

STUDY OF FODDER PLANTS OF RUPANDEHI

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ABSTRACT

Fodder, a type of animal feed, is any agricultural food stuff used specifically to feed domesticated livestock. In the present study 37 plant species belonging to 22 families and 26 genera as fodder plants were recorded from different parts of Rupandehi and its surrounding area.

Keywords: Fodder plants, livestock, Rupandehi

INTRODUCTION

Fodder, a type of animal feed, is any agricultural food stuff used specifically to feed domesticated livestock such as cows, buffaloes, goats, sheep, chickens, ducks, pigs etc. Domesticated cattle require feed that gives them energy, proteins, minerals and vitamins to maintain their body condition, milk production, meat production and reproduction. Nepal hosts different agro-ecological zones which are used to feed large number of livestock. The growth of livestock is less than that of fishery and cash crops. The overall growth rate of livestock is around 5.3 percent per annum (MOAC 2011/12). Livestock is an integral part of the Nepalese farming system, providing cash, food, wool, manure and power. Livestock production is almost solely dependent on those fodder plants and crop residue which are locally available. Plantation of fodder trees and shrubs is an ecologically sound practice, which contributes on soil conservation and maintaining agricultural sustainability. Fodder trees and shrubs play an important role in Nepalese economy. More than 136 different species of trees and shrubs have been used as a source of livestock feed in Nepal (Bajracharya et al., 1985). Traditionally, foliage fodder tree and shrub have been offered to cattle, buffalo, cow and goats especially in stall-fed condition.

It is estimated that fodder trees and shrubs provide approximately 41 percent of dry matter in annual feed supply (Pandey; 1982). Besides providing fodder to livestock, trees and shrubs also provide fuel wood, poles and timber for house construction (Pande; 2007). Fuel-wood is the major source of the energy needs. It was estimated that fuel wood provides more than 87 percent of the country's energy need (Manandhar; 1980, Danovan; 1981). Trees and shrubs not only provide fodder and fuel wood but also serve as an excellent source for soil improvement and conservation (Brewbaker; 1983).

MATERIALS AND METHODS

Study Area

The study was conducted in Rupandehi district (27° 20' to 27° 47' 25" N latitudes and 83° 12' 16" to 83° 38' 7" E longitudes) (Fig. 1). The topographical features of the study area vary greatly from lowlands of south Indian border to the highland Siwalik (Churia) in north. Rupandehi district occupies the total area of 1360 Km² (CBS, 2011) and is surrounded by Nawalparasi district in the east; Kapilvastu district in the west, hilly district of Palpa and Arghakhanchi in the north and Mahrajganj

and Siddharthanagar districts of Uttar Pradesh (India) in the south (Figure 1). The study area enjoys a monsoon type of climate with wet summer and dry winter. Maximum percentage of rainfall occurs during the months of June to September. This district is characterized by tropical Sal (*Shorea robusta* Roth.) forest with tree associates like Sissoo (*Dalbergia sissoo* Roxb.); Khayar (*Acacia catechu* (L.f.) Willd.); Saj (*Terminalia alata* Heyne. ex Roth.); Banjhi (*Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Bedd.); Simal (*Bombax ceiba* L.); Jamun (*Syzygium cumini* (L.) Skeels.) etc. The total population of this district is 8, 80,196 (CBS, 2011). Brahmin, Chhetry, Magar, Tharu, Yadav, Kewat, Gurung, Muslim, Chamar, Newar, Teli, Kurmi, Koiri, Damai, Sunar and Thakuri are the major communities living within the district.

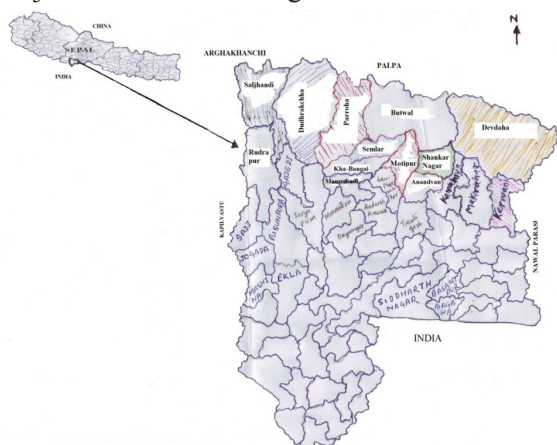


Figure 1: Map of Nepal showing Rupandehi district

Data Collection

The author visited villages and cities of the Rupandehi district situated near the foot hills of Churia on northern side and Terai region on southern side during 2013 and 2014 and collected data through direct observation of farmer's livestock centers and feeding techniques and through prepared questionnaire. The main objectives of the study was to explore,

and identify the plants used by farmers and owners of livestock farming centers as fodder and fuel wood. Following standard technique (Lawrence; 1974) herbarium sheets were prepared and collected plant specimens were identified with the help of floras, books, journal and standard literatures (Polunin and Stainton 1984; Stainton 1988; Grierson and Long 1983-2001; and Noltie, 1994) and nomenclature of the identified plant species follow Hara et al., (1978, 1979, and 1982), and Press *et al.* (2000). Identification of collected plant specimens were later confirmed by comparing them with authentic specimens available at department of Botany, Tribhuvan University, Butwal Multiple Campus, Butwal and National Herbarium Godavari, Lalitpur, Nepal. The herbaria are deposited at the Department of Botany, Butwal Multiple Campus, Butwal.

RESULT

In the present study, a total of 37 plant species belonging to 22 families and 26 genera, used as fodder plants, were documented. The documented plant species were arranged alphabetically according to their botanical name (Table 1)

Table: 1- Collected and identified plant species which are used in feeding livestock

Botanical Name with author citation	Family Name	Local Name
<i>Acacia catechu</i> (L.f.) Willd.	Mimosaceae	Khayer
<i>Acacia nilotica</i> (L.) Willd. ex Del.	Mimosaceae	Babool
<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Bel
<i>Albizia lebbek</i> (L.) Benth.	Mimosaceae	Siris
<i>Annona squamosa</i> L.	Annonaceae	Sarifa
<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Bedd.	Combretaceae	Banjhi
<i>Anthocephalus cadamba</i> (Roxb.) Miq.	Rubiaceae	Kadam
<i>Artemisia vulgaris</i> L.	Asteraceae	Tite pati
<i>Artocarpus heterophyllus</i> Lamk.	Moraceae	Katahar
<i>Artocarpus lakoocha</i> Roxb.	Moraceae	Badahar
<i>Asparagus racemosus</i> Willd.	Asparagaceae	Kurilo
<i>Bauhinia purpurea</i> L.	Caesalpinaceae	Tanki
<i>Bauhinia variegata</i> L.	Caesalpinaceae	Koiralo
<i>Bombax ceiba</i> L.	Bombaceae	Simal
<i>Dalbergia sissoo</i> Roxb. Papilionaceae	Papilionaceae	Sisham
<i>Ficus auriculata</i> Lour.	Moraceae	Timilo
<i>Ficus bengalensis</i> L.	Moraceae	Bar
<i>Ficus benamina</i> L.	Moraceae	Sami
<i>Ficus cunia</i> Buch. Ham. ex Roxb.	Moraceae	Khanyu
<i>Ficus glomerata</i> Roxb.	Moraceae	Gular
<i>Ficus hispida</i> L.	Moraceae	Khasreto
<i>Ficus hookerii</i> Miq.	Moraceae	Nevaro
<i>Ficus lacor</i> Buch.-Ham.	Moraceae	Kabro
<i>Ficus religiosa</i> L.	Moraceae	Pipal
<i>Garuga pinnata</i> Roxb.	Burseraceae	Dabdabe
<i>Leucaena leucocephala</i> (Lamk.)de Wit	Fabaceae	Epil-epil
<i>Litchi chinensis</i> Sonn.	Sapindaceae	Litchi
<i>Madhuca longifolia</i> (Koeing) Macbride	Sapotaceae	Mahuwa
<i>Mallotus philippinensis</i> Muell. Arg.	Euphorbiaceae	Sindure
<i>Melia azedarach</i> L.	Meliaceae	Bakaino
<i>Moringa oleifera</i> Lamk.	Moringaceae	Saijan
<i>Morus alba</i> L.	Moraceae	Kimbu
<i>Shorea robusta</i> Gaertn. f.	Dipterocarpaceae	Sal
<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamun
<i>Terminalia alata</i> Heyne. ex Roth.	Combretaceae	Asna/ Saj
<i>Vitex negundo</i> L.	Verbinaceae	Simali
<i>Zizhipus mauritiana</i> Lam.	Rhamnaceae	Bayer

DISCUSSION AND CONCLUSION

The present work is totally based on information given by local farmers on the quality of fodder plants. In Rupandehi district and its surrounding areas, farmers lack any scientific knowledge about the fodder, livestock feeding and management. However, they have a good traditional knowledge about the fodder plants and livestock feeding sufficient to keep livestock alive. Farmers usually prefer multipurpose trees or shrubs to cultivate in their fields. They generally cultivate those plants around their houses which are fast growing, having medium height and spreading nature. However, they give more priority to quantity of fodder rather than their quality. In the urban area and villages with pronounced lack of good pasture the hope lies on raising trees and shrubs. Farmers cultivate the plants even in the gardens in place of ornamental plants. A few plants which are used as fodder plants have good food value and farmers cultivated these plants as fodder. These plants are different species of *Ficus*, *Acacia*, *Artocarpus*, and leguminous plants. Providing livestock with nutritious feed and fodder is necessary for maintaining them in a good condition for the economic production of milk, meat and other products. There is considerable lack of information about the fodder resources in Rupandehi district and its surrounding locality. The large bulk of the feed of livestock's is obtained from the crop residue such as hay, straw, dry stalks of crop plants and green or dry grasses. In the lack of adequate alternative source of livestock feed, green fodder consisting of herbage and tree leaves, plays an important role in the nutrition of livestock.

Due to speedy urbanization and lack of land, owners and farmers of livestock farming face a lot of problems in feeding programs. To improve the availability and enhance the use of

fodder plants in Nepal for the maintenance of livestock body condition, milk production, meat production, reproduction and other by products, the following actions are recommended,

- Launch fodder shrubs and trees plantation program.
- Convert at least 10 percent of the marginal lands into fodder orchards.
- Cultivate fodder trees or shrubs in grazing land.
- Extend the knowledge of agro-forestry systems in the farming community.

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