Saarth
E-Journal of Research

ISSN NO: 2395-339X

STUDY ON THE DIVERSITY AND USE OF SOME WILD EDIBLE PLANTS

By Dhwani M Patel*

ABSTRACT

This study was designed to document the use and conservation of some wild edible plants randomly in Dang district. Data was collected through semi-structured interview and focus group discussions. The collected data was analyzed through direct matrix ranking, pair wise ranking, and priority ranking methods. In this study, a total of 77 wild edible plant species were identified. Of these plants, trees account for 35.5% followed by shrubs (31.1%). Fruits were the most harvested parts (59.7%) followed by leaves (12.9%), roots and tubers (3.8%), and rhizomes (2.5%).These plants are consumed either raw (57.1%) and/or cooked (17%); most are collected by women (62.5%) and children (20.8%), but the participation of men is stumpy (4.2%). According to pair wise ranking analysis, fruits of Vitex doniana and the leaves of Portulaca quadrifida are the most preferred plant species because of their sweet taste. However, some of the plants have side effects causing abdominal pain, diarrhea, and constipation. Although religion and cultural norms and values play an important role in the conservation of wild edible plants, population pressure and its associated impacts contributed much to the disappearance of these plants. Thus, community participation is the suggested solution for the conservation and sustainable use of the wild edible plants in the study area.

KEY WORDS: Wild, Plants, Trees, Edible, Harvest

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*Dhwani M Patel, Depart of Botany Science, M.Sc., GSET.

Saarth
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INTRODUCTION

The tribal communities of India depend on wild edible plants to meet their food requirements during periods of food shortage seasons. Studies conducted indicated that the wild edible plants are mostly serving as supplementary foods in different parts of India. Wild edible plants are nutritionally rich and can supplement especially vitamins and micronutrients. These show that wild edible plants are essential components of many Indian diets, especially in period of seasonal food shortage.

The flora has approximately 6000 species of higher plants of which about 10% are endemic. The country is known as the biodiversity hotspot and center of origin and diversification for a significant number of food plants and their wild relatives. The wide range of climatic and edaphic conditions permitted the growing of a variety endowed with deep knowledge on how to use plant resources. This is particularly true with regard to the use of medicinal plants and wild edible plants that are consumed at times of famine and other hardships. In this regard, the elder community members are mostly the key sources of knowledge about plants.

The consumption of wild plants seems more common in food insecure areas of the country as compared to relatively food sufficient areas. Thus, many tribal people of India usually feed on wild food plants for survival during food shortage seasons. Although wild edible plants play an important role during periods of food shortage seasons, little attention has been given to conservation of wild edible plant species. Available published studies on the botany of wild food plants are limited to specific area. In Dand district of India, the

Saarth
E-Journal of Research
ISSN NO: 2395-339X

consumption of wild food plants seems to be one of the important local survival strategies appears to have intensified due to the repeated climatic shocks hampering agricultural production and leading to food shortage seasons.

Figure 1: Location map of the study area (Dang District, Gujarat)

In Dang district of Gujarat state, the non-cultivated plants provide considerable amount of supplementary food and have significant contribution to generating additional income for many households. However, there has not been sufficient research carried out about the indigenous knowledge of wild edible plants in Dang district. Therefore, this study was designed to (1) identify and document wild edible plant species, (2) identify and record the parts of wild edible plants which are edible to humans, (3) evaluate the exploitation and conservation status of wild edible plants, and (4) assess threats on the wild edible plant species and recommend the possible management scenarios for their conservation.

Saarth
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METHODOLOGY AND MATERIALS

Reconnaissance Survey and Site Selection

A reconnaissance survey was conducted to depict the different vegetation types, natural resource management, and indigenous knowledge associated with the use of wild edible plant species. Following the survey, focus group discussion was carried out in one of the study sites. After the discussion, three villages – Mahal, Don and Kalibel, were systematically selected as study sites out of the total 15 villages of the district. The study villages were chosen based on proximity to the existing remnant forest resources and representativeness of the different agro-ecologies.

Ethno-botanical Data Collection

Seventy-two informants (40 males and 32 females) from different age groups were chosen from three villages of the study site based on the recommendations given from elders, Development Agents (DAs), and Mukhya – the village administration leaders. The ages of the informants were between 15 years and 60 years. The key informants were chosen based on traditional knowledge of wild edible plants following the suggestion made by. Semi-structured interviews, field observation, and focus group discussions (FGDs) were employed for data collection. Focus group discussions were employed for wild edible plants investigation to help in comparison of patterns evident among individual interviews and to reject contradictory information. Accordingly, FGDs were undertaken in groups consisting of six to eight people in three

Saarth
E-Journal of Research
ISSN NO: 2395-339X

selected villages. Interviews were conducted in "Mahal, Don and Kalibel" in Gujarati language.

Plant Specimen Identification and Collection

Based on the ethnobotanical information obtained from informants, specimens with their vernacular names were observed and identified. Preliminary identification was done in the field based on published guides of useful trees and shrubs of India. The identification was done mainly based on the various researchers' works.

Data Analysis

Descriptive statistics that are percentage and frequency were used to analyze the ethnobotanical data of the reported wild edible plants and their associated indigenous knowledge. Preference ranking was computed to assess the degree of preference of wild edible fruit and leafy vegetables based on taste, edibility quality, and importance of species at different seasons. Priority ranking was employed to determine threats of wild edible plants based on their level of destructive effects. To recognize threats of wild edible plant species, values from 1–5 were given: 1 is the least destructive threat and 5 is the most destructive threat. Use diversity ranking was carried out to identify the multipurpose use of wild edible plants which were commonly reported by the key informants.

Saarth
E-Journal of Research
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Discussions and Result

Out of the 72 respondents, 70 (93.5%) reported that their knowledge of wild food plants was acquired through observation, imitation, and oral history, while 2 (26.5%) reported that they acquired knowledge secretly from elders, when they became very old. Moreover, the respondents reported that the knowledge of wild food plants was transferred through songs, folklore, and riddles in local languages at different times especially when the people are at rest especially during the night time.

Taxonomic Diversity

A total of 77 wild edible plant species belonging to 61 genera and 39 families were recorded in the study area. The relative high number of wild edible plants in the study area may be due to the more intensive utilization of plants by the local communities and diverse agro-ecology.

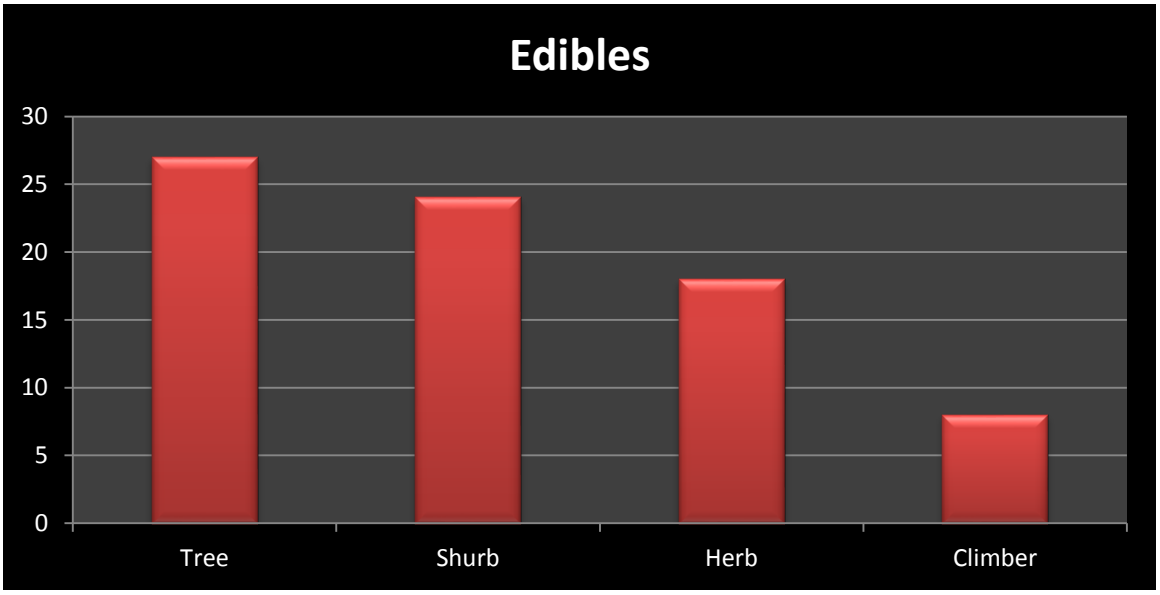

Figure 2: Number and habit of wild edible plants used by the local people

Saarth
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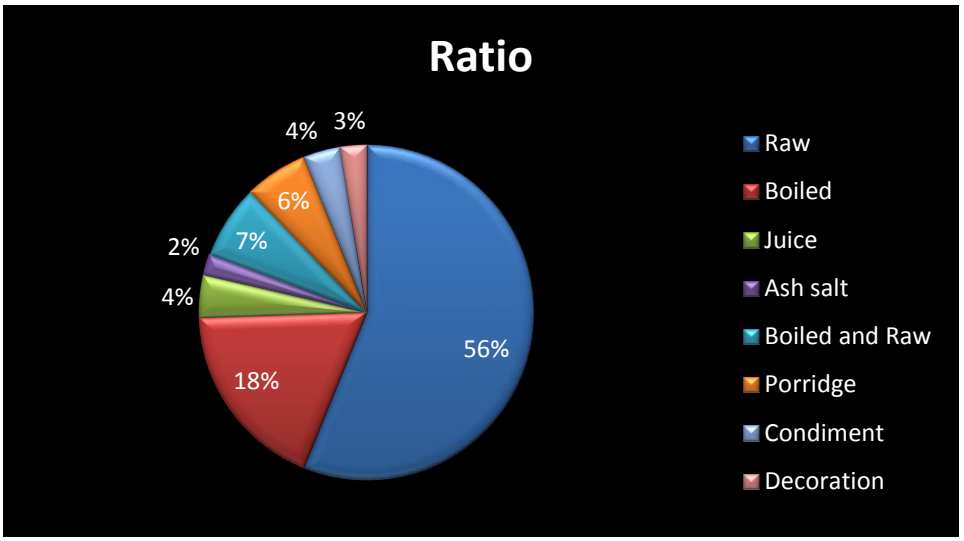

Figure 3: Mode of consumption.

Of the reported 39 families, Tiliaceae, Euphorbiaceae, and Moraceae had the highest number of species. But the remaining families were represented by 1 to 3 species. The reported plant species were comparable with those reported elsewhere in India.

Mode of Preparation/Consumption, Parts Used and Growth Forms

The largest numbers of edible wild plant species were found to be trees, followed by herbs, shrubs, and climbers (Figure 2). Regarding parts used, a total of 6 edible parts were recorded. Of these, 63.6% were fruits, 20.8% leaves, and 6.5% roots and tubers, while the remaining 9.1% were flowers, nectar, stem barks, and seeds (Figure 4). This implies that more than one part of a plant species was consumed by humans. As regards the mode of consumption, 57.1% are consumed raw, 16.9% boiled, 6.5% in juice form, 9.1% either raw or boiled, and 5.2% as porridge/sauce (Figure 3).

Saarth
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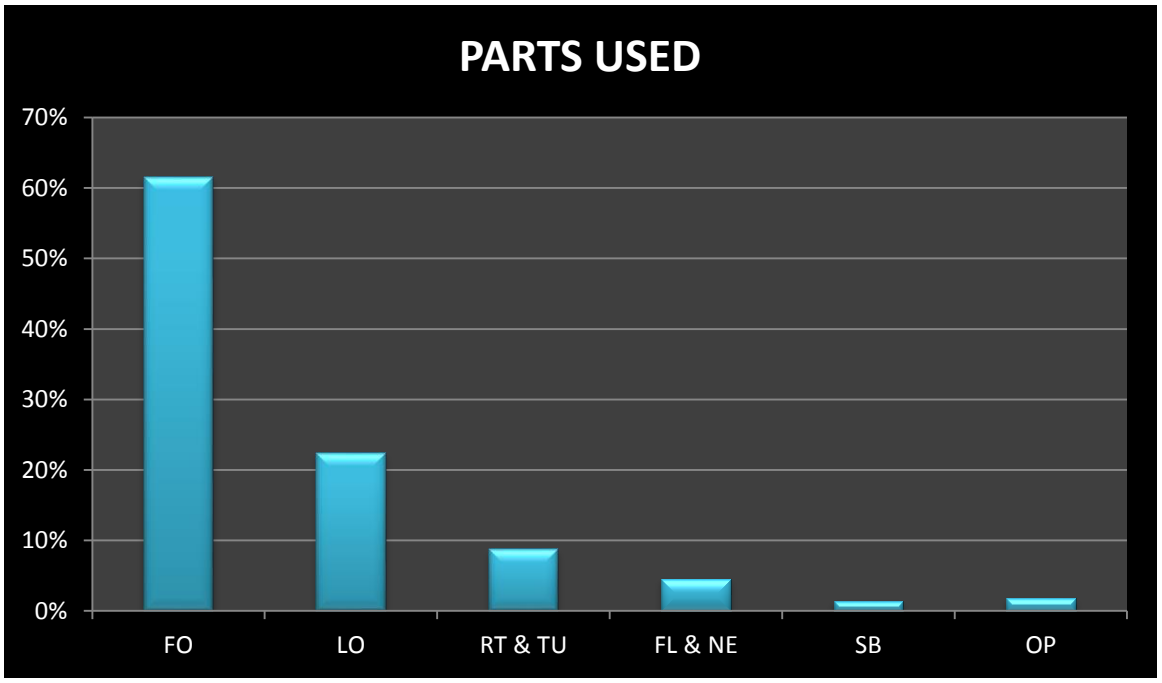

FO = fruit only, Lo = leaf only, FL & Ne = flower and nectars, SB = stem bark, RT & TU= root and tuber, and OP = other part.

Preference of Edibility of Parts

In the study area preference of wild food plants parts varied. For example, plants consumed during famine were not consumed during normal periods. As informants reported, the roots of *Dioscorea cayenensis* Lam. and the young stemof *Phoenix reclinata* Jacq. are only consumed during times of food shortage seasons. Moreover, the fruits of *Vitex dodoniaa* Sweet are the most preferred wild food fruits over the other reported wild food fruits. This is due to them being well known by all communities. Preference of wild leafy vegetables indicates that *Portulaca quadrifida* L. ranks first. This is due to their easy

Saarth
E-Journal of Research
ISSN NO: 2395-339X

accessibility and palatability. These results concur with *Plants.* In the study area informants reported that of the identified plant species sixteen (20.7%) plant species including parts such as leaves, fruit, stem bark, root, and seeds were mentioned as useful to treat one or more human health problems.The number of these plants against the specific human ailment ranged from 1% to 18.7%. Of the 16 species mentioned, the leaves and roots of *Balanites aegyptiaca* got priority by the local communities to relive abdominal pain.

The fruit of *Cordia* is also mentioned as treatment for diarrhea; the leaves of *Solanum nigrum* are used to treat abdominal pain and the roots of *Carissa spinarum* for remedying tape worm. Most of the plant remedies used by the people of Dang district are obtained from herbs (37.5%) followed by trees (31.2%). Data analysis showed that the majority (20.7%) of medicinal plants in the wild are herbs and are used in the treatment of different kinds of diseases, in addition to their food value. This result indicates that people rely more on herbs and trees because they are relatively common in the area compared to shrub species.

The most widely sought plant parts in the preparation of remedies are roots (56.2%). The popularity of these parts has grave consequences, from both ecological point of view and the survival of the wild edible species point of view. On the other hand, collecting leaves alone could not pose a lasting danger to the continuity of an individual plant compared with the collection of roots, bark, stem, or whole plant. Based on growth habit, the total number of medicinal wild edible plants in the study area: herb = 6, tree = 5, shrub = 4, and climber = 1.

Saarth
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CONCLUSION

The knowledge of wild food plants was transferred through songs, folklore, and riddles in local languages at different times especially when the people are at rest especially during the night time. The study revealed that all household members of the study area were involved in the collection and consumption of wild edible plant species. This helps to ensure the maintenance of indigenous knowledge associated with wild edible plant species. However, there is a decline in the consumption of some wild edible plant species that were used during periods of drought and famine such as the young seedling of *Borassus* a*ethiopum* and the young stem of *Phoenix reclinata* which gradually lead to the fade away of the indigenous knowledge associated with them. The local knowledge about the nutritional composition and side effects of the wild edible plant species is very scanty and little is known about undesirable side effects such as toxicity originating from the wild edible plants. Apart from their food and medicinal value, most of the identified wild edible plant species in the study area are used by the community for other different purpose. The local people harvest the wild edible plants not only for food but also for construction, fire wood, and furniture. Particularly, wild edible plant species such as plant species widely used by the local communities. Thus, this has led to a high level of threats to the wild edible plant species in the study area. In addition, many of the wild edible plants found in the study area are found to be under growing pressure, due to anthropogenic and socioeconomic factors. This has resulted in the dwindling of the species of wild edible plants and the associated indigenous knowledge.

Saarth
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ISSN NO: 2395-339X

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