

Relearning Agroecology from India's Living Traditions

Ancient Indian agrarian knowledge recognised that soil fertility, crop resilience and food security arise from diversity, not monoculture. Agricultural land was treated as a living ecological system sustained through crop rotation, mixed cultivation, and attentive stewardship. This ecological orientation was not abstract philosophy; it was codified in classical texts and embedded in archaeological and lived agrarian practices across regions.

Textual and Archaeological Roots

The Krishi Parashara (c. 400 BCE) presents agriculture as seasonally calibrated and soil-conscious, advocating crop rotation and mixed cultivation based on rainfall and lunar cycles. This ecological orientation is elaborated in Vrikshayurveda (c. 1000 CE), Surapala, classified soils and described organic nutrient formulations such as Kunapajala, a fermented mixture of plant and animal matter, indicating an early understanding of circular fertilisation and soil management. The Arthashastra (c. 300 BCE) formalised agriculture; the Sita Adhyaksha (superintendent of agriculture) was tasked with seed preservation, irrigation oversight, manure regulation and seasonal planning. Sangam literature (c. 300 BCE) reflects region-specific agroecology in ancient Tamilakam through its classification of five ecological landscapes: Kurinji (mountain), Mullai (forest), Marutham (wet plains), Neithal (coastal), and Palai (arid). Each zone was associated with distinct crops, water systems, and livelihoods adapted to terrain and rainfall.

Similarly, epic literature reinforces these concerns. In the Sabha Parva of the Mahabharata, the sage Narada asks King Yudhishtira whether farmers remain dependent solely on rainfall, a condition termed Adevamatraka. This query implies the ruler's duty to construct tanks and canals, framing water as a shared trust. The Aranya Kanda of the Ramayana depicts forest hermitages where fruit-bearing trees, cultivated fields, and groves coexist, reflecting early agroforestry principles.

Moreover, archaeological evidence further grounds the agrarian knowledge. The Indus Valley regions of Harappa and Mohenjodaro demonstrate grain storage, irrigation management and diversified cropping patterns, including barley, pulses, sesame and millets. Early rice cultivation in the middle Ganga plains at Lahuradewa suggests experimentation with regionally suited crops, while Neolithic sites in peninsular India, such as Brahmagiri and the ash-mound complexes of Karnataka, point to millet-based agro-pastoral systems adapted to semi-arid ecologies. All these indicate regionally adapted agricultural experimentation across ecological zones since antiquity.



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Landscapes as Laboratories

India's geography spans diverse climates, from Himalayan glaciers to tropical coasts and arid deserts. Each ecological zone generated distinct agricultural knowledge systems shaped by centuries of observation and experimentation.

In the Himalayan belt, terrace farming stabilised fragile slopes and reduced erosion. Ladakh's Zing irrigation system stored and gradually released glacial meltwater, conserving topsoil and supporting nutrient cycling during short growing seasons. Crop selection prioritised frost resistance and early maturity. In coastal Kerala, the saline-tolerant Pokkali rice system combined rice with prawn and fish cultivation, restoring soil fertility through tidal nutrient exchange and aquatic biomass. Agricultural calendars tracked rainfall rhythms and seasonal winds with notable precision rooted in lived experience. In the north-eastern hills, Jhum cultivation functioned as rotational agroecology. Land was briefly cultivated, then left fallow for forest regeneration and nutrient renewal. Mixed cropping and community labour suited fragile terrains. In western India, Rajasthan's Khadin system captured monsoon runoff through earthen embankments, depositing nutrient-rich sediments onto fields even under minimal rainfall. Sacred pastures such as Oran and Gochar sustained livestock-based nutrient cycles while preventing desertification. Together, these practices reflected a cultivation ethos aligned with ecological limits.

Why Traditional Agroecological Wisdom Matters Today

India has not been institutionally passive. The Soil Health Card Scheme, nutrient-based fertiliser subsidy reforms, the Paramparagat Krishi Vikas Yojana, the National Mission on Natural Farming, and the Indian Council of Agricultural Research's (ICAR) 'National Innovations in Climate Resilient Agriculture' reflect policy awareness of ecological risk. Yet, ecological pressures persist. ICAR estimates that nearly 30% of India's land is degraded. Soil Health Card data indicate widespread soil organic carbon deficiencies. NITI Aayog's Composite Water Management Index (2018) highlights severe groundwater depletion across agrarian regions. The policy architecture exists; it is now time to place ecological resilience at the centre of agricultural performance.

Way Forward

A systematic pan-Indian repository of Indigenous agroecological knowledge is now essential. Much of this knowledge survives in fragments preserved in community memory, manuscripts and local practices, yet remains unsystematically documented. A national repository could document farming methods alongside ecological parameters such as soil type, rainfall and irrigation systems, linking historical insight with contemporary needs. To move beyond mere documentation, it must be structured around clear institutional and intellectual priorities.

First, traditional agroecological practices must be documented in context, grounded in diverse geography, seasonal cycles and environmental conditions. Second, interdisciplinary collaboration among agronomists, ecologists, historians and farmers to evaluate how traditional practices perform under climatic stress. Third, agricultural and environmental curricula should recognise indigenous knowledge as part of India's scientific tradition. Fourth, digital platforms can connect this repository with advisories, enabling tradition and technology to reinforce one another.

Finally, the repository must inform practical ecological interventions. Indian soils are experiencing declining soil organic carbon and humus levels, while substantial volumes of organic waste remain underutilised. Treating biomass and organic waste as resources can restore fertility while reducing dependence on synthetic inputs. Integrating composting, biomass recycling and traditional organic formulations into soil management policy would strengthen long-term ecological resilience.

The aim is not to return to pre-modern agriculture but to broaden what counts as knowledge. In an era of ecological uncertainty, sustainability depends on reinterpreting inherited wisdom that understood land as a living system to be sustained with care and continuity.

Fable with Moral

The Kasi Bharadvaja Sutta (Discourse to Bharadvaja, the farmer)

The Pali Canon, Sutta Nipata 1.4

The Kasi Bharadvaja Sutta is a well known narrative from the Pali Canon that beautifully illustrates the Buddha's ability to use analogies to bridge the gap between worldly activities and spiritual practice. Once upon a time, a wealthy brahmin farmer named Kasi Bharadvaja was preparing his fields using 500 plows in Magadha. When the Buddha approached him for alms, the brahmin, seeing the Buddha's serene but seemingly 'unproductive' lifestyle, remarked:

"I, ascetic, plow and sow; and having plowed and sowed, I eat. You, too, ascetic, should plow and sow; and having plowed and sowed, you shall eat."

The Buddha responded by claiming that he, too, was a farmer who plowed and sowed. Confused by the lack of actual farming tools, the brahmin asked for evidence of the Buddha's 'farming.' The Buddha then delivered a brilliant metaphor involving the agricultural process. He stated, "faith is my seed, austerity the rain, wisdom my yoke and plow, modesty is the pole, mind the strap, mindfulness is my ploughshare and effort is my beast of burden."



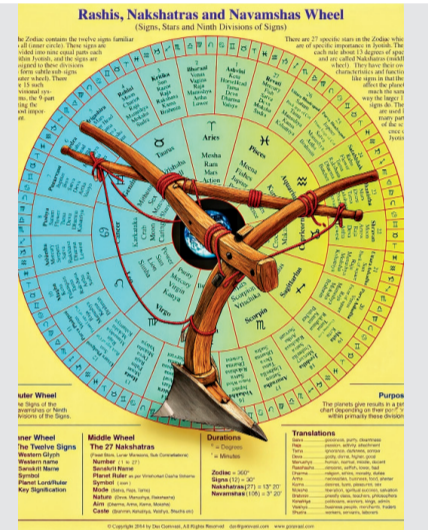
The Buddha explained that his "plowing" targeted the weeds of suffering resulting in enlightenment. This kind of farming released one from all sorrow. Deeply moved by the depth of the teaching, Kasi Bharadvaja offered the Buddha a golden bowl of milk rice. The Buddha however declined the food, stating that it was not the practice of enlightened ones to accept what one received for chanting verses.

Moral of the Fable

This story validates agriculture by using it as the key metaphor for spiritual growth. By comparing enlightenment to a successful harvest, the Buddha honoured the farmer's labour as the most relatable and essential human activity. It suggests that if we do not "sow" (work), we cannot "reap" (eat or find peace).

Did you know?

Did you know that the ancient Indian text *Krishi Parashara* is one of the earliest texts that tries to systematize how farming should be done. It was likely composed around c. 400 BCE. It reflects how actual farming practices were mixed with cosmological beliefs. It was not just about soil and seeds—farmers were advised to plan ploughing, sowing and harvesting according to nakshatras (lunar constellations), planetary movements and phases of the moon. Rainfall prediction was linked to planetary alignments and cloud formations. It showed a fascinating blend of environmental awareness and cosmological beliefs. This tells us that ancient Indian agriculture was highly systematized, deeply observant, and



rooted in a worldview where humans, nature and the cosmos were closely connected

Wisdom Word Search

S G K S H E T R A L K B
G W I X L Y O J A V A I
A L Q T M I P K Q R N J
Y P K R I S H I J I K A
O A J V P A P W L H X V
H I V T L S A Q P I O R
L C T A E Y J G A O T L
A Y M N T A A A S K L S
T O A Q P I Y H L M Q E
D H A N Y A S L K A D T
I K G P M F N A I S Z U
A N N A P O S H A N A W

WORDS TO FIND

Annapposhana, Bija, Dhanya, Jala, Kshetra, Krishi, Sasya, Setu, Vrihi, Yava

- ANNAPPOSHANA** - From *anna* (food) + *poshana* (nourishment): sustenance and nutritional well-being through food.
- BIJA** - The seed as the origin of life, central to regeneration and agricultural continuity.
- DHANYA** - Food grains symbolising prosperity, sustenance, and food security.
- JALA** - Water as the essential resource enabling cultivation and crop survival.
- KSHETRA** - Cultivated land representing the productive base of agrarian economy.
- KRISHI** - From *krish* (to cultivate): the act of farming as a foundational human activity.
- SASYA** - Growing crops reflecting agricultural cycles and seasonal rhythms.
- SETU** - Irrigation and water management structures supporting sustainable farming.
- VRIHI** - Rice, one of the oldest and most important staple crops in India.
- YAVA** - Barley, an ancient grain associated with resilience and early agriculture.

Marvels of India

GHATIYANTRA

A Marvel of Indian Mechanical Ingenuity
The Ghatiyatra exemplifies Bharat's advanced understanding of hydraulics and mechanical aids in early Indian agricultural society, showcasing a practical, science based approach to water management.

Monolithic Engineering Feat
The term denotes a "pot machine" or water lifting device, usually a wheel or pulley system with attached pots that draw water from wells or tanks and pour it into channels. In Banabhatta's literary composition - the *Harshacharita* (seventh century CE) - the image of fields being watered by Ghatiyatra pots indicates a relatively organised, field scale irrigation apparatus, not just a simple rope and bucket.

Architectural and Artistic Excellence

Its design reflects efficient rotational mechanics and load balancing, anticipating later forms such as the *Ara ghatta* (Persian wheel). The rhythmic, repetitive motion of the device became a poetic symbol of sustained, ordered cultivation in early literary imagination.

Civilisational Significance

By enabling reliable irrigation, the Ghatiyatra supported food production, agrarian stability and the growth of settlements and institutions. It stands as a micro marvel of Indian technological culture, linking empirical innovation with literary and philosophical reflection on *Yantra* and *Yukti* in the service of society.



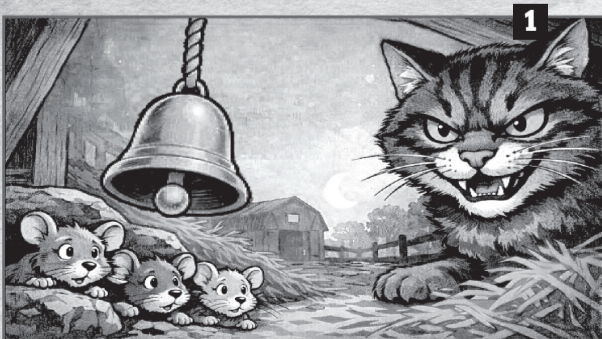
QUIZ Agriculture & Food Security

Questions	Option A	Option B	Option C	Option D
1. Which of them is a traditional organic formulation made from cow products that helps in enhancing soil health as well as plant growth by promoting beneficial microorganisms, as per the ancient Indian texts?	Sunai	Agniastra	Kunapajala	Panchagavya
2. Which is the ancient Indian text that offers holistic methods for plant health, including soil management, seed treatment, irrigation, and plant disease treatment with natural remedies inspired by Ayurveda?	Atharvaveda	Arthashastra	Vriksh-Ayurveda	Krishi-Parashara
3. Which one of the following is a nutritious as well as heat-tolerant crop, having evidences of being grown even during the Indus Valley Civilization?	Rice	Ragi	Wheat	Sugarcane
4. Which is the traditional interconnected earthen tank system used in Tamil Nadu for rainwater harvesting and irrigation?	Cheruvu	Phad	Kere	Eri
5. Which of these sites is likely to be the earliest with evidence of agriculture in India?	Chirand	Madurai	Daimabad	Uraiyur

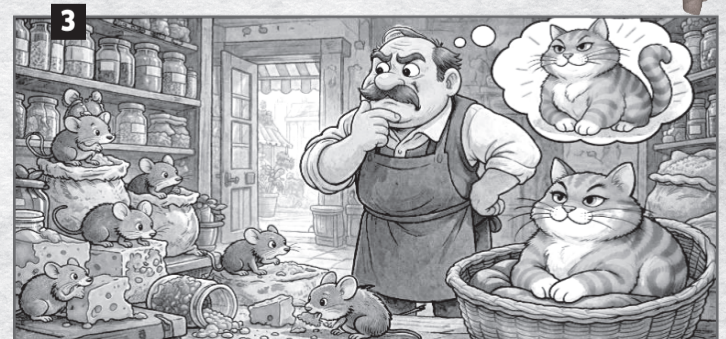
ANSWERS: 1 - D, 2 - C, 3 - B, 4 - D, 5 - A

panchatantra

Belling the Cat



Once there was a shop which was full of mice. The mice nibbled at all the things in the shop. Everything went to waste because of the mice.



Finally the grocer was fed up with the menace and decided to bring in a big fat cat.



Soon after the cat was brought, the mice were frightened. They held an emergency meeting to discuss the issue.



As the meeting was in progress, a young mouse suggested, "Let us tie a bell around the cat's neck so that we would know when the cat arrives."



The mice rejoiced as they thought it was a good idea. Just then, an old wise mouse stood up and asked, "But who will bell the cat?" Suddenly all the mice fell silent.

MORAL OF THE STORY:
It is easy to propose impossible ideas.