

FORGOTTEN SUSTENANCE: REDISCOVERING THE SIGNIFICANCE OF UNCULTIVATED FOODS FOR FOOD SECURITY AND NUTRITION

Abstract

This study explores the overlooked significance of uncultivated foods within Adivasi communities, shedding light on their pivotal role in food security and nutrition. While terms like "wild foods" and "forest foods" have been used, anthropological research often neglects the dietary habits and economies tied to these resources. This chapter gives the glimpse of nutritional composition of uncultivated foods, addressing safety concerns and advocating for a synthesis of indigenous knowledge and scientific data to elevate their importance. It also highlights contemporary research on wild edible foods and emphasizes the need for their preservation.

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I. INTRODUCTION

Various terms, such as wild foods, wild edible plants, and forest foods, have been used in literatures to describe the category of uncultivated foods. It's notable that within anthropological research, the food cultures and economies of Adivasi communities related to wild food sources have often been overlooked. Despite detailed descriptions of various aspects of tribal life, such as clans, rituals, and agricultural practices, publications often lack thorough documentation of the uncultivated wild foods consumed.

Verrier Elwin, a respected anthropologist known for his dedication to indigenous people, has provided some insights into the dietary practices of different tribal communities. For instance, his work sheds light on the consumption of jungle leaves, herbs, fruits, shoots, and roots among various tribes. While these descriptions offer glimpses into the significance of wild foods, a comprehensive understanding of their role in food security is largely absent.

Throughout various historical Gazetteers and reports, traces of information about uncultivated foods can be found. These sources acknowledge that many forest-dwelling communities depended on wild foods, especially during lean periods. These foods were integral to the survival of these communities and were often crucial during times of distress, effectively preventing widespread famine.

However, when it comes to the portrayal of consuming these foods in mainstream media, a prevalent perspective often associates such practices with backwardness and poverty. Over the years, reports have emerged, often annually, detailing instances of Adivasis' unfortunate deaths following the consumption of dishes like mango kernel soup. These incidents tend to be highlighted in media coverage. Governments, too, have taken an active role in discouraging tribal communities from partaking in such uncultivated foods. On occasion, political parties in opposition have seized upon the consumption of wild foods as a means to underscore their point that government services are not adequately reaching Adivasi communities. Consequently, the consumption of uncultivated foods has been utilized as a scorecard to emphasize a perceived lack of government support. During periods of food scarcity, households might resort to eating foods like mango kernels, salap tree bark, tamarind seeds, jackfruit seeds, and various forest-derived resources like bamboo shoots and mushrooms. It has been highlighted that deaths and illnesses resulting from the consumption of these foods are often linked to improper storage practices. Despite experts concurring on the nutritional value of items like mango kernels, mushrooms, and tamarind seeds, the act of consuming such foods is frequently equated with poverty or even perceived as "sub-human conditions." This chapter gives the glimpse of nutritional composition of uncultivated foods, addressing safety concerns and advocating for a synthesis of indigenous knowledge and scientific data to elevate their importance. It also highlights contemporary research on wild edible foods and emphasizes the need for their preservation.

II. IMPORTANCE OF UNCULTIVATED FOODS

The significant oversight of uncultivated foods in the diets of Adivasi communities, which contribute substantially to their nutrition and sustenance.

- 1. Essential Supplementation:** During periods of hardship such as poor cultivated food production, scarcity of PDS rations, or limited employment opportunities, uncultivated foods play a pivotal role in ensuring community survival. Historical records and firsthand accounts underscore their vital significance, which is further underscored by their nutritional composition.
- 2. Year-round Availability:** Well-maintained forests with good access offer a consistent supply of uncultivated foods throughout the year. This is particularly notable for tubers, greens, and assorted fruits.
- 3. Nutritional Diversity:** Technical analysis reveals the high nutritional value of most uncultivated foods, though some might possess anti-nutritional properties. The diverse array of these foods contributes to their importance.
- 4. Affordability and Freedom:** Against a backdrop of growing income inequality in rural settings, uncultivated foods stand out as not only affordable but entirely cost-free. Sustainable resource management can also yield income for communities.
- 5. Safe Consumption:** Unlike cultivated foods, which sometimes raise food safety concerns due to chemical additives, uncultivated foods grow and mature without exposure to such agents. This attribute is especially relevant for malnourished populations vulnerable to pesticide-related risks.
- 6. Climate Resilience:** Wild species exhibit greater resilience to climate change compared to cultivated counterparts. In a changing climate scenario, relying solely on cultivated foods could lead to increased food scarcity. Uncultivated foods serve as a valuable fallback during these periods.
- 7. Dignity and Pride:** These foods empower communities and households by fostering self-reliance. Unencumbered by costs, debts, or permissions, individuals gain a sense of dignity and pride, particularly significant to Adivasi communities.
- 8. Traditional Knowledge:** A wealth of biological knowledge, spanning growth habitats, seasons, characteristics, nutritional and medicinal properties, processing, cooking methods, and cultural uses, resides within the community. This knowledge is often held by community members, including children.
- 9. Cultural Significance:** Many uncultivated foods hold deep cultural importance for the dependent communities. However, this aspect remains largely unexplored and unrecognized. Gender Equality: In contrast to subsistence farming, where gender disparities often prevail, collecting uncultivated foods exhibits greater gender equality. Although slight gender-based variations might exist, the act of gathering these foods usually bridges gender gaps.

Despite the significance of these points, they have yet to gain traction within the discourse of civil society organizations focusing on Adivasi rights, sustainable forestry models, and food rights. This disregard extends to action plans as well. Furthermore,

anthropological studies on Adivasi and forest-dependent communities have frequently overlooked these aspects. Recently, interest has been sparked by biochemistry, ethnobotany, and nutrition scientists, who have begun delving into the subject matter.

III. THE NUTRITIONAL SIGNIFICANCE OF WILD, UNCULTIVATED FOOD

The chapter implies a range of uncultivated foods regularly consumed, encompassing vegetables, fruits, roots, tubers, greens, small mammals, birds, aquatic life, and various types of mushrooms. These foods play a crucial role by providing micro-nutrients, making a significant contribution to local diets even in small quantities. In comparison to starchy staples produced through agriculture or acquired via the public distribution system (PDS), as well as snacks purchased, these food categories exhibit a higher concentration of most micro-nutrients relative to energy, carbohydrates, and sugars. However, due to the absence of comprehensive nutrient data for all uncultivated foods, making direct comparisons with cultivated foods is challenging. Furthermore, the nutrient composition of various fruits and vegetables can be highly variable, influenced by factors such as variety, climate, harvesting, and storage conditions.

Food item	Protein g	Fat g	Fibre g	Energy Kcal	Calcium mg	Iron mg
Colocasia	3	0.1	1	97	40	0.4
Yam elephant	1.2	0.1	0.8	79	50	0.6
Yam Ordinary	1.4	0.1	1	111	35	1.19
Yam wild	1.2	0.3	1	110	20	1
Guruda Saga	3.9	0.3	2.1	49	398	20.9
Jumbo	1.3	0.5	3.8	37	30	4.3
Kankoda	3.1	1	3	52	33	4.6
Tamarind seed	16.1	7.3	1	387	121	0
Kusum kol	1.5	0.8	0.6	53	15	0
Tamarind	3.1	0.1	5.6	283	170	17
Drum stick leaf	6.7	1.7	0.9	92	440	0.85
Mushroom	3.1	0.8	0.4	43	6	1.5
Bamboo Shoot	3.9	0.5	0	43	20	0.1
Jack fruit (seeds)	6.6	0.4	1.5	133	50	1.5
Siali seed	27.3	29.9	1.1	493	302	6.8
Mahula	1.4	1.6	0	111	45	0.23

(Deb *et al.* 2014)

A systematic analysis of the nutritional composition of uncultivated foods is noticeably lacking within the purview of state agencies. The limited analysis that has been conducted, however, indicates a substantial potential in these foods to effectively combat hunger and malnutrition, particularly within Adivasi communities. Conducting a comprehensive and widespread analysis holds the potential to guide policy discussions toward more constructive directions. Moreover, such analysis can catalyze grassroots

dialogues aimed at revitalizing and bolstering the presence of these foods in local diets. This entails a dual approach involving the amalgamation of indigenous knowledge and scientific nutritional data to champion the virtues of uncultivated food.

Indigenous Knowledge of Local communities possess generations of knowledge about the nutritional properties, preparation methods, and traditional uses of uncultivated foods. Integrating this indigenous wisdom into nutrition-related initiatives ensures cultural sensitivity and relevance. Conducting rigorous scientific analysis of the nutritional content of uncultivated foods provides a credible foundation for advocating their integration into diets. This data can resonate with policymakers, researchers, and the general public, lending greater legitimacy to the cause.

IV. BENEFITS OF MERGING INDIGENOUS KNOWLEDGE AND SCIENTIFIC DATA

Indigenous knowledge ensures that interventions align with local customs and practices, increasing the likelihood of successful adoption. Combining scientific insights with traditional wisdom allows for a holistic understanding of uncultivated foods, considering not only nutritional aspects but also cultural, ecological, and social dimensions. Equipped with comprehensive data, advocacy efforts can be better targeted toward policy changes and community-driven initiatives that promote the consumption of uncultivated foods. Scientific validation can lead to shifts in public perception, encouraging individuals and communities to recognize the nutritional value of uncultivated foods. Robust scientific evidence facilitates policy discussions, potentially leading to the integration of uncultivated foods in government food programs and nutrition strategies. Leveraging traditional and scientific knowledge creates a sustainable foundation for long-term solutions to malnutrition and food security challenges.

V. SOME ANTI-NUTRITIONAL ELEMENTS

Uncultivated foods generally offer safety and organic qualities by being free from chemical residues like pesticides. However, both traditional community knowledge and modern scientific analysis acknowledge that certain uncultivated foods possess toxicity, anti-nutritional elements, or potential harm under specific circumstances. This variability can be influenced by factors such as the plant part used, growth stage, preparation method, season, and individual consumer characteristics, as highlighted in scientific literature.

Extended consumption of certain fruits containing natural toxins can lead to symptoms like stunting, indigestion, and exacerbated malnutrition. Anti-nutritional components like oxalates, phytates, saponins, and tannins can interfere with metabolic processes, negatively impacting growth and nutrient absorption. Communities possess knowledge about which foods to avoid or detoxify before consumption. However, safety concerns can arise during processing and storage, as seen in incidents such as the notoriety linked to deaths and illnesses following mango kernel consumption.

The bioavailability of the positive nutritional aspects of these foods is another crucial consideration. Some Adivasi communities predominantly consume their food boiled, with

minimal use of cooking oils. Notably, in certain study villages, the evident malnutrition in some children raises concerns. Therefore, investigating potential issues related to bioavailability and consumption quantities of uncultivated foods becomes essential.

Clearly, any future studies focused on uncultivated foods must intricately consider these multifaceted factors to comprehensively understand their nutritional and safety aspects.

VI. CONTEMPORARY RESEARCH

In recent times, there has been a noticeable surge in the attention from scholars across various disciplines towards the topic of wild edible foods, often referred to as uncultivated foods. Research endeavors have been undertaken in regions like Sahel, Senegal, Nigeria, and others, with the aim of evaluating the role of wild foods in shaping traditional dietary habits within 12 distinct indigenous communities spanning various nations. These studies collectively suggest that the contribution of wild food sources to overall dietary energy varies significantly, ranging from 30% to as high as 93% (Kuhnlein et al.2009). In the context of India, the majority of studies concerning uncultivated foods have primarily centered on two main aspects: taxonomic cataloging and the nutritional composition of the plant life gathered and consumed by diverse communities. Consequently, a broad array of wild edible plants found in the eastern states, such as West Bengal, Sikkim, and Odisha, have been documented in various research efforts.

Examining the significance of tropical forests as a vital food resource for rural communities, a comprehensive assessment reveals that approximately 80% of those residing in forests across states like Bihar, Odisha, Madhya Pradesh, West Bengal, and Himachal Pradesh rely on forest resources to fulfill between 25% and 50% of their annual dietary needs (Tiwari D N. 1994). Within Eastern India, dedicated research efforts have been carried out by two institutions: the Directorate of Extension Education at Birsa Agricultural University in Jharkhand and the Regional Plant Resource Center situated in Bhubaneswar. The latter institution has notably produced a publication titled "Wild Edible Fruit Plants of Eastern India," which features vibrant images showcasing 150 different wild plants, along with their fruits and flowers.

These wild fruit-bearing plants play a multifaceted role, serving not only as a source of sustenance but also significantly enhancing the nutritional value of diets. They contribute essential nutrients, particularly vitamins and diverse forms of carbohydrates, thereby positively impacting the quality of nutrition obtained through consumption (Mahapatra and Panda,2009).

An investigation into the edible wild plant species found in the Darjeeling hill region of West Bengal focused primarily on establishing the taxonomic classification of these plants as well as identifying the various edible parts associated with each plant (Bhujel et al. 1984).

In a more recent survey conducted in the Cooch Behar district of West Bengal, an inventory was compiled which highlighted the array of edible wild food plants present in the region. This inventory encompassed a total of 2 Pteridophytes (ferns and fern allies), 98 dicotyledonous plants, and 25 monocotyledonous plants. These edible plants are

predominantly consumed by communities such as the Coch, Kheria, Oraon, Rabha, and Santal, indicating their significance as dietary resources within these cultural groups (Bandyopadhyay et al. 2009). An alternate facet of research has been directed towards examining the nutritional composition of various uncultivated food plants. For instance, studies have been conducted to assess the nutritional properties of wild edible plants found in the Midnapur district of West Bengal as well as in the state of Sikkim (Sundriyal and Sundriyal, 2001).

These studies involved laboratory analyses conducted on each type of edible plant, detailing their protein, carbohydrate, lipid, and vitamin contents per unit quantity. Notably, research conducted by the Regional Plant Resource Center in Bhubaneswar delved into the nutrient analysis of specific wild edible fruits, highlighting their significance as valuable nutrient sources for rural populations with limited means. In several instances, the nutritional value of these wild fruits exhibited favorable comparisons to well-known cultivated fruits (Mahapatra et al. 2012).

One of the most thorough compilations of wild and uncultivated plants and animals used as food resources in eastern India was published in the Proceedings of the SANFEC (South Asian Network for Food, Ecology, and Culture) Conference on Uncultivated Foods, held in 1999. This study stands as the pioneering endeavor that encompassed a comprehensive inventory of both wild plants and animals consumed as food in the entire state of West Bengal, across all ethnic groups within the region (Deb, 1999).

This study not only cataloged wild plants and undomesticated animals derived from forests, wetlands, and farm hedges, but also meticulously identified the edible components of 317 plant species and 75 types of wild animals. Furthermore, it illuminated the diverse culinary preferences of different communities towards various edible species. A significant aspect underscored by this research was the pivotal role played by undomesticated flora and fauna in the strategies of indigenous societies to secure food availability during periods of scarcity.

VII. DECLINATION OF UNCULTIVATED FOODS

The assessment of dependence on uncultivated foods for community and household food security was severely constrained due to the absence of a baseline reference. Nonetheless, even with this limitation, there is evident decline in the diversity, quantity, and consumption of uncultivated foods over the past 3-4 decades. This decline has been gradual and unnoticeable within the community. The contributing factors are multifaceted:

Forests have receded and moved farther from villages, diminishing the proximity to uncultivated food sources. Forest areas have been replaced by monoculture plantations, either initiated by the forest department or encouraged among villagers as alternatives to traditional shifting cultivation practices (podu). Changing rainfall patterns have adversely affected specific forest foods, such as mushrooms and greens. The Public Distribution System (PDS) for rice has influenced dietary habits, instilling a sense of food security while disregarding the cultural and nutritional significance of uncultivated foods. Forests, particularly bamboo forests, have been affected by elephant herds and intentional forest fires, often set during

kendu leaf season. Increased cash incomes from various sources have led to greater reliance on purchased food, altering the food landscape. Development projects and cashew nut plantations have penetrated communities, altering traditional land use. While not observed in this study, invasive alien species have been recognized elsewhere as contributors to the decline in availability and consumption of uncultivated foods. In regions where uncultivated foods are collected from farm fields, chemical-intensive agriculture and monocultures have negatively impacted their availability.

VIII. PRESERVATION OF UNCULTIVATED FOOD

Preserving the sources of uncultivated foods is of utmost importance. These factors encompass changes in forests, shifting cropping patterns, and the adoption of modern agricultural technologies such as monocultures, herbicides, and pesticides. Additionally, challenges related to community access to these resources are influenced by a range of socio-cultural shifts. Safeguarding these sources is paramount, as uncultivated foods hold the key to addressing the fundamental issues surrounding the food and nutrition security of Adivasi communities.

To effectively protect these invaluable resources there is need to do collaborative efforts by local communities, NGOs, and government agencies are vital. This involves establishing protected areas, sustainable forest management practices, and reforestation initiatives. Ensuring communities' access to these resources involves addressing socio-cultural changes that might hinder traditional practices. This might include advocating for land rights and customary resource use practices. Encouraging agroecological practices that integrate traditional farming methods with modern knowledge can help strike a balance between agricultural production and uncultivated food preservation. Raising awareness about the importance of uncultivated foods for nutrition, culture, and sustainability can foster local commitment to their conservation

IX. CONCLUSION

Uncultivated foods stand as a vital, yet often disregarded, component of Adivasi communities' diets. This study underscores their multifaceted contributions to food security, nutrition, culture, and sustainability. Despite their significance, these foods remain neglected in policy discourse and anthropological studies. Bridging the gap between indigenous knowledge and scientific research is essential to advocate for their recognition and integration into food systems. The nutritional content and safety of uncultivated foods should be systematically analyzed to harness their potential to combat malnutrition. Contemporary research efforts have begun to explore these foods' role in diverse contexts, highlighting their relevance in securing food availability. However, the decline in availability and consumption of uncultivated foods signals the urgency of preservation efforts. Collaborative initiatives involving local communities, NGOs, and government agencies are crucial to safeguarding these resources. The protection of uncultivated foods can contribute to not only the well-being of Adivasi communities but also the broader discourse on sustainable and diverse food systems. Acknowledging, valuing, and preserving uncultivated foods can redefine their place in society and contribute to a more holistic understanding of food security and nutrition.

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