



## DOCUMENTATION OF FORAGE YIELDING PLANTS OF SHIVAMOGGA TALUK, KARNATAKA

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### ABSTRACT

*An ethnobotanical survey was conducted in order to document the forage plants in and around Shivamogga taluk of Karnataka from January to December 2016. A total of 38 plant species belonging to 17 families were reported from the study area which are sources of fodder to the livestock. Among 17 families Fabaceae is dominant with 11 species. Agriculture and animal husbandry are the main occupation in this study area. The diversity of forage plants is a proportion of the enormous biodiversity occurring in this region. The present findings suggest a high scope of the utilization of these natural and cultivated/uncultivated plants for supporting livestock-based livelihood in the studied area.*

### KEY WORDS

*Forage Plants, Ethno Botany, Live Stock, Shivamogga Taluk*

### INTRODUCTION

Plants provide a supplement of green feed when grasses and other herbaceous material is dry, and they provide the only source of protein and energy during drought when all other feed is absent (Lefroy et al., 1992). At the same time trees and shrubs have several disadvantages as sources of feed. They are often inaccessible to grazing animals. They are slow to establish requiring isolation from stock. Their foliage generally has higher fibre and lignin content than grasses (Wilson, 1969).

The occupation in this region is agriculture and animal husbandry, that acts as a main source of income to farmers and local people. Some household invariably keeps cows, buffalo, sheep and goats for their daily requirements of milk, butter, wool, meat and manure. Although the peoples generally depend upon the resources of forests and cultivated fodder plants and fulfill their fodder requirement from these resources. The present study deals with the preliminary

documentation on forage plants in and around Shivamogga taluk, Karnataka that's being used by these local farmers and peoples.

### MATERIALS AND METHODS

#### Study Area

Shivamogga district covers an area of 8477.84 sq. km and lies in the western part of the Karnataka state between 130 27' to 140 14'39" north latitude and 740 38'to 750 45' east longitudes. The district is surrounded by Uttara-Kannada & Dharwad districts in the north, Udupi & Chikmagalur districts in the south and Davanagere district in the east (Figure 1).

The area enjoys tropical climate throughout the year. Generally, the weather is hot and humid in the eastern part and very pleasant in the remaining parts of the area. The relative humidity ranges from 27 to 88%, the wind speed recorded is between 4 and 7km/hr. The evapo-transpiration is normally high in ghat section as

compared to plain in the east. Summer prevails between March to early June, the wet months start from early June to September, October and November months experience scanty rain by NE monsoon. The winter commences in mid-November and ends in the middle of February.

The main crops grown in the district are Paddy, Ragi, Jowar, Maize, Cotton, Groundnut, Pulses, Sugarcane, Coconut and Areca nut. The soils that occur in the study area are reddish to brownish clayey loam to lateritic. These cover major parts of the area. Thin strips of yellowish loamy soil are seen along the banks of major river and nallah courses. In general, these soils are acidic in nature (Central ground water Board, 2012).

#### Methods:

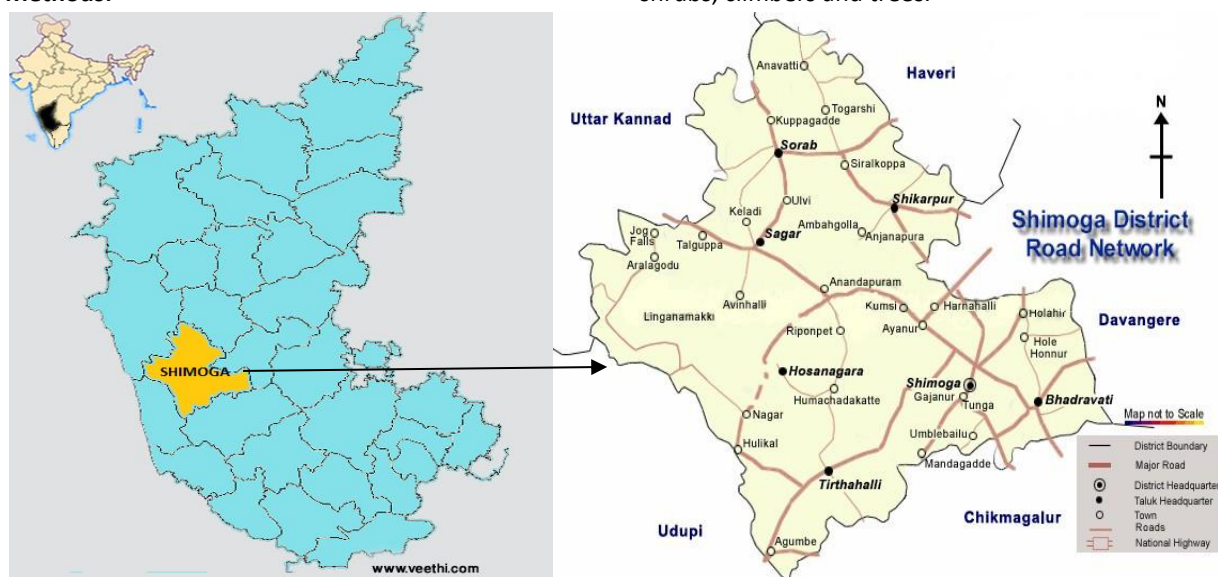


Figure 1: Study area map (Source: www.veethi.com; en.wikipedia.org)

## RESULTS AND DISCUSSION

Table 1 shows the list of forage yielding plants. A total of 38 plant species belonging to 17 families were recorded. Among the 17 families, 12 families are represented by single species. Fabaceae is the dominant family with 11 species, followed by Poaceae (05 species), Moraceae and Combretaceae with 04 species each, Euphorbiaceae with 2 species and rest of the families with single species each respectively (Figure 1). Figure 2 depicts the habit percentage occurrence of forage plants.

Ever since ancient times, Indians have practiced mixed farming where livestock formed an integral part of agriculture. Rich genetic diversity exists for cultivated and rangeland species including tree, browse species, and herbaceous grasses and legumes. These plants besides many others form an integral part of feed and fodder resources of the country. The country is further endowed with the rich heritage of traditional know-how of raising, maintaining and utilizing forage, feed and livestock resources (Kalloo, 2015).

Apart from fodder value, many of the plants also provide edible fruit, fuel wood, fibre, flowers, buds, vegetables, seeds, bee-forage, etc. Some plants are of crucial ethnobotanical importance and are brought into various uses, such as in curing of certain diseases, religious rituals and cultural rights (Vir Singh et al., 2008). Singh et al. (1995) and Singh and Bohra (2005) have given a list of 50 fodder trees, shrubs and non-graminaceous herbaceous plants occurring in mountain habitats. These fodder species occur in the agro-forestry systems or in the tree-

dominated rangelands. Vir Singh et al. (2008) recorded some 300 species of grasses, other herbaceous plants, trees and shrubs in the mid-altitude rangelands of Uttarakhand (India). In our study we have recorded 47 species of fodder plants.

**Table: 1: List of forage plants in and around Shivamogga district, Karnataka**

SN	Botanical Name	Habit	Parts used	Family	Flowering/ Fruiting season
1.	<i>Albizia lebbeck</i>	Tree	Leaf	Fabaceae	Fl- April-May, Fr- Dec-Jan
2.	<i>Acacia catechu</i>	Tree	Leaf, Stem Bark	Fabaceae	Jun-Oct
3.	<i>Acacia nilotica</i>	Tree	Leaf, Stem, Young Pod	Fabaceae	Jul-Dec
4.	<i>Bauhinia variegata</i>	Tree	Leaf	Fabaceae	Feb-Apr
5.	<i>Bauhinia purpurea</i>	Tree	Leaf	Fabaceae	Feb-Apr
6.	<i>Butea monosperma</i>	Tree	Leaf	Fabaceae	Feb-May
7.	<i>Cassia fistula</i>	Tree	Leaf	Fabaceae	Mar-Jul
8.	<i>Dalbergia sisso</i>	Tree	Leaf	Fabaceae	Mar-Jun
9.	<i>Leucaena leucocephala</i>	Tree	Leaf, Pod	Fabaceae	May-Aug
10.	<i>Pongamia pinnata</i>	Tree	Leaf	Fabaceae	Apr-Jun
11.	<i>Tamarindus indica</i>	Tree	Leaf	Fabaceae	May-Jun
12.	<i>Cymbopogon citratus</i>	Herb	Leaf	Poaceae	Jul-Dec
13.	<i>Cynodon dactylon</i>	Herb	Leaf	Poaceae	Jul-Dec
14.	<i>Dendrocalamus strictus</i>	Shrub	Leaf	Poaceae	Nov-Apr
15.	<i>Oryza sativa</i>	Herb	Aerial part branch	Poaceae	Jul-Sep
16.	<i>Zea mays</i>	Herb	Plant	Poaceae	Jul-Aug
17.	<i>Artocarpus sp.</i>	Tree	Leaf	Moraceae	Mar-Aug
18.	<i>Ficus racemosa</i>	Tree	Leaf	Moraceae	Apr-Jul
19.	<i>Ficus religiosa</i>	Tree	Leaf	Moraceae	Fl- Summer; Fr- Rainy
20.	<i>Morus alba</i>	Tree	Leaf, twig	Moraceae	Feb-Jun
21.	<i>Terminalia arjuna</i>	Tree	Leaf	Combretaceae	Apr-Dec
22.	<i>Terminalia chebula</i>	Tree	Leaf	Combretaceae	Fl- Apr-Jun; Fr- Nov-Mar
23.	<i>Terminalia bellerica</i>	Tree	Leaf	Combretaceae	May-Sep
24.	<i>Terminalia tomentosa</i>	Tree	Leaf	Combretaceae	Fl- Jun-Jul; Fr- Feb-Mar
25.	<i>Euphorbia prostrata</i>	Herb	Plant	Euphorbiaceae	Jun-Aug
26.	<i>Phyllanthus emblica</i>	Tree	Leaf	Euphorbiaceae	Fl- Feb-Mar; Fr-Oct-Mar
27.	<i>Mitragyna parviflora</i>	Tree	Leaf	Rubiaceae	Fl- Jun-Jul; Fr- Nov-Jan
28.	<i>Brassica sp.</i>	Herb	Aerial part	Brassicaceae	Nov-Apr
29.	<i>Clerodendron</i>	Shrub	Leaf	Lamiaceae	Fl- Jan-Apr; Fr- Jun-Aug
30.	<i>Ziziphus jujuba</i>	Tree	Leaf, stem	Rhamnaceae	Sep-Mar
31.	<i>Holarrhena antidysenterica</i>	Tree	Leaf	Apocynaceae	Jun-Feb
32.	<i>Asparagus racemosus</i>	Shrub	Plant	Asparagaceae	Jun-Nov
33.	<i>Capparis sp.</i>	Tree	Leaf, stem	Capparaceae	Mar-Oct
34.	<i>Ipomea sp.</i>	Shrub	Leaf, aerial part	Convolvulaceae	Oct-Dec
35.	<i>Shorea robusta</i>	Tree	Leaf, branch	Dipterocarpaceae	Mar-Jul
36.	<i>Moringa oleifera</i>	Tree	Aerial part	Moringaceae	Jan-Jun
37.	<i>Madhuca longifolia</i>	Tree	Leaf	Sapotaceae	Fl- Feb-Apr; Fr- Apr-Jul
38.	<i>Helicteres isora</i>	Tree	Leaf	Sterculiaceae	Fl- Apr-Dec; Fr- Jun-Oct

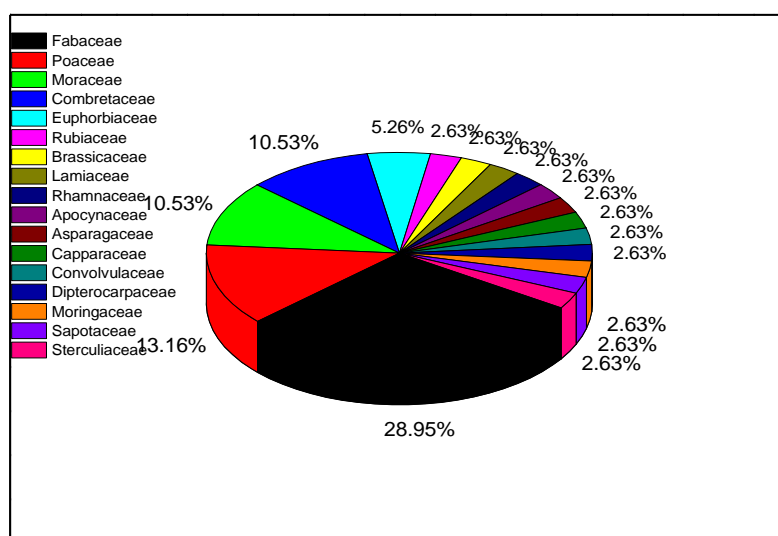


Figure 2: Family wise percentage occurrence of Forage plants in Shivamogga district

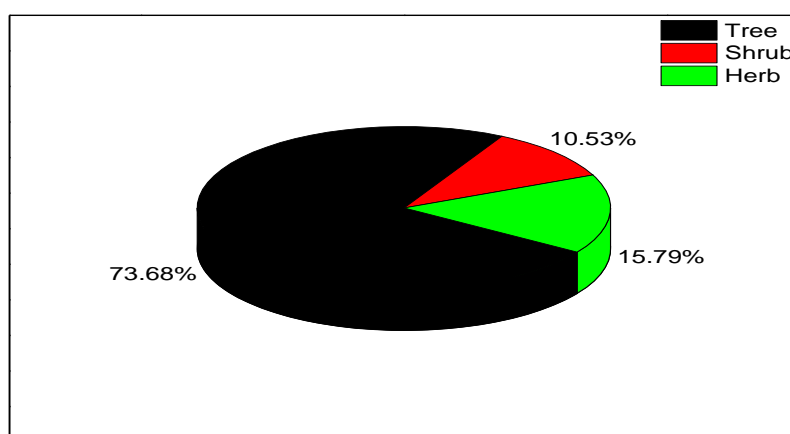


Figure 3: Habit percentage occurrence of Forage plants in Shivamogga district

Harish Kumar and Kiran (2015) recorded a total of 47 plant species belonging to 27 families from the Bhadravathi area which are sources of fodder to the livestock. They reported that among families Fabaceae is dominant with 8 species. Dry paddy straw is stored and used as fodder during summer season. However, ground nut oil cake and grains are given to the livestock as a feed along with fodder plants.

#### Conservation and Management Perspectives:

The following measures seem appropriate for the conservation and management of forage resources;

- 1) Studies on species wise quantum collection, species preference, probability of use and resource use index of the forage species are needed to identify the species level pressure (Samant et al. 2006).

- 2) Analysis of forage species for nutritive value is urgently required for the identification of quality fodder.
- 3) Identification of biotechnological means to improve germination/ propagation of forage species need to be investigated/explored.
- 4) Training on lopping, nursery, propagation and plantation techniques needs to be provided to the local communities.
- 5) Promotion of preferred fodder species in afforestation, reforestation and forest rehabilitation programmes and participation of the local communities need to be ensured (Samant et al., 2007; Samant,2015; Harish Kumar and Kiran,2015) .

## CONCLUSION:

The present work briefly summarizes local farmers/people's information on the diversity of fodder plants in and around Shivamogga taluk of Karnataka. A total of 38 fodder plants belonging to 17 families were recorded which are sources of fodder to the livestock and the family Fabaceae is dominant. A few plants considered good to the livestock and cultivated as fodder have higher feed value. On this basis species of Ficus, Acacia, Zea mays and Grass species can be said as good forage and it is suggested for further in-depth investigation on scientific basis.

## REFERENCES

- Ahmet K. 2011. Fodder plants, everything you want to know –a featured article.  
<http://www.agricultureguide.org/fodder-plants-all-everything-you-want-to-need-know-a-featured-article>.
- Central ground water Board, 2012. Ground water information Booklet, Shimoga district, Karnataka.
- Dhani Arya, Chandra Pal Singh Bohra & Ashish Tewari.2011. Use of major fodder species in Oak and Pine dominant zones of Garhwal Himalaya, India - A Case study. E-International Scientific Research Journal Volume: 3 Issue: 3, 2011:187-191.
- Harish Kumar, K and B.R.Kiran .2015. A Preliminary survey of fodder yielding plants of Bhadravati taluk, Karnataka. International Journal of Multidisciplinary Research and Modern Education Vol 1(1):174-178.
- Jain, S.K. and Rao, R.R.1977. A hand book of field and herbarium methods. Today and Tomorrow Publication. New Delhi.
- Jaswant Singh Saini and S.K. Sood.2018. Ethno botanical enumeration of forage plant species in and around Colonel Sher Jung National Park, Simbalbara (CSJNPS) Sirmour (H.P), India. International Journal of Advanced Scientific Research and Management vol 3(8):133-140.
- Kaloo.G.2015. Forage Research – New Dimensions. Indian Council of Agricultural Research, New Delhi.  
[http://www.igfri.res.in/pdf/DDG\\_Kaloo\\_Lecture.pdf](http://www.igfri.res.in/pdf/DDG_Kaloo_Lecture.pdf).
- Kulhari, O.P. and Prabhakar Joshi.1992. Fodder plants of Shekhawati region (Rajasthan). In: Ethnobotany in India (Edited by J.K.Maheshwari, G.Kunkel, M.M.Bhandari and J.A.Duke).Scientific Publishers, Jodhpur: 355-370.
- Lefroy E.C., P. R. Dann, J. H. Wildin , R.N. Wesley-Smith and A. A. McGowan .1992. Trees and shrubs as sources of fodder in Australia. Agroforestry Systems 20:117 – 139.
- Samant S. S., Rawal R. S. and Dhar U. 2006. Diversity, extraction, and status of fodder species in Askot Wildlife Sanctuary, West Himalaya, India. International Journal of Biodiversity Science and Management (2): 29 ~ 42.
- Samant, S. S., Man Singh, Manohar Lal, and Shreekar Pant. Diversity, Distribution and Prioritization of Fodder Species for Conservation in Kullu District, Northwestern Himalaya, India. Journal of Mountain Science Vol 4 No 3 (2007): 259~274
- Samant. S. S (2015). Diversity, Distribution and Conservation of Fodder Resources of West Himalaya, India.G.B. Pant Institute of Himalayan Environment & Development, Kosi-Katarmal, Almora (U.P) – 263643, India.
- Singh, V. and Bohra, B. 2005. Livestock Feed Resources and Feeding Practices in Hill Farming Systems: a Review. Indian Journal of Animal Sciences, 75: 121-127.
- Singh, V., Sharma, R.J. and Kumar, A. 1995. Perspectives on the Utilization of Forest Fodder in the Mountains. In Singh, V., Sharma, R.J., Kumar, A. (eds.) Ecological Carnage in the Himalaya. IBD, Dehradun.
- Vir Singh, RD Gaur and Babita Bohra. 2008. A Survey of Fodder Plants in Mid-altitude Himalayan Rangelands of Uttarakhand, India. Journal of Mountain Science. (2008) 5: 265 – 278
- Wilson AD (1969) A review of browse in the nutrition of grazing animals. J Range Man 22:23–28.

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