



Title of the project

Promoting nutritional security through Cultivation of Chironji, Tamarind, and Wood Apple in Forest Fringe Areas

Research areas

Unconventional modes of growing fruit trees that make efficient use of land, e.g., planting on wasteland, field bunds, community land, forest fringes, rooftops, and roadside.

Target area

Forest fringe areas of Mandla & Dindori districts of MP State

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Introduction to project:

- *B. lanzan*, *T. indica*, *Limonia acidissima* are nutritionally rich wild fruit species.
- These species are socially, ecologically and economically important for the tribals residing in forest fringes of Central India.
- Tribals of the state use the fruits of these species for getting nutrition as well as livelihood generation.
- Annual demand of *T. indica*: 1000-2000 MT; *B. lanzan*: 100 – 200 MT; *L. acidissima*: 100-150 MT for medicinal purposes (NMPB)
- Trade of these target species are very high in Madhya Pradesh & Chhattisgarh states.



B. lanzan

Table 1: Nutritional composition of seeds of *Buchanania lanzan* (g/100g)

COMPONENTS	PROXIMAL VALUE (%)
Ash	2.20
Moisture	3.6
Crude fat	38
Total protein	43.24
Total carbohydrate	12.96
Total Crude fiber	18.50
Energy value (kCal)	229.99

Table: 2 Total Mineral contents estimated in *B. lanzan* seeds

MINERAL	CONCENTRATION (mg/100g)
P	593
Sr	0.68
Ti	0.01
Zn	3.32
Al	0.3
B	0.6
Ba	0.15
Ca	70
Cu	1.15
Fe	4.8
Mg	275
Mn	1.6

Nutritional Profile

T. indica

Table 1

Nutritional value per 100 g of Tamarind (*T. indica*). (Source: USDA National Nutrient data base).

Principle	Nutrient value	Percentage of RDA
Energy	239.00 Kcal	12%
Carbohydrates	62.50 g	40%
Protein	2.80 g	5%
Total tat	0.60 g	3%
Cholesterol	0 mg	0%
Dietary fiber	5.10 g	13%
Vitamins		
Folates	14.000 µg	3.5%
Niacin	1.938 mg	12.0%
Pantothenic acid	0.143 mg	3.0%
Pyridoxine	0.066 mg	5.0%
Thiamin	0.428 mg	36.0%
Vitamin A	30.000 IU	1.0%
Vitamin C	3.500 mg	6.0%
Vitamin E	0.100 mg	<1.0%
Vitamin K	2.800 µg	2.0%
Electrolytes		
Sodium	28 mg	2%
Potassium	628 mg	13%
Minerals		
Calcium	74.00 mg	7.0%
Copper	0.86 mg	9.5%
Iron	2.80 mg	35.0%
Magnesium	92.00 mg	23.0%
Phosphorus	113.00 mg	16.0%
Selenium	1.30 µg	2.0%
Zinc	0.10 mg	1.0%
Phyto-nutrients		
Carotene-β	18 µg	-
Crypto-xanthin-β	0 µg	-
Lutein-zeaxanthin	0 µg	-

L. acidissima

Table 1. Nutritional analysis of dried pulp.

Constituents	Dried pulp (%)
Moisture	6.4
Ash	5.28
Protein	13.8
Fat	4.3
Carbohydrates	70.0
Dietary fiber	1.7

Table 2. Minerals and vitamins content of *L. acidissima* pulp.

Analyte	Concentration (µg/g)
Minerals (µg/g)	
P	1,137.35
Mg	852.5
Ca	711.8
Fe	23
Zn	23.84
Cu	6.67
Mn	3.64
Sb	0.626
As	ND
Be	ND
Cd	ND
Cr	1.543
Co	ND
Pb	0.163
Li	0.241
Mo	0.263
Ni	0.819
Se	0.768
Sr	ND
Tl	1.930
Ti	0.257
Sn	0.474
Vitamins (µg/g)	
Vitamin C	180
Riboflavin (B2)	0.23
Thiamine (B1)	0.31
Beta-carotene	0.04

Problem statement

- Despite socioeconomic importance, these wild fruit species are still restricted to the natural pockets/ forest areas and sourced from there only.
- Despite its significant contribution to tribal livelihood and nutrition, the species remains uncultivated.
- Very limited efforts have been made to promote these valuable species outside forest areas.
- Natural regeneration is very poor.
- Chironji – Vulnerable

Brief evidence/field experience

- *B. lanzan*: CPT selection, evaluation, and production of QPM, seed gene bank – ICFRE funding
- *T. indica*: Germplasm collection from MP, CG & MH, evaluation & experimentation on propagation techniques, seed gene bank (07-08) - CG CAMPA funding
- *L. acidissima*: Germplasm collection, evaluation & experimentation on propagation techniques - MoEF & CC funding



Project Objectives:

The primary objective of this research is promoting nutritional security through *Cultivation of Chironji, Tamarind, and Wood Apple in Forest Fringe Areas of tribal districts i.e. Dindori and Mandla*

- 1) Production of Quality Planting Material (QPM) of Chironji, Tamarind, and Wood Apple**
- 2) Establishment of demo plantation in forest fringe areas**
- 3) Education & trainings of tribals / peoples residing in forest fringes in for nursery development and cultivation of wild fruits**

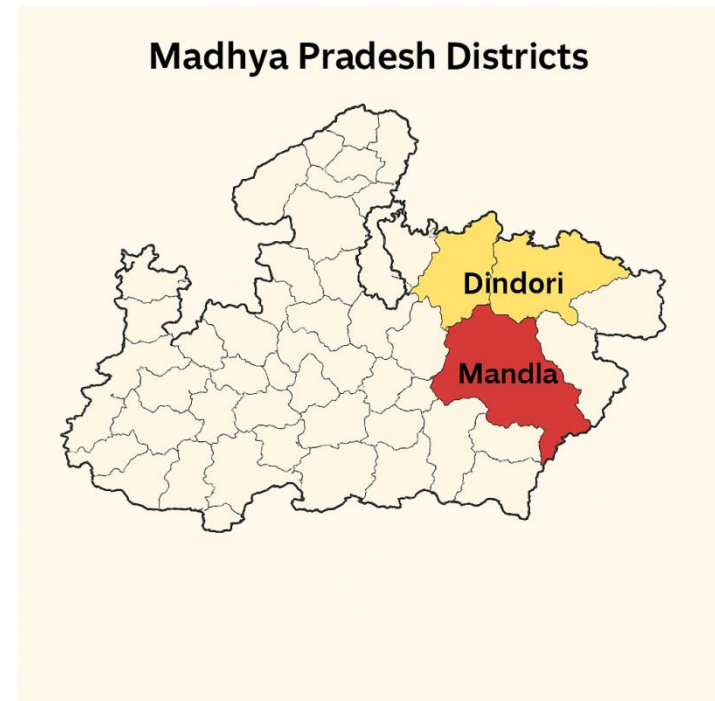
Methodology and implementation approach:



Sourcing / Production of the QPM : Propagation material of the targeted species will be collected / sourced from the promising populations. Populations are already identified by the institute in earlier projects. Planting stock will be raised in the institutes nursery.

Establishment of demo plantations :

- Suitable sites in 03 forest fringe villages of each Mandla and Dindori district (total 06 sites) will be identified for plantations through exhaustive surveys.
- Community participation will be ensured by involving concerned forest range offices and Forest Committees (VFCs/JFMCs/SFGs).
- Monitoring on survival and growth: Periodic observations will be recorded on survival and growth. Casualty replacement will also be done, if needed.



Education & training of tribals/peoples residing in & around forest fringes for nursery development and cultivation of wild fruits :-



Community mobilization and awareness meetings



Practical training modules

- seed collection, nursery preparation, management, and transplanting



A community model nursery

will be established to provide real-time learning and continuous technical support

Community mobilization and awareness meetings. Practical training modules - **seed collection, nursery preparation, management, transplanting and processing/value addition.**

A community model nurseries will be established to provide real-time learning and continuous technical support.

Social and nutrition impact pathway – Project outcomes / Impact :



- Enhanced long-term nutritional & livelihood security for tribal communities in Dindori and Mandla districts through cultivation of Chironji, Tamarind, and Wood Apple.
- Production of Quality Planting Material (QPM) will ensure access to healthy, high-yielding saplings for sustainable orchards.
- Nurseries established in forest-fringe areas will provide practical, field-based learning for local farmers.
- Capacity-building trainings strengthen skills in nursery development, seed handling, wild-fruit cultivation and management.
- Conservation of wild fruit resources.

Environmental and climate advantages



Enhanced biodiversity through large-scale cultivation of locally adaptive wild fruit species such as Chironji, Tamarind, and Wood Apple, strengthening local forest ecosystems.

Improved soil health as these perennial species support organic matter buildup, reduce erosion, and promote natural regeneration in degraded forest-fringe landscapes.



Increased carbon sequestration & Reduced pressure on natural forests.

Scaling, sustainability and cost efficiency:



Scaling	Sustainability	Cost Efficiency
<ul style="list-style-type: none">• QPM production will enable large-scale cultivation of Chironji, Tamarind, and Wood Apple.• Demo plantations will act as replicable models for forest fringe communities.• Trainings will build local capacity, allowing rapid expansion across tribal districts.	<ul style="list-style-type: none">• Promotes long-term cultivation of native wild fruit species.• Strengthens community ownership through skill development and community involvement.• Reduces pressure on natural forests.	<ul style="list-style-type: none">• Community-based nurseries will lower the input costs and reduce dependency on external suppliers.

Budget summary



Head	Year 1	Year 2	Year 3	Total (Rs. in Lakh)
Manpower (Field Assistant @ Rs. 17,000 per month)	2.04	2.04	2.04	6.12
Travel	3.00	3.00	3.50	9.50
M&S	1.50	1.50	2.00	5.00
Contingency	3.50	4.00	5.00	12.50
Institutional charges @15%	1.50	1.58	1.88	4.96
Total	11.54	12.12	14.42	38.08



Thanks