

The image features a minimalist design on a light gray background. On the left side, there are two vertical black lines of different heights. Two horizontal black lines cross these vertical lines, extending across the width of the page. The word "DISCUSSION" is printed in a bold, black, sans-serif font, centered horizontally and positioned between the two horizontal lines.

# **DISCUSSION**

## DISCUSSION

Present survey conducted in 11 districts of Vidarbha has resulted in documenting 125 wild plant species that are edible. Out of these 104 species belonging to 84 genera are from 44 dicotyledonous families while 21 species belonging to 17 genera are from 12 monocotyledonous families; i.e. comparatively few species of monocot are utilized by locals. Fabaceae in wild also is major food family; 11 species belonging to 10 genera are used as non-conventional foods. Next are Caesalpiniaceae, Convolvulaceae and Amaranthaceae with 7 edible species, Cucurbitaceae and Asclepiadaceae with 6 species each. Tiliaceae with 5 species, Anacardiaceae, Asteraceae and Dioscoreaceae with 4 species, Mimosaceae, Liliaceae and Areceae with 3 species each. There are 12 families of which only 2 species of each and 31 families of which only single species of each are edible.

Out of 125 edible species 44 are herbaceous, 14 are shrubby, 32 climbers and 35 trees (Fig.1). Different parts of plants are used as food (Fig. 2). Likewise these foods may be used raw, cooked or pickled (Fig.3).

**Roots** of seven species are edible; five of which are eaten raw while two are used after cooking.

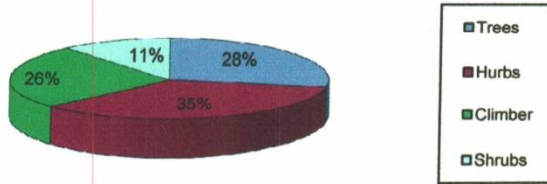
### A) RAW:-

*Sterculia urens*  
*Abrus precatorius*  
*Butea monosperma*  
*Orthosiphon rubicundus*  
*Boerhavia repens*

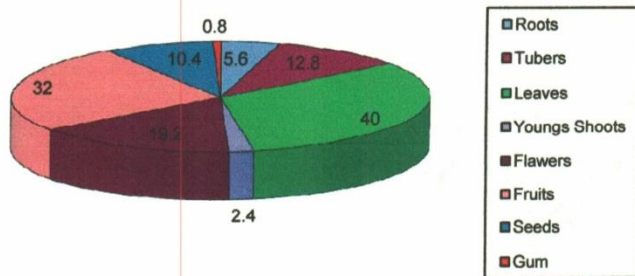
### B) COOKED/ BOILED

*Abelmoschus manihot*  
*Hemidesmus indicus*

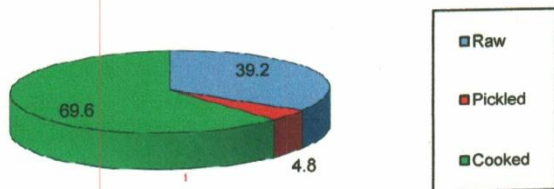
**Fig. 1 Showing representation of Trees, Shrubs, Climbers and herbs in wild edibles**



**Fig. 2 Showing % representation of edible parts of wild species (some species with multiple use)**



**Fig. 3 Mode of species used**



**Tubers** of sixteen species are edible. Of these tubers of seven species are eaten raw, of eleven species after boiling, of four species roasted and that of *Curcuma pseudomontana* are pickled. Tuber of the same species can be used in different ways.

**A) RAW:-**

- Bombax ceiba*
- Pueraria tuberosa*
- Solena amplexicalis*
- Ceropegia bulbosa*
- Ceropegia occulata*
- Habenaria roxburghii*
- Tacca leontopetaloides*

**B) COOKED:-**

**1. BOILED**

- Bombax ceiba*
- Pueraria tuberosa*
- Ceropegia bulbosa*
- Ceropegia occulata*
- Dioscorea alata*
- Dioscorea bulbifera*
- Dioscorea pentaphylla* var.
- pentaphylla*
- Dioscorea pentaphylla* var .
- jacquimontti*

- Amorphophallus comutatus*
- Amorphophallus paeoniifollus* var.
- campanulatus*
- Colocasia esculenta*

**2. ROASTED**

- Dioscorea alata*
- Dioscorea bulbifera*
- Dioscorea pentaphylla* var.
- pentaphylla*
- Dioscorea pentaphylla* var .
- jacquimontti*

**C) PICKLED**

- Curcuma pseudomontana*

**Leaves-** Many of the species are used as leafy vegetables. Out of 125 edible species 40 species are found to be used as leafy vegetables; however the mode of use may differ, some times leaves of same species are used in different way. Raw leaves of eight species are eaten as salad, leaves of four species are processed in specific manner (refer exploration part), leaves of 46 species are cooked as vegetable.

**A. RAW:-**

**1.SALAD:-**

*Oxalis corniculata*  
*Moringa oliefera*  
*Abrus precatorius*  
*Cicer arietinum*  
*Tamarindus indica*  
*Goniocaulon indicum*

**B.COOKED**

*Cocculus hirsutus*  
*Corchorus olitorius*  
*Corchorus trilocularis*  
*Tribulus terrestris*  
*Biophytum sensitivum*  
*Oxalis corniculata*  
*Impatiens balsamina*  
*Schleichera oleosa*  
*Moringa oliefera*  
*Cicer arietinum*  
*Lablab purpureus*  
*Bauhinia racemosa*  
*Bauhinia variegata*  
*Cassia tora*  
*Vigna radiata*  
*Momordica charantia*  
*Centella asiatica*  
*Caesulia axillaries*  
*Glossocordia bosvallea*  
*Goniocaulon indicum*  
*Launea procumbens*  
*Plumbago zeylanica*  
*Ceropegia bulbosa*

*Ceropegia bulbosa*  
*Solanum nigrum*

**B. SPECIAL PREPARATION**

*Oxalis corniculata*  
*Mangifera indica*  
*Abrus precatorius*  
*Tamarindus indica*  
  
*Blepharis repens*  
*Enicostema axillare*  
*Argyreia nervosa*  
*Ipomea aquatica*  
*Merremia gangetica*  
*Rivea hypocrateriformis*  
*Hygrophilla schulli*  
*Mirabilis jalapa*  
*Alternanthera sessilis*  
*Amaranthus roxburghianus*  
*Amaranthus spinosus*  
*Amaranthus tricolour*  
*Amaranthus viridis*  
*Celosia argentea*  
*Digera muricata*  
*Basella alba*  
*Dendrophthae falcata*  
*Otella alismoides*  
*Chlorophytum tuberosum*  
*Scilla hyacinthiana*  
*Commelina benghalensis*  
*Amorphophallus commutatus*  
*Colocasia esculenta*

**Shoots**-Young sprouts and tender shoots of few species four species are utilized. They may be cooked or are pickled.

**A) COOKED:-**

*Asparagus racemosus var.javanicus*

*Smilax zelanica*

*Dendrocalamus strictus*

**B) PICKLED:-**

*Dendrocalamus strictus*

**Flowers** are also used frequently. Flowers of 24 species are used as food, flowers of eight species are eaten raw, those of 19 species are cooked, while those of four species special preparations are made.

**A) RAW:-**

*Annona squamosa*

*Semecarpus anacardium*

*Delonix regia*

*Tamarindus indica*

*Madhuca longifolia*

*Holostema annulare*

*Cordia gharaf*

*Agave Americana*

*Bauhinia variegata*

*Cassia fistula*

*Acacia eburnea*

*Madhuca longifolia*

*Telosma pallida*

*Wattaka volubilis*

*Cordia gharaf*

*Ipomoea muricata*

*Ipomoea turbinata*

*Oroxylon indicum*

*Clerodendrum serratum*

**A) COOKED:-**

*Flacourtia indica*

*Bombax ceiba*

*Moringa oleifera*

*Abrus precatorius*

*Canvalia gladiata*

*Crotolaria juncea*

*Indigofera cassiodes*

*Bauhinia racemosa*

**B) SPECIAL PREPARATION**

*Butea monosperma*

*Tamarindus indica*

*Madhuca longifolia*

*Cordia gharaf*

**Fruits** have always remained a favourite food of mankind. Nutritionwise as well as tastewise fruits are a preferred commodity . The fruits which we are conventionally eating one or the other type were growing in wild. Several of the wild foods are used by tribals in ripe as well as raw / unripe condition. Present survey revealed fruits 40 species as edible. Fruits of 17 species are eaten after ripening, fruits of six species are eaten unripe and raw. Unripe fruits of 14 species are used after cooking while fruits of three species are pickled. Fruits of *Tribulus terrestris* are used as tonic in the form of 'laddos'.

#### **A) RAW:-**

##### **1. Ripe:-**

*Annona squamosa*  
*Grewia orbiculata*  
*Grewia serrulata*  
*Grewia tilifolia*  
*Ziziphus oenoplia*  
*Ziziphus xylopyra*  
*Buchanania cochinchinensis*  
*Lanea coromendelica*  
*Mangifera indica*  
*Tamarindus indica*  
*Cordia gharaf*  
*Solanum nigrum*  
*Mukia maderaspatana*

*Opuntia elatior*  
*Madhuka longifolia*  
*Manilkara hexandra*  
*Canthium coromendelicum*  
*Ficus racemosa*  
*Phoenix sylvestris*

##### **2. Unripe:-**

*Adansonia digitata*  
*Mangifera indica*  
*Tamarindus indica*  
*Orthosiphon rubicundus*  
*Solena amplexicaulis*  
*Diospyros melanoxylon*

#### **B) COOKED**

*Flacourtia indica*  
*Moringa oleifera*  
*Canvalia gladiata*  
*Lablab purpureus*  
*Cassia tora*

*Acacia nilotica*  
*Prosopis cineraria*  
*Momordica charantia*  
*Momordica cymbalarica*  
*Momordica dioica*  
*Tamilnadia uliginosa*

*Wrightia tinctoria*

*Ficus hispida*

*Ficus racemosa*

**C) PICKLED**

*Boswellia serrata*

*Lannea coromandelica*

*Mangifera indica*

*Oroxylon indicum*

**D) SPECIAL PREPARATION**

*Tribulus terrestris*

Seeds of thirteen species were found to be utilized; these are either as taste food or form the part of regular diet. Seeds of 13 sp were found to be used. Seeds of six species are eaten raw, those of six species are cooked while seeds of two species are used for oil extraction. Seeds of *Indigofera glandulosa* and *Oryza rufipogon* were used as famine foods in old days.

**A) RAW**

*Caesaria tomentosa*

*Buchanania cochinchinensis*

*Cajanus scarabaeoides*

*Terminalia bellerica*

*Diplocyclos palmatus*

*Ipomoea pestigridis*

**B) COOKED**

*Cajanus scarabaeoides*

*Indigofera glandulosa*

*Lablab purpureus*

*Cassia tora*

*Vigna radiata*

*Oryza rufipogon*

**C) ROASTED**

*Bauhinia vahlii*

**D) FRUIT OIL**

*Schleichera oleosa*

*Madhuca longifolia*

Pith of a single species i.e. *Phoenix sylvestris* was found to be used as delicacy the pith is collected from young plant just above the ground and is eaten raw as well as after cooking.

**A) RAW**

*Phoenix sylvestris*

**B) COOKED:-***Phoenix sylvestris*



**Gum** of *Acacia nilotica* was found to be used very widely and commonly.

S. K. Jain (1991) has noted about 2500 species that are used by various tribals and folks. Out of these 616 species are reported to have both the medicinal as well as food value. Out of 125 species documented presently, 114 find mention in S. K. Jains review. Out of these 99 species are recorded as edible in addition to their medicinal uses. This means that the species reported as edible from Vidarbha have wide acceptability.

*Acacia eburnea* is less known edible. Galls formed on the stem locally known as 'murmata' are edible. Gunjaikar (1982) has reported this wild edible from Pune district.

During present investigation it was found that roots and tubers of 23 species are used. History of usage of underground plant part is as old as human history. It may not be a preferred food but reliable. Though all tubers and roots not need to be cooked, certainly the caloric value of many tubers is increased when cooked. *Dioscorea* spp. are widely used by several tribes globally, especially in Africa, Euroasia and South East Asia. Only few are having no toxic compounds, most of them are used only after good leaching. Species of *Dioscorea* are well known down the hierarchy of preferred foods. (Vincent, A. 1984.)

However *Dioscorea pentaphylla* var. *jacquemontii* is less utilized (Rayan, 1987). *Diplocyclos palmatus* (Rajasab 2004) and *Glossocordia boswellea* (Anonymous) are also less known vegetables. *Asparagus racemosus* is well known medicinal plant. *Asparagus racemosus* var. *javanicus* is also reported as medicinal. For the first time it is reported as edible. However, several species of *Asparagus* are known world over as edible. Many of the Asclepiads are used by indigenous people of Africa as edible. In Asia several creepers of the genus *Telosma* provide, variously

edible flowers, leaves, young fruits and roots. ([http:// www.naturalhub.com/natural food guide vegetables.](http://www.naturalhub.com/natural-food-guide-vegetables))

11 of the documented species are being reported for the first time as edible.

Sr. No.	Name of the species	Part Used
1	<i>Agave barbadense</i>	Flowers
2	<i>Blepharis repens</i>	Leaves
3	<i>Crotolaria juncea</i>	Flowers
4	<i>Enicostema axillare</i>	Leaves
5	<i>Goniocaulon indicum</i>	Leaves
6	<i>Habenaria roxburghii</i>	Tuber
7	<i>Ipomea muricata</i>	Fleshy thalamus
8	<i>Orthosiphon rubicundus</i>	Nutlets,
9	<i>Scilla hyacinthiana</i>	Leaves
10	<i>Asparagus racemosus</i> var. <i>javanicus</i>	Young sprouts
11	<i>Canthium coromandelicum</i>	Fruit

It is found that different parts of the same species are used differently in various regions. In case of following 7 species it was found that the part used is different from the one reported in earlier literature.

Sr. No.	Name of Species	Part Used (Presently reported)	Part Used (From Literature)
1	<i>Abelmoschus manihot</i>	Root stock	Leaves,Buds,Fruit
2	<i>Sterculia urens</i>	Tuberous Root	Fruit,Seed aril
3	<i>Butea monosperma</i>	Young Root, Flower	Flower, Fruit
4	<i>Solena amplexicaulis</i>	Tuber	Leaves, Flowers, Fruits.
5	<i>Dendroptae falcata</i>	Leaves	Ripe fruit.
6	<i>Mirabilis jalapa</i>	Leaves	Tuber
7	<i>Boerhavia repens</i>	Tuber	Leaves

Comparatively very few aquatics are utilized as edibles. Only two aquatic species *Ipomea aquatica* and *Ottelia alismoides* were found to be used in Vidarbha and that too in restricted area only- Bhandara and Chandrapur districts.

Pith- heart of young palm stem (*Phoneix sylvestris*) was also found to be used only in restricted villages of Amravati and Gadchiroli district. Guaymi tribe of Costa Rica has been reported to use the heart of 5 species of Arecaceae; popularly the edible part is known as 'palmito' (Langlois 2004).

Leafy vegetables form the major component of wild edibles documented here. In all cases the leaves are used when they are young, some times very tender shoots are used. Usually young parts of the plants are more palatable and also often have higher concentrations of vitamins (Zennie 1977).

Most of the fruits that are eaten ripe or unripe are pulpy, however, fruits of *Grewia* species, *Mukia maderaspatana*, *Solanum nigrum*, nutlets of *Orthosiphon rubicundus* do not possess any considerable pulp but are eaten simply for the sake of taste; they can be therefore termed as 'taste food' or 'childrens food' since they are preferred mostly by children only.

Flowers of all the 24 species reported here as edible find mention in earlier literature of Indian ethnobotany; except *Crotolaria juncea*.

Use of *Acacia* gum as one of the best nutrient and muscle strengthening is known to Indians from generations. *Acacia* gums are well known especially in Africa; very common and very widespread 'karoo thorn', *Acacia karroo* was eaten in late summer, particularly by children (it has sweetish taste). The gum is apparently very nutritious, and can sustain life for days in the absence of other food. Young leaflets also edible ([http:// www.naturalhub.com/natural](http://www.naturalhub.com/natural) food guide vegetables). During the survey it was found that not leaves but young pods are used as vegetable.

11 of the food preparations are especially for one or the other health ailment

Sr.No	Part Used	Name of Species	Medicinal Use
1	Leaves	<i>Corchorus trilocularis</i>	Dysentery
2	Fruit	<i>Tribulus terrestris</i>	Highly nutritious given in Delivery.
3	Flower	<i>Butea monosperma</i>	Combat body heat
4	Leaves	<i>Cicer arietium</i>	Acidity(Dew of plant was collected in a muslin cloth early morning and then given in Acidity.)

5	Seeds	<i>Bauhinia vahlii</i>	Highly nutritious
6	Leaves	<i>Cassia tora</i>	Rheumatism
7	Gum	<i>Acacia nilotica</i>	Strengthen muscles after delivery.
8	Tuber	<i>Ceropegia bulbosa</i>	Tonic
9	Leaves	<i>Argyrea nervosa</i>	Rheumatism
10	Flowers and Fruits	<i>Oroxylum indicum</i>	Rheumatism
11	Fruits	<i>Boswellia serrata</i>	Rheumatism

This shows that concept of medicinal food is age old in India. Time demands more exhaustive studies on these medicinal foods to regain there dignity which is to some extent preserved by tribals and rural folk.