Utilization of wild vegetables in Dapoli Taluka of Ratnagiri district, Maharashtra

PANKAJ N BHUVAD, VINOD M MHAISKE, ANIL S GAWALI, SUYOG J ZAGADE, SHILPA S RATHOD, TAHOORA A GANI CHIPLUNKAR and AJAY D RANE

College of Forestry, Dr Balasaheb Sawant Konkan Krishi Vidyapeeth
Dapoli, Ratnagiri 415712 Maharashtra, India
Email for correspondence: vinod.mhaiske@gmail.com

 Received: 12.08.2021/Accepted: 12.09.2021

ABSTRACT

Wild plants make an important contribution to the life of rural communities. These plants have been used as a source of food, fodder, shelter, clothing, medicine and a veriety of useful commodities from ancient time. Rural communities include wild edibles in their daily food intake and sales from the surplus add to their income. Importance of wild edible vegetables in food security has not been given sufficient attention in India. The present investigations were carried out with the objective to explore, identify, document and study the ethno-botany with respect to food value of wild edible plants consumed by local communities in Dapoli Taluka of Ratnagiri district of Maharashtra. In the study, total 29 species of wild vegetables belonging to 21 families were documented. Life forms indicated that herbs were dominating (48.29%) followed by shrubs (24.13%), climbers (17.24%) and trees (10.34%). Average consumption of wild vegetables by respondents in study area was found as 51.43 days in a year. Per family utilization of wild vegetables for one time food was reported as 369.31 g. However *Clerodendrum serratum* was most demanding vegetable preferred and consumed by local people. In a year, amount saved on purchase of vegetables was calculated Rs 1,126.70 per family.

Keywords: Wild vegetables; utilization; ethno-botany; medicinal uses

INTRODUCTION

Wild vegetables refer to the species which are not cultivated on large scale commercially and local people collect these plants from forest or farm field for domestic requirement as a food. Wild plants make important contribution to the life of rural communities. Throughout the world, wild or uncultivated plants provide a 'green social security' to hundreds of millions of people in the form of food, materials for clothes and shelter. From ancient time, plants have been used as a source of food, shelter, clothing, medicine, gum, resin, oil etc (Aryal et al 2009). Wild edible plants play significant role in meeting requirement of local people in remote parts of the country (Sundriyal and Sundriyal 2001). The diversity in the wild vegetables not only gives variations in the diet but also provides nutritional diversity (Gawali and Narkhede 2018). Local people can earn extra income by selling wild edibles to the urban markets (Setiya et al 2016).

Every year during rainy season, various vegetables growing wild are eaten by people on the basis of traditional knowledge (Jadhav and Rajbhoj 2018). There are several wild edible plants that are consumed by the local people in several forms such as roots, tubers, leaves, flowers, fruits, seeds etc. Wild edible plants are nutritionally richer than some cultivated species (Burlingame 2000). It has been observed that the traditional knowledge on wild food plants is rapidly declining. Unless efforts are made to educate the younger generations about their importance, this knowledge may be lost in the near future (Bhogaonkar et al 2010).

The tradition of eating wild plants has not completely disappeared from India and their nutritional role for health benefits are reported in many surveys (Vartak and Gadgil 1980). Nowadays people are more focused on domestic plants for their basic needs but still wild edibles form major part of the diet of many

tribal communities. The nutritional value of traditional wild plants is higher than several known common vegetables and fruits. These wild edibles can be considered as a valuable resource which can be used for new crop species development (Chaithanya et al 2015).

In Maharashtra, several studies have been conducted on traditionally used wild vegetable plants. There is limited work that records the diversity and usability of wild vegetables in Konkan region (Khan and Kakde 2014). Rural people fulfill their nutritional requirement from wild resources. They get knowledge of wild edible plants traditionally. Documentation of traditional knowledge of wild edible plants along with their ethno-botanical uses is essential for conservation and understanding of indigenous knowledge (Sundriyal and Sundriyal 2001). Therefore present study was conducted to document the diversity in wild vegetables used by rural community of Dapoli Taluka of Ratnagiri district of Maharashtra.

METHODOLOGY

The present study was conducted in Dapoli Taluka of Ratnagiri district of Maharashtra. Dapoli lies in Konkan region and is a part of Western Ghats and represents more or less tropical climate with rich biodiversity in area. The average humidity is 78 per cent with well-expressed three seasons viz summer (March to May), rainy (June to October) and winter (November to February). The average minimum and maximum temperature is 18.5°C and 30.8°C respectively with an average annual precipitation 3,500-4,000 mm which is generally received from June to October. Dapoli has an altitude of 250 m amsl. Total 44 respondents were randomly selected from 9 villages of Dapoli Taluka to investigate the wild vegetable utilization pattern. The data were collected with the help of specially designed questionnaire by the personal interview and discussions with respondents in the month of February-March 2021. Prior to survey, a questionnaire was designed and pre-tested with five informants to find out its suitability for present study and modified according to the response of informants. Information regarding the local names, growth forms, plant parts used, availability, quantity consumed, most preferred species, money saved, pre-treatment and conservation needs were recorded. Plant specimens identified during the field visits were cross checked throgh different informants to validate the information.

RESULTS and DISCUSSION

Wild vegetables available in the study area

In the present investigations total 29 species belonging to 21 families were documented in the villages (Tables 1, 2). Three species each belonged to family Fabaceae and Amaranthaceae; 2 species each to Moraceae, Asteraceae and Areaceae; 1 species each to Lamiaceae, Liliaceae, Dioscoreaceae, Moringaceae, Vitaceae, Sapindaceae, Portulacaceae, Phyllanthaceae, Cucurbitaceae, Basellaceae, Commelinaceae, Malvaceae, Solanaceae and Agaricaceae. Life forms of the plants indicated that maximum were herbs (48.29%) followed by shrubs (24.13%), climbers (17.24%) and trees (10.34%).

Leaves were collected in different seasons, cooked and eaten with their staple food. Therefore majority of the species (72.42%) were used in the form of leaves as a part of their food. These were collected either from forest area or from agriculture fields. Women played major role in collection and preparation of wild leafy vegetables.

Status of available data showed that majority (two-third) of the wild vegetables were under sufficient category and one-third of them were under rare category. Favourable climatic conditions for growth and development of species and endemic nature of species yield led to sufficient availability of these wild vegetables. Anthropogenic pressure, harvesting by non-scientific methods, grazing, forest fire and concrete jungles were the main reasons for species under rare category. Study indicated that total 10 species of wild vegetables were needed to be protected and conserved for sustained yield.

Considering the utilization pattern of wild vegetables, 61.36 per cent of the respondents used 250 g of wild vegetables in one time food, 34.09 per cent 500 g and 4.55 per cent respondents consumed 1,000 g wild vegetables. Per family utilization of wild vegetables for one time food was reported as 369.31 g.

In the present study, total 29 species were reported in Dapoli Taluka of Ratnagiri district. Thus in this study more species were documented than the study conducted by Dhore et al (2012), Wankhade (2015), Deshmukh and Khyade (2020), Pawar (2020), Patil and Tale (2018), Lele et al (2017) and Pranjale and Dube (2016) in Maharashtra state. However more

Table 1. Details of wild vegetables of Dapoli Taluka

Local name	Common name	Botanical name	Family	Habit	Edible plant part	Medicinal value
Bharangi	Bharangi	*Clerodendrum serratum*	Lamiaceae	Shrub	Leaves	Root is useful in asthma, cough
Kuda	Kutaja	*Holarrhena antidysenterica*	Apocynaceae	Shrub	Flowers and pods	Dysentery
Abhaysheng	Swort beam	*Canavalia gladiata*	Fabaceae	Climber	Pods	Beneficial in anorexia dyspepsia, hyperdipsia
Phodashi	Musali	*Chlorophytum tuberosum*	Liliaceae	Herb	Tender leaves and tuberous root	Effective against colic, anorexia, bronchitis
Fanas	Jackfruit	*Artocarpus heterophyllus*	Moraceae	Tree	Immature fruits	Effective against heart diseases
Takala	Tora	*Cassia tora*	Fabaceae	Herb	Leaves	Effective against helminthiasis, constipation, cardiac disorders
kurdu	Kuradu	*Celosia argentea*	Amaranthaceae	Herb	Leaves	Used against kidney stones
Teri	Taro	*Colocasia esculenta*	Araceae	Shrub	Leaves	Effective against haemorrhage, otorrhorea , adenitis, alopecia
Ambushi	Creeping woodsorrel	*Oxalis corniculata*	Oxalidaceae	Herb	Leaves	Beneficial and useful against snake bite
Karinde	Air potato	*Dioscorea bulbifera*	Dioscoreaceae	Climber	Fruits	Treatment of piles, dysentery
Shewaga	Drum stick	*Moringa oleifera*	Moringaceae	Tree	Leaves, pods	Anti-diabetic
Dinda	Bandicoot berry	*Leea indica*	Vitaceae	Shrub	Leaves	Used against skin diseases
Agada	Chaff flower	*Achyranthes aspera*	Amaranthaceae	Herb	Leaves	Beneficial against asthma, bronchitis
Kapalfodi	Balloon plant	*Cardiospermum halicacabum*	Sapindaceae	Climber	Leaves	Effective against cough, fever
Karvand	Karonda	*Carissa carandas*	Apocynaceae	Shrub	Fruits	Effective against skin diseases, diabetes
Suran	Elephant foot, yam	*Amorphophallus paeoniifolius*	Araceae	Shrub	Leaves, tuber	Beneficial against asthma, vomiting
Maka	False daisy	*Eclipta prostrata*	Asteraceae	Herb	Leaves	Antiseptic
kawala	Lajalukavala	*Smithia sensitiva*	Fabaceae	Herb	Leaves	Leaf juice used as lotion against headache
Ghole	Common purslane	*Portulaca oleracea*	Portulacaceae	Herb	Whole plant	Effective against gastro-anorexia, jaundice
BhuiAwala	Gale ofWind	*Phyllanthus amarus*	Phyllanthaceae	Herb	Leaves	Used for stomach problems
katala	Kakrol	*Momordica dioica*	Cucurbitaceace	Climber	Fruits	Used against fever, asthma, jaundice
Mayalu	Malabar spinach	*Basella alba*	Basellaceae	Climber	Leaves	Effective against constipation, flatulence, anorexia
Pimple	Pepal	*Ficus religiosa*	Moraceae	Tree	Leaves	Used in case of skin diseases
katemath	Prickly Amaranth	*Amaranthus spinosus*	Amaranthaceae	Herb	Leaves, stem	Effective against diabetes
kena	Tropical spiderwort	*Commelina benghalensis*	Commelinaceae	Herb	Leaves	Beneficial in piles, constipation, fever, calculi indigestion
Patheri	Creeping Launaea	*Launeaprocumbens* sp	Asteraceae	Herb	Leaves	Effective against dysentery
Chuch	Jute mallow	*Corchorus olitorius*	Malavaceae	Herb	Leaves	Effective against fever
Chichardi	Brihati	*Solanum indicum*	Solanaceae	Shrub	Fruits	Effective against fever, asthma, chest pain
Alambi	Mushroom	*Agaricus bisporus*	Agaricaceae	Herb	Whole plant	Anti-diabeic

Table 2. Analytical data of each family

Family	Total species	Trees	Shrubs	Herbs	Climbers
Lamiaceae	1	-	1	-	-
Apocynaceae	2	-	2	-	-
Fabaceae	3	-	-	2	1
Liliaceae	1	-	-	1	-
Moraceae	2	2	-	-	-
Amaranthaceae	3	-	-	3	-
Araceae	2	-	1	1	-
Oxalidaceae	1	-	-	1	-
Dioscoreaceae	1	-	-	-	1
Moringaceae	1	1	-	-	-
Vitaceae	1	-	1	-	-
Sapindaceae	1	-	-	-	1
Asteraceae	2	-	-	2	-
Portulacaceae	1	-	-	1	-
Phyllanthaceae	1	-	-	1	-
Cucurbitaceae	1	-	-	-	1
Basellaceae	1	-	-	-	1
Commelinaceae	1	-		1	-
Malvaceae	1	-	-	1	-
Solanaceae	1	-	1	-	-
Agaricaceae	1	-	-	1	-

species than the present investigations were documented by Gawali and Narkhede (2018), Bhogaonkar et al (2010), Kuvar and Shinde (2019), Khyade et al (2009), Khan and Kakde (2014), Lokhande (2020), Setiya et al (2016), Jadhav et al (2011), Deshpande et al (2019), Mahadkar and Jadhav (2013) and Oak et al (2015) in the studies conducted in Maharashtra state.

Most demanding wild vegetables

Out of the total reported wild vegetable species, *Clerodendrum serratum* (93.18%) was top vegetable preferred and consumed by local people followed by *Cassia tora* (81.82%), *Colocasia esculenta* (81.82%), *Artocarpus heterophyllus* (59.09) *Moringa oleifera* (15.91%), *Agaricus bisporus* (11.36%) (Fig 1). Most of the respondents demanded *Clerodendrum serratum* due to its easy and plenty availability in surrounding area, having better growth in Konkan climatic conditions and its non-palatability nature for grazing animals.

Wild vegetables consumption

It was observed that 15.90 per cent of the respondents consumed wild vegetables for 40 days in a year, 40.90 per cent for 41-50 days, 34.09 per cent for 51.90 days, 6.81 per cent for 61-70 days and 2.27 per cent for 71 days (Fig 2). Average consumption of wild vegetables by respondents in the study area was found as 51.43 days in a year.

Total money saved through utilization of wild vegetables

Total amount saved by respondents was grouped into six categories as given in Fig 3. It was observed that maximum respondents (54.54%) saved Rs 100-500 through utilization of wild vegetables while minimum (2.27%) saved Rs 2,000-2,500. In a year per family amount saved on purchase of vegetables was calculated to be Rs 1,126.70 which ranged from Rs 480.00 to 2,880.00.

CONCLUSION

Wild vegetables contribute to the household food security and give variation in diet to the village community. Survey revealed that village community depended on wild plant species for consumption as these were growing on forest land and agriculture fields and people had rich knowledge about their utilization. Study concluded that there was immense need to document the indigenous knowledge of wild edibles for future generations and to encourage the people for cultivation of wild edible plants in their home gardens. Further investigations on phytochemical and nutraceutical value of these wild vegetables were

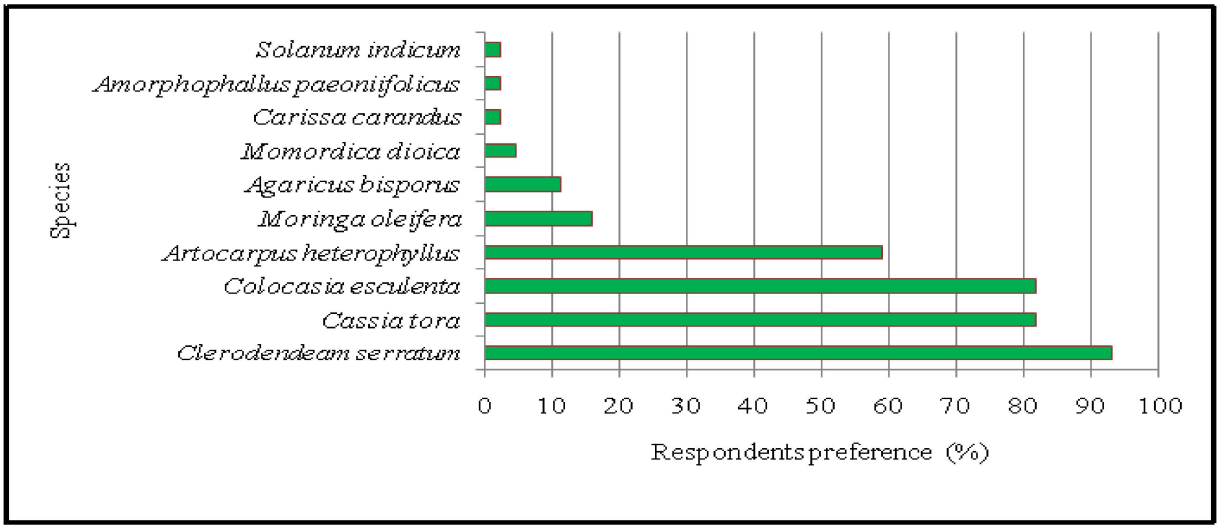

Fig 1. Most demanding wild vegetables in study area

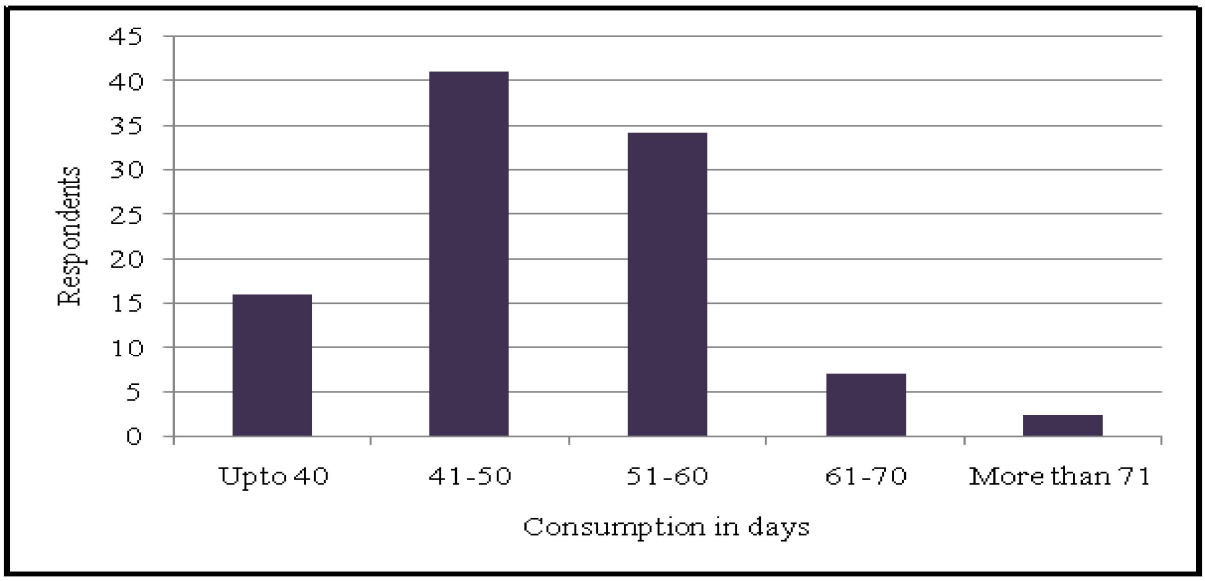

Fig 2. Wild vegetables consumption in Dapoli Taluka, Maharashtra

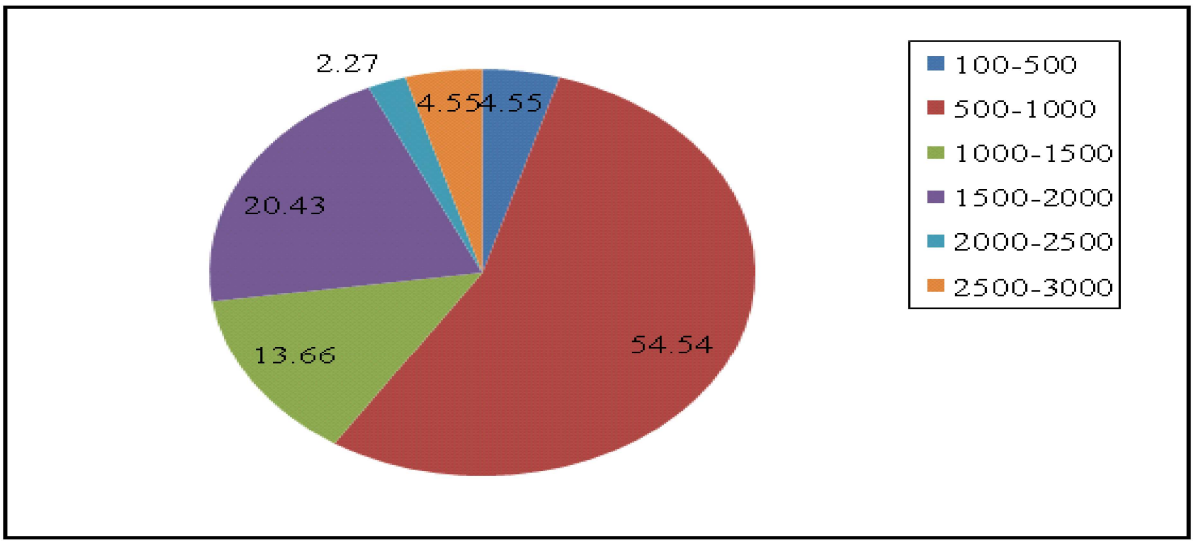

Fig 3. Total amount saved by the respondents (Rs)

needed for sustainable management and conservation of wild resources.

REFERENCES

Aryal K, Berg A and Ogle B 2009. Uncultivated plants and livelihood support- a case study from the Chepang people of Nepal. Ethnobotany Research and Applications **7:** 409-422.

Bhogaonkar PY, Marathe VR and Kshirsagar PP 2010. Documentation of wild edible plants of Melghat forest, district Amaravati, Maharashtra state, India. Ethnobotanical Leaflets **14:** 751-758.

Burlingame B 2000. Wild nutrition. Journal of Food Composition and Analysis **13(2):** 99-100.

Chaithanya VV, Sugiya N and Aneesh KS 2015. Wild edible plants traditionally used by Kadar tribes of Vazhachal forest division, Thrissur, Kerala. Journal of Global Biosciences **4(9):** 3344-3349.

Deshmukh RR and Khyade MS 2020. Wild edible plants used by Thakar tribe of Gautala- Autram Ghat sanctuary, Aurangabad district, Maharashtra state, India. International Journal of Food Science and Nutrition **5(3):** 1-7.

Deshpande S, Pawar U and Kumbhar R 2019. Exploration and documentation of wild food plants from Satara district, Maharashtra (India). International Journal of Food Science and Nutrition **4(1):** 95-101.

Dhore MM, Lachure PS, Bharsakale DB and Dabhadkar DK 2012. Exploration of some wild edible plants of Digras Tehsil, dist Yavatmal, Maharashtra, India. International Journal of Scientific and Research Publications **2(5):** 1-5.

Gawali AS and Narkhede SS 2018. Diversity in wild vegetables in forest of Konkan region of India. Journal of Medicinal Plants Studies **6(2, Part A):** 1-16.

Jadhav J and Rajbhoj BG 2018. Screening of nutritional factors from some wild vegetables in Poladpur. Journal of Pharmacognosy and Phytochemistry **7(4):** 549-552.

Jadhav VD, Mahadkar SD and Valvi SR 2011. Documentation and ethnobotanical survey of wild edible plants from Kolhapur district. Recent Research in Science and Technology **3(12):** 58-63.

Khan TMA and Kakde BU 2014. Biodiversity in wild vegetables of Konkan region- Maharashtra. International Journal of Researches in Bioscience Agriculture and Technology **II(2):** 226-240.

Khyade MS, Kolhe SR and Deshmukh BS 2009. Wild edible plants used by the tribes of Akola Tehsil of Ahmednager district India. Ethnobotanical Leaflets **13:** 1328-1336.

Kuvar DS and Shinde RD 2019. Wild edible plants used by the Kokni tribe of Nasik district, Maharashtra. Journal of Global Biosciences **8(2):** 5936-5945.

Lele YA, Thorve BA, Tomar S and Parasnis A 2017. Traditional uses of the wild plants by the tribal communities of Jawhar, Palghar, Maharashtra, India. International Journal of Botany and Research **7(6):** 19-22

Lokhande KS 2020. Ethnobotanical survey on wild edible plants used by tribals and rural people of Arjuni/Mor Taluka, Gondia district, Maharashtra state, India. Advances in Zoology and Botany **8(3):** 209-217.

Mahadkar SD and Jadhav V 2013. Traditional use of some wild edible plants from Kolhapur district. Life Science Leaflets **5:** 19-26.

Oak G, Kurve P, Kurve S and Pejaver M 2015. Ethano-botanical studies of edible plants used by tribal women of Thane district. Journal of Medicinal Plants Studies **3(2):** 90-94.

Patil VS and Tale OS 2018. Preliminary survey on occurrence and distribution of wild vegetables from Akola district. International Journal of Advance Research and Innovative Ideas in Education **4(1):** 16-20.

Pawar NB 2020. Some wild edible plants of Malegaon region from Nashik district, Maharashtra. International Journal of Creative Research Thoughts **8(3):** 2749-2752.

Pranjale A and Dube KG 2016. Ethno-veterinary traditional knowledge of some plants used in Wardha district Maharashtra. International Journal of Science and Research **5(5):** 1279-1283.

Setiya AV, Narkhede SD and Dongarwar NM 2016. Exploration and documentation of some wild edible plants used by the aboriginals from Gadchiroli district (MS), India. International Advanced Research Journal in Science, Engineering and Technology **3(7):** 24-35.

Sundriyal M and Sundriyal RC 2001. Wild edible plants of the Sikkim Himalaya: nutritive values of selected species. Economic Botany **55(3):** 377-390.

Vartak VD and Gadgil M 1980. Studies on ethnobotany- a new vista in botanical sciences. Biovigyanum **6:**151-156.

Wankhade P 2015. Wild vegetable used by the tribal and rural people of area Kolwan, Arni Tehsil, district Yavatmal (MS), India. International Journal of Recent Research in Life Sciences **2(2):** 1-2.