



**Diversity and Ecological Significance of Wild Edible Plants and Their  
Local Utilization in a Semi-Arid Region of Rajasthan, India**

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**ABSTRACT**

This study documents the diversity and ecological significance of wild edible plant species in the Sikar district of Rajasthan, India. Particularly in semi-arid areas, wild edible plants are essential for sustainable ecosystem functioning, local livelihoods and nutritional security. Field surveys were carried out in a variety of habitats, such as hilly areas, sandy plains and agricultural margins. Local communities were also consulted. Trees and herbs are most common life forms among the 49 wild edible plant species found in 26 families. Fruits, leaves were the plant parts that were most frequently used. The study highlights the importance of these species to sustain food security, biodiversity and indigenous knowledge systems. In order to conserve these priceless plant resources, appropriate documentation, conservation tactics and traditional utilization practices are needed.

**Keywords:** Wild edible plants, Sikar district, Ethnobotany, Biodiversity, Ecological adaptation

**1. INTRODUCTION**

Food security is a persistent global issue that affects millions of people's quality of life. Asia alongwith Sub-Saharan Africa are severely affected. (Chichaibelu et al.2021; FAO 2021). Wild edible plants are essential for maintaining rural livelihoods because they support traditional health care, a healthy diet, nutrition, and cultural identity. These plants continue to be essential to regional diets and medical customs (Awoke et.al 2025). Approximately 7,000 plants are used as food worldwide, with a large percentage coming from wild edible sources, especially in developing nations subsistence agricultural systems (Bharucha and Pretty, 2010).

There is a common custom of eating fruits, leaves, roots, young stems, and entire portions of wild edible plants for food, feed, and/or health benefits, despite variations in methods of preparation and consumption among communities residing in various regions of Rajasthan (Rumicha et al., 2025). Wild edible plants are widely available and well-liked, particularly in Sikar district region. *Acacia leucopholea*, *Prosopis cineraria*, *Balanites aegyptica*, *Capparis decidua*, *Ziziphus nummularia* are the principal wild edible plants found throughout the region (Sharma, 2020). WEF species can provide fiber, fuel, and other processed items in addition to being utilized as food. The most well-liked Non-Timber Forest Products (NTFPs)



are Wild Edible Fruits (WEFs), which are important source of food, medicine, and income for their users. (Gawali & Pawar,2025). However, some of these resources have suffered severely damage by the growth of current technology in agriculture and urbanization, and related ancient wisdom, which includes indigenous medicine, has been lost (Jia et al 2022). Even while wild edible plants are important for traditional diets and food security, plenty of species not recognized properly, particularly in semi-arid areas like Rajasthan, despite the area's vast botanical diversity. Some study has been carried out in parts of Rajasthan (Salvi and Katewa, 2007) but there is lack of information about Sikar district's underutilized wild edible plants. Thus, the traditional knowledge of edible wild plant resources in this region was investigated, documented and compiled in this study. In order to educate the next generation about this, the associated traditional knowledge may be lost. In the light of necessity, this study is required to evaluate the dietary and medicinal properties for conservation, its sustainable use and preservation of traditional knowledge, as this knowledge is our national heritage.

## **2. MATERIALS AND METHODS**

### **(A) Study area**

The study was conducted in the Sikar district, which is located in the northeastern part of Rajasthan, India is situated between 27.21°N to 28.12°N latitude and 74.44°E to 75.25°E longitude. It is 422 meters above sea level on average. It borders the district of Jhunjhunu in north, Churu in northwest, Nagaur in southwest and Jaipur in southeast. Some part of Mahendgarh district of Haryana to the southeast. (Vyas and Sharma, 2014). A total of 77742.43 square km in its entirety covers up almost 2.26% of the entire state shown in fig.1. The area characterized by semi-arid climatic conditions. The study sites included hilly regions such as Harshnath hills (Sikar tehsil) and sandy areas included Vedik Ashram Piprali (Sikar tehsil) and Do Janti Dham (Fatehpur tehsil). The region supports diverse vegetation including herbs, shrubs and trees with wild edible value.

### **(B) Data collection**

The study was conducted with several field surveys through repeated site visits from. Field surveys were carried out between July 2025- February 2026. Semi-structured interviews were conducted with groups of individuals, occasionally at various locations. The information was collected from both the primary and secondary data. Primary data was gathered through careful field surveys, in-person observations, and conversation with nearby communities. Secondary data was collected mainly by searching Google Scholar, Science Direct, Elsevier, etc.

### **(C) Plant collection and identification**

Plant specimen were collected during field surveys and stored in polybag for the temporary basis and later verified using standard floras and literature. Photographs were taken, with some images geo-tagged for GPS location. Photographs of some plant specimen were captured during survey shown in fig.1. The samples were identified using the floristic work of Bhandari (1990), and Shetty and Singh (1993). Plant specimen which was not identified was sent as voucher specimens to the Botanical Survey of India for identification. Herbarium

specimen was prepared. The Wild edible plants were identified based on their edible parts such as fruits, leaves, seeds and flowers.

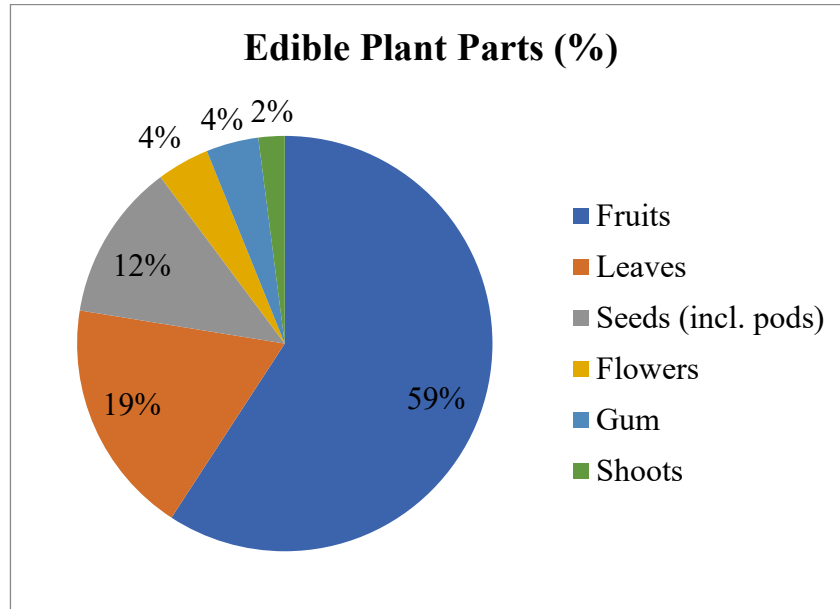


Fig.1 A. *Abutilon indicum* (L.) Sweet.; B. *Achyranthes aspera* L.; C. *Butea monosperma* (Lam.) Taub.; D. *Capparis decidua* (Forssk.) Edgew.; E. *Ficus benghalensis* L.; F. *Momordica diocea* Roxb.; G. *Moringa olifera* Lamk.; H. *Morus alba* L.; I. *Pedalium murex* Linn.; J. *Tribulus terrestris* L.; K. *Zizyphus nummularia* (Roxb.) R. Br.; L. *Zizyphus nummularia* Mill.

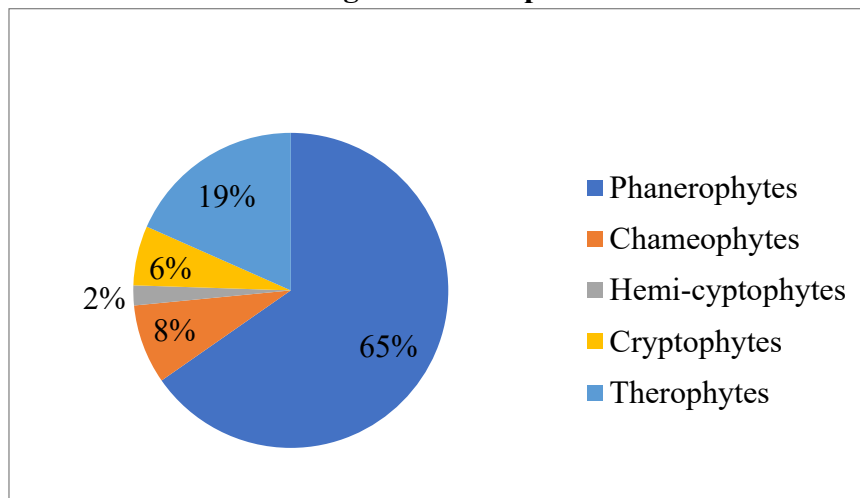
### 3. RESULTS AND DISCUSSION

A total of 49 wild edible plant species belonging to 26 families were recorded from the Sikar district (Table 1.) Fabaceae was found to be the dominant family, indicating adaptation to semi-arid conditions. The importance of wild edible plants in the research area is reflected by the fact that there is dominance of trees, followed by herbs and then shrubs. Fruits made up of 59% of the edible components, shown in fig.2, largely due to the prevalence of polycarpic tree species. The predominance of fruit-bearing plants emphasizes how vital they are to the indigenous diet and nutrition. Leaves were the second most popular plant portion with 19%, followed by seeds (including pods) at 12%. Shoots barely made up 2% of the overall consumption, whilst gum and flowers each contributed 4%. Many of these plants are valuable in traditional practices because they have therapeutic qualities. In parallel with meeting human needs, these edible wild plants help ecological stability. In addition, the growth form spectrum showed dominance of phanerophytes which made up of 65% of the identified species in the research area. Therophytes made for 19% of all species, followed by cryptophytes (6%), chameophytes (8%), and hemi-cryptophytes (2%). The overabundance of phanerophytes suggests that is suited to the research area's semi-arid climate predominates.

The significant number of therophytes further illustrates the seasonal variability of herbaceous plant linked to the local climate, shown in fig 3.



**Fig.2 Percentage distribution of edible plant parts, showing dominance of fruits (59%) among wild edible plants.**



**Fig.3 The distribution of growth forms of wild edible plants in the study area.**

#### 4. CONCLUSION

The analysis revealed that wild edible plants of the study area are diverse and well adapted to semi-arid environments. Although poaceae family dominates in species richness, but fabaceae shows greater species representation in the study area, with many members possessing important medicinal values. Various plant parts were used as food including fruits, leaves, seeds, flowers, roots. The most prevalent and significant components of local diets are fruit-bearing and tree species. Additionally, these plants support wildlife & help maintain ecological balance, while also contributing to disease prevention and traditional healthcare practices. However, increasing human activities, overexploitation of resources, and the loss of



traditional knowledge are threatening their survival. Therefore, conservation strategies and sustainable utilization practices are essential to preserve these valuable resources for future use.

## **5. ACKNOWLEDGMENT**

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**Tables1. List of wild edible plant species recorded from Sikar district, Rajasthan.**

S. No	Botanical name	Common name	Family	Edible part used	Habit	Mode of use
1.	<i>Abutilon indicum</i> (L.) Sweet	Kanghi	Malvaceae	Leaves	Shrub	Leaves are cooked as vegetable
2.	<i>Acacia leucopholea</i> (Roxb.) Wild.	Roonz	Fabaceae	Seeds	Tree	Boiled seeds are edible
3.	<i>Acacia senegal</i> (L.) Wild.	Kumta	Fabaceae	Gum	Tree	Fruits are eaten raw
4.	<i>Achyranthes aspera</i> L.	Modokanto	Amaranthaceae	Seeds	Herb	A drink can be prepared using its seeds with boiling milk.
5.	<i>Aegle marmelos</i> (L.) Corr.	Bael	Rutaceae	Fruits	Tree	Juice prepared from its fruit
6.	<i>Aloe vera</i> Linn.	Ghritkumari	Asphodelaceae	Leaves	Herb	Fleshy leaves are used for making laddu
7.	<i>Amaranthus viridis</i> L.	Chaulai	Amaranthaceae	Leaves	Herb	Leaves are cooked as vegetable
8.	<i>Annogeissus pendula</i> Edgew.	Dhokra	Combretaceae	Gum	Tree	Gum is prepared to make laddu
9.	<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Fruits	Tree	Ripen fruits commonly known as nimbolis are eaten
10.	<i>Balanites aegyptica</i> (L.) Delile.	Hingot	Zygophyllaceae	Fruits	Tree	Fruits are eaten raw
11.	<i>Bauhinia racemosa</i> Lam.	Jhinjha	Fabaceae	Fruits	Tree	Fruits are edible
12.	<i>Boerhavia diffusa</i> L.	Punarnava	Nyctaginaceae	Leaves	Herb	Leaves are cooked as vegetable
13.	<i>Butea monosperma</i> (Lam.) Taub.	Palash	Fabaceae	Flowers	Tree	Chatni is prepared from its flowers
14.	<i>Calligonum polygonoides</i> L.	Phog	Polygonaceae	Flowers	Shrub	A coolant drink is prepared from its flower bud mixing with curd



15.	<i>Capparis decidua</i> (Forssk.) Edgew.	Kair	Capparaceae	Fruits	Shrub	Fruits are cooked as vegetable (Chatni). Pickle is prepared from its fruits
16.	<i>Carissa carandas</i> L.	Karonda	Apocynaceae	Fruits	Shrub	Fruits are eaten raw and also cooked as vegetable
17.	<i>Ceropegia bulbosa</i> Roxb.	Khadula	Asclepiadaceae	Leaves, Tubers	Herb	Leaves are eaten. Tubers are edible as raw vegetable.
18.	<i>Chenopodium album</i> L.	Bathua	Amaranthaceae	Leaves	Herb	Leaves are cooked as vegetable
19.	<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Matira	Cucurbitaceae	Fruits	Herb	Fruits are edible and cooked as vegetable
20.	<i>Citrus medica</i> L.	Bada nimbu	Rutaceae	Fruits	Shrub	Pickle is prepared from its fruit
21.	<i>Cochorus depressus</i> (L.) Stocks	Choti palak	Malvaceae	Leaves	Herb	Leaves are cooked as vegetable
22.	<i>Cordia dichotoma</i> G. Forst	Lehsua	Ehertiaceae	Fruits	Tree	Pickle is prepared from its fruits
23.	<i>Cordia sinensis</i> Lam.	Gundi	Ehertiaceae	Fruits	Tree	Fruits are edible
24.	<i>Cucumis callosus</i> (Rottl) Cogn.	Kachri	Cucurbitaceae	Fruits	Herb	Fruits are cooked as vegetable
25.	<i>Dactyloctenium aegyptium</i>	Garithia	Poaceae	Seeds	Herb	Boiled seeds are edible
26.	<i>Ficus benghalensis</i> L.	Bargad	Moraceae	Fruits	Tree	Fruits are eaten raw
27.	<i>Ficus religiosa</i> L.	Peepal	Moraceae	Fruits	Tree	Fruits are edible
28.	<i>Grewia tenax</i> (Forssk.)	Gagan	Malvaceae	Fruits	Shrub	Fruits are edible
29.	<i>Holoptelia integrifolia</i>	Bandar ki roti, Papdi	Ulmaceae	Fruits	Tree	Fruits are used as salad or cooked as vegetable

	(Roxb.) Planch					
30.	Leptadenia pyrotechnica (Forssk.) Decne.	Kheep	Apocynaceae	Young shoots	Shrub	Cooked as vegetable
31.	Mangifera indica	Aam	Anacardiaceae	Fruits	Tree	Fruits are eaten raw
32.	Momordica diocea Roxb.	Kankoda	Cucurbitaceae	Fruits	Herb	Fruits are cooked as vegetable
33.	Moringa olifera Lamk.	Sehjana	Moringaceae	Pods	Tree	Pods are eaten as vegetable
34.	Morus alba L.	Shahtoot	Moraceae	Fruits	Tree	Fruits are eaten
35.	Ocimum americanum L.	Bapchi	Lamiaceae	Seeds	Herb	A coolant drink is prepared
36.	Pedaliium murex Linn.	Badagokhru	Pedaliaceae	Fruits	Shrub	Fruits are used for making laddu
37.	Phoenix acaulis Buch.-Ham. Ex Roxb.	Khajur	Arecaeae	Fruits	Shrub	Fruits are edible
38.	Phyllanthus officinalis	Amla	Phyllanthaceae	Fruits	Tree	Fruits are eaten raw. Pickle and candy are prepared
39.	Physalis peruviana L.	Rasbhari	Solanaceae	Fruits	Shrub	Fruits are edible
40.	Prosopis cinearia (L.) Druce	Khejri	Fabaceae	Fruits	Tree	Fruits are cooked as vegetable known as sangri and dried fruits commonly known as Khokha eaten as raw
41.	Rhus mysorensis	Dasariya	Anacardiaceae	Fruits	Shrub	Fruits are edible
42.	Salvadora oleoides Decne.	Pilu	Salvadoraceae	Fruits	Tree	Fruits are edible
43.	Sida ovalifolia khsriti	Bala	Malvaceae	Leaves	Herb	Leaves are cooked as vegetable
44.	Syzgium cumini (L.) Skeels	Jamun	Myrtaceae	Fruits	Tree	Fruits are eaten raw
45.	Tamarindus indica L.	Imli	Fabaceae	Pods	Tree	Pods are eaten raw



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46.	Tribullus terrestris L.	Chota gokhru	Zygophyllaceae	Fruits	Herb	Fruits are used for making laddu
47.	Trigonella foenum-graecum	Methi	Fabaceae	Leaves	Herb	Cooked as vegetable
48.	Wrightia tinctoria (Roxb.) R. Br.	Khirna	Apocynaceae	Fruits	Tree	Young fruits are edible
49.	Zizyphus nummularia Mill.	Ber	Rhamnaceae	Fruits	Shrub	Fruits are eaten raw