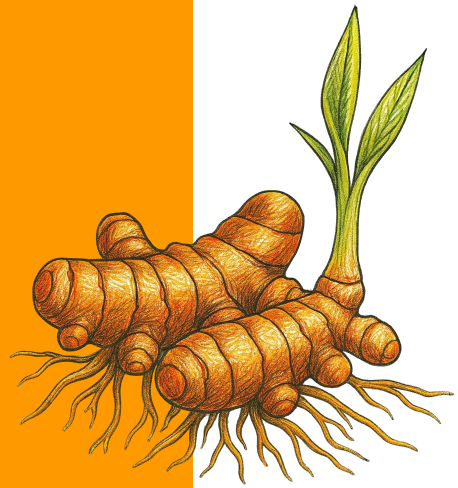

Unlocking the Turmeric Value Chain for India

Insights From Secondary Research

SELCO Foundation

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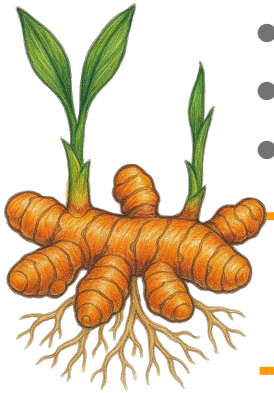


This deck synthesizes secondary research to identify systemic gaps and possibilities for decentralized interventions in turmeric value chains.

A SYSTEMS LENS ON THE TURMERIC VALUE CHAIN

At SELCO Foundation, we look at value chains not just as production-to-market pipelines, but as systems that need to work for both people and the planet. That means:

Enabling climate-resilient livelihoods

Unlocking economic potential equitably

Strengthening institutions, not just infrastructure

This deck synthesizes insights from secondary research to explore how such an **ecosystem approach can be applied to turmeric — a high-potential but under-leveraged crop especially in Northeast India.**

TURMERIC AS A FOCUS COMMODITY

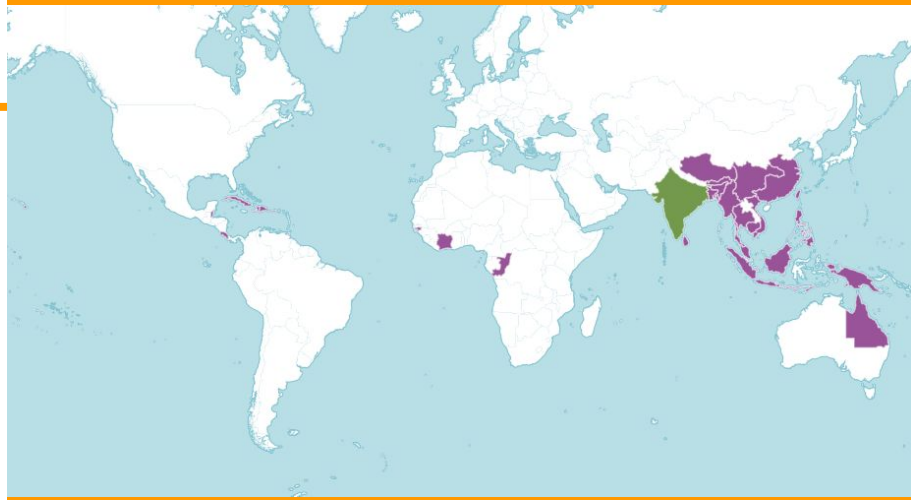
Turmeric is an

ANCIENT INDIAN CROP

has been used as a culinary spice and for religious purposes for

4000 years

Native to Asia and India, its global consumption is increasing due to medicinal properties.



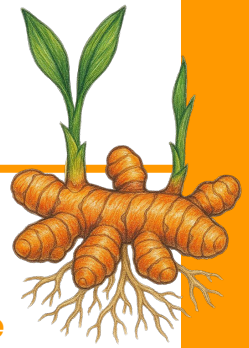
India leads the world in turmeric production, consumption, and export. In 2022-23, India cultivated 3.24 lakh hectares, producing 11.61 lakh tonnes, accounting for over 75% of global output.

Over 30 varieties are grown across 20+ states, with Maharashtra, Telangana, Karnataka, and Tamil Nadu being major producers.

India holds over 62% of the world's turmeric trade,

Source: Press Information Bureau

THE UNTAPPED POTENTIAL OF TURMERIC IN THE NORTH EAST REGION OF INDIA



For indigenous communities in the NER, turmeric is a,

low-input cash crop

providing a major income source

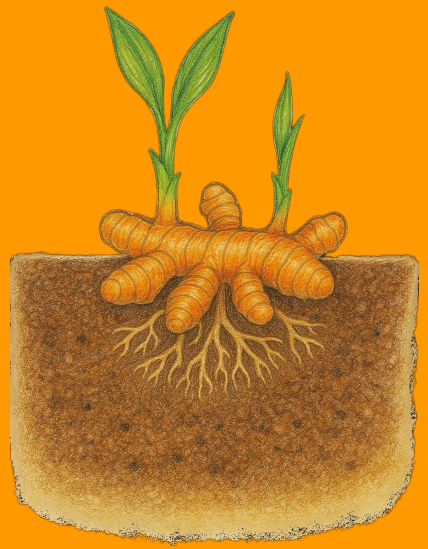
It is mostly cultivated in jhum fields spread over the hills and tribal areas of the entire region

Key Features of Turmeric in NER -

- Lakadong turmeric from Meghalaya boasts high oleoresin and curcumin content (6.8–7.5%).
- It's primarily sold fresh with limited local demand, resulting in a 70-80% surplus.
- Strong export potential exists for turmerones, oleoresin, and powder derived from this turmeric.
- Turmeric is a crucial cash crop in the Northeast region, accounting for 8.30% of national production.
- Mizoram is the leading producer in the region (27.82 thousand MT), followed by Meghalaya (16.63 thousand MT) and Manipur (15.40 thousand MT).
- The region's climate, characterized by warm, humid summers with abundant rainfall and cool winters, is perfectly suited for turmeric cultivation.

Source: Indian Journal of Agricultural Economics, 2020

UNDERSTANDING THE CROP AND ITS CHARACTERISTICS



Indigenous communities in India **grow turmeric organically by default**, though farming typologies vary from certified organic to fully hybrid and chemical-based.

Key Challenges Include

Poor benefit of organic farming
Despite significant organic farming and quality differentiation, national markets are largely homogenous, with organic producers not directly benefiting financially.

Low diversity in value addition
Despite diverse uses and value-addition potential in pharmaceuticals, textiles, and food due to its anti-inflammatory and antioxidant properties, turmeric is mainly consumed as powder domestically.

Need to make better use of high curcumin
Opportunities exist to capitalize on high-curcumin varieties and diversified products for both domestic and international markets.

UNDERSTANDING THE CROP'S CLIMATE STRESSES

Reduced Rhizome Formation

Climate change impacts have caused reduced rhizome development and delayed maturity, directly lowering turmeric productivity in vulnerable zones.

Increased Diseases

Shifts in rainfall and temperature increase susceptibility to diseases like rhizome rot and leaf blight, undermining both yield and product quality.

Curcumin Content Sensitivity

Climate stress lowers curcumin concentration, a critical quality trait for turmeric's pharmaceutical and export value.

Export Challenges

Changes in climate indirectly exacerbate challenges in meeting export standards due to variable quality and biochemical markers affected by environmental stressors.

*Rhizome- the part of turmeric crop harvested

PACKAGE OF PRACTICES | CULTIVATION LIFECYCLE

1

Land Preparation

Land preparation, vegetation clearing, ploughing, and bed/furrow formation. Intercropping with maize or vegetables is possible

2

Sowing & Inputs

specific rhizome spacing, and NPK application.

3

Manuring & Mulching

Pits filled with FYM/compost, insecticides. Green leaves are used immediately after planting.

4

Weeding & Irrigation

2-3 weeding cycles are typically needed. Rainwater is usually sufficient.

5

Harvesting

Indicated by drying aerial parts. Lakadong variety matures in 8-9 months, harvested late Dec-early Jan

6

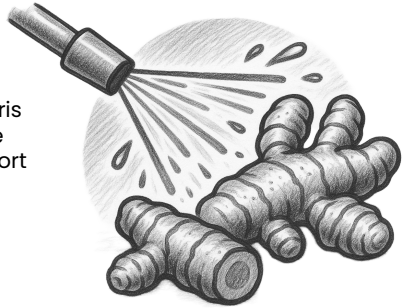
Storage

Mother and healthy finger rhizomes are stored in well-ventilated rooms, covered with turmeric leaves, or in traditional pits.

PACKAGE OF PRACTICES | POST HARVEST LIFECYCLE

1

Cleaning
Remove debris and pressure wash for export quality.



2

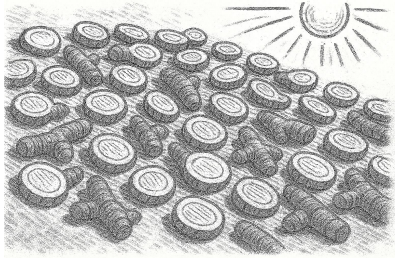
Slicing
Slice large turmeric before boiling and drying to reduce moisture

3

Boiling
Fresh rhizomes boiled for dry turmeric.

4

Drying
Cooked fingers sun-dried. Solar tunnel dryers enhance speed. Yield: 20-25% (% of weight after drying)



5

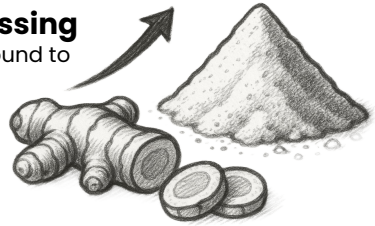
Polishing & Colouring
Dried turmeric polished for appearance. Turmeric powder sprinkled for color.

6

Storage & Packing
Cleaned, graded turmeric packed in double burlap gunny bags, stored cool, dry, pest-free. No pesticide application on dried/polished tur

7

Powder Processing
Polished fingers ground to fine particles



PACKAGE OF PRACTICES | POST HARVEST LIFECYCLE - TECHNOLOGIES REQUIRED

1

Cleaning

Remove debris and pressure wash for export quality.

Destoner | Rod and Flood Washers | Vibratory Feed Conveyor

2

Slicing

Slice large turmeric before boiling and drying to reduce moisture

Slicer

3

Boiling

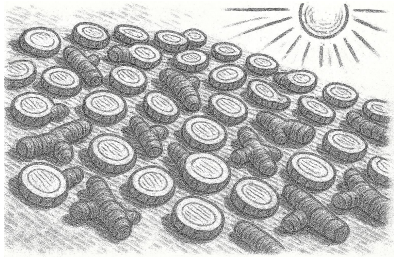
Fresh rhizomes boiled for dry turmeric.

Blancher

4

Drying

Cooked fingers sun-dried. Solar tunnel driers enhance speed. Yield: 20-25%.



Solar Dryer

5

Polishing & Colouring

Dried turmeric polished for appearance. Turmeric powder sprinkled for color.

6

Storage & Packing

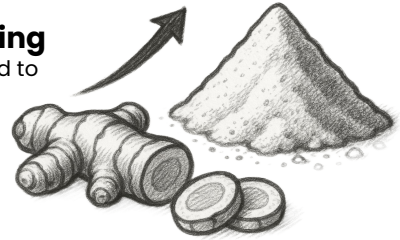
Cleaned, graded turmeric packed in double burlap gunny bags, stored cool, dry, pest-free. No pesticide application on dried/polished tur

Packaging Machine

7

Powder Processing

Polished fingers ground to fine particles



Grinders, Pounders

Challenges in the Turmeric Value Chain

Cultivation

Appropriate machinery and better farming practices are essential.

- Frequent leaf spot and rhizome rot outbreaks reduce yields in humid northeastern states (Assam, Tripura, Mizoram)
- Lack of disease-resistant, high-curcumin seed varieties limits resilience and market value
- Limited soil testing and organic inputs degrade soil health and productivity
- Scattered smallholdings hinder coordinated crop planning and farmer collaboration

Processing

Farmers receive under 15% of consumer spending due to limited value-added processes.

- Absence of solar dryers and slicers lowers curcumin retention and product quality; limited technical know-how affects curing, boiling, and slicing quality
- Poor storage exposes rhizomes to humidity, spoilage, and contamination
- Weak producer-processor linkages cause irregular supply and idle capacity

Markets

A disconnect exists between industry needs and current value addition.

- Lakadong turmeric from Meghalaya, despite its high curcumin content, doesn't achieve premium culinary prices, resulting in underutilized mills
- Nutraceutical firms demand slice-dried turmeric, not powder
- Weak branding and adulteration reduce price premiums for premium turmeric types
- Price volatility and limited data deter long-term investment

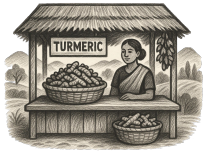
Market Channels - Price Appreciation

12%

Traders

Rs. 25-30/kg

7%



Markets (Nearby Districts & City)

Rs. 30-35/kg

End Consumers

Rs. 200-250/kg

Farmers

Rs. 22-27/kg

12%

Local Markets

Rs. 28-32/kg

12%

Traders

Rs. 25-30/kg

7%

Rs. 30-35/kg

Absent

Processing Center with Storage	Value Addition & Product Development	Packaging

7-8x

PROCESSING & PRODUCT STREAMS

Primary Processing

Raw Turmeric

Secondary Processing

Dry Turmeric Powder

Turmeric Paste

Turmeric Curcumin

Turmeric Oil

Tertiary Processing

Turmeric Soap & Cosmetics

Turmeric Pickle

Turmeric Tea

Turmeric Milk

PROCESSING & PRODUCT STREAMS

Primary Processing

Raw Turmeric

Rs. 25/kg

Secondary Processing

Dry Turmeric Powder

Rs. 190/kg (7.6X)

Turmeric Paste

Rs. 200/kg (8X)

Turmeric Curcumin

Rs. 3000/kg (120X)

Turmeric Oil

Rs. 1600/kg (64X)

Tertiary Processing

Turmeric Soap & Cosmetics

Rs. 250/kg (10X)

Turmeric Pickle

Rs. 200/kg (8X)

Turmeric Tea

Rs. 500/kg (20X)

Turmeric Milk

Rs. 800/kg (32X)

LEARNINGS FROM CASE STUDIES - LIFE SPICE CO-OPERATIVE

Founded in 2022 in Laskein, Meghalaya, the **Life Spice Co-operative unites 23 turmeric farmers**, primarily women, to process high-curcumin **Lakadong turmeric**. It aggregates produce from 15 nearby Community Marketing Centres (CMCs), promoting collective ownership and income generation.

Last season, **Life spice bought 55 tonnes of raw turmeric** from farmers at ₹30–35/kg. They sold **10 tonnes of dried slices** to PoroWellness (Gujarat) for ₹180/kg and 1 tonne of powder locally for ₹300/kg.

Life spice **provides steady income** (₹5,000/month honorarium), empowers women, and promotes renewable energy. Secretary Teimonlang Shylla hopes it will "sustain for generations."

Frequent rains and limited sunlight lead to 40–50% product losses from blackened turmeric.

Machinery and renewable energy (solar, biomass dryers) boosted cooperative productivity from 10 kg to 100 kg daily.

The **co-operative will vertically integrate into nutraceuticals**, partnering with TechnoChemical Calicut for curcumin oil resin extraction and tablet production. They will implement price differentiation based on lab-tested curcumin content and improve branding and packaging.

Image Source: The Morung Express

LEARNINGS FROM CASE STUDIES - RANGSANG FPO

Formed in 2020, Rangsang **brings together local farmers cultivating turmeric, black pepper, and bay leaf**. The FPC's goal is to enhance processing, marketing, and sustainable cultivation—shifting from selling raw produce to producing market-ready organic spices.

Rangsang enhanced its ecosystem through collaborations with Aqysta and FoodLea Fresh for **market linkages** and with NABARD and Diya Foundation for **leadership, business management, and e-commerce training**. The FPC also received the **Best Farmer Award** from the Horticulture Department.

The FPC achieved an **annual turnover exceeding ₹17 lakh and aims to double it within three years**. Farmers now retain higher margins by processing and packaging locally, improving profitability and financial resilience while reducing dependence on middlemen.

With support from SELCO Foundation and Diya Foundation, the **FPC solar-powered its 10 spice processing machines**— including threshing, boiling, grinding, packaging, and ginger candy-making units. The ₹9.8 lakh project was jointly financed by SELCO (₹9.35 lakh) and the FPC's corpus (₹0.49 lakh).

LEARNINGS FROM CASE STUDIES - PRAGATI FPC

Located in Boko, Kamrup, Pragati Farmer Producer Company (600+ members) established a s**olar-powered spice processing unit in June 2024** with support from SELCO Foundation, focusing on black pepper and turmeric value addition for small farmers.

The FPC faced **3–4 hour daily power cuts, frequent production delays**, and high electricity costs (₹1200–1500/month). These issues limited bulk order processing and **capped profits at ₹30,000/month**, restricting overall growth and farmer income.

The solar system provided continuous, reliable power, **reducing electricity costs to ₹500/month and extending operating hours by 3–4 hours daily. Monthly profits rose to ₹50,000,** while consistent production enabled larger order volumes and greater member procurement.

Learnings from Secondary Research

1

Low Productivity

Yields remain low due to limited use of improved agronomic practices. Using certified rhizomes, proper spacing, and integrated pest and nutrient management can raise productivity and reduce costs.

2

Nutrient Replenishment

Continuous cultivation and sloping terrain deplete soil nutrients. Crop rotation with legumes, green manures, and biofertilizer use help maintain fertility and prevent erosion.

3

Moisture Content

High humidity delays drying and causes fungal losses. Promoting solar dryers and improved curing can maintain ≤12% moisture and preserve colour and curcumin quality, especially for Lakadong.

4

Storage Facilities

Lack of scientific storage and drying units causes heavy post-harvest losses. Localized solar or mechanical dryers and FPO-led godowns can preserve product quality and value.

5

Cultivation of Suitable Varieties

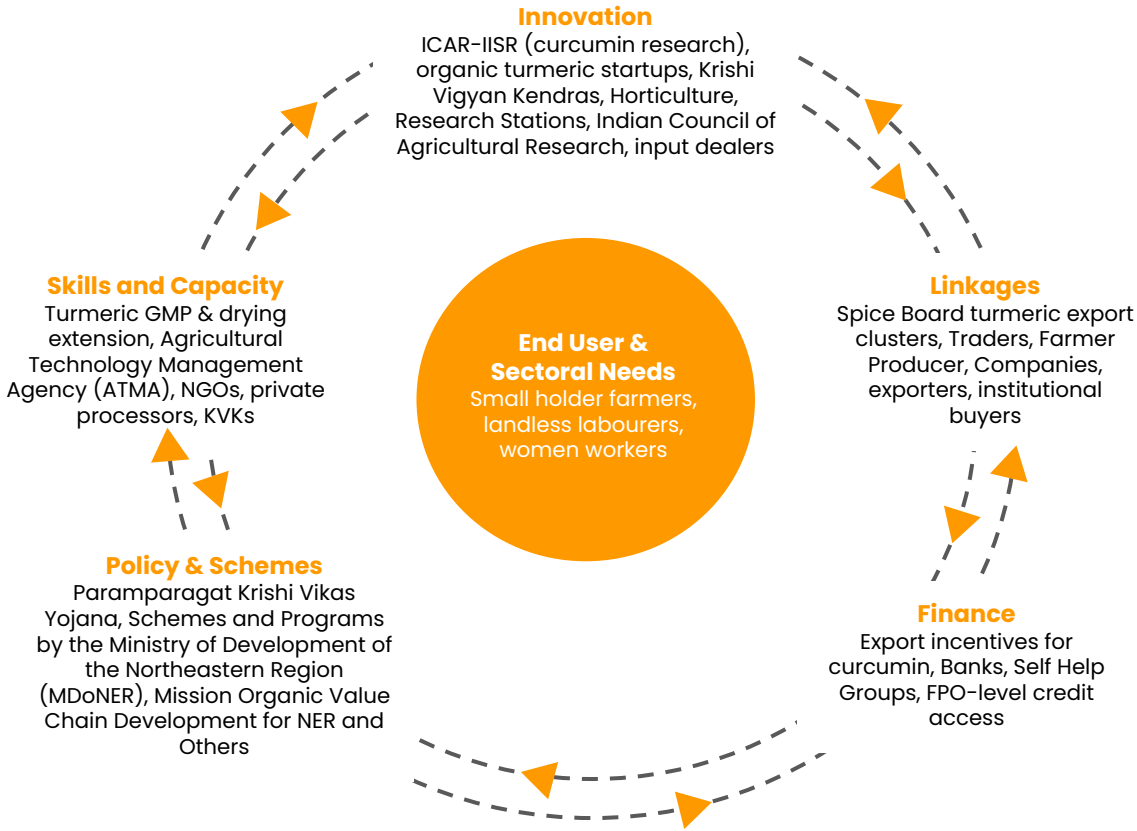
High-curcumin Lakadong and regional varieties have export potential but limited scale. Strengthening seed rhizome banks and ensuring varietal purity can boost yields and market value.

6

Price Stabilisation

Seasonal gluts and poor market links depress prices. Strengthening FPOs, market linkages, and promoting Lakadong as a premium GI product can stabilize farmer incomes.

ECOSYSTEM MAPPING — WHO HOLDS THE CHAIN TOGETHER?



RELEVANT GOVT. DEPARTMENTS AND SCHEMES

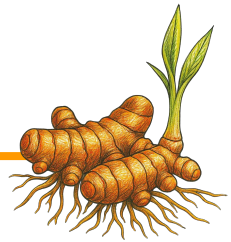
Planning	**Ministry of Development of the Northeastern Region (MDoNER), North Eastern Council (NEC)**	Planning, Development, Advisory, Economic and Infrastructure Projects
Finance	**North Eastern Development Finance Corporation Limited (NEDFi), Kisan SAMPADA Yojana**	Financial aid to support industrial infrastructure and agri-allied projects, fostering entrepreneurship.
Value Chain Development	**Mission Organic Value Chain Development for North Eastern Region, Paramparagat Krishi Vikas Yojana (PKVY), National Project on Organic Farming (NPOF), Mission for Integrated Development of Horticulture (MIDH), Mega Food Parks (MoFPI Scheme)**	Certification, technology dissemination. Infrastructure. Credit-linked back-ended subsidies

The Northeast already grows turmeric at scale.

The challenge — and opportunity — is to convert that production into prosperity.

This isn't about turmeric alone — it's about building equitable, decentralised, climate-resilient rural economies.

LET'S CO-CREATE !



If you're working with rural communities, FPOs, or institutional partners in the North East — or building climate-resilient agri-value chains anywhere — we'd love to collaborate.

Reach out to us to explore ideas, align efforts, or pilot together.

SELCO Foundation