



Project Profile

ORGANIC RAJMA



1. INTRODUCTION

1.1 Ladakh: A Frontier for High-Altitude Organic Agriculture:

Ladakh, situated in the trans-Himalayan region of India (3,000-5,800 meters altitude), presents a unique agro-ecological zone characterised by extreme aridity, intense solar radiation, significant diurnal temperature fluctuations, and a truncated growing season (typically 120-150 days from May to September). Historically reliant on subsistence farming of barley, wheat, and hardy vegetables, the region is undergoing a transformative shift under the Ladakh Organic Mission – a strategic government initiative promoting chemical-free, climate-resilient agriculture. This policy framework, combined with Ladakh's inherent "pesticide-free by geography" status (due to isolation and cold-induced pest suppression), creates an ideal foundation for premium organic production.

1.2 Rajma: An Untapped Opportunity for Diversification:

Kidney beans (*Phaseolus vulgaris*), locally termed Rajma, represent a strategic high-value crop for Ladakh's agricultural diversification. While not traditionally cultivated at scale, recent agronomic trials (e.g., by SKUAST-K, ICAR) have demonstrated the viability of short-duration (90-110 days), cold-tolerant varieties of both Red Rajma (rich, robust flavour) and Yellow Rajma (buttery texture, milder taste). These varieties align with Ladakh's growing window and offer compelling advantages:

Nutritional Powerhouse: Exceptionally high plant-based protein (22-24%), fiber, iron, and folate – aligning with booming global demand for health-focused, sustainable protein sources.

Soil Health Benefits: As nitrogen-fixing legumes, they enhance soil fertility, reducing dependence on external inputs and supporting crop rotation systems.

Water Efficiency: Lower water requirements compared to staples like paddy or some vegetables – a critical advantage in Ladakh's water-scarce environment.

1.3 Market Imperative: Rising Demand for Premium Organic Pulses:

The global and Indian markets for organic pulses are experiencing robust growth, driven by:

Health & Wellness Trends: Surging plant-based diets, protein supplementation demand, and clean-label preferences.

Food Safety Concerns: Heightened consumer awareness about pesticide residues in conventional pulses.

Export Potential: Strong demand in EU, North America, and Middle Eastern markets for certified organic, traceable legumes.

Ladakh's pristine environment, organic certification potential, and unique terroir position its Rajma to command significant price premiums (estimated 30-50% over conventional) in these niche markets.

1.4 Project Vision: Sustainable Value Chain Development:

This project proposes the establishment of a farmer-centric organic Rajma (Red & Yellow) production and primary processing system in Ladakh. It aims to:

Demonstrate Agronomic Viability: Scale proven cultivation protocols for cold-tolerant Rajma varieties across select villages.

Establish Market Linkages: Connect Ladakhi farmers directly to premium domestic (health food stores, gourmet retailers, e-commerce) and export-oriented buyers.

Build Processing Capacity: Introduce basic cleaning, grading, and packaging facilities to ensure quality, meet market standards, and capture higher value locally.

Enhance Farmer Resilience: Provide a lucrative cash crop alternative, diversifying income sources and mitigating risks associated with mono-cropping or climate volatility.

Leverage the "Ladakh Brand": Capitalise on the region's growing reputation for purity, sustainability, and unique origin to create a distinctive "High-Altitude Himalayan Organic Rajma" identity.

1.5 Strategic Alignment:

This initiative directly supports:

Ladakh Organic Mission Goals: Transitioning to certified organic production, enhancing farm incomes.

National Food Security & Nutrition: Increasing domestic production of protein-rich pulses.

Sustainable Development Goals (SDGs): SDG 2 (Zero Hunger), SDG 8 (Decent Work), SDG 12 (Responsible Consumption), SDG 13 (Climate Action - via low-input ag).

1.6 Key Challenges & Mitigation:

Limited Growing Season: Addressed through use of specifically bred short-duration varieties and optimised planting schedules.

Post-Harvest Management: Critical investment in moisture-controlled storage and processing to prevent spoilage and maintain quality.

Market Access & Logistics: Requires strategic partnerships with specialised agri-exporters and investment in efficient supply chains from remote areas.

Farmer Adoption: Needs robust training, assured buy-back mechanisms, and demonstration of profitability.

2. PRODUCT & ITS APPLICATION:

Core Offerings:

Organic Red & Yellow Rajma (Whole Beans):

Sourced from high-altitude farms of Ladakh, these kidney beans are grown without chemical fertilisers or pesticides, offering superior taste, texture, and nutrition. Available in retail-friendly packaging and bulk formats for both local and national markets.

Value-Added Products:

Rajma Flour: Finely milled, high-protein gluten-free flour ideal for baking, protein bars, and thickening soups and stews.

Ready-to-Cook Rajma Mixes: Pre-spiced or plain dehydrated mixes for instant cooking, targeting urban consumers and tourists.

Canned Organic Rajma: Cooked and preserved in brine or mildly spiced gravies for quick consumption – a convenient, shelf-stable option for domestic and export markets.

By-Products:

Bean Husks & Waste: Cleaned and processed for use as livestock feed or converted into organic compost through farm-level waste management practices, promoting circular agriculture.

Applications:

Culinary Use in Households and Commercial Kitchens:

The beans are a staple in Indian cooking, especially in dishes like Rajma-Chawal.

Used in restaurants, cafes, and institutional kitchens for salads, curries, and soups.

Versatile protein substitute in vegetarian and vegan recipes.

Health & Wellness Segment:

Rich in protein, dietary fiber, iron, and antioxidants, making them ideal for:

Gluten-free and diabetic-friendly diets.

Fitness and wellness-focused consumers.

Ayurvedic and traditional wellness food brands promoting Ladakhi produce.

Ethnic, Cultural & Souvenir Market:

Attractively packaged heirloom Rajma beans and flour as culinary souvenirs.

Perfect for tourist retail outlets, airport counters, and Ladakh-themed gourmet gift boxes.

Narratives on heritage farming, high-altitude cultivation, and organic certification enhance value.

Export Potential & Diaspora Market:

Targeted exports to Indian diaspora communities in Europe, North America, and the Gulf.

Niche organic and ethnic food stores interested in Himalayan, sustainable, and traceable supply chains.

Institutional and Government Procurement:

Can be supplied to government-run schools, hostels, and healthcare institutions under nutrition-based schemes like Mid-Day Meals or Public Distribution System (PDS), with a focus on promoting indigenous pulses.

3. DESIRED QUALIFICATION FOR PROMOTER:

Education: Degree in Agriculture, Agronomy, or Food Technology.

Experience: 2+ years in organic farming or pulse processing.

Skills: Knowledge of cold-climate agriculture, supply chain management, and organic certification.

Local Knowledge: Familiarity with Ladakh's agro-climatic challenges.

Certifications: NPOP (Organic), FSSAI, and PMFME training.

4. INDUSTRY LOOKOUT AND TRENDS:

Global Demand: Organic pulses market to grow at 8.3% CAGR (2023–2030).

Trends: Plant-based proteins, clean-label foods, and traceable supply chains.

Ladakh-Specific: Government subsidies for organic inputs and micro-processing units.

5. MARKET POTENTIAL AND MARKETING ISSUES:

Potential:

Local Demand: 50,000+ residents and 3+ lakh tourists annually.

National/Export Markets: Metro cities (Delhi, Mumbai), Europe, and Middle East.

Challenges:

Climate Risks: Frost, short growing season, and water scarcity.

Competition: Cheap non-organic Rajma from Himachal and Punjab.

Logistics: High transport costs from remote Ladakh.

Marketing Strategies:

Brand as "Ladakh's Organic Protein Power" with eco-friendly packaging.

Partner with health stores (Organic India, Nutty Gritties), e-commerce (BigBasket).

Tourism tie-ups (hotels, homestays) for direct sales.

Core Value Proposition of Ladakhi Organic Rajma

Attribute	Red Rajma	Yellow Rajma	Market Advantage
Origin & Purity	Grown 3,000m+ altitude, No synthetic inputs	Same as Red	"Pristine Himalayan Origin," Strong organic certification appeal, Traceability story
Nutritional Profile	High Protein (24%), Iron, Fibre	High Protein (22%), Potassium	Meets health-food & plant-based protein demand
Culinary Traits	Holds shape well, Robust flavour	Creamy texture, Milder flavour	Appeals to gourmet chefs; Versatility for diverse cuisines
Agronomic Fit	100–110-day maturity, Cold-tolerant	90–100-day maturity, Cold-tolerant	Suits Ladakh's short season; Low water requirement
Sustainability	Nitrogen-fixing, Soil health improver	Same as Red	Low carbon footprint; Enhances f

6. RAW MATERIAL REQUIREMENTS:

Primary: Organic Rajma seeds (cold-tolerant varieties).

Secondary: Biodegradable packaging, organic compost, drip irrigation systems.

Energy: Solar-powered processing units.

7. MANUFACTURING PROCESS

Cultivation:

Land preparation (well-drained soil).

Sowing in May–June, intercropping with barley for soil health.

Harvesting post-90–120 days.

Processing:

Cleaning, drying, and sorting.

Milling into flour or canning (optional).

Packaging: Airtight, moisture-resistant pouches with organic certification labels.

8. MANPOWER REQUIREMENT:

Skilled: 2 agronomists, 1 food technologist.

Labour: 10–15 farmworkers for cultivation/harvesting.

Processing Unit: 5 operators, 2 quality inspectors.

Sales: 2 executives for B2B and retail.

9. IMPLEMENTATION SCHEDULE:

Phase	Activity	Timeline
1	Seed procurement, land preparation	May–June 2024
2	Sowing and organic certification	July 2024
3	Harvesting and processing setup	Sept–Oct 2024
4	Product launch and marketing	Nov–Dec 2024

10. COST OF PROJECT:

Component	Cost (INR)
Land lease (5 acres)	1.5 lakh
Seeds, organic inputs	3 lakhs
Solar-powered processing unit	10 lakhs
Packaging and branding	2 lakhs
Contingency	1.5 lakh
Total	18 lakhs

11. MEANS OF FINANCE:

Equity: 8 lakhs (promoter's contribution).

Debt: 7 lakhs (NABARD loan @7% interest).

Subsidy: 3 lakhs (PM Formalisation of Micro Food Enterprises Scheme).

12. LIST OF MACHINERY REQUIRED:

Solar dryers, seed cleaners, milling machine.

Weighing scales, moisture meters, packaging machine.

Drip irrigation systems.

13. PROFITABILITY CALCULATIONS:

Revenue (Year 1): $8,000 \text{ kg} \times ₹120/\text{kg} = ₹9.6 \text{ lakh}$.

Value-Added Products: Flour/canned beans (₹4 lakh).

Operational Costs: ₹8 lakh (cultivation, labour, marketing).

Net Profit: ₹5.6 lakh (pre-tax).

14. BREAKEVEN ANALYSIS:

Fixed Costs: ₹6 lakh (machinery, rent).

Variable Costs: ₹70/kg.

BEP: $₹6 \text{ lakh} / (₹120 - ₹70) = 12,000 \text{ kg annually}$.

15. STATUTORY/GOVERNMENT APPROVALS:

FSSAI License for processed products.

Organic Certification (NPOP).

GST Registration.

NOC from LAHDC (Land Use).

16. BACKWARD AND FORWARD INTEGRATIONS:

Backward: Farmer training in organic practices; seed cooperatives.

Forward: Retail partnerships (Reliance Fresh, Amazon), export via APEDA.

17. TRAINING CENTERS AND COURSES:

Krishi Vigyan Kendra (KVK), Leh: Organic pulse cultivation.

National Institute of Food Technology (NIFTEM): Processing and packaging.

PMFME Scheme: Entrepreneurship and food safety training.

18. SUPPLIERS

Suggested Machinery & Equipment Suppliers for Rajma Processing:

1. Cleaning, Grading & Sorting Equipment

Use: Removal of dust, stones, broken grains; size/weight-based grading

Sifter International, Faridabad (Haryana)

<https://www.sifterinternational.com>

Offers: Seed graders, destoners, gravity separators, vibro cleaners.

Buhler India Pvt. Ltd. (Bangalore)

<https://www.buhlergroup.com>

Premium-grade machinery for seed cleaning, colour sorting (optical sorters).

Ang Enterprise (Rajkot, Gujarat)

<https://www.angenterprise.com>

Focus on small-medium capacity seed cleaners and graders ideal for agri-cooperatives.

2. Milling & Flour Processing

Use: Converting dried rajma into flour or meal

Mill Power Pvt. Ltd. (Ahmedabad, Gujarat)

<https://www.millpoweronline.com>

Offers: Hammer mills, impact pulverisers for pulse flour.

Shree Shyam Industries (Punjab)

Specializes in mini-dal mills, flour mills, and multipurpose grinders.

Rising Industries (Kolkata, West Bengal)

<https://www.risingindustries.in>

Pulse flour mills, spice grinders, and food processing lines.

3. Packaging & Sealing Machinery

Use: Retail-friendly pouch packaging (vacuum, nitrogen-flush), labeling

Multipack Machinery Company (Ahmedabad)

<https://www.multipack.com>

Machines for pouch filling, sealing, and labeling (both semi-automatic & automatic).

Nichrome India Ltd. (Pune, Maharashtra)

<https://www.nichrome.com>

VFFS (Vertical Form Fill Seal) machines for pulses & flour packaging.

4. Canning & Retort Processing Units

Use: Cooked and preserved rajma in brine or curry

SS Engineers and Consultants (Hyderabad)

<https://www.ssengineers.co.in>

Retort-based canning lines, sterilisers, and tin sealing machines.

Goma Engineering Pvt. Ltd. (Thane, Maharashtra)

<https://www.goma.co.in>

Offers food canning and sterilisation machinery with steam/retort systems.

5. Turnkey/Integrated Plant Setup Providers

Use: End-to-end Rajma processing line from cleaning to packaging

Sri Ganesh Mill Stores (Coimbatore, Tamil Nadu)

<https://www.sriganeshmillstores.com>

Custom solutions for small agro-processing startups.

Ultra Febtech Pvt. Ltd. (Ahmedabad)

<https://www.ultrafebtech.com>

Provides complete food processing systems, including pulse-based product lines.

Suggested Machine Types & Costs (Indicative)

Machine	Capacity	Approx. Cost (INR)
Vibro Cleaner	200–500 kg/hr	₹1.5–2.5 lakh
Gravity Separator	500–1000 kg/hr	₹2.5–5 lakh
Hammer Mill / Pulverizer	50–200 kg/hr	₹1–3 lakh
Pouch Packing Machine	20–60 ppm	₹2–6 lakh
Retort Canning Machine	100–500 cans/hr	₹5–15 lakh

Tips:

Choose solar-compatible or low-energy models suitable for Ladakh.

Look for suppliers offering training and installation support.

Check if machines are ISI-certified or supported under MSME subsidies, PMFME Scheme, or LADF (Ladakh Autonomous Development Fund).

Disclaimer:

Only a few training centres are mentioned in the profile, although many are available in the market. The addresses given for centres have been taken from reliable sources, to the best of our 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.