

## TRADITIONAL SEEDS - ENVIRONMENT

NEWS: The **traditional seeds** are rapidly disappearing as farmers increasingly focus on new hybrid variety seeds, sidelining thousands of diverse indigenous seeds.

### WHAT'S IN THE NEWS?

#### What are Seeds?

- A seed is a **fertilized ripened ovule** of a flowering plant containing an embryo capable of germinating to produce a new plant.



- Seeds are **evolutionary tools**, changing properties across generations to adapt to **climate, soil, pests, and farming practices**.

#### What are Traditional Seeds?

- Traditional seeds typically refer to **seeds passed down through generations**, often heirloom or open-pollinated varieties.
- Farmers and gardeners save them for consistent traits, cultural value, or adaptability to local conditions.
- **Characteristics:**
  - **Non-hybrid:** Produce offspring identical to parent (true-breeding).
  - **Non-GMO:** Not genetically modified. (Genetically Modified Organism)
  - **Locally adapted:** Suited to specific climates/soil.
  - **Cultural value:** Linked to heritage, festivals, and traditions.

#### Significance of Traditional Seeds

- **Genetic Diversity & Biodiversity Preservation:** Act as reservoirs of genetic traits essential for **crop improvement**, pest resistance, and disease tolerance.

- Loss of traditional seeds is linked to a **75% reduction in crop diversity** since 1900, per FAO estimates.
- Nagina mustard provides disease-resistant traits for new mustard varieties.
- **Climate Resilience:** Adapted to **local environmental stresses** – drought, flood, heat, poor soils.
  - E.g., Navara Rice (Kerala), Bhalia Wheat (Gujarat) – thrive in water-scarce and arid regions.
- **Low Input Requirement:** Need **less water, no chemical fertilizers**, and minimal external inputs.
  - Suitable for organic, low-cost, and smallholder farming systems.
- **Seed Sovereignty:** Farmers can **save, reuse, and exchange** seeds freely, reducing dependence on commercial corporations.
  - Beej Bachao Andolan (Uttarakhand) promotes inter-village seed exchange and conservation.
- **Nutritional & Health Value:** Millets and pulses offer **higher fibre, protein, vitamins, and minerals** compared to polished grains.
  - Serve the dietary needs of local populations.
- **Cultural and Heritage Importance:** Embedded in local **rituals, festivals, and culinary traditions**.
  - Act as living links to **indigenous knowledge systems and ancestral wisdom**.
- **Resilience through Community:** Often preserved through **community seed banks** and **inter-village exchange** networks.
  - Support **seed guardianship** and intergenerational knowledge transfer.
  - **Community Seed Bank Campaign in Uttarakhand** – restored 81 traditional seed types.
  - **Rahibai Popere (Seed Mother, Maharashtra)** – saved 80+ native seeds; promotes traditional cultivation.

### Issues with Traditional Seeds

- **Lower Yield:** Often produces less compared to hybrid or GMO seeds, impacting commercial scalability.
  - Indigenous rice varieties like Kalanamak yield less than modern hybrids. One study found that Kalanamak rice grown under the Kalam system yielded 3504 kg/ha, while a normal transplanting system yielded 2415 kg/ha.
- **Market & Consumer Demand Deficit:** **Urban consumers** prefer high-yielding, polished rice and wheat over millets or indigenous grains.

- Despite being nutrient-rich, millets are largely absent in food programs, discouraging farmers from growing them.
- **Policy Bias Toward High-Yielding Varieties (HYVs): Green Revolution** and subsequent agricultural policies favored **HYVs**, especially wheat and rice.
  - **MSP, procurement, and subsidies** heavily tilted toward HYVs.
  - **R&D investment** focuses on a few commercial crops, ignoring biodiversity.
- **Commercialization of Agriculture:** Rise of **corporate seed companies** has made farmers dependent on **patented or hybrid seeds**.
  - Traditional seeds offer no commercial incentive due to **lack of standardization and branding**.
  - Hybrid seeds (like F1 hybrids) dominate because of their high yields and commercial viability—but can't be reused.
- **Weak Conservation Infrastructure:** Traditional seeds rely on **community exchange and storage**, not formal supply chains.
  - India lacks sufficient **well-funded community seed banks** and **regional conservation centers**.
- **Loss of Traditional Knowledge & Practices:** Decline in traditional seed use has caused **erosion of indigenous knowledge** of seed selection, breeding, and storage.
  - Modern agricultural education often **ignores traditional wisdom**.
- **Neglect in Agricultural Research:** Traditional seeds are largely **excluded from formal breeding programs**.
  - Lack of focus on improving traits (e.g. pest resistance, yields) of indigenous varieties hinders their competitiveness.
- **Decline Due to Monoculture & Global Trends:** Monoculture and uniform global food preferences have led to the **displacement of traditional crops**.
  - **75% of plant genetic diversity** has been lost since 1900; just **15 crops account for 90%** of global food production, according to the **FAO**.
- **Regulatory & Legal Challenges:** **IPR regimes**, seed certification laws, and seed market liberalization have made it harder to legally exchange and sell traditional seeds

### Key Initiatives for Conservation of Traditional Seeds

- **National Bureau of Plant Genetic Resources (NBPGR): Established in 1976**, conserves **94,609 native Indian varieties** of crops and trees across multiple gene banks.
  - Supports **ex-situ conservation** through long-term seed storage in different agro-climatic zones.

- Acts as India's central node for **plant genetic resource management**.
- India's **first gene bank** was set up in **1996** by the **Indian Council of Agricultural Research-National Bureau of Plant Genetic Resources (ICAR-NBPGR)** in New Delhi.
- **Indian Seed Vault**, a backup seed bank located in **Chang La, Ladakh**, which was built in **2010**.
- **Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA)**: Regulatory body established by the Central government to implement the Protection of Plant Varieties and Farmers' Rights Act, 2001.
  - Registered **1,896 native Indian varieties**, enabling farmers to **commercialize** them legally.
  - Encourages individual and community **conservation of native biodiversity**, especially in agro-biodiversity hotspots.
  - Provides **awards and recognition** to custodians of indigenous seeds.
- **Indian Council of Agricultural Research (ICAR)**: Developed **2,900 improved crop varieties** since 2014 using native gene pools.
  - Focused on **high-yielding, multi-stress tolerant** varieties suited to diverse agro-climatic conditions.
  - Covers **cereals, pulses, oilseeds, horticulture, fiber crops**, and underutilized crops.
- **Sub-Mission on Agroforestry (SMAF)**: Program under the National Mission for Sustainable Agriculture (NMSA)
  - Implemented since **2016-17** to promote **tree plantation on farmlands**.
  - Encourages use of **indigenous tree species** like Indian rosewood, teak, Malabar neem, poplar, etc.
- **Community Seed Banks (State-Led and NGO Initiatives)**: Help **collect, preserve, and distribute traditional seeds** at the village level.
  - **Beej Bachao Andolan** in Uttarakhand.
  - **Seed banks**: Adapa Mahila Utpadaka Dala-Jhirihjhira and Ahinsa Community Seed Bank in Odisha and assistentialist seed Bank in Andhra Pradesh.
- **Odisha Millet Mission**: Revives cultivation of **traditional millets** in tribal areas.
  - Links production with **local markets and nutrition programs** (schools, PDS).
- **Seed Testing Infrastructure**: **161 State and 6 Central Seed Testing Laboratories** operational.

- Ensure seed quality by checking **germination rate, purity, moisture, and health**.
- Seed testing is regulated under the Indian Seeds Act of 1966 and the Seed Rules of 1968.

### International Efforts to Conserve Traditional Seeds

- **Global Seed Vaults & Gene Banks**
  - **Svalbard Global Seed Vault (Norway):** World's largest secure seed storage facility safeguarding global crop diversity.
    - Stores **1.3 million seed samples**, including **Indian varieties**.
  - **Consultative Group on International Agricultural Research Genebanks:** 11 centers worldwide preserve **700,000+ traditional varieties**.
- **FAO's Global Treaty on Plant Genetic Resources (ITPGRFA):** Adopted by **FAO in 2001**, also called the "**Seed Treaty**".
  - **India is a signatory**, enabling access to **global seed diversity** for climate-resilient crop breeding.
  - Aims to ensure **conservation and sustainable use** of plant genetic resources.
  - Facilitates **access and benefit sharing** through a Multilateral System.
- **Seed Exchange Networks & Farmer Collaborations**
  - **La Via Campesina:** Worldwide peasant movement promoting **seed sovereignty**.
  - **Open Source Seeds Initiative (OSSI):** Global model to keep seeds **patent-free** and accessible.
- **Climate Adaptation Projects**
  - **UNEP's Seeds for Resilience:** Works in Africa/Asia to revive **indigenous drought-tolerant crops**.
  - **EU's Farmers' Pride:** Links Indian seed savers with European counterparts to exchange **rare landraces**.

### Way Forward: Conservation of Traditional Seeds in India

- **Mainstream Traditional Seeds into Policy and Procurement:** Expand **Minimum Support Price (MSP)** and **procurement programs** to include millets, pulses, and indigenous grains.
  - Integrate traditional crops into **midday meals, ICDS, and PDS** schemes for nutrition and market support.

- **Strengthen Community Seed Systems:** Establish and scale up **Community Seed Banks** across agro-climatic zones.
  - Promote **inter-village seed exchange networks**, especially in tribal and mountain regions.
- **Promote Participatory Plant Breeding (PPB):** Encourage collaboration between **farmers and scientists** to improve traditional seeds without losing their resilience.
  - Focus on breeding for **local adaptability, climate tolerance, and nutrition**.
- **Preserve Indigenous Knowledge and Practices:** Document **traditional agricultural knowledge** related to seed selection, preservation, and farming methods.
  - Include it in **agriculture education curricula** and local capacity-building programs.
- **Support Agro-ecology and Organic Farming:** Link traditional seeds with **organic and natural farming** movements to reduce input dependency.
  - Provide incentives for **low-input, biodiversity-based farming** through schemes like Paramparagat Krishi Vikas Yojana (PKVY) and SMAF.
- **Create Consumer Awareness and Market Linkages:** Launch campaigns highlighting **health, ecological, and cultural benefits** of traditional crops.
  - Promote **branding, GI tagging, and direct-to-consumer platforms** for native grains and produce.
- **Enhance Seed Conservation Infrastructure:** Strengthen **NBPGR gene banks** and make regional repositories more accessible.
  - Upgrade **state seed testing labs** to support analysis and quality certification of traditional varieties.
  - In the **2025-26 budget**, it is announced the establishment of a **second national gene bank**, with the capacity to conserve **1 million lines of germplasm**.
- **Assert Leadership in Global Biodiversity Discourse:** Build regional alliances and forums to push for **agro-biodiversity** in international platforms like COP and FAO.
  - Frame India's traditional seed conservation as a **climate justice and food sovereignty** issue.

## Conclusion

India must **balance productivity with sustainability** by integrating traditional seeds into mainstream agriculture through **policy support, research, and market linkages**. A diversified food system ensures long-term **food security amid climate change**.

Source: <https://www.thehindu.com/opinion/op-ed/saving-traditional-varieties-of-seeds/article69446064.ece>

