Traditional knowledge in festivals: agricultural practices and biodiversity conservation among the Ho tribe of Jharkhand

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Research

Abstract

Background: The Ho tribe of Jharkhand weaves ecological knowledge into seasonal festivals that guide agricultural practices and promote biodiversity conservation. These rituals, rooted in tribal cosmology, foster sustainable living and preserve traditional knowledge across generations.

Methods: Ethnographic research was carried out in ten villages of West Singhbhum district during two agricultural seasons (February and October 2024). Data collection involved 150 participants through semi-structured interviews, focus group discussions (FGDs), and participant observation. Six major festivals Maghe, Baha, Hero, Hermut, Bartauli, and Jomnama were studied for their connections to seasonal farming and ecological practices.

Results: The festivals align with stages of the agricultural cycle, such as seed purification, soil preparation, transplantation, pest control, and harvest. Sacred species like Sal (*Shorea robusta*) feature prominently across rituals for their spiritual and ecological roles. Over 70% of participants expressed concern about declining knowledge transmission due to youth migration and changing cultural dynamics.

Conclusions: The Ho community's festivals act as cultural mechanisms for agroecological stewardship and biodiversity conservation. Recognizing and supporting these practices is critical amid threats from modernization and environmental change. Policies aligned with SDGs 13 and 15 should incorporate Indigenous Knowledge Systems to foster community-based conservation.

Keywords: Ho Tribe, Traditional Knowledge, Biodiversity Conservation, Indigenous Festivals, Oral Traditions

Background

Jharkhand, in eastern India, is home to more than 32 tribal communities. Among them, the Ho tribe has preserved a unique way of life that is deeply connected to forests, agriculture, and the rhythm of the seasons. Most Ho families live in the forest-rich district of West Singhbhum, where their beliefs, songs, and festivals are closely tied to nature and land (Dubey & Soy 2021). Agriculture is not just a source of food it is a cultural practice shaped by ritual, ancestral wisdom, and a strong sense of respect for the environment (Choudhary 2022, Mohanta 2005).

This study is guided by the concept of Traditional Ecological Knowledge (TEK) the deep-rooted understanding that communities develop over generations about how to live in balance with their surroundings (Berkes 2017). TEK is not just technical knowledge it includes values, practices, and beliefs, shared through festivals, oral stories, and everyday farming. Alongside this, ethnobiology offers a lens to understand how people relate to plants, animals, and ecosystems (Martin, 2004), while socio-ecological resilience helps explain how these traditions adapt and endure even as the world around them changes (Folke 2006). Traditional Ecological Knowledge (TEK) is also widely referred to as indigenous knowledge and traditional knowledge. It is described as indigenous knowledge because it is specific to particular communities and cultural groups, and as traditional knowledge because it is rooted in long-standing practices and transmitted across generations through oral traditions and lived experience (Murmu 2020).

While the focus here is on the Ho people, their practices echo those of neighbouring communities like the Santhal, Munda, and Oraon, who also weave ecological wisdom into their ritual and farming calendars (Khan *et al.* 2008, Singhal *et al.* 2021). What sets the Ho apart is the clarity with which their seasonal festivals serve as ecological calendar providing guidance on when to prepare land, plant seeds, manage forests, and give thanks for harvests (Gilua 2022).

These festivals can be broadly understood in three ecological themes: (1) Seed-related rituals, such as Hero Parv, mark the beginning of the sowing cycle and ensure seed sanctity. (2) Forest-related festivals, such as Baha Parv, celebrate flowering trees and recognize the forest as a sacred space. (3) Harvest-time rituals, like Jomnama Parv, honour the season's first grain and ancestral spirits before it is consumed (Simbo 2010).

These ceremonies involve specific actions and plants, with trees like the Sal (*Shorea robusta*) playing a central role in rituals. But the forest is far more diverse. Trees such as Kendu (*Diospyros melanoxylon*), Mahua (*Madhuca indica*), and Jamun (*Syzygium cumini*) are also essential not only as sources of food and medicine, but as part of sacred life. Each plant carries with it stories, responsibilities, and knowledge about how to care for the land and live within its limits (Kala 2005, Uprety *et al.* 2012).

At a time when traditional knowledge systems are increasingly threatened by migration, climate change, and modernization, this study examines how Ho festivals influence the timing of farming activities, promote the protection of culturally important plant species, and support the transmission of ecological knowledge between generations. By documenting seasonal rituals, associated plant uses, and local beliefs, the research highlights how ecological understanding is embedded in cultural practices and how these practices are adapting in response to social and environmental change. In doing so, it contributes to broader discussions on the role of indigenous knowledge in biodiversity conservation and sustainable livelihoods.

Materials and Methods

Study area

This research was conducted in West Singhbhum district of Jharkhand, eastern India (21.97°N to 23.60°N, 85.00°E to 86.90°E), covering an area of approximately 7,224 km² (JSAC 2021). The region is home to the Ho tribe, one of Jharkhand's largest Indigenous communities, with a population of over 773,930 according to the 2011 Census. Known for its extensive forests especially the Saranda Forest, Asia's largest continuous Sal (*Shorea robusta*) forest the district supports rich biodiversity and deeply rooted cultural practices (JSAC 2021). The terrain is mostly hilly and forested, with approximately 46.6% forest cover, and it remains a stronghold of traditional ecological knowledge systems (JSAC 2021).

Sampling framework

A purposive sampling strategy was used to select participants with in-depth knowledge of traditional festivals, agricultural customs, and ecological practices. Ten villages were chosen based on criteria such as proximity to forests, cultural engagement in ritual practices, and ecological diversity. These included: Tekrahatu, Bichagutu, Kulaburu, Kumbram, Lisimoi, Baihatu, Chhota Jaipur, Gundipua, Kursi, and Kudahatu. The geographical distribution of the ten selected villages is illustrated in (Figure 1). All selected villages had Scheduled Tribe populations exceeding 80%, with total populations ranging from 310 to 1,464. In total, 150 participants were interviewed, comprising 60 elders, 55 farmers, 20 ritual specialists, and 15 healers and artisans. Gender diversity was observed (95 males and 55 females), with participants spanning the age range of 18 to over 70 years. Participants were selected based on their active role in ritual and ecological knowledge-sharing within their communities. The geographic location, administrative affiliation, Scheduled Tribe population, and number of participants from each study village are presented in (Table 1).

Table 1. Description of the selected Ho villages in West Singhbhum district, Jharkhand

Village Name	Sub-District	District	Latitude	Longitude	ST Population (2011)	No. of Informants Involved in Study
Chhota Jaipur	Chaibasa	West Singhbhum	22.5311	85.8837	322	11
Gundipua	Chaibasa	West Singhbhum	22.5014	85.8255	1249	18
Kursi	Chaibasa	West Singhbhum	22.5187	85.8817	1045	17
Tekrahatu	Chaibasa	West Singhbhum	22.5152	85.8000	1235	18
Bichagutu	Tantnagar	West Singhbhum	22.4008	85.9651	310	10
Kulaburu	Tantnagar	West Singhbhum	22.4936	85.9099	486	13
Kumbram	Tantnagar	West Singhbhum	22.4795	85.9444	1464	19
Baihatu	Tonto	West Singhbhum	22.3691	85.6469	1218	18
Kudahatu	Tonto	West Singhbhum	22.3755	85.6662	351	11
Lisimoti	Tonto	West Singhbhum	22.3648	85.6103	846	15
Total					**8526**	**150**

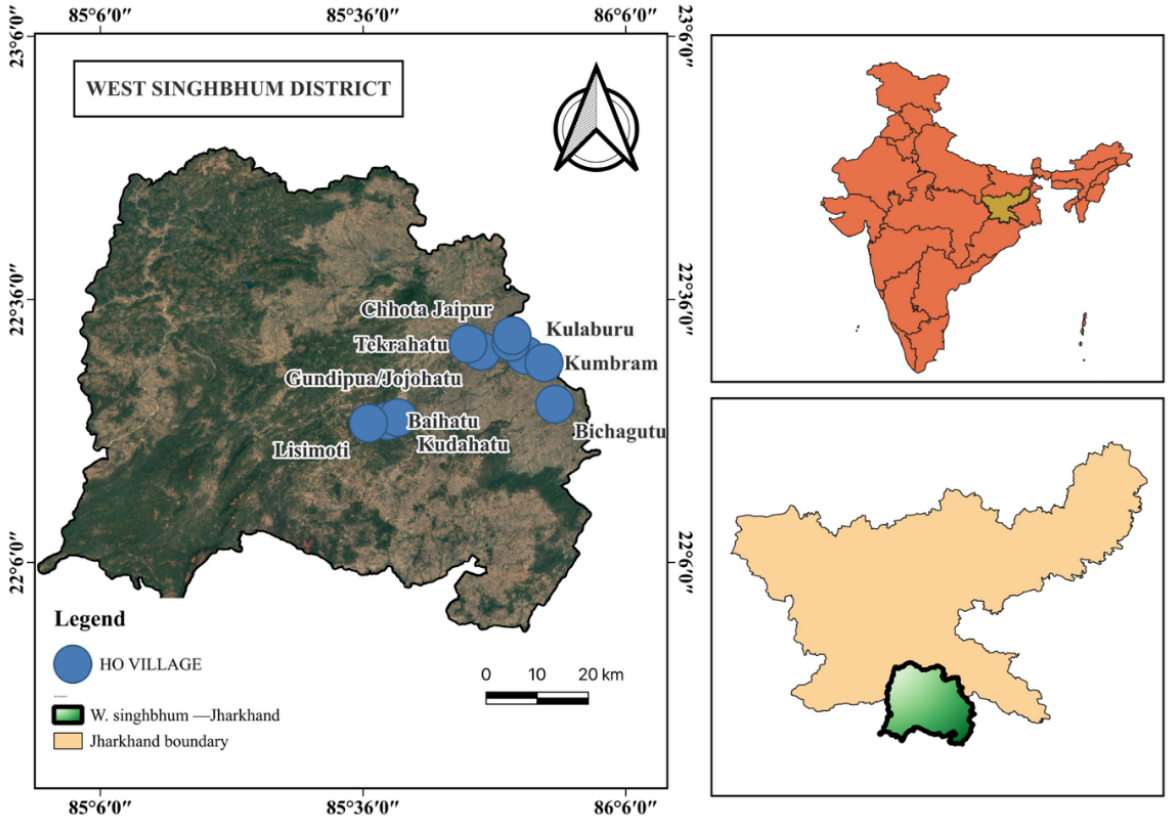

Figure 1. Map showing selected Ho tribe villages in West Singhbhum, Jharkhand

Data collection

This study adopted an exploratory qualitative design, following a knowledge-based systems framework as outlined by (Walker *et al.* 1997) and (Sinclair & Walker 1999). Fieldwork was carried out in two agricultural seasons, in February and October 2024, coinciding with major festivals such as Maghe Parv, Baha Parv, and Hero Parv. This timing allowed direct observation of cultural events and seasonal agricultural transitions. Data were collected using, Semi-structured interviews to document ritual sequences, plant use, and agricultural timings. Focus group discussions (FGDs) to understand shared beliefs and community-wide perspectives on ecological practices. Participant observation to record live festival performances, sacred plant collection, and ceremonial rituals.

To ensure linguistic clarity and cultural sensitivity, a local translator fluent in the Ho language was present throughout the fieldwork. This helped build trust and ensured accurate translation of oral narratives, especially among elder and monolingual participants. Topics covered included seed selection, soil preparation, pest management, forest collection practices, and ritual plant use especially concerning culturally significant species like *Shorea robusta*, *Diospyros melanoxylon*, *Madhuca indica*, and *Syzygium cumini*.

Data analysis

All qualitative data collected through interviews, focus group discussions, and participant observations were systematically reviewed and coded using an inductive content analysis approach. Rather than relying on predefined categories, themes were developed based on recurring patterns emerging from participant narratives (Elo & Kyngas 2008, Newing 2010). This process highlighted three central areas: the role of festivals in guiding agricultural timing, the cultural and ritual significance of specific plant species, and the mechanisms through which ecological knowledge is transmitted across generations.

To ensure the reliability of findings, methodological triangulation was applied by comparing information across multiple sources and data collection methods. This cross-verification enhanced the credibility of the results and helped identify consistent themes while minimizing the influence of isolated perspectives (Huntington 2000, Martin 2004).

A total of 150 participants across ten villages contributed to the dataset, allowing for a diverse range of insights. Attention was given to consistency across gender, age groups, and social roles. Throughout the analysis, the research team maintained reflexive awareness of their positionality and potential influence on the research setting, which is crucial in ethnographic and Indigenous knowledge studies (Chambers 2008, Smith 2012). Field visits were deliberately timed across two agricultural seasons to account for seasonal variations in ritual and ecological practices.

Ethical Considerations

Although formal Institutional Review Board (IRB) approval was not required for this non-invasive, community-based study, ethical protocols were strictly followed. Informed verbal consent was obtained from all participants, and community approval was secured through discussions with Gram Sabha leaders and village elders. The research adhered to the International Society of Ethnobiology Code of Ethics (2006), ensuring cultural sensitivity, participant confidentiality, and the respectful handling of indigenous knowledge.

Results and Discussion

This study draws on data collected from 150 participants across ten Ho villages during two key agricultural seasons February and October 2024 allowing observation of both sowing and harvest-related festivals. Respondents included 60 elders, 55 farmers, 20 ritual specialists, and 15 healers and artisans, selected for their active roles in ritual and ecological knowledge-sharing. Three primary thematic areas emerged across the dataset: (1) the ecological function of seasonal festivals in structuring farming practices (2) the ritual significance of specific plant species such as *Shorea robusta* and (3) concerns about the intergenerational transmission of traditional knowledge. Across the ten study villages, nearly all participants identified Maghe Parv as the ceremonial renewal of ecological life, symbolically honouring the earth and marking the transition into a new seasonal cycle. Sal (*Shorea robusta*) was universally recognized during Baha Parv as central to both ecological health and spiritual life. Notably, over 70% voiced concern about declining transmission of traditional knowledge due to youth migration and changing household dynamics.

Festivals as Ecological Calendars

The ritual calendar of the Ho community closely mirrors the ecological and agricultural cycles of West Singhbhum. Seasonal festivals such as Maghe Parv and Hero Parv not only mark religious occasions but also serve as community-level ecological indicators, guiding transitions in land use, farming, and forest gathering. These festivals are embedded in the temporal rhythm

of nature rainfall, flowering, sowing, and harvest and are structured to ensure that traditional agricultural knowledge aligns with sustainable resource management.

Maghe Parv, celebrated in the Hindu month of Magh (January–February), symbolizes the beginning of a new agricultural cycle. Rituals begin with cleansing of homes and courtyards, offering prayers to sacred groves, and invoking ancestral blessings. A folk song recited during the first day of Maghe Parv (Anader) compares the festival's arrival to the onset of monsoon:

"मगो का आगमन हुआ है,
बारिश के फुहारों की भांति मगो का पदार्पण हुआ है।"
(Maghe has arrived; like the showers of rain, it has descended among us) (Biruli 2021).

This poetic imagery not only celebrates the festival but also alludes to seasonal renewal and soil fertility, linking spiritual arrival with ecological awakening.

Each day of Maghe Parv is linked with specific tasks reflecting environmental stewardship such as land preparation (Loyo Guri), cleaning of homes with cow dung, and worshipping of ancestral spirits symbolized by fire and Sal leaves. These rituals establish a cultural timeline for transitioning into the farming season with renewed purity and collective intent. Similarly, Hero Parv observed just before or during the monsoon is centered around agricultural readiness and crop initiation. Ritual songs from this festival include verses like:

"आषाढ़ पूर्णिमा में
फसल की पूंजी लगाते हैं,
हवा बारिश और पानी से खेती शुरू होती है।"
(On Ashadh Purnima, the seeds of crops are sown, farming begins with air, rain, and water) (Biruli 2021).

This shows the precision with which traditional knowledge is interwoven with seasonal agricultural logic. Rainfall is not just a weather event it is ritually anticipated, sung about, and institutionalized in oral tradition. The internal sequencing of these festivals cleaning, sowing, purification, ancestor worship acts as a living ecological calendar. Unlike written almanacs, this knowledge is stored in rituals, remembered through songs, and acted upon collectively. It reflects a phenological awareness of the land, developed over generations of close interaction with monsoon cycles, soil behaviour, and crop performance.

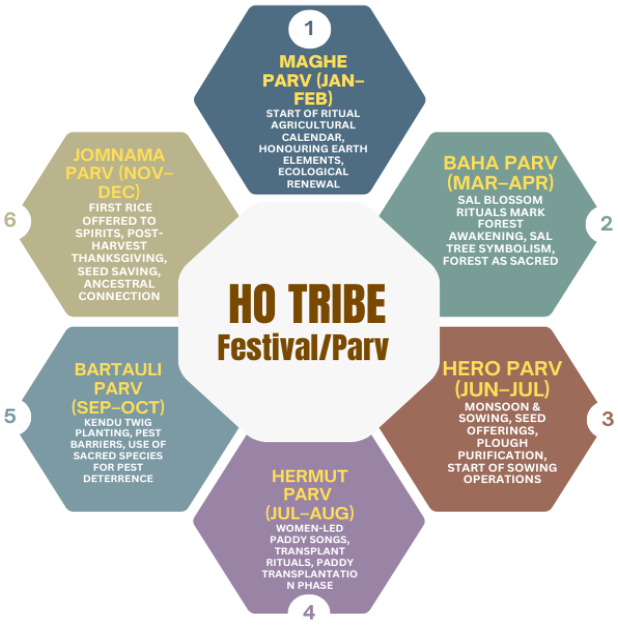

Figure 2. The cyclical rhythm of Ho festivals from Maghe Parv (Creation Life) to Jomnama Parv (Agricultural Life), illustrating how each Parv aligns with seasonal and ecological transitions

Sacred Flora and Ritual Landscapes

For the Ho tribe, biodiversity is not only a matter of subsistence it is sacred. Ritual practices across seasonal festivals reflect a deeply spiritual bond with the forest, and certain plant species such as *Shorea robusta* (Sal), *Diospyros melanoxylon* (Kendu), *Madhuca indica* (Mahua), and *Syzygium cumini* (Jamun) are elevated to a symbolic status through ritual songs and offerings. These sacred plants are central to both ecological functioning and cultural meaning, forming the core of ritual landscapes.

The most prominent example is the Sal tree (*Shorea robusta*), which plays a crucial role in Baha Parv, the festival of renewal and spring. Baha literally means "flower," and the Sal blossom (Sarjom baha) is considered the first and purest floral offering to the deities. Its collection is time-bound: it must be plucked before full bloom, or it loses its spiritual significance. This practice illustrates phenological awareness, where the community times ritual activities with the life cycles of flora, ensuring minimal harm to plant regeneration. A ritual verse sung by village women during Baha Parv captures this connection:

"सरजों बहा लेके
गिधी बहा में धरते हैं,
धरती माता को नमन कर
फूलों से पूजा करते हैं।"
(With the Sal flower in hand, we offer it at Gidhi Baha, bowing to Mother Earth, we worship through the flowers) (Biruli 2021)

This song reflects the role of the Sal tree as a sacred intermediary between people and the earth. The act of bowing to the land and offering flowers underscores an ethic of reciprocity between humans and nature. Similarly, *Diospyros melanoxylon* (Kendu) features prominently In Bartauli Parv, where twigs are ritually planted in the fields to ward off pests and bless the crops, these twigs especially from Kendu (*Diospyros melanoxylon*) are first worshipped and then placed at field boundaries. This act is both protective and sacred, symbolizing a spiritual fence that shields crops from harm. A ritual verse sung during this practice expresses the connection between flora and protective energy:

"खेत में भेंलुवा केंदु की डाल गाड़ते हैं,
यह जोमनमा की आराधना है !!"
(We plant the Bhailuwa Kendu twig in the field, this is the worship of Jomnama.) (Biruli 2021)

This verse highlights why Kendu twigs are chosen not merely for their botanical properties, but because they represent Jomnama's blessings, a harvest deity whose worship is central to agricultural success. The act of planting the twig becomes a ritualized plea for protection, fertility, and harmony with nature. The symbolic role of Jamun (*Syzygium cumini*) is also reflected in the second day of Maghe Parv, Gaumhara, where villagers honour the caretakers of livestock by performing rituals involving Jamun twigs. One of the folk verses associated with this ritual beautifully captures the spiritual meaning:

"माटी के टिले पर, जामुन की डाली,
सूर्य की किरणें 'महादेड़' बन, टिले को सींग मारता है।"
(On a mound of soil, a Jamun branch stands; the sun's rays take the form of a bull and strike the mound with its horns.) (Biruli 2021)

This verse, sung on "Gau Mahra", metaphorically connects the Jamun tree to cosmic energies—where the sun transforms into a mythical bull (Mahaded) and engages with the sacred landscape. The act of placing Jamun twigs on earthen mounds is not merely symbolic; it enacts a mythological scene where nature, animal, and divine forces converge, reinforcing Jamun's sacredness in ritual and environmental practice. In Jomnama Parv, the harvest festival, fresh rice is first offered to the ancestors before anyone consumes it. Here again, flora—especially newly harvested grains are not just food but sacred offerings. Songs performed during this festival thank the land and invoke ancestral spirits:

"नया धान का पहला दाना,
बोंगा को अर्पण करना है,
तब जाकर हम अन्न खाएंगे।"
(The first grain of the new rice must be offered to the Bonga, only then shall we eat) (Biruli 2021)

In addition to Sal and Kendu, *Madhuca indica* (Mahua) is another sacred species referenced in multiple ritual verses, especially in connection with Baha Parv and springtime celebrations. The Mahua tree is admired not just for its ecological value providing flowers, fruits, and shade but also for its spiritual and aesthetic role in Ho oral traditions. A song from the collection (Biruli 2021) captures the blossoming of Mahua along the village paths:

"ऊँचे पर्वत पर सरजोंम का पुष्प खिला है,
रास्ते के किनारे पर महुआ के फूल झरते हैं।"
(On high hills, the Sal flower has bloomed, along the paths, Mahua flowers are falling.)

This verse paints a vivid seasonal image, suggesting that the blooming of Mahua and Sarjom (Sal) is not only noticed but celebrated in the village's poetic memory. The falling Mahua blossoms mark both a natural and a spiritual event the renewal of spring and the blessings of the forest. Another song invokes Mahua more directly in ritual preparation:

"जल्दी से बांस की टोकरी बना दो,
सरजोंम का पुष्प बुलाते हैं,
जल्दी से टांगी पजा दो,
महुआ के पुष्प झरते हैं !!"
(Make the bamboo basket quickly, the Sal flower calls us, hang the basket soon, for Mahua flowers are falling)

Here, the Sal and Mahua trees are paired as central actors in the ritual landscape. The need for gathering, the preparation of bamboo baskets, and the blossoming of sacred flowers underscore the integral role that the natural cycles of Mahua play in the collective rituals, particularly during seasonal transitions. This emphasizes Mahua's significance not just as a forest resource but as a ceremonial partner, with its flowers marking the time for spiritual offerings and community gatherings. Through these ritual connections and their accompanying songs, the Ho tribe cultivates a relationship with flora characterized by reverence, regulation, and rhythm. Sacred plants are safeguarded rather than commodified, and their inclusion in songs and rituals acts as a cultural mechanism that promotes biodiversity conservation at the grassroots level.

Traditional Agriculture and Biodiversity Conservation

Traditional agriculture among the Ho tribe is intricately linked with ritual knowledge, seasonal patterns, and forest ecology. In contrast to industrial farming systems that view nature solely as a resource to be exploited, Ho agricultural practices prioritize balance, restraint, and a sacred sense of duty. Seasonal festivals serve as ecological roadmaps, directing seed preparation, field rituals, pest management, and harvest ethics. A particularly ecologically significant festival is Hero Parv, celebrated around Ashadha Purnima, which marks the arrival of the monsoon. It marks the ritual beginning of cultivation. Before any ploughing or sowing begins, the Deori (ritual priest) leads a ceremony involving soil blessing, purification of ploughs, and offering of Sal leaves and rice beer to the land spirits. This event is accompanied by songs that blend agricultural work with ecological prayer:

"आषाढ़ पूर्णिमा में
फसल की पूंजी लगाते हैं,
हवा बारिश और पानी से
खेती शुरू होती है।"
(On Ashadh Purnima, we sow the seeds of crops, with wind, rain, and water, farming begins) (Biruli 2021)

This verse illustrates an intimate understanding of monsoon ecology, treating elements like rain and wind as spiritual collaborators rather than climatic variables. The ritual timing ensures that land is not disturbed prematurely, thus protecting soil moisture and structure an example of traditional soil conservation. In Bartauli Parv, traditional pest management is enacted through the symbolic planting of Kendu twigs and the use of sacred ash at field boundaries. These practices, passed down orally, are said to "guard the crop" and "scare away the pest spirits." While modern science may not fully validate the biological effect, the cultural impact is profound these rituals discourage overuse of chemical inputs and reinforce collective care of the crop. Hermut Parv, often celebrated during transplantation season, involves singing rituals performed by women

as they move into paddy fields. Songs narrate the work of ancestors and the responsibility of each generation to "leave the soil fertile." One such field-recorded phrase is:

"हमारे पूर्वजों की तरह
मिट्टी की रक्षा करो,
गोबर से खेत संवारो,
बीजों को जीवन दो।"
(Like our ancestors, protect the soil, ready the fields with cow dung; give life to the seeds) (Biruli 2021)

This verse connects organic soil enrichment (e.g., cow dung use) with intergenerational ethics and is a clear example of sustainable agricultural logic embedded in ritual song. Finally, Jomnama Parv, the harvest festival, functions as both celebration and control. Before any grain is consumed or stored, a ritual offering is made to the Bongas (spirits). This ensures communal sharing and discourages overharvesting or hoarding. It also prevents the immediate sale of produce, thereby stabilizing local food systems and encouraging household storage. Participants in your field interviews repeatedly emphasized that these rituals were not "religion" in the narrow sense, but ways of protecting the field, forest, and future. Even young informants, though less involved in ritual performance, could recall specific agricultural dos and don'ts based on seasonal songs. This shows the continuing role of oral culture as ecological instruction. Together, these festivals illustrate a localized system of agroecological governance, where farming is not dictated by market cycles or monoculture but by ritual ecology and biodiversity values. The use of native seeds, organic amendments, and plant-based knowledge creates a farming model that is low-cost, climate-resilient, and culturally rooted.

Oral Knowledge and Intergenerational Transmission

In Ho tribal culture, oral traditions are the foundation of both spiritual identity and environmental understanding. Myths, ritual songs, and folk narratives serve as dynamic repositories of knowledge transmitted across generations through storytelling, festival performance, and everyday conversations. Among these oral narratives, the creation story of Luku Kuru and Luku Kuri stands as a cornerstone of Ho cosmology. According to this myth, the supreme deity Sing Bonga created the Earth, sky, rivers, forests, and mountains. Yet the creation of humans was left incomplete. To fulfill this divine task, five deities Desauli, Pauri, Jayera, Guabonga, and Marang Bonga took on the responsibility of creating life. They turned to nature itself for guidance, choosing harlu soil, known for its softness and fertility, to shape the first human, Luku Kuru. After crafting the male form, they mixed leftover soil with rice flour and released it into the river. A fish consumed the mixture, and from its womb emerged Luku Kuri, the first woman (Choudhary 2022). This myth is profoundly ecological. It ties human origin to soil fertility, aquatic life, and sacred grains, presenting a worldview where humans are not separate from nature, but born from it. The story is ritually re-enacted during Maghe Parv, in ceremonial acts and songs that recall this divine creation. In this way, cosmology, ecology, and identity are fused through performance. The deities then assigned roles to maintain the balance of the world. Desauli became the guardian of villages, while his wife Jayera was tasked with overseeing fertility and protection. Both are worshipped in key agricultural festivals. Their veneration reinforces social obligations to land, water, and community care. The creation myth is also used pedagogically. In field interviews, elders often began explanations of ritual practice by first recounting this myth explaining that it is from this soil we are born, so it is the soil we must protect. During Loyo Dang, the sixth day of Maghe Parv, elders sing verses that evoke this origin:

"हरलू माटी से लुकु कुरु बना,
चावल से लुकु कुरी बनी।
माटी से जीवन, धान से भूख मिटे,
धरती की पूजा यही से शुरू होती।"
(Luku Kuru was formed from harlu soil, Luku Kuri from rice. Life comes from soil, hunger ends with grain this is where our worship of the Earth begins.) (Biruli 2021)

These songs teach that soil and seed are sacred, not commodities. The intergenerational role of elders, especially grandmothers and Deoris, becomes central in storytelling and ritual song, embedding ethics of land care, restraint, and reciprocity in community consciousness. Importantly, these oral traditions are not static relics. In some villages, versions of the Luku myth were adapted to include metaphors for deforestation and seed loss, showing that oral traditions are dynamic

instruments for reflecting environmental change. One youth group in Baihatu village adapted a song verse to reflect their concerns:

"पहले की माटी मुलायम थी,
अब तो वह सख्त हो गई।
पेड़ों की छाया घटी है,
बारिश भी रूठ गई।"
(The soil was once soft, now it has hardened. The shade of trees is fading, and the rains have turned away.) (Biruli 2021)

A compelling example of knowledge transmission through oral tradition is the folklore connected to Baha Parv and the sacred Sal flower. This narrative, shared across generations, describes how spiritual neglect following Maghe Parv resulted in chaos throughout the village. The restoration of harmony was achieved only when a Luku Kuri embarked on a journey beyond seven hills to retrieve the everlasting Sal flower. Her quest, along with the rituals conducted by her husband, established the Sal flower as a sacred entity. This tale, frequently recounted by elders and conveyed through folk songs, not only encapsulates the logic of rituals and the ethics of the seasons but also emphasizes the pivotal role of women in environmental restoration and cultural resilience. Like other oral traditions of the Ho, this folklore imparts lessons using metaphor and memory, embedding values of respect, ecological awareness, and community responsibility in a format that resonates emotionally and is accessible to all. Thus, oral knowledge in the Ho tradition transcends mere storytelling; it embodies functional environmental wisdom. Through its myths, metaphors, and memories, it communicates rules regarding seed purity, forest ethics, community agricultural practices, and harmony with the seasons. This wisdom is transmitted not in formal classrooms but around fires, in agricultural fields, at sacred sites, and through song, rendering it resilient, adaptable, and intricately tied to the landscape and way of life.

Cultural Continuity and Conservation Discourse

The rituals, songs, and myths embedded in the Ho tribe's seasonal festivals are not only expressions of faith or heritage they constitute a functioning knowledge system that promotes ecological resilience and sustainable living. Through the yearly celebration of festivals such as Maghe Parv, Baha Parv, Hero Parv, Hermut, Bartauli, and Jomnama, the Ho community upholds a cultural framework that shapes agricultural practices, governs biodiversity use, and strengthens social bonds. This ongoing transmission of ecological knowledge through cultural rituals illustrates what scholars refer to as Indigenous Knowledge Systems (IKS) dynamic, localized ways of understanding that have developed through direct interaction with the environment (Berkes 2017 , Gadgil *et al*. 1993).

A key characteristic of Ho ecological knowledge is its non-instrumental ethic nature is not merely viewed as a resource but as a living entity deserving of reverence. For instance, the Sal tree (*Shorea robusta*) is cherished not just for its timber or practical uses, but as a sacred presence integral to the rituals of Baha Parv. Similarly, rivers, hills, and soil are honoured through oral poetry and ritualistic offerings. These practices embody an eco-spiritual perspective that fosters biodiversity conservation not through regulations or incentives, but through a sense of cultural duty and emotional connection. Furthermore, the sustained cultural practices stemming from these traditions strongly advocate for the incorporation of indigenous knowledge into formal conservation discussions. While national frameworks such as the Biological Diversity Act (2002) and India's National Biodiversity Action Plan formally recognize the value of traditional knowledge, their implementation often focuses on documentation and access benefit-sharing mechanisms, with less emphasis on the lived, ritual, and seasonal expressions through which such knowledge is practiced and transmitted. The findings of this study suggest that effective conservation must go beyond documentation and seek partnerships with indigenous communities, allowing their cultural rhythms to inform ecological governance. This is especially pertinent in light of the Sustainable Development Goals (SDGs), particularly Goal 15 (Life on Land) and Goal 13 (Climate Action). The rituals of the Ho tribe inherently incorporate principles of soil conservation, forest protection, climate adaptation, and seed diversity all achieved without outside intervention. Acknowledging and supporting these practices could lead to the development of affordable, community-based conservation strategies that respect local culture while effectively addressing ecological needs. Moreover, the oral and ritualistic methods of passing down knowledge ensure that it remains accessible. Unlike scientific manuals or government brochures, these traditions are conveyed through songs, stories, and ceremonies, reaching every segment of the community, including the illiterate, elderly, and children. As a result, they act as resilient conduits of ecological understanding, deeply anchored in language, land, and lived experience. As cultural erosion, land degradation, and climate change pose increasing threats to indigenous lifestyles, safeguarding these knowledge systems becomes crucial not just for preserving heritage, but also for

ensuring ecological survival. The festive traditions of the Ho tribe illustrate that conservation can be joyful, spiritual, and communal. They present a model of sustainability that is in harmony with the land rather than exploitative.

Table 2. Overview of Ho Festivals and Their Agricultural and Ecological Functions
Source: Fieldwork (2024)

Festival Name	Timing (Month)	Main Ritual Activities	Agricultural Significance	Ecological/Biodiversity Role
Maghe Parv	Jan–Feb	Soil worship, fire rituals, ancestor offerings	Marks beginning of new agricultural year	Celebrates earth and fire as sacred forces
Baha Parv	Mar–Apr	Sal flower offering, singing, Deori-led prayers	Prepares for sowing and planting	Sal tree worship, symbolic forest renewal
Hero Parv	Jun–Jul	Seed offering, plough purification	Start of sowing season	Soil fertility, monsoon alignment
Hermut Parv	Jul–Aug	Women-led songs in paddy fields	Transplantation rituals	Promotes soil care, seed purity
Bartauli Parv	Sep–Oct	Planting Kendu twigs on field borders	Protects standing crops from pests	Ritual pest management using sacred Kendu twigs
Jomnama Parv	Nov–Dec	New rice offering to spirits	Harvest festival	Encourages sharing, seed saving

Table 3. Sacred Plant Species and Their Ritual Roles
Source: Fieldwork (2024)

Botanical Name	Local Name	Festival(s) Associated	Part Used	Ritual Use	Cultural/Ecological Significance
Shorea robusta Gaertn. f.	Sarjom	Maghe, Baha, Hero, Hermut, Bartauli and Jomnama parv	Leaf, Flower	Used in offerings, tool decoration, grove rituals	Central sacred tree symbolizes forest renewal, soil care, and ancestral connection
Diospyros melanoxylon Roxb.	Kendu	Bartauli Parv	Branches, Leaves	Planted along field borders for spiritual protection	Traditional pest management signals crop safeguarding
Madhuca indica J.F. Gmel.	Mahua	Hero Parv, Hermut Parv	Flower, Fruit	Brewed in hadia, used in ritual food and seasonal rites	Supports pollinators source of nutrition and income
Syzygium cumini (L.) Skeels	Jamun	Maghe Parv	Leaf, Twig	Used in home sweeping and purification rituals	Symbol of cleansing valued for shade and erosion control
Oryza sativa L.	Dhan (Paddy)	Jomnama Parv	Grain	First harvest offered to ancestral spirits	Sacred staple crop symbolizes abundance and sharing

Table 4. Eight Days of Maghe Parv Ritual Structure and Folk Songs
Sources: (Biruli 2021, Mohanta 2005, Fieldwork 2024)

Day (Local Name)	Ritual Focus & Symbolism	Key Activities & Offerings	Ecological/Cultural Significance
Anader	Honoring ancestors	Offerings at Desauli Sthal animal sacrifice by Deori	Spiritual preparation soil as sacred origin
Gaumhara	Honoring livestock keepers	Jamun stems, circling ritual, Hadia sharing	Reverence for animals jamun for purification
Otteilli	Worshipping the Earth	Offering Som to land (Otte)	Earth as living being fertility prayer
Hei Sakam	Forest gathering, Sal leaves	Women collect Sal leaves; make Dauna	Sustainable forest use, women's ecological role
Loyo Guri	Village cleansing	Cow dung plastering, sweeping homes	Ritual and hygienic purity, soil enrichment
Maghe Marang	Main day thanksgiving to nature	Poultry and seed offerings Sal leaves, Gungu fruit	Biodiversity offering fertility rituals
Jatra	Communal worship and union	Singing, dancing, honoring Sing Bonga	Fertility celebration social cohesion
Heramgaya	Honoring livestock	Symbolic return of animals to forest edge	Human–animal interdependence

Table 5. Four Days of Baha Parv – Rituals and Ecological Meaning
Sources: (Biruli 2021, Gilua 2022, Fieldwork 2024)

Day (Local Name)	Ritual Focus & Symbolism	Key Activities & Offerings	Ecological/Cultural Significance
Baha Katab	Fasting and preparation	Deori fasts Hadia prepared	Spiritual readiness tree connection
Baha Guri	Home purification	Cleaning with cow dung	Hygiene and spiritual prep
Baha Parv	Worship and celebration	Sal flower offerings	Sal tree veneration ancestral offerings
Baha Basi	Initiation of new flora	Sal, Mahua, Mango trees worshipped	Sustainable forest uses seasonal transition

Conclusion

This study explored how the Ho community of West Singhbhum integrates cultural traditions and ecological knowledge through six seasonal festivals celebrated across the agricultural year. By engaging with 150 participants across ten villages, the research identified key links between ritual practices, sacred plant species like *Shorea robusta*, and farming cycles. These findings demonstrate that traditional festivals act as ecological calendars, shaping decisions around sowing, transplanting, and harvesting. Importantly, over 70% of participants expressed concern about the decline in knowledge transmission, especially in households affected by youth migration. While these festivals continue to anchor sustainable practices and social cohesion, changing lifestyles, environmental pressures, and reduced participation of younger generations pose real risks to continuity. The study's qualitative nature, based on fieldwork during two agricultural seasons, provides in-depth insights, though limited in geographic scope and broader generalizability. Seasonal observations may have missed festivals outside the selected timeframes, and the interpretations are based on narratives and observations, they reflect perceived ecological relationships rather than scientifically measured environmental impacts. Going forward, future research could include more quantitative tracking of biodiversity outcomes linked to ritual practices, involve younger community members to understand intergenerational shifts, and explore comparative analysis across tribal groups. Policy initiatives and conservation programs would benefit from recognizing and supporting such Indigenous knowledge systems not merely as cultural heritage, but as living practices essential to ecological resilience and local sustainability.

Declarations

List of abbreviations: FGDs - Focus group discussions, IKS - Indigenous Knowledge Systems, IRB - Institutional Review Board, JSAC - Jharkhand Space Applications Center, KVK - Krishi Vigyan Kendra, NRM - Natural Resource Management, TEK - Traditional Ecological Knowledge, TK - Traditional Knowledge, ST - Schedule Tribe, UGC - University Grants Commission.

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Author contributions: A.R. conceptualized and executed the study, conducted fieldwork, analysed the data, and, prepared the manuscript D.D supervised the research and provided critical feedback throughout the study.

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