

Issues related to promotion and restoration of Millet Cultivation in Jharkhand:

Case study of Ranchi and Gumla - exploration of promising leads.

Mayank Khandelwal

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XISS, Ranchi

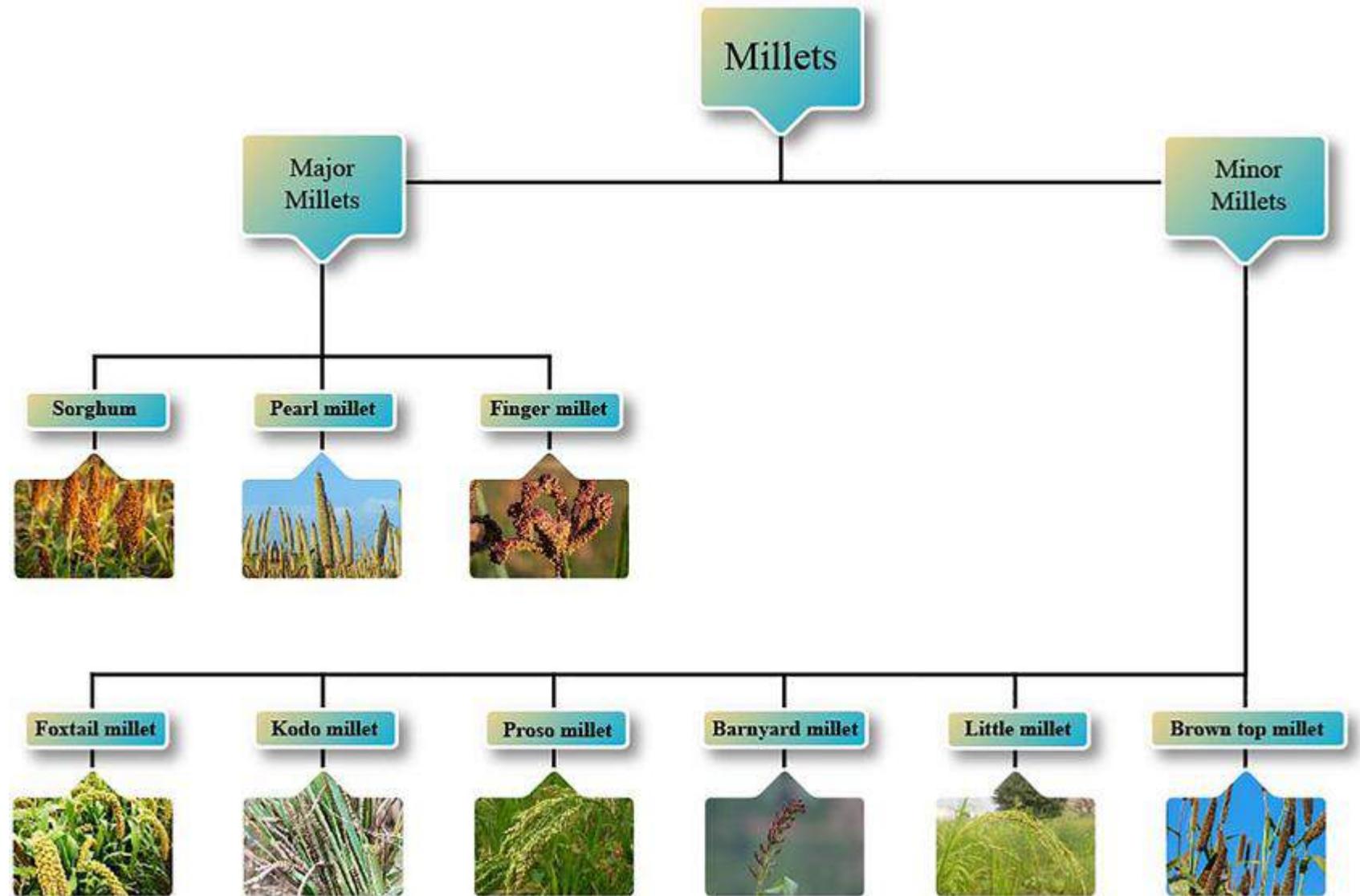
OBJECTIVE

To explore the challenges and opportunities related to the promotion and restoration of millet cultivation in Jharkhand. We will highlight promising leads for a sustainable future.



Overview of Millets

- Sorghum Millet (Jowar)
- Pearl Millet (Bajra)
- Finger Millet (Ragi)
- Foxtail Millet (Kakum / Kangni)
- Kodo Millet
- Proso Millet (Chena / Barri)
- Barnyard Millet (Sanwa)
- Little Millet (Moraiyo)
- Browntop Millet (Korle)
- Buckwheat Millet (Kuttu)
- Amaranth Millet (Rajgira)



HISTORICAL SIGNIFICANCE

- **Ancient Domestication:**
 - Among the first crops cultivated by humans over 10,000 years ago in Asia and Africa.
 - **Cultural and Religious Roles:**
 - Integral to traditional diets and rituals in ancient civilizations, particularly in India.
 - **Adaptability and Trade:**
 - Thrived in diverse environments, supporting early agricultural societies and ancient trade routes.
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CURRENT SIGNIFICANCE

SDG	Contribution of Millets
1. No Poverty	Empower smallholder farmers
2. Zero Hunger	Nutritional powerhouse, drought tolerance, diversified food source
3. Good Health & Well-being	Essential nutrients, gluten-free, low glycemic index
5. Gender Equality	Empower women in millet value chains
6. Clean Water & Sanitation	Water conservation through drought tolerance
8. Decent Work & Economic Growth	Employment opportunities & income generation
13. Climate Action	Climate resilience, carbon sequestration
15. Life on Land	Soil health, biodiversity conservation

Global Millet Production: Current Scenario

Regional Distribution:

- **Africa:** 59% of the global area under millet cultivation and 55% of global production.
- **Asia:** 38% of the global area and 42% of production.

Dominant Producers:

As per USDA, the top 5 producers and consumers of millets as of 2023:

- India
- Niger
- China
- Nigeria
- Mali



Millets in Jharkhand

Crop	Season	Year	Area (Hectare)	Production (Tonnes)	Yield (Tonnes/Hectare)
BAJARA	Kharif	2019-20	418	281	0.67
JWAR	Kharif	2019-20	3842	2752	0.72
RAGI	Kharif	2019-20	28611	24061	0.84
TOTAL			32934	27094	2.23

Geography and Climate:

- Diverse topography with plateaus, hills, and forests.
- Varied climate: humid to sub-humid with ~1200 mm annual rainfall.

Agricultural Economy:

- Agriculture supports 80% of the rural population.
- Dominated by paddy; issues include low investment, productivity, and inadequate irrigation (12% coverage).

Agricultural Land:

- 7.97 million hectares; half of Jharkhand's area.
- Predominantly uplands with low water retention.

Millets as a Solution:

- Resilient to diverse agro-climatic conditions.
- Suitable for upland, rain-fed areas.
- Require minimal water, enhancing sustainability and productivity.

Strategic Importance:

- Promoting millets can transform agriculture, improve food security, and boost livelihoods.
- Aligns with Jharkhand's climate and socio-economic context for long-term resilience.

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- Why Jharkhand has less area under millet cultivation and low yield ?

State Wise Millets Production: Total Production				
Area in Lakh Ha, Production in Lakh Tones & Yield in Kg/Ha				
SN	States	Area (2023-24)	Production (2023-24)	Yield (2023-24)
1	Rajasthan	47.75	48.09	1007
2	Maharashtra	20.82	17.15	824
3	Karnataka	14.25	17.49	1227
4	Uttar Pradesh	13.47	26.98	2003
5	Madhya Pradesh	6.40	12.68	1982
6	Haryana	5.90	11.94	2024
7	Tamil Nadu	4.69	6.23	1327
8	Gujarat	2.64	4.51	1707
9	Andhra Pradesh	1.46	3.90	2672
10	Uttarakhand	1.09	1.61	1481
11	Odisha	1.04	0.72	694
12	Telangana	0.62	1.15	1851
13	Chhattisgarh	0.53	0.20	387
14	Jharkhand	0.32	0.30	922
15	Bihar	0.08	0.08	1001

Study Area:

Gumla

Amboa - Village Overview	
Gram Panchayat :	Amboa
Block / Subdivision :	Gumla
District :	Gumla
State :	Jharkhand
Pincode :	835207
Area :	586.94 hectares
Population :	3,046
Households :	581
Village code:	376048

Ranchi

Hutar - Village Overview	
Gram Panchayat :	Hariharpur Jamtoli
Block / Subdivision :	Bero
District :	Ranchi
State :	Jharkhand
Pincode :	835301
Area :	413 hectares
Population :	666
Households :	80
Village code:	374351

Methodology: Understanding the Landscape



1

Field Visits

Conducted extensive field visits to gather firsthand information about millet cultivation areas.

2

Stakeholder Engagement

Engaged with key stakeholders, including farmers, Block Programme Manager, and Self-Help Group members, etc.

Data Collection Methodology:

- Structured FGDs, In-depth Interviews and Observations.
- Key Stakeholders: Farmers, SHG Members, etc..



FINDINGS OF AMBOA VILLAGE

Community History and Occupation:

- Traditional subsistence farming with diversified livelihoods (masonry, labor, livestock rearing, small businesses).

Millet Cultivation Practices

•Varieties:

- Primarily finger millet.
- Gundli (local Sorghum)

•Cultivation Practices:

- Traditional seasons dictated by the monsoon.
- Practices include direct sowing, transplanting, using local seeds, [Urea](#), [DAP](#).
- Manual harvesting with sickles, manual and mechanical threshing and dehulling.

Agricultural Landscape:

- 70-80% of land is agricultural, with an average of 2 acres per household.

FINDINGS OF AMBOA VILLAGE

•Soil Quality and Intercropping:

- Predominantly red soil; loamy soil (Khirsi Mitti) preferred for Ragi.
- Limited intercropping, mainly Urad with Ragi and Groundnut with Arhar

Challenges and Support

Challenges:

- Lack of irrigation during erratic rainfall.

Management and Support:

- Limited irrigation facilities and no support from government or NGOs.

FINDINGS OF AMBOA VILLAGE

Economic Aspects, Yield, and Marketing:

•Yield and Market Dynamics:

- Average yield: 10-12 quintals per acre, sold in local markets.

•Market Prices and MSP:

- Increasing market prices over the past decades.
- Low awareness of MSP schemes.

•Cost of Production and Financial Incentives:

- Production cost: ~10,000 rupees per acre.
- Limited awareness and access to subsidies or financial incentives.

FINDINGS OF AMBOA VILLAGE

Knowledge and Awareness

•Training and Information Sources:

- Reliance on traditional knowledge and fellow farmers.
- Participation in training programs seen as highly beneficial among farmers.

•Benefits of Millets:

- Recognized for resilience to drought, nutritional value, and suitability to local conditions.

Future Prospects

•Expansion Potential:

- High potential for expanding Ragi cultivation due to good returns.
- Need for better access to quality seeds, improved irrigation, and training programs.

Key Takeaways:



Reliance on rainfall makes farming unpredictable.

Traditional knowledge limits the adoption of modern, sustainable practices.

Lack of irrigation and external support curtails agricultural development.

Soil quality is an advantage that can be leveraged with better practices.

There is a need for knowledge on value addition and formation of FPOs.

FINDINGS OF HUTAR VILLAGE

Community History and Occupation:

- Traditionally subsistence farming . Now mason , construction workers, brickwork, etc.

Millet Cultivation Practices

•Varieties and Duration:

- Primarily finger millet.

•Cultivation Practices:

- Traditional seasons dictated by the monsoon.
- Practices include direct sowing, transplanting, using local seeds, Urea, DAP.
- Manual harvesting with sickles, manual and mechanical threshing and dehulling.

Agricultural Landscape:

- Around 70% of land is agricultural, with an average of around 1.5 acres per household.

FINDINGS OF HUTAR VILLAGE

•Soil Quality and Intercropping:

- Predominantly Black (Nagra Mitti) regur soil.
- No intercropping.

Challenges and Support

Challenges:

- Lack of irrigation during erratic rainfall.
- Low ground water level

Management and Support:

- Limited irrigation sources, and support from government or NGOs.

FINDINGS OF HUTAR VILLAGE

Economic Aspects, Yield, and Marketing:

•Yield and Market Dynamics:

- Average yield: 3-4 quintals per acre, is some , sold in local markets (Bero) with fluctuating prices.

•Market Prices and MSP:

- Increasing market prices over the past decades.
- Low awareness of MSP schemes.

•Cost of Production and Financial Incentives:

- Production cost: ~5,000 rupees per acre.
- Awareness and access to subsidies through SHGs. No awareness of financial incentives on millets cultivation.

FINDINGS OF HUTAR VILLAGE

Knowledge and Awareness

•Training and Information Sources:

- Traditional farming knowledge. Few farmers underwent training for millet cultivation.
- Participation in training programs seen as highly beneficial.

•Benefits of Millets:

- Recognized for resilience to drought, nutritional value, lower input cost, and higher shelf life.

Future Prospects

•Expansion Potential:

- High potential for expanding Ragi cultivation due to increasing market price.
- Need for better access to quality seeds, improved irrigation, and comprehensive training programs.

Personal observations:



Key Takeaways:



Reliance on rainfall makes farming unpredictable.



Traditional knowledge limits the adoption of modern, sustainable practices.



Lack of irrigation sources and facilities. Limited support curtails agricultural development.



Low yield and low ground water level



Lacks knowledge on Organic farming. Need for formation of FPOs.

Case Story Of Successful Intervention In Ragi Cultivation – Bero, Ranchi

Millet Intervention in Mahila Kisan Sashaktikaran Pariyojana (MKSP) In Bero, Ranchi (2014-2019)

- **Organizations Involved:**

- **Lead Implementer:** Asian Institute for Sustainable Development (AISD)
- **Collaborators:** Birsa Agriculture University (BAU), Lamps, Krishi Vigyan Kendra, and other agencies.
- **Support Provided:** Organic farming practices and market linkages.

- **Millets Intervention:**

- Focused on intensification of millets through training and seed support.
- Adoption of traditional and improved varieties of finger millet (ragi/mandua).
- Encouraged value addition for local marketing

Millet Intervention in Mahila Kisan Sashaktikaran Pariyojana (MKSP) In Bero, Ranchi (2014-2019)

- **Capacity Building:**
 - Conducted training on millet intensification in 16 villages in Bero.
 - Supported by SPWD consortium.
 - Promoted value-added millet products.
- **Community Impact:**
 - Revived traditional millet varieties.
 - Established millet as a staple food in local diets.
 - Opened potential for revitalizing other millets like local sorghum (Gundli) and barnyard millet (Sawan).
 - Enhanced economic empowerment and food security for local communities.
- These initiatives showcase the potential of sustainable agriculture practices in empowering
- women farmers and improving food security.

Intervention of District Administration of Gumla to make a transition from water-guzzling paddy to a more sustainable model of *ragi* cultivation.



Strategies and Interventions:

1. Identifying and Leveraging Local Resources:

- *Initial Analysis*: Local soil conditions (acidic, mix of red and laterite soil) and the terrain were unsuitable for water-intensive paddy cultivation.
- *Selection of Ragi*: Ragi was chosen for its drought tolerance, high nutritional value, suitable growth in local climatic conditions, and past familiarity among local farmers.

2. Mobilizing and Training Farmers:

- *Stakeholder Meetings*: In April 2022, the DC organized meetings with district agricultural officers, JSLPS, and the social welfare department to address malnutrition and anaemia.
- *Farmer Outreach*: The administration reached out to SHGs to identify and motivate 5,500 women farmers to cultivate ragi.
- *Training Programs*: Collaborations with Krishi Vigyan Kendra and private agencies were set to train farmers in modern ragi cultivation techniques and best practices.

Assurance and Support Mechanisms:

- *Seed Distribution*: Orders for 20,000 kg of high-quality ragi seeds were placed, and seeds were distributed to farmers free of cost.
- *Market Assurance*: The administration assured farmers that their ragi harvest would be bought at a good price, with further processing and distribution plans.
- *Field Visits and Support*: Regular field visits were conducted to guide farmers through cultivation, manage pests, and educate them on the finer grain varieties of ragi.

Formation of Farmer Producer Organizations (FPO):

- *FPO Establishment*: The Baghima-Palkot Farmer Producer Company Ltd, led by about 500 women farmers, was formed to procure and process ragi.
- *Seed Money and Investment*: The SHGs and CLFs managed the buying and processing of ragi. Local SHGs participated in marketing by investing in ragi flour produced by the FPO.

Infrastructure Development:

- *Irrigation Systems*: Efforts were made to develop drip irrigation, solar lift systems, and the renovation of ponds to support the cultivation of ragi.
- *Processing Unit*: A defunct godown was converted into a processing unit equipped with machinery to grind ragi into flour, thanks to a grant of Rs 50 lakh from the district administration. Solar panels were installed to power the processing unit.

Adding Value to Ragi:

- *Product Development*: The FPO began producing various ragi-based products like laddoos, cookies, nimki, and selling them locally. They supplied these to Anganwadi centers and sold them at local festivals and fairs.
- *Millet Cafe*: A Millet Cafe was established in Gumla where ragi products like cookies, samosas, and other snacks are sold.

Addressing Malnutrition and Anaemia:

- *Nutritional Campaigns*: Intensive screening for malnutrition and anaemia was conducted in children and pregnant women. Ragi-based food items were distributed to those in need.

Anganwadi Support: Ragi products were incorporated into meals at Anganwadi centers and included in Poshan Kits for TB patients to boost their immunity

Outcomes and Impact:

1. Agricultural Growth:

- *Land Cultivation:* Net acreage under ragi cultivation increased by 219% in 2022-23, with over 30,000 acres cultivated by 2023.
- *Production Increase:* Ragi production saw a 270% growth in 2022-23 compared to the previous year.
- *Diversification:* Farmers began cultivating ragi on upland areas while continuing to grow paddy in lowland areas.

2. Economic Benefits:

- *Revenue Generation:* The FPO earned approximately Rs 15 lakh from retail sales and Rs 28 lakh from selling food items to the local administration, tot

Empowerment and Entrepreneurship

- **Economic Independence:** Women farmers transitioned to self-sustaining entrepreneurs, creating a thriving local economy.
- **Skill Development:** Farmers gained skills in sustainable agriculture and small-scale business operations.

Health Improvements

- **Reduction in Malnutrition:** Notable improvements in nutritional levels among children and lactating mothers.
- **Awareness:** Increased awareness about the health benefits of consuming ragi.

Societal Transformation

- **Behavioural Change:** Shift from paddy to ragi cultivation led to better income stability and reduced dependence on unpredictable irrigation.
- **Cultural Adoption:** Ragi became part of the local dietary habits, fostering better health and economic stability.

Future Prospects:

- **National Model:** The Gumla model is now under study for replication across other regions in India.
- **Sustainable Development:** Continued support for diversification in crop production and improved agricultural practices.