



Wild Food Resource Utilization in Tribal Communities of South Gujarat

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Abstract: The southern part of Gujarat is rich in terms of forest resources and home for many ethnic communities. Present study was conducted to document the collective knowledge of wild edibles possessed by selected ethnic communities of south Gujarat. Information on use of wild edibles were collected mainly from Dhodia, Kukna, Varli, Gamit and Naika communities South Gujarat. The 40 wild food plant species of 21 families are commonly consumed by these communities. Study helped to document the various wild food sources like tree-based food, tuber, leafy vegetables, fruits, bulb, pods, seeds, nuts, mushroom and young shoots. The Varli, Kukna and Gamit communities have adequate knowledge of wild plants and making maximum utilization. The generated baseline data through present study will be helpful for prioritization of conservation through sustainable use and management of the resources. Community based conservation efforts will be more effective way for resource management and maintaining the ethnic food culture of the communities in long run.

Keywords: Ethnic food, South Gujarat, Tribal communities, Wild edibles

Food scarcity, nutrition crisis, pesticide residue, drought are some serious problems of this twenty first century. In the changing scenario, it is difficult to fulfil the food demand of all in present rate of agricultural production. There is an urgent need to search for alternative sources which can fulfil the human needs of nutrition and health. In these circumstances wild edible species are the better source to meet the food demand and are good source of vitamins and minerals. In recent days, ethnic food culture is declining due to many reasons like deforestation, over-harvesting, indiscriminate way of utilization, change in food preference and due to modern lifestyle, the knowledge of this wild treasure remains in the memory of elderly people. These factors eventually leading to resource degradation and this decline affect the food security of rural people directly (e.g., availability and accessibility to food) and indirectly (modifying the ecological habitat where species grow) (Van Noordwijk et al 2014, Agarwal et al 2015).

Wild plants are important source of food, healthcare and material subsistence in much of the developing world and carry a strong association with human livelihood (Sundriyal et al 2004, Misra et al 2008, Mavengahama et al 2013, Ojelel et al 2015). The word 'wild' in this context refers to species that are not intentionally grown and managed by humans, including those minimally managed to prevent overgrowth or overharvest. This includes both native and alien plants, regardless of the preservation

level of the habitats (Menendez et al 2012). Since ancient times, wild food supplements are helpful in maintaining the dietary balance of the tribal communities. Aborigines consume a main staple diet and it is supported with supplementary wild foods. These species are consumed by various communities depending on the local availability. The knowledge of traditional food associated with farmers, hunters and nomadic tribes is of great importance. These people had survived in extreme food scarcity periods from time immemorial. Numerous preparations of plant species are also in practice and sold in tribal markets. Tribal and local communities have traditional knowledge of wild food resources due to their long association with nature (Chauhan et al 2018). In recent years, there has been a growing interest in exploring the traditions of using wild plants and consensus has been formed that information on wild edibles is a vital part of ethnobotanical knowledge. Many previous ethnobotanical works have listed useful plants with a strong tendency to focus on the scouting of new drug sources and new non-wood forest products (NWFP), both of which can be economically lucrative. Nene (2004) recorded 300 diverse plant species belonging to 90 families utilized as food resources during famine. It includes herbs, flowering stalks, leaves, seeds, kernels, fruits, tubers, etc. Usually, these wild species are not in cultivation. The survey of wild edibles from Orissa state reported 144 non-conventional food resources consumed

by five tribal groups which are playing major role in nutritional point of view (Kulkarni 2006). Studies on wild edibles from Gujarat region were carried out by many researchers (Bhattacharjee et al 2009, Shalini Dhyani 2016, Chauhan et al 2018). However, there is lack of information on ethnic food culture of Dhodia, Kukna, Varli, Gamit and Naika communities in particular. With this background, present investigation was undertaken to explore the collective knowledge of wild edibles possessed by selected ethnic communities of south Gujarat.

MATERIAL AND METHODS

Study area: Biogeographically, the south Gujarat (latitude 21°14'-22°49' N and longitude 72° 22' - 74°15' E) consists of seven districts viz., Bharuch, Dangs, Narmada, Navsari, Surat, Tapi and Valsad covering a geographical area of 31,495 km². The plains of south Gujarat are watered by Purna, Par, Damanganga, Auranga, Kolak, Ambica, Darota, Narmada and Tapi rivers. The region shows a typical sub-humid to humid climate (Anonymoius 2006). The mean annual temperature is about 26 °C and average annual rainfall varies from 1300 to 2200 mm. The major forest types in the south Gujarat are moist deciduous forest and dry deciduous forest. (Bhatt et al 2013).

Methodology: The study was conducted in selected tribal pockets of south Gujarat. Information on wild edibles was collected through Participatory Rural Appraisal (PRA) method (Chambers 1995). Data was collected from 100 respondents from Dhodia, Kukna, Varli, Gamit and Naika communities. Expert interviews with key informant were also conducted to quantify past and present consumption trends. The diverse information about local names, plant part and usages etc. was also sought from the local people. Wild food plants identified during the field visits were cross checked against different informants to validate the information. The details on utilization of wild food plants were prepared by referring the earlier studies of Bhattacharjee et al (2009), Chauhan et al (2018) and Kokni & Solanki (2022) for authentication.

RESULTS AND DISCUSSION

The 40 wild food plant species of 21 families are being commonly consumed by Dhodia, Kukna, Varli, Gamit and Naika communities (Table 1). The higher number of wild food yielding plants were reported from families namely, Fabaceae (06 species) followed by Amaranthaceae (03 species) and Lyophyllaceae (03 species). Plant species from Fabaceae family were collected mainly for leaves and some for fruits, while species from Amaranthaceae family

were collected for their leaves. The various wild food sources recorded were 23 fruit trees, 01 tuber crop, 09 green leafy vegetables etc. (Table 2). Some of these were used for direct consumption, garnish or complement other food items. Mainly wild fruits and green leafy vegetables are utilized by the communities in different season. Varli, Kukna and Gamit communities have adequate knowledge of wild plants and reported maximum utilization of wild plants along with their staple diet (Fig. 1). Tree-based food sources and herbs were highly utilized by the communities. The majority of fruits in the diet of communities were mainly contributed by tree species, while leafy vegetables were mostly sourced from herbs species. Trees and shrubs were the main source of edible fruits and flowers and herbs for leaves. The main sources of tubers and pods were from twiners and climbers. In case of young shoot, they are collecting from herb and grass species. Bhattacharjee et al (2009) recorded out of 31 wild food plants gathered by Bhil tribe of Dang district for consumption 18 were fruits, nuts and seeds from trees and 13 green leafy vegetables. Chauhan et al (2018) reported about the utilization of 90 species of wild edibles by the Vasavas in Dediapada Taluka which shows the dependency of those communities on wild food resources. Some of the studies previously undertaken in India also highlighted about the usage of wild resources as a food sources. There are 22 species of edible plants used by major ethnic groups such as Gond, Majhwar and Baiga reported from the deciduous forests of Chhattisgarh in Central India (Kala 2009). Utilization of 32 wild edibles in Manipur was documented by Pfoze et al (2012) through market and house hold survey in the villages of Mao community. In present study, use of wild mushrooms were rare by the communities. Similar observations were also made about the mushroom usage in different parts of South Gujarat by various tribal people (Kokni & Solanki 2022) and Mahadeo Koli tribe in Western Maharashtra (Kulkarni and Kumbhojkar 1992).

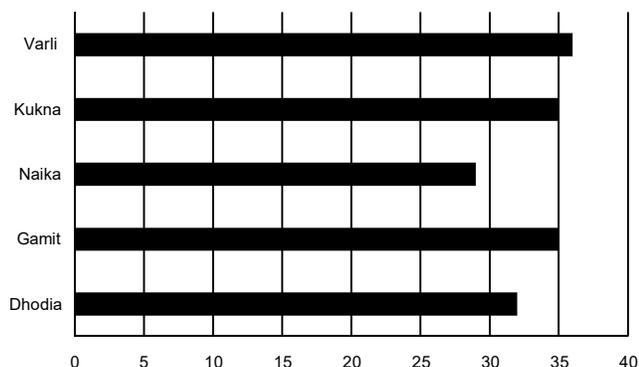
Community based conservation efforts will be more effective way for resource management and maintaining the ethnic food culture of the communities in long run. Cultural values associated with the wild edible plants may enrich the efforts of bio-resources conservation. The study and documentation of local wild edible plants can also be used in development of domestication programme. Processing, preparation of food items from the wild species and their marketing will give rise to small scale food web which can providing job opportunities to many people in rural areas.

Table 1. Wild food plant species utilized by the communities

Plant species and scientific name	Local name	Family	Use
Trees			
<i>Aegle marmelos</i>	Bili	Rutaceae	Fruits used as a pickle
<i>Bauhinia purpurea</i>	Kuhrul, Kuralo	Fabaceae	Young leaves used as a stir-fried vegetable
<i>Bauhinia racemosa</i>	Katmauli	Fabaceae	Young leaves used as a stir-fried vegetable
<i>Bombax ceiba</i>	Savar	Bombacaceae	Flowers used as a vegetable
<i>Borassus flabellifer</i>	Tad	Arecaceae	Ripen fruit use for consumption
<i>Cordia gharaf</i>	Gundi	Boraginaceae	The ripe fruit is consumed, and unripe fruit is pickled
<i>Cordia dichotoma</i>	Gunda	Boraginaceae	Green Fruits and Inflorescence used as a stir-fried vegetable & also used for pickle & ripen fruits used for raw consumption
<i>Diospyros melanoxylon</i>	Timru	Ebenaceae	Ripen fruit used for consumption
<i>Garuga pinnata</i>	Kakad	Burseraceae	Fruits used as a pickle.
<i>Grewia tiliaefolia</i>	Dhamna	Malvaceae	Ripen fruit use for consumption
<i>Limonia acidissima</i>	Kotha	Rutaceae	The fruit pulp is edible after adding some spices. It is usually made into a chutney
<i>Madhuca longifolia</i>	Mahudo	Sapotaceae	Oil from Seeds and flowers use for alcohol preparation and dry flowers also edible
<i>Manilkara hexandra</i>	Rayan	Sapotaceae	Ripen fruits used for consumption
<i>Meyna laxiflora</i>	Alva	Rubiaceae	Fruits are edible
<i>Moringa oleifera</i>	Sektho, Saragvo	Moringaceae	Fruits used as a vegetable
<i>Pithecellobium dulce</i>	Vilayati amlī	Fabaceae	Ripen fruits for direct consumption and it also used as vegetable
<i>Phoenix sylvestris</i>	Khajur	Arecaceae	Ripen fruits used for consumption
<i>Spondias pinnata</i>	Khato ambado	Anacardiaceae	Green fruit in the form of Chutany
<i>Tamarindus indica</i>	Khati amlī	Fabaceae	Ripen fruits use for consumption and Chutney preparation
<i>Terminalia bellirica</i>	Baheda	Combretaceae	Fruits are edible and having medicinal importance also
<i>Terminalia chebula</i>	Harde	Combretaceae	Fruits are edible and having medicinal importance also
<i>Wrightia tinctoria</i>	Kudi	Apocynaceae	Leaf and flowers are used as a vegetable
<i>Ziziphus mauritiana</i>	Bor	Rhamnaceae	Ripen fruits use for consumption
<i>Ziziphus oenoplia</i>	Chini bor	Rhamnaceae	Ripen fruits use for consumption
Shrubs			
<i>Carrisa carandas</i>	Karamda	Apocynaceae	Ripen fruits use for consumption
Herbs			
<i>Abelmoschus esculentus</i>	Jungli bhindi	Malvaceae	Fruits used as a vegetable
<i>Achyranthes aspera</i>	Aghedo	Amaranthaceae	The leaves are consumed as leafy vegetables
<i>Amaranthus viridis</i>	Tandaljo, Lal bhaji	Amaranthaceae	Leaves used as a vegetable
<i>Amorphophallus commutatus</i>	Shevla	Araceae	Young shoot used as a Vegetable with <i>Largestroemia speciosa</i> leaves for removing it's pruritic property
<i>Celosia argentia</i>	Lemdi bhaji	Amaranthaceae	Young leaves of plant used as a vegetable
<i>Chlorophytum borivilienum</i>	Kavli	Asparagaceae	Young leaves used as a vegetable
<i>Hibiscus sabdariffa</i>	Khati bhaji	Malvaceae	Leaves are used as a vegetable
Climbers			
<i>Bauhinia vahlii</i>	-	Fabaceae	Young leaves used as a vegetable
<i>Canavalia gladiata</i>	Abai	Fabaceae	Fruits used as a pickle
Mushroom			
<i>Termitomyces globoulos</i>	Alim	Lyophyllaceae	Used as a vegetable stir fried with spices and dry mushroom also used for consumption
<i>Termitomyces microcarpus</i>	Alim	Lyophyllaceae	Used as a vegetable stir fried with spices and dry mushroom also used for consumption
<i>Termitomyces albuminous</i>	Alim	Lyophyllaceae	Used as a vegetable stir fried with spices and dry mushroom also used for consumption
Grass			
<i>Dendrocalamus strictus</i>	Vans	Poaceae	Young shoot used as a vegetable and pickle is also prepared from it

Table 2. Wild food sources utilized by the communities

Type of food resources	Number of species
Fruit trees	23
Green leafy vegetables	09
Wild flowers	03
Bulb	01
Tubers	01
Tree Seeds	01
Mushroom	03
Young shoot	02

**Fig. 1.** Wild plants utilized by the tribal communities

CONCLUSIONS

Total 40 species of wild food plants of 21 families commonly consumed by the communities namely, Dhodia, Kukna, Varli, Gamit and Naika. Among all families Fabaceae family represented high number of plants. The various wild food sources recorded are fruit trees, tuber crops, green leafy vegetables, bulb, pods, seeds, nuts and mushroom. Among these, green leafy vegetables and fruits are widely consumed by the tribal communities, but the consumption pattern vary according to the season and availability. These ethnic foods are functional ingredients and lead to improve the health in a holistic way. This study generated the baseline data helpful for prioritization of conservation strategies through sustainable use and management of the resources.

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