



BIODIVERSITY OF VEGETABLES SOURCES IN TRIBAL REGION OF KHANDESH (MAHARASHTRA) INDIA

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ABSTRACT:

This paper informs vegetables sources from foliage, bulbils and underground parts w.r.t. their diversity and traditional utility in view of food security in tribal tehsils of Khandesh region of state of Maharashtra (India). In all 16 species belonging to 13 genera and 11 families are utilized from homestead gardens. Apart from dietary uses, other miscellaneous but traditional uses –reports are also studied. Overall subsistence throughout the year is highlighted. Utilisation apart from the principal purposes, adapted by the tribals is noteworthy.

Keywords: - Home Gardens, Vegetable, Khandesh.

INTRODUCTION :

Nearly 3000 plant species are regarded as food source in which only 200 species have been domesticated. Likewise, 400 plant species are vegetable sources in the world and about 80 species of major and minor vegetables are said to be originated in India (cf. Chadha, 2009). In the tribal region of Khandesh with particular emphases on homestead gardens were investigated during may 2008 to August 2016. Vegetables sources from foliage, bulbils and underground parts are being communicated in this paper.

METHODOLOGY:

The area was visited during different seasons to tap down classic as well as traditional uses in view of human nutrition. The plant species collected were identified by using local floras and treatises like floras by Patil (2003), Kshirsagar and Patil (2008), . Bailey (1949), Naik (1998), Sharma, Karthikeyan and Singh (1996), Singh

and Karthikeyan, (2000), Cooke(1958), Singh and Karthikeyan, (2001), etc. The results of this investigation are presented in the following enumerations. Certain investigations are being directed to diversity of wild vegetable (cf. Chute and Dakhane 2022 & 2021). Diversity also exists in cultivated, classic vegetable, however, it is being overlooked. This is particularly so in tribal

ENUMERATION:

1) Leafy Vegetable:

1) Plant Species : *Amaranthus hybridus* L.

Family : Amaranthacea

Local Name : Rajgurya

Useful Part : Leaves, tender twigs

Classic Use : (i) Both are cooked as vegetable.

(ii) The grains used to prepare popcorns and sweet balls by using jaggary. (iii) Grains are sold in market places because of variety having demand from rural and urban areas as fast day food.

Season : Rainy

Variety Used : Gawaran, two subspecies and varieties, indigenous.

Subspecies and Variety-I : Subsp. *hybridus* L. var. *erythrostachys* Moq.

Subspecies and Variety-II : Subsp. *cruentus* (L.) Thell. var. *paniculatus* (L.) Thell.

Cultivation : Sown in small 5 x 8 ft beds in house gardens, also as inter crop with Maize, Rice, Chillies and Ragi crops.

Miscellaneous Use : Entire plants are useful as fodder for cattle.

Remark : Fertile soil is favourable for this crop.

2) Plant Species : *Amaranthus viridis* L.

Family : Amaranthaceae

Local Name : Matala, Lal Matala

Useful Part : Leaves, tender stem-axes.

Classic Use : Both are cooked as vegetable.

Season : Round the year

Variety Used : Gawaran, indigenous.

Cultivation : Common in wasteland near hamlets in the fields, along edges of homestead gardens.

Miscellaneous Use : Entire plants are used as fodder for goats and other cattle.

Remark : (i) Although it is a weed, it is allowed growing near abodes as vegetable source. (ii) Stem colour changes to red with age hence the name "Lalmatala".

3) Plant Species : *Basella alba* L.

Family : Basellaceae

Common Name : Indian Spinach

Useful Part : Leaves

Classic Use : Leaves and tender stem - axes are cooked as vegetable.

Season : Throughout the year.

Variety Used : Local, 02 varieties, indigenous, Variety-I-*rubra* (L.) Stewart; Variety-II - *alba* L.

Cultivation : Planted in house gardens along hedges, purgolas or near large shrubs or on some supports.

Remark : Both varieties are readily recognisable by their colouration as stated above. The green variety is favoured more by the tribals.

4 Plant Species : *Bauhinia purpurea* L.

Family : Caesalpiniaceae

Local Name : Kustya, Kurlya, Kuryala, Buphala

Useful Part : Leaves

Classic Use : Young leaves are cooked as vegetable.

Season : Throughout the year.

Variety Used : Local, indigenous.

Cultivation : Planted in house gardens or back yards of hamlets. In nearby surrounding naturally growing trees are protected by local tribals.

Miscellaneous Use: (i) Mature leaves are used as bidi wrapper and fodder. (ii) Wood is used for domestic fuel. (iii) Wood is employed for preparation of pendals and roofs for cattle. (iv) The trees are useful as shade tree for domestic animals.

Remark : It is also planted as a roadside tree.

5) Plant Species : *Celosia argentea* L. var.

argentea **Family** : Amaranthaceae

Common Name : Feather Cockscomb, Quil grass

Local Name : Ukiwada, Lambdi, Kurdu, Kombada, Ukhirdi.

Useful Part : Leaves, inflorescence.

Classic Use : Both are cooked as vegetable. Leaves and tender twigs along with inflorescences are sundried and cooked as vegetable during summer period.

Season : Rainy.

Variety Used : Local, indigenous.

Cultivation : It is a common weed in homestead gardens and farmyards but protected by local tribal from grazing animals being a vegetable source.

Miscellaneous Use : Entire plants are also used as green fodder for domestic animals.

Remark : It is also found as a common crop weed in this region.

6) Plant Species : *Colocasia esculenta* (L.)

Schott. **Family** : Araceae

Common Name : Taro, Cocoyam

Local Name : Aav, Aawu, Adu, Aawadya

Useful Part : Leaves.

Classic Use : Leaves are cooked as vegetable.

Season : Rainy, rabi.

Variety Used : 02 varieties, exotic.

Cultivation : Planted in house gardens in 3 x 3 ft. beds, along agricultural field margins, planted near the water canals, in water-logged waste places near abodes.

Remark : Its product is shared by the neighbour tribal families free of costs.

Native of South Europe.

7) Plant Species : *Digera muricata* (L.) Mart.

Family : Amaranthaceae

Local Name : Killu, Lahalya, Bokadkillu.

Useful Part : Leaves, tender branches.

Classic Use : (i) Fresh tender twigs and leaves are collected and cooked as vegetable. (ii) Sundried mature leaves, tender twigs are cooked as vegetable during summer period.

Season : Rainy.

Variety used : Local, exotic.

Cultivation : Common weed of cultivated fields and homestead gardens, also found in wastelands.

Miscellaneous Use : Entire plants are also used as fodder for cattle.

Remark : Plant species naturally grown in homestead gardens and nearby fields purposely protected from grazing animals to save the plants for vegetable source.

Native of North Africa.

8) Plant Species : *Hibiscus cannabinus* L

Family : Malvaceae

Common Name : Kenaf, Bimli Jute

Local Name : Ambadi, Pendya, Khatopendo.

Useful Part : Leaves

Classic Use : Leaves are cooked as vegetable.

Season : Rainy

Variety Used : Gawaran, exotic.

Cultivation : Sown by broadcasting method around hamlets and in homestead gardens. Sown as intercrop with Sorghum, Maize and

Pigeon pea. Cultivated as major crop, sown along with agricultural field margins.

Miscellaneous Use: (i) Fibres extracted from stems after retting. They are used for cordage. (ii) Seeds used for oil extraction which is edible. (iii) Seeds are sold in market. (iv) Seeds are used to prepare cattle feed.

Remark : kharif season is started with the sowing of seeds of this plant species to get early vegetable in the form of leaves. Sowing of this species at the beginning is regarded a sign of good fortune.

Native of Tropical Africa.

9) Plant Species : *Hibiscus sabdariffa* L.

Family : Malvaceae

Common Name : Roselle or Rama

Local Name : Khatphulya, Dedba, Khatambadi.

Variety Used : Gawaran, exotic.

Cultivation : Cultivated in small plots of 10 x 15 ft. near hamlets, cultivated as hedge crop around Chillies, Soyabean, Cowpea, Pigeon pea and Sorghum crops.

Miscellaneous Use : (i) Fibers obtained from stem used for cordage. (ii) Seeds are sold in market, oil is extracted from seeds which is edible (iii) Calyces used to prepare drink (sarbat) by adding jaggary or sugar.

Remark : (i) 'kharif' season is started with the sowing of this plant species to get early vegetable in the form of leaves. Tribal believe that early sowing of this plant species at the beginning of a season is a sign of good fortune. (ii) Usually cultivated in agricultural fields but also grown near abodes if sufficient place available. Native of America, West Africa and West Indies.

10) Plant Species : *Raphanus sativus* L.

Family : Brassicaceae (Cruciferae)

Common Name : Radish

Local Name : Mula, Muli.

Useful Part : Leaves, root

Classic Use : Both cooked as vegetable.

The latter is used as salad. Fruits are also used for vegetable.

Season : kharif (Rainy) and rabi.

Variety Used : Local, exotic.

Cultivation : Sown in small beds 6 x 6 ft; near water canals, cultivated as intercrop in Chillies, Cicer and Wheat fields.

Miscellaneous Use : Mature crops are fed to cattle.

Remark : Native of Western Asia, China and Japan.

11)Plant Species : *Spinacea oleracea* L.

Family : Chenopodiaceae.

Common Name : Spinach

Local Name : Palak

Useful Part : Leaves.

Classic Use : Leaves are cooked as vegetable.

Season : Throughout the year.

Variety Used : Local, exotic.

Cultivation : Sown in homestead gardens in 3 x 5 ft. beds, also in agricultural fields in beds of 4 x 6 ft.

Remark : Native of Persia.

12)Plant Species : *Trigonella foenum-graecum* L.

Family : Fabaceae (Papilionaceae).

Common Name : Fenugreek

Local Name : Methi, Methir.

Useful Part : Leaves, tender stem- axis, seeds.

Classic Use : (i) Leaves and tender stem- axes are cooked as vegetable. Seeds are useful as a spice in pickles of mango. (ii) Leaves are also consumed raw along with chutneys. (iii) Seeds are used for curry preparation. (iv) Seed powder is used to prepare sweet balls (Ladu) especially in winter season for better health.

Season : Rainy (kharif), rabi

Variety Used : Gawaran, exotic.

Cultivation : Sown in small beds 3 x 6 or 5 x 5 ft. or in small patches, in earthen pots, around hamlets also sown in fields or as a mixed crop with Raddish, Onion, Cicer, Chillies and Brinjal.

Miscellaneous Use : (i) Thick stems are used as fodder for cattle, (ii) Matures crops are fed to cattle

Remark : It is also cultivated as a sole crop. Leaves of local variety are smaller than the hybrid one. Native of South Europe.

(II) Roots, Tubers, Bulbils As Vegetable

Sources:

1)Plant Species : *Dioscorea bulbifera* L.

Family : Dioscoreaceae

Common Name : Greater Yam, Asiatic Yam

Local Name : Kankhali

Useful Part : Tubers, bulbils.

Classic Use : Cherished after boiling.

Season : Throughout the year.

Variety Used : Local, indigenous.

Cultivation : Planted in house gardens, near large trees or waste place available near hamlets.

Remark : Usually planted near huts or houses.

2)Plant Species : *Dioscorea wallichii* Hook.

Family : Dioscoreaceae

Local Name : Gawas

Useful Part : Tubers

Classic Use : Cherished after boiling.

Season : Throughout the year.

Variety Used : Local, indigenous.

Cultivation : Planted in house gardens near trees, hedges or huts.

Remark : Very commonly planted near abodes trailing on some supports.

3)Plant Species : *Ensete superbum* (Roxb.) Cheesm. **Family :** Musaceae.

Local Name : Nathade, Jungali kela, Kela.

Useful Part : Inflorescence axis, Rhizome.

Classic Use : Both are cooked as vegetable, whereas rhizome powder is added while preparing breads.

Season : Throughout the year

Variety Used : Local, indigenous.

Cultivation : Planted in small beds 3x3 or 4x4 ft. by keeping distance of 4 x 5 ft. or in small patches in house gardens or in open space available near hamlets where supply of domestic waste water is given.

Miscellaneous Use: (i) Leaves are used to cover food stuffs. (ii) Inflorescence axis, leaves and rhizome are used as fodder.

Remark : It is wild species in forest areas. However, it is being depleted due to over exploitation. Hence, it is introduced in recent times in house gardens especially by the local tribals.

4) Plant Species : *Ipomoea batatas* (L). Lamk.

Family : Convolvulaceae.

Common Name : Sweet Potato

Local Name : Sakarya.

Useful Part : Roots.

Classic Use : Cherished after boiling. Roots are roasted and used as a staple food. Roots eaten raw.

Season : rabi

Variety Used : Local, exotic.

Cultivation : Planted in 3 x5 ft. beds in house gardens or near earthen water containers, also planted in fields where irrigation is available.

Miscellaneous Use : After harvesting roots, the crop remains used as fodder for cattle.

Remark : Household waste water provided to plant species planted in homestead gardens. It appears a recent introduction in the tribal region. Native of Tropical America, Brazil.

RESULTS AND CONCLUSIONS:

(1)Vegetables have considerable role in household food security, nutrition and even economy.

(2) In tribal areas of Khandesh, rather fair diversity of vegetable species is noted. leafy vegetables are derived from 12 species. Moreover, 04 species provide vegetable sources form underground parts.

(3)Except few, majority of vegetable sources of tribal areas are similar to the ones in the non-tribal areas. Only *Benincasa hispida* (Thunb.) Cogn. (cultivated) *Amaranthus viridis* L., *Celosia argentea* L.var. *argentea*, *Digera muricata* (L.) Mart., *Hibiscus cannabinus* L.& *H. sabdariffa* L.

are commonly used in tribal areas which is not the case of non-tribal areas.

(4) These obviously are providers of additional nutrients and micro-elements. These species are indicative of tribal way of life and they have learnt from nature.

(5)The sources of vegetable from underground parts as mentioned in are never noted in vegetable. All these additional sources help combat 'hidden hunger' caused by micronutrient deficiencies. These plant species collectively receive little attention and extension services.

(6)It is to be noted that the tribal use indigenous as well as exotic species for vegetable sources.

(7)Regular hunger, hidden hunger, malnutrition and famine period can be addressed by supplementation and the food based strategies, which include nutrition, education and food fortification (cf. Rule and Levin, 2000).

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