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Use of some wild fodder plants for livestock by traditional shepherds in Washim district of Maharashtra

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Abstract
The present study, "Use of Some Wild Fodder Plants for Livestock by Traditional Shepherds in Washim District of Maharashtra," aims to document the wild fodder plants traditionally utilized by shepherds in the study area and to record their local knowledge regarding their identification, availability and use for different livestock. The study also seeks to highlight the importance of these plants as locally available fodder resources and the need for preserving associated traditional knowledge for sustainable livestock management and biodiversity conservation. The documented information showed that about 80 common fodder plants collected from rainfed areas were categorized as Herbs (41) Shrubs (8), Trees (20), and Climbers (11). They were used by maximum villagers as fodder for animals. In the opinion of shepherds and villagers, these plants had better nutritious and preservative values and required no agricultural practices for their cultivation. They belonged to 34 families including Amaranthaceae, Anacardiaceae, Asteraceae, Bignoniaceae, Bombacaceae, Boraginaceae, Caesalpiniaceae, Capparaceae, Celastraceae, Chenopodiaceae, Combretaceae, Commelinaceae, Convolvulaceae, Cucurbitaceae, Cyperaceae, Euphorbiaceae, Fabaceae, Lecythidaceae, Meliaceae, Menispermiaceae, Mimosaceae, Moraceae, Moringaceae, Myrtaceae, Nyctaginaceae, Oxalidaceae, Periplocaceae, Poaceae, Portulacaceae, Rhamnaceae, Sapindaceae, Tiliaceae, Verbenaceae, Vitaceae. The maximum members (11) were reported from family Poaceae. The present paper deals with the botanical aspects of such wild fodder plants.
Keywords: *Wild, Fodder, Livestock, Traditional, Shepherds.*

Introduction

Livestock rearing is an important component of the rural economy in India, particularly in semi-arid regions where agriculture is often dependent on uncertain rainfall. Sheep, goats, cattle and buffaloes provide milk, meat, manure, fibre and supplementary income to rural households. In Maharashtra, traditional shepherd communities have developed a close relationship with local vegetation and possess considerable knowledge regarding the identification, collection and utilization of wild plants as livestock fodder. This indigenous knowledge has been transmitted from one generation to another and represents an important component of the traditional ecological knowledge of rural communities.

Wild fodder plants play a significant role in maintaining livestock, especially during periods when cultivated fodder and crop residues are scarce. Naturally occurring grasses, herbs, shrubs, climbers and tree foliage may provide valuable sources of carbohydrates, proteins, minerals and other nutrients required for animal growth and production. Shepherds often select particular plant species based on their palatability, availability, nutritional value, seasonal occurrence and suitability for different livestock species. Their knowledge may also include information about the edible plant parts, appropriate stages of collection and plants that should be avoided because of their toxicity or adverse effects on animals.

Washim district of Maharashtra lies in the Vidarbha region and is characterized largely by a semi-arid to dry sub-humid climate, agricultural landscapes, grasslands, fallow areas and patches of natural vegetation. These habitats support a variety of wild plant species that may serve as important fodder resources. However, increasing agricultural intensification, habitat modification, changing land-use patterns and modernization of livestock-rearing practices may contribute to the gradual loss of traditional knowledge concerning wild fodder plants.

Local wild fodder plants provide livestock feed and play critical role especially during dry season and drought. The potential of fodder trees and shrubs to produce considerable amount of high protein biomass and their adaptation to natural vegetation make them suitable for further development as feed resources. They contribute significantly to sustainable agriculture by providing high value fodder for livestock and has dietary component, especially energy and protein supplement, to the low quality of basal feeds. BRAC *et al.* (2008) reported that the indigenous knowledge was wealth on local feed and fodder systems for livestock rearing as sustainable livelihood approach. Ghosh and Sahoo (2011) elaborated the need of documentation

of Indigenous Traditional Knowledge (ITK) showing its difference from modern knowledge. Ahirrao and Patil (2012) studied fodder species used for their livestock in Buldhana district of Maharashtra.

In Washim district, 82.3 % of population is located in rural area (Census, 2011). Most of them are marginal land holders and farm labors. Besides farming, cattle rearing is a promising source for their livelihood. As per district level 2019 census, total livestock has been 4,12,614 which comprised 2,21,917 (53.78%) cattle, 53,826 (13.05 %) buffaloes, 1,27477 (30.89 %) goats and 9394 (2.28%) sheep.

Documentation of this knowledge is therefore important from both botanical and socio-economic perspectives. Recording the plant species used as fodder, their local names, plant parts utilized, seasonality and livestock preferences can provide baseline information for future studies on fodder resources, ethnobotany, biodiversity conservation and sustainable livestock management. Such documentation may also help recognize the contribution of traditional shepherd communities to the conservation and utilization of local plant diversity.

Review of Literature

In Maharashtra, several studies have documented the ethnobotanical importance of plants used by rural, tribal and pastoral communities. Kulkarni and Kumbhojkar (1992) specifically reported fodder plants used by the Mahadeokoli tribe of Western Maharashtra. Their work is particularly relevant to the present investigation because it demonstrated the importance of documenting fodder plants as a distinct component of traditional plant knowledge.

Ahirrao and Patil (2012) reported many fodder plant species from Buldhana district of Maharashtra they reported some fodders species either as trees, Herbs, shrubs, climbers or lianas.

Patil (2021) studied the fodder resources of the Satpura hills of Nandurbar district, Maharashtra. The study reported fodder resources belonging to 31 Angiospermic families and highlighted their importance to tribal and rural livestock-rearing communities. The work is especially relevant to the present study because Nandurbar, like Washim, includes areas where livestock depend substantially on locally available vegetation.

Ethnobotanical research in Nashik district has also demonstrated the multifunctional importance of local plant resources. Patil (2006) documented approximately 364 species and additional species used by local people for various purposes including fodder, medicine, food, fibre, fuel and other traditional applications. The study emphasizes the breadth of indigenous knowledge associated with plant resources in Maharashtra.

Similarly, Wagh and Pawar (2021) documented 41 ethnobotanical plant species belonging to 18 families in the north-eastern region of Nashik district. Their informants included local people and shepherds, and the plants were reported to have uses including food, fodder and medicine. The inclusion of shepherds as knowledge holders supports the importance of pastoral communities in documenting traditional fodder resources.

The nutritional significance of locally available fodder resources has also been examined in Maharashtra. Kauthale et al. (2018) evaluated crop residues from rice, maize and sorghum collected from areas of Palghar, Pune and Nandurbar districts. Their study showed considerable variation in crude protein, crude fibre, ether extract, ash and silica contents among different fodder materials. Although their investigation focused on crop residues rather than wild plants, it emphasizes the importance of locally available plant resources in sustaining livestock nutrition.

Materials and Methods:

1. Study Area:

The present study was conducted in Washim district of Maharashtra, India, with the objective of documenting wild fodder plants traditionally used by shepherd communities for livestock feeding. Washim district is situated in the Vidarbha region of Maharashtra and represents a predominantly agricultural landscape interspersed with fallow lands, grasslands, field margins, grazing areas, scrub vegetation and patches of natural vegetation. These habitats provide a variety of naturally occurring plant resources used by local livestock keepers.The study focused particularly on areas where traditional shepherd communities regularly graze sheep, goats, cattle and buffaloes. Selected villages representing different geographical and agricultural conditions of the district were included in the survey.

2. Selection of Informants:

Information was collected from traditional shepherds and experienced livestock keepers residing in selected villages of Washim district. Informants were selected using purposive and snowball sampling methods. Preference was given to persons having considerable experience in livestock grazing and knowledge of local wild plants used as fodder. During the survey, information such as the informant's age, occupation, experience in livestock rearing, livestock species maintained and knowledge of wild fodder plants was recorded. Particular attention was given to elderly shepherds because they generally possess extensive traditional knowledge of local vegetation.

3. Field Survey and Data Collection:

Field surveys were conducted during different seasons to record the availability and utilization of wild fodder plants. Repeated field visits were made to grazing lands, grasslands, forest margins, agricultural field boundaries, fallow lands and other habitats used by livestock. Semi-structured interviews and informal discussions were conducted with shepherds. During interviews, the above information was documented: Local name of the fodder plant, Habit of the plant, Habitat and locality, Part(s) used as fodder, Livestock species consuming the plant, Season of availability, Method of collection and feeding, Palatability as reported by shepherds, Traditional knowledge concerning the plant, Plants avoided by livestock and reasons, where known. Direct observations of livestock grazing were also made wherever possible to verify information provided by the informants.

4. Collection and Identification of Plant Specimens:

Wild fodder plants reported by the shepherds were collected during field visits in accordance with applicable collection permissions and ethical practices. Representative specimens were prepared as herbarium specimens using standard botanical methods. Field photographs were taken to assist in identification and documentation.

The collected specimens were identified using standard floras, taxonomic literature and available herbarium resources.

5. Data collection and Analysis:

The collected data were analyzed using descriptive methods. Wild fodder plants were classified according to: Plant family, Growth habit – herbs, shrubs, trees and climbers, Plant part utilized – leaves, shoots, stems, or whole entire plant.

The present investigations completed during 2024-2026 have made the extensive survey, group discussions and repeated field visits with the shepherds and villagers from different localities in Manora, Karanja, Risod, Malegaon and Washim tehsils of Washim district from Maharashtra. The interviewed with 58 Shepherds having experience of 10 to 30 years within the age of 30 to 55 years. The visits of 25 villages from different parts of Washim district is conducted. The information about the fodder plants and their local names was gathered. The plants were digitized from the fields and their specimens were collected and identified using the Flora of Maharashtra.

Result and Discussion:

Table.1. List of Wild Fodder Plants used by traditional Shepherds from Washim District.

Sr. No.	Botanical Name	Local Name	Family	Habit	Edible Parts
1.	*Achyranthus aspera* L.	Aaghada	Amaranthaceae	H	Shoot
2.	*Alternanthera sessilis* DC.	Tondalya	Amaranthaceae	H	Entire plant
3.	*Amaranthus polygonoides* L.	Jangli Choulai	Amaranthaceae	H	Entire plant
4.	*Amaranthus virdis* L.	Green Rajgira	Amaranthaceae	H	Entire plant
5.	*Celosia argentia* L.	Kardu	Amaranthaceae	H	Leaves, stem
6.	*Digera muricata* (L.) Mart.	Tandulali	Amaranthaceae	H	Entire plant
7.	*Mangifera indica* L.	Aamba	Anacardiaceae	T	Leaves
8.	*Launaea procumbens* (Roxb.) Ramaiyya and Rajgopal	Pathri	Asteraceae	H	Entire plant
9.	*Sonchus oleracaus* L.	Mhatari	Asteraceae	H	Entire plant
10.	*Vernonia cinerea* (L.) Less.	Sahdevi	Asteraceae	H	Entire plant

11.	*Dolichondrone fulcata* (Wall. ex DC.) Seem.	Medshigi	Bignoniaceae	T	Leaves
12.	*Adansonia digitata* L.	Gorakhchinch	Bombacaceae	T	Leaves
13.	*Cordia dichotoma* (L.) Forsk. f.	Bhokar	Boraginaceae	T	Leaves
14.	*Cordia gharaf* (Forsk.) Ehrenb.	Gondhan	Boraginaceae	T	Leaves
15.	*Bauhinia racemosa* Lamk.	Aapta	Caesalpiniaceae	T	Leaves
16.	*Cassia fistula* L.	Bahava	Caesalpiniaceae	T	Leaves
17.	*Tamarindus indica* L.	Chinch	Caesalpiniaceae	T	Leaves
18.	*Capparis zeylanica* L.	Waghati	Capparaceae	C	Leaves
19.	*Maytenus emarginata* (Wild.) Dinig Hou.	Ehankal	Celastraceae	S	Leaves, shoot
20.	*Chenopodium murale* L.	Songawat	Chenopodiaceae	H	Entire plant
21.	*Terminalia bellirica* (Gaertn.) Roxb.	Beheda	Combretaceae	T	Leaves
22.	*Commelina benghalensis* L.	Kena	Commelinaceae	H	Entire plant
23.	*Commelina forskalaei* Vahl	Keni	Commelinaceae	H	Entire plant
24.	*Cynotis oristata* L.	Ichaga	Commelinaceae	H	Entire plant
25.	*Convolvulus arvensis* L.	Chandwel	Convolvulaceae	C	Entire plant
26.	*Rivea hypocrateriformis* L.	Fang	Convolvulaceae	C	Entire plant
27.	*Cucurbita maxima* Duch. Ex Lom.	Gangafal	Cucurbitaceae	C	Entire plant
28.	*Langenaria siceraria* (Molina) Standl.	Dhudhi Bhopla	Cucurbitaceae	C	Entire plant
29.	*Mukia maderaspatana* L.	Kamuni	Cucurbitaceae	C	Entire plant
30.	*Cyperus rotundus* L.	Nagarmotha	Cyperaceae	H	Entire plant
31.	*Cyprus nutons* Vahl.	Lavhale	Cyperaceae	H	Entire plant
32.	*Euphorbia heterophylla* L.	Dudhi	Euphorbiaceae	H	Entire plant
33.	*Phyllanthus amarus* Schumach and Thonn.	Futane	Euphorbiaceae	H	Entire plant
34.	*Phyllanthus maderaspatenensis* L.	Bhui awala	Euphorbiaceae	H	Entire plant
35.	*Phyllanthus reticulatus* Poir.	Pithori	Euphorbiaceae	S	Leaves
36.	*Securingea virosa* (Roxb. ex Willd. Baill)	Pandhari Pithombari	Euphorbiaceae	S	Leaves
37.	*Clitoria ternatea* L.	Gokarn	Fabaceae	C	Entire plant
38.	*Alysicarpus longifolius* Wight and Arn.	Shewara	Fabaceae	H	Entire plant
39.	*Desmodium dichotonum* (Willd.) DC.	Chiktya	Fabaceae	H	Leaves, shoot
40.	*Desmodium gangeticum* (L.) DC.	Khulkhula	Fabaceae	H	Leaves, shoot
41.	*Rhynchosia minima* DC.	Jangli tur	Fabaceae	H	Entire plant
42.	*Sesbania sesban* (L.) Merr.	Shewari	Fabaceae	S	Leaves
43.	*Dalbergia latifolia* Roxb.	Sisam	Fabaceae	T	Leaves
44.	*Leucaena leucocephala* (Lam.) de Wit	Subabhul	Fabaceae	T	Leaves, Shoot
45.	*Sesbania gradiflora* (L.) Poir.	Hadga	Fabaceae	T	Leaves
46.	*Careya arborea* Roxb.	Kumbi	Lecythidaceae	T	Leaves
47.	*Azadirachta indica* A. Juss.	Kadu Neem	Meliaceae	T	Leaves
48.	*Cocculus hirstutus* (L.) Diels.	Wasan Wel	Menispermiaceae	C	Entire plant
49.	*Tinospora cordifolia* (Willd.) Miers.	Gulwel	Menispermiaceae	C	Entire plant
50.	*Prosopis cineraria* (L.) Druce.	Saundad	Mimosaceae	S	Leaves
51.	*Acacia nilotica* (L.) Willd. ex. Del.	Babhul	Mimosaceae	T	Leaves

52.	*Albizia lebbeck* (L.) Willd.	Shirish	Mimosaceae	T	Leaves
53.	*Ficus racemosa* L.	Umbar	Moraceae	T	Leaves
54.	*Moringa oleifera* Lamk.	Shevaga	Moringaceae	T	Leaves
55.	*Syzigium cumini* (L.) Skeels	Jambhlun	Myrtaceae	T	Leaves
56.	*Boerhavia diffusa* L.	Punarnava	Nyctaginaceae	H	Leaves
57.	*Biophytum sensitivum* (L.) DC.	Lajwanti	Oxalidaceae	H	Entire plant
58.	*Oxalis corniculata* L.	Aambusi	Oxalidaceae	H	Entire plant
59.	*Hemidesmus indicus* (L.) R. Br.	Anantmul	Periplocaceae	C	Leaves
60.	*Apluda mutica* L.	Shippi	Poaceae	H	Entire plant
61.	*Chloris virgata* Koenig. ex Roxb.	Gawat	Poaceae	H	Entire plant
62.	*Chloris barbata* Sw.	fingergrass	Poaceae	H	Entire plant
63.	*Cynodon dactylon* (L.) Pers.	Harali	Poaceae	H	Entire plant
64.	*Digitaria abyssinica* (A. Rich.)	Gawat	Poaceae	H	Entire plant
65.	*Digitaria longiflora* (Retz.) Pers.	Gawat	Poaceae	H	Entire plant
66.	*Heteropogan cantortus R.& S.*	Kusali gawat	Poaceae	H	Entire plant
67.	*Rottboellia cochinchinensis* (Lour.) W.D.Clayton.	Pendhi	Poaceae	H	Entire plant
68.	*Setaria verticillata* Beauv.	Chiwat	Poaceae	H	Entire plant
69.	*Themeda quadrivalvis* Ktze.	Gawat	Poaceae	H	Entire plant
70.	*Dichanthium annulatum* (Forsk.) Stapf.	Ghas Gawat	Poacee	H	Entire plant
71.	*Portulaca oleracea* L.	Ghol bhaji	Portulacaceae	H	Entire plant
72.	*Portulaca quadrifida* L.	Chhoti Ghol	Portulacaceae	H	Entire plant
73.	*Ziziphus mauritiana* Lamk.	Bor	Rhamnaceae	T	Leaves
74.	*Cardiospermum helicacabum* L.	Kapalphodi	Sapindaceae	H	Entire plant
75.	*Corchorus olitorius* L.	Chuncha	Tiliaceae	H	Entire plant
76.	*Corchorus trilocularis* L.	Harankhuri	Tiliaceae	H	Entire plant
77.	*Grewia tiliaefolia* Vahl.	Dhaman	Tiliaceae	S	Leaves
78.	*Cleodendrum multiflorum* (Burm. f.) O. Ktze	Takahalan	Verbenaceae	S	Leaves
79.	*Cleodendrum serratum* (L.) Moon.	Bharangi	Verbenaceae	S	Leaves
80.	*Cayratia trifolia* (L.) Domin	Tivhan	Vitaceae	C	Leaves

Abbreviations used: H-Herb, S-Shrub, T-Tree, C-Climber

Table.2. Habitat wise distribution of observed plants species.

Sr. No.	Plant Habit	Number of plant Species	Percentage
1.	Herbs	41	51%
2.	Shrubs	08	10%
3.	Trees	20	25%
4.	Climbers	11	14%

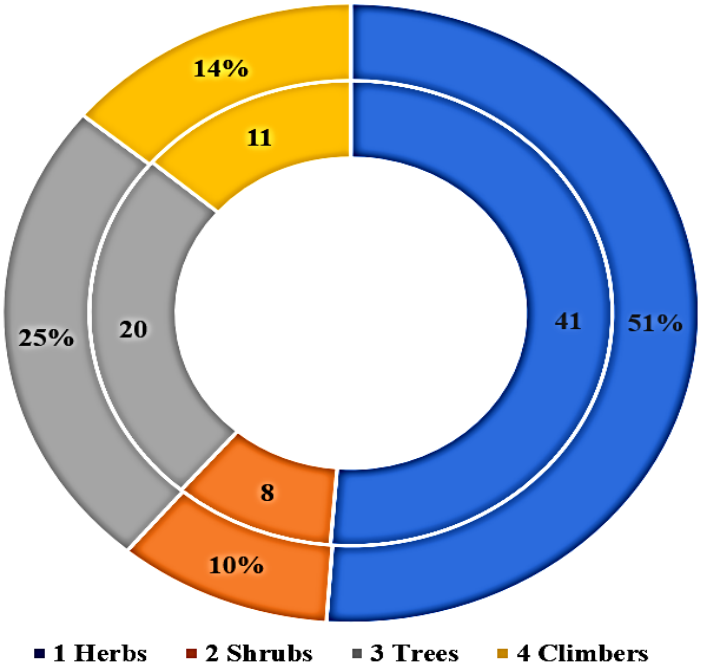


Fig. 1. Habitat wise distribution of fodder plant species.

Table.3. Cotyledons wise distribution of observed plants species.

Sr. No.	Plant Habit	Number of plant Species
1.	Dicotyledons	64
2.	Monocotyledons	16

The data regarding the botanical and local names of wild fodder plants, their families and parts used as a feed by animals has been enumerated in Table 1. The maximum members (11) were reported from family Poaceae. They belonged to 34 families including Amaranthaceae, Anacardiaceae, Asteraceae, Bignoniaceae, Bombacaceae, Boraginaceae, Caesalpiniaceae, Capparaceae, Celastraceae, Chenopodiaceae, Combretaceae, Commelinaceae, Convolvulaceae, Cucurbitaceae**,** Cyperaceae, Euphorbiaceae, Fabaceae, Lecythidaceae, Meliaceae, Menispermiaceae, Mimosaceae, Moraceae, Moringaceae, Myrtaceae, Nyctaginaceae, Oxalidaceae, Periplocaceae, Poaceae, Portulacaceae, Rhamnaceae, Sapindaceae, Tiliaceae, Verbenaceae, Vitaceae.

Fodder plant species were found diversified by different habits. According to habit the observed plants were distributed in to Herbs (41), Shrubs (08), Trees (20) and Climbers (11) (Table no.2.) From this documented report 64 plant species reported from Dicotyledons while 16 fodder plant species from Monocotyledons (Table no.3.).

Therefore, the present study attempts to document the traditional knowledge of shepherds regarding wild fodder plants in Washim district of Maharashtra. Such documentation can provide baseline information for ethnobotanical research, conservation of local plant diversity, preservation of traditional ecological knowledge and sustainable livestock management.

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