Roasters (Fluid Bed/Screw Type): Better for larger volumes, more complex/expensive.

Key Suppliers (India Focused):

Spectrum Industries: (Pune) Offers a range of food roasters. Contact for small-scale options.

Bühler India: (Major player) High-end, likely overkill unless large scale, but has small pilot/test roasters. Expensive.

Ganesh Industrial Works: (Rajkot) Known for food processing machinery, including roasters. Ask specifically for barley capacity.

Alcobar India: (Delhi NCR) Specialises in roasting machines (coffee, nuts, grains). Good for inquiry.

Smaller Fabricators: Search for manufacturers in Punjab (Ludhiana, Jalandhar) or Delhi NCR specialising in grain processing or snack food machinery. Often more customisable/cost-effective.

Grinding/Milling (Crucial for Tsampa Texture):

Traditional: Stone hand mills (ghanti) or water mills - authentic texture but slow.

Mechanised:

Stone Flour Mills (Atta Chakki): Best for authentic coarse texture. Look for models specifically designed for dry grains.

Hammer Mills: Can produce coarser grinds with the right screen/sieve. Versatile but can generate heat/fines.

Disc Mills: Can be adjusted for coarser grinds.

[Key Suppliers \(India Focused - Stone Mills are highly recommended\):](#)

Natraj Aatamaker (VVF (India) Ltd): (Widespread) Their commercial stone flour mills are common. Specify it's for roasted barley (dry) and you need coarse flour.

Haystar Flour Mill: Popular home/commercial stone mill brand. Check commercial models.

Mill Power Industries: (Ahmedabad) Major manufacturer of flour mills (stone & hammer types).

Laxmi Flour Mill (Shubh Sanket Industries): (Ahmedabad) Another major flour mill manufacturer.

Rajkumar Agro Engineers Pvt. Ltd: (Nagpur) Offers various flour mills, including hammer mills. Specify coarse grind for roasted barley.

Local Fabricators (Punjab/Haryana): Often build sturdy stone or hammer mills. Search locally in grain belt regions.

[Optional: Sieving/Grading:](#)

Vibratory Sieves/Sifters: To separate very fine flour or husk remnants if desired. Often integrated with mills or available separately.

Key Suppliers: Same flour mill suppliers (Natraj, Mill Power, Laxmi, Rajkumar) often offer sieving attachments or standalone units. Also look at Kumar Metal Industries (Mumbai - pioneers in sieving).