Wild Edible Plants Consumed by Rural Communities in District Bilaspur, Himachal Pradesh, India

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DOI: http://dx.doi.org/10.33980/jbcc.2019.v05i02.001

(Received 26 May, 2019; Accepted 09 Jul, 2019; Published 22 Jul, 2019)

ABSTRACT: Plants are gifts of God for mankind and are the basis of life on earth. The tradition of consuming wild plants as a source of food still persists in rural communities, despite their primary reliance on agriculture and animal husbandry. District Bilaspur lies between 31° 12' 30" and 31° 35' 45" N latitude and between 76° 23' 45" and 76° 55' 40" E longitude with an altitude ranging from 300 - 1930 meter in Shivalik hills of the Himalayas in the basin of river Satluj. A total of 103 species of wild edible plants belonging to 76 genera and 49 families have been recorded in district Bilaspur. Among the total studied plants, maximum species were used as fruit (40.77%) followed by leaf (17.47%), flower (6.79%), seed (5.82%), shoot (5.85%), root (4.88%), leaf and fruit (3.88%), fruit and flower (1.94%), fruit and stipule, flower and seed, leaf and seed, leaf and bark, leaf and root, wood and gum (0.97% each); flower, fruit and shoot (0.97%) were consumed by the inhabitants of the area. According to mode of utilization, plants were eaten as raw, cooked pot-herb “saag/bhuju” and vegetable, pickle, beverages “chatni”; “pakoda”, “rayata”, flavour, additive and special dishes like “behadi/patroda/bharuni/panjeeri”. It is evident from the present study that traditional knowledge of wild edible plants is vanishing among modern generations of district Bilaspur, and is at the verge of erosion. So there is an urgent need to recognize, conserve and comprehensively study these wild plants for phytochemical analysis and nutraceutical potential.

Keywords: Wild edible plants; traditional knowledge; mode of utilization; Species; family and Bilaspur.

INTRODUCTION: Plants are gifts of God for mankind and are the basis of life on earth. Humans have relied on plants for their basic needs of food, flavour, shelter, clothing and medicine, since the beginning of human civilization. Among the various types of plants, man has recognized food yielding plants and selected them through trial and error method and subsequently domesticated them. The term “wild food” is referred to explain all non domesticated plant and animal resources which are collected for the human consumption from forest, savannah, bush land, and other waste land areas outside the agricultural areas. Wild edible plants are included into the routine diet and livelihood approaches of many rural people, regular farmers, shifting cultivators, or hunter gatherers.1 The tradition of consuming wild plants as a source of food still persists in rural communities, despite their primary reliance on agriculture and animal husbandry.2 It has been recorded that wild fruits are rich sources of vitamins, minerals like sodium, potassium, magnesium, iron, calcium, phosphorus etc., fibres, polyphenols and anti-oxidant which are beneficial to health.3,7 Wild fruits reduce the risk of diseases, like cancer, diabetes, common heart diseases and neurodegenerative disorders.8 It has observed that the tribes who still having the traditional food habit of consuming large variety of seasonal foods, are found to be healthy and free from diseases.9 Traditional indigenous communities conserve domestic and wild species through sustainable use, which ensure food security, improved livelihoods and incomes.10 The FAO recognizes that nutrition and biodiversity converge towards a common goal of food safety and sustainable development, and wild species play a key role in global nutrition safety.11 The primitive man through trial and error has selected many wild edible plants for cultivation and they are less susceptible to disease, can be grown easily without the use of pesticides.12 Vegetables were often consumed due to hunger, medicinal needs, and as source vitamin, fruits tended to be eaten for fun or their taste. Food-insecure household’s often collected wild edible plants due to hunger.13 Generally
most of the wild edible plants are available seasonally for a short duration with short shelf life and are consumed immediately.

Kallas (2010) defined edible wild plants as “wild plants endowed with one or more parts that can be used for food if gathered at the appropriate stage of growth and properly prepared”. The FAO defines the wild edible plants as “Plants that grow spontaneously in self-maintaining populations in natural or semi-natural ecosystems and can exist independently of direct human action”. Wild edible plants can be used as food sources and are never cultivated and never domesticated, but these can get from their wild habitat. They are locally accessible, low input and cheap source for nutrition and traditional ecological knowledge is considered to be the basis for their utilization. There are about 20,000 edible plants species documented in the world and many more still have to be recorded and about 7000 species of plants have been cultivated or collected for food. Throughout world only 150 plant species are commercially cultivated, of which only four – rice, wheat, maize and potatoes – supply 50 percent of the world’s energy needs, while 30 crops provide 90 percent of the world’s caloric intake, and thousands of species are still marginalized by both agriculture and nutrition researchers. However, the indigenous knowledge of wild edible plants is diminishing rapidly but their use still persists in many parts of the world and it is crucial for their sustainable utilization and conservation of these plant species.

Himalaya is the major repository of wild edible plant species and is one of the biodiversity hotspot of the world. Out of 1532 wild edible wild plant species reported in India, over 675 species are known from Indian Himalayan region.

The state of Himachal Pradesh located in Western Himalayan region have forest cover of about 26.4% is endowed with rich biodiversity. The state is famous for cultivation of temperate fruits. Besides cultivated fruits, the practice of harvesting and consuming the seasonal wild fruits and vegetable is also common among rural peoples. Various studies have been carried out on ethnobotanical and ethno-medicinal uses of floristic diversity in Himachal Pradesh, but few attentions have been given towards wild edible plants. Literature survey reveals that there are few studies have been done on wild edible plants of Himachal; however such studies are missing from the study area. The objective of the present study was to collect data regarding traditional knowledge, diversity, utilization enumeration of wild food plants in rural peoples of Bilaspur district.

**MATERIALS AND METHODS:**

**Study Area:** District Bilaspur lies between 31° 12' 30" and 31° 35' 45" N latitude and between 76° 23' 45" and 76° 55' 40" E longitude with an altitude ranging from 300 - 1930 meter in Shivalik hills of the Himalayas in the basin of river satluj. Geomorphology shows lesser hills and comparatively wider valleys, drained by khadds and nallahs with an average rain fall of 1373 mm. Most of the soil of the Bilaspur district is somewhat sandy and is usually deficient, shallow and at times severely eroded. The hills and valleys along the Khads are quite dry and hot in summer, but are humid and sultry during rainy season. Winters are cold and a thick blanket of fog envelops the valleys in the early hours of the day. The district is one of the treasure houses of biodiversity due to its varied geographical, altitudinal, edaphic and climatic features. According to the classification of Champion and Seth, Bilaspur district have three types of forest namely Northern Tropical Dry Deciduous Forests, Himalayan Sub-Tropical Pine Forest, and Lower Western Himalayan Temperate Forests. The 93% population of the district resides in rural areas, with agriculture, animal husbandry and horticulture as their major occupation. People of the area are hardworking, eco-friendly, religious and God fearing. The indigenous knowledge of Bilaspur district has been documented by some workers during last few years, but for complete exploration still comprehensive efforts are required.

To collect first hand information on wild edible plant species and their dietary uses, the extensive exploratory surveys had been carried in 24 villages of district Bilaspur, (H.P.) during 2017-2018. Surveys were planned to include all the seasons of the year and all the agroclimatic zones of the study area. Information was recorded according to the methodology suggested by Jain and Goel (1995) through questionnaires, interviews and discussion among villagers in their local dialect. The informants included were men, women, youths and elders between the ages of 23 and 80 years and most of them were farmers and depend on agriculture and horticulture for their livelihood. The prior consent for the documentation of information was obtained verbally from each of them before the interview conducted. Information on botanical binomial, local name, and plant part/s used, altitudinal range, habit and habitat/s and mode of use were gathered. Fresh samples of the wild edible species were collected, photographed and identified with the help of local and regional floras, books and previous works.
family, local name, habit, collection season and mode of utilization is presented in Table 1.

RESULTS AND DISCUSSION: A total of 103 species of wild edible plants belonging to 76 genera and 49 families were recorded. Out of total species, 102 belong to Angiosperm and one belongs to Gymnosperm. According to habit 42 species were trees, 18 shrubs, 7 climbers and 36 herbs. The representation of families was as Moraceae (10 spp.), Papillionaceae (7 spp.), Cucurbitaceae (6 spp), Caesalpiniaceae and Rosaceae (5 spp. each), Rhamnaceae and Amaranthaceae (4 spp. each), Bambusaceae (3 spp.), Anacardiaceae, Areceae, Berberidaceae, Brassicaceae, Caryophyllaceae, Chenopodiaceae, Combretaceae, Dioscoreaceae, Euphorbiaceae, Lamiaceae, Mimosaceae, Moringaceae, Myrtaceae, Polygonaceae, Rutaceae, Solanaceae and Urticaceae (2 spp. each), Acanthaceae, Agavaceae, Apocynaceae, Araceae, Asclepiadaceae, Bombaceae, Cactaceae, Cannabinaeae, Commelinaceae, Cordiaceae, Flacourtiaceae, Lauraceae, Liliaceae, Lythraceae, Oxalidaceae, Pinaeae, Portulaceae, Punicaceae, Santalaceae, Sapotaceae, Verbenaceae and Violaceae (1 spp. each) (Figure 1).

Table 1: Wild Edible Plants of Bilaspur.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Botanical Name</th>
<th>Family</th>
<th>Common Name</th>
<th>PU</th>
<th>Hb</th>
<th>Collection Season</th>
<th>Mode of Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acacia catechu (L. f.) Wild.</td>
<td>Mimosaceae</td>
<td>Khair</td>
<td>W, G</td>
<td>T</td>
<td>W: Oct- Feb, G: April- June</td>
<td>Gum is eaten and heart wood is used to make tea.</td>
</tr>
<tr>
<td>2</td>
<td>Acacia celentica</td>
<td>Mimosaceae</td>
<td>Kikar</td>
<td>G</td>
<td>T</td>
<td>March-June</td>
<td>Gum is edible.</td>
</tr>
<tr>
<td>3</td>
<td>Adhatoda vasica Nees</td>
<td>Acanthaceae</td>
<td>Basuti</td>
<td>F</td>
<td>S</td>
<td>March-June</td>
<td>Sweet nectar is sucked by children.</td>
</tr>
<tr>
<td>4</td>
<td>Aegle marmelos (L.) Correa ex Roxb.</td>
<td>Rutaceae</td>
<td>Bil</td>
<td>F</td>
<td>T</td>
<td>March-June</td>
<td>Ripe fruits are eaten. Fruit pulp is used to prepare “Sharvat” in summers.</td>
</tr>
<tr>
<td>5</td>
<td>Agave cantula Roxb.</td>
<td>Agavaceae</td>
<td>Kwarpatha</td>
<td>Sh</td>
<td>H</td>
<td>May-June</td>
<td>Fresh soft peduncle is cooked into vegetable.</td>
</tr>
<tr>
<td>6</td>
<td>Amaranthus spinosus L.</td>
<td>Amaranthaceae</td>
<td>Kanta Chulai</td>
<td>L</td>
<td>H</td>
<td>April- July</td>
<td>Traditional dish Bhuj/ saag is prepared from leaves.</td>
</tr>
<tr>
<td>7</td>
<td>Amaranthus viridis L.</td>
<td>Amaranthaceae</td>
<td>Chulai</td>
<td>L</td>
<td>H</td>
<td>April- July</td>
<td>Traditional dish Bhuj/saag is prepared from leaves.</td>
</tr>
<tr>
<td>8</td>
<td>Bambusa nutans Wall. ex Munro</td>
<td>Bambusaceae</td>
<td>Chaw</td>
<td>Sh</td>
<td>T</td>
<td>July- August</td>
<td>Juvenile shoots (“manu”) are used to prepare vegetable and pickle.</td>
</tr>
<tr>
<td>9</td>
<td>Bauhinia quadrifolia</td>
<td>Caesalpinaceae</td>
<td>Taur</td>
<td>Sd</td>
<td>C</td>
<td>Dec- May</td>
<td>Seeds are eaten after smoking in fire.</td>
</tr>
<tr>
<td>10</td>
<td>Bauhinia variegata DC.</td>
<td>Caesalpinaceae</td>
<td>Karyalya</td>
<td>Fl</td>
<td>T</td>
<td>March- April</td>
<td>Flower buds are boiled, squeezed and fried to make vegetable and “rayata”.</td>
</tr>
<tr>
<td>11</td>
<td>Berberis aristata DC.</td>
<td>Berberidaceae</td>
<td>Kashmal</td>
<td>F</td>
<td>S</td>
<td>May-June</td>
<td>Ripe fruits are eaten.</td>
</tr>
<tr>
<td>12</td>
<td>Berberis lycium Royle</td>
<td>Berberidaceae</td>
<td>Kashmal</td>
<td>F</td>
<td>S</td>
<td>June-July</td>
<td>Ripe fruits are eaten.</td>
</tr>
<tr>
<td>13</td>
<td>Bombax ceiba L.</td>
<td>Bombaccaceae</td>
<td>Seemal</td>
<td>FL, Sd</td>
<td>T</td>
<td>Fl: Jan-Feb Sd: May</td>
<td>Immature calyx used to make vegetable. Dry seeds are eaten raw.</td>
</tr>
</tbody>
</table>
Wild Edible Plants Consumed by Rural Communities in District Bilaspur, Himachal Pradesh, India

<table>
<thead>
<tr>
<th>No.</th>
<th>Scientific Name</th>
<th>Family</th>
<th>Common Name</th>
<th>Flowering/Maturity Period</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Butea monosperma Lam. Kuntze</td>
<td>Papilionaceae</td>
<td>Plah</td>
<td>G T</td>
<td>Gum called as “kamar-kash” is added in traditional sweet “panjeeri” especially given to ladies after delivery.</td>
</tr>
<tr>
<td>15</td>
<td>Callicarpa macrophylla Vahl.</td>
<td>Verbenaceae</td>
<td>Dregal</td>
<td>F S</td>
<td>Ripe fruits are eaten.</td>
</tr>
<tr>
<td>16</td>
<td>Cannabis sativa L.</td>
<td>Cannabinaceae</td>
<td>Bhang</td>
<td>L, Sd H</td>
<td>Leaves are used to make “pakodas” with gram flour and a drink “Ghota” along with milk and almond.</td>
</tr>
<tr>
<td>17</td>
<td>Carissa opaca Stapf ex Haines</td>
<td>Apocynaceae</td>
<td>Gurm Karundu</td>
<td>F, Fl, Sh S</td>
<td>Throughout year</td>
</tr>
<tr>
<td>18</td>
<td>Cassia occidentalis L.</td>
<td>Caesalpinaceae</td>
<td>Badi Eluan</td>
<td>Sd H</td>
<td>Seeds are added in pickles.</td>
</tr>
<tr>
<td>19</td>
<td>Cassia tora L.</td>
<td>Caesalpinaceae</td>
<td>Chhoti Eluan</td>
<td>Sd H</td>
<td>Seeds are added in pickles and also used in tea.</td>
</tr>
<tr>
<td>20</td>
<td>Celosia argentea L.</td>
<td>Amaranthaceae</td>
<td>L H</td>
<td>Sept.- Oct.</td>
<td>Leaves are used to make pot herb named “saag”.</td>
</tr>
<tr>
<td>21</td>
<td>Ceropegia bulbosa Roxb.</td>
<td>Asclepiadaceae</td>
<td>Galod</td>
<td>R, L H</td>
<td>Root tubers and leaves are eaten raw. Outer rind of tuber is removed before eaten.</td>
</tr>
<tr>
<td>22</td>
<td>Chenopodium album L.</td>
<td>Chenopodiaceae</td>
<td>Ghanaowan, Ba-thu</td>
<td>L H</td>
<td>Leaves are used to make pot herb named “saag”.</td>
</tr>
<tr>
<td>23</td>
<td>Chenopodium murale L.</td>
<td>Chenopodiaceae</td>
<td>Ghanawan</td>
<td>L H</td>
<td>Leaves are used to make pot herb named “saag”.</td>
</tr>
<tr>
<td>24</td>
<td>Coccinia grandis (L.) Voigt</td>
<td>Cucurbitaceae</td>
<td>Kandiari</td>
<td>F H</td>
<td>Unripe fruits are used to make vegetable.</td>
</tr>
<tr>
<td>25</td>
<td>Colocasia esculentum L.</td>
<td>Araceae</td>
<td>Ubadari</td>
<td>L H</td>
<td>Leaves are used to make traditional dish “patro-du”.</td>
</tr>
<tr>
<td>26</td>
<td>Commelina paludosa Blume</td>
<td>Commelinaceae</td>
<td>Chhura</td>
<td>L H</td>
<td>Young leavers are used to make pot herb “Bhu-ju”.</td>
</tr>
<tr>
<td>27</td>
<td>Cordia dichotoma Frost.</td>
<td>Cordiaceae</td>
<td>Lasura</td>
<td>F T</td>
<td>Unripe fruits are pickled and ripe fruits are eaten.</td>
</tr>
<tr>
<td>28</td>
<td>Cucumis melo var. agrestis Naudin</td>
<td>Cucurbitaceae</td>
<td>Photlu</td>
<td>F H</td>
<td>Ripe fruits are eaten.</td>
</tr>
<tr>
<td>29</td>
<td>Debregasia hypoleuca (Hochst.) Wedd.</td>
<td>Urticaceae</td>
<td>shyaru</td>
<td>F S</td>
<td>Ripe fruits are eaten.</td>
</tr>
<tr>
<td>30</td>
<td>Dendrocalamus hamiltonii Nees &amp; Arn. Ex Munro</td>
<td>Bambusaceae</td>
<td>Magar</td>
<td>Sh T</td>
<td>Juvenile shoots (“manu”) are used to prepare vegetable and pickle.</td>
</tr>
<tr>
<td>31</td>
<td>Dendrocalamus strictus (Roxb.) Nees.</td>
<td>Bambusaceae</td>
<td>Bainj</td>
<td>Sh T</td>
<td>Juvenile shoots (“manu”) are used to prepare vegetable and pickle.</td>
</tr>
<tr>
<td>32</td>
<td>Digera muricata (L.) Mart.</td>
<td>Amaranthaceae</td>
<td>L H</td>
<td>Sept.- Oct.</td>
<td>Leaves are used to make pot herb named “saag”.</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Family</td>
<td>Common Names</td>
<td>Flower color</td>
<td>Season</td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>--------</td>
<td>--------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>33</td>
<td>Dioscorea belophylla Voigt ex Haines</td>
<td>Dioscoreaceae</td>
<td>Taradi</td>
<td>R</td>
<td>Oct.- March</td>
</tr>
<tr>
<td>34</td>
<td>Dioscorea pentaphylla L.</td>
<td>Dioscoreaceae</td>
<td>Dregal</td>
<td>R</td>
<td>Oct.- March</td>
</tr>
<tr>
<td>35</td>
<td>Duchesnea indica Focke</td>
<td>Rosaceae</td>
<td>Akha</td>
<td>F</td>
<td>April- June</td>
</tr>
<tr>
<td>36</td>
<td>Euphorbia royleana Boiss.</td>
<td>Euphorbiaceae</td>
<td>Chhur</td>
<td>Sh</td>
<td>May- June</td>
</tr>
<tr>
<td>37</td>
<td>Ficus auriculata Lour.</td>
<td>Moraceae</td>
<td>Tryambal</td>
<td>F</td>
<td>May- July</td>
</tr>
<tr>
<td>38</td>
<td>Ficus bengalensis L.</td>
<td>Moraceae</td>
<td>Bar/Barga d</td>
<td>F</td>
<td>May- June</td>
</tr>
<tr>
<td>39</td>
<td>Ficus glomerata Roxb.</td>
<td>Moraceae</td>
<td>Ambarya</td>
<td>F</td>
<td>May- July</td>
</tr>
<tr>
<td>40</td>
<td>Ficus hispida L.</td>
<td>Moraceae</td>
<td>Dabernya</td>
<td>F</td>
<td>May- July</td>
</tr>
<tr>
<td>41</td>
<td>Ficus palmate Frossk.</td>
<td>Moraceae</td>
<td>Dagla</td>
<td>F</td>
<td>May- July</td>
</tr>
<tr>
<td>42</td>
<td>Ficus religiosa L.</td>
<td>Moraceae</td>
<td>Peepal</td>
<td>F, St</td>
<td>F: May- June, St: April</td>
</tr>
<tr>
<td>43</td>
<td>Ficus semicordata Buch. – Ham. ex Smith</td>
<td>Moraceae</td>
<td>Khainu</td>
<td>F</td>
<td>Sept.- Oct.</td>
</tr>
<tr>
<td>44</td>
<td>Flacourtia indica (Burm. f.) Merr.</td>
<td>Flacourtiaceae</td>
<td>Kangu</td>
<td>F</td>
<td>May- June</td>
</tr>
<tr>
<td>45</td>
<td>Grewia asiatica L.Mant.</td>
<td>Tiliaceae</td>
<td>Beuli</td>
<td>F</td>
<td>June-July</td>
</tr>
<tr>
<td>46</td>
<td>Indigofera cassioides Rottl. Ex DC.</td>
<td>Papilionaceae</td>
<td>Kathi</td>
<td>Fl</td>
<td>March- April</td>
</tr>
<tr>
<td>47</td>
<td>Lathyrus ophaca L.</td>
<td>Papilionaceae</td>
<td>Safa Daroda</td>
<td>L, Sh</td>
<td>Feb-March</td>
</tr>
<tr>
<td>48</td>
<td>Lantana camara L. (Roxb.) Pers.</td>
<td>Lauraceae</td>
<td>Guau</td>
<td>F</td>
<td>August- Sept.</td>
</tr>
<tr>
<td>49</td>
<td>Luffa acutangula (L.)Roxb.</td>
<td>Cucurbitaceae</td>
<td>Kharad Kandoli</td>
<td>F</td>
<td>August- Oct.</td>
</tr>
<tr>
<td>50</td>
<td>Madhuca longifolia var. latifolia(Roxb.) A.Chev.</td>
<td>Sapotaceae</td>
<td>Mahua/ Mokri</td>
<td>F</td>
<td>July- August</td>
</tr>
<tr>
<td>51</td>
<td>Mangifera indica L.</td>
<td>Anacardiaceae</td>
<td>Amb</td>
<td>F</td>
<td>May- July</td>
</tr>
<tr>
<td>52</td>
<td>Melilotus idicus (L.) All.</td>
<td>Papilionaceae</td>
<td>L</td>
<td>H</td>
<td>Feb.- March</td>
</tr>
<tr>
<td>No.</td>
<td>Scientific Name</td>
<td>Family</td>
<td>Common Name</td>
<td>Flowering Season</td>
<td>Fruits Used</td>
</tr>
<tr>
<td>-----</td>
<td>----------------</td>
<td>--------</td>
<td>--------------</td>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>53</td>
<td>Melothria heterophylla (Lour.) Cogn.</td>
<td>Cucurbitaceae</td>
<td>Van Kakri</td>
<td>F</td>
<td>C</td>
</tr>
<tr>
<td>54</td>
<td>Mentha longifolia (L.) Huds.</td>
<td>Lamiaceae</td>
<td>Jangli Pudina</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>55</td>
<td>Momordica dioica Roxb. Ex Willd.</td>
<td>Cucurbitaceae</td>
<td>Kakora</td>
<td>F</td>
<td>H</td>
</tr>
<tr>
<td>56</td>
<td>Moringa concanensis Nimmo.</td>
<td>Moringaceae</td>
<td>Rasunana</td>
<td>FL, F</td>
<td>T</td>
</tr>
<tr>
<td>57</td>
<td>Moringa oleifera Geartn.</td>
<td>Moringaceae</td>
<td>Rasunana</td>
<td>FL, F</td>
<td>T</td>
</tr>
<tr>
<td>58</td>
<td>Morus alba L.</td>
<td>Moraceae</td>
<td>Toot</td>
<td>L, F</td>
<td>T</td>
</tr>
<tr>
<td>59</td>
<td>Morus macroura Miq.</td>
<td>Moraceae</td>
<td>Toot</td>
<td>L, F</td>
<td>T</td>
</tr>
<tr>
<td>60</td>
<td>Morus Serrata Roxb.</td>
<td>Moraceae</td>
<td>Toot</td>
<td>L, F</td>
<td>T</td>
</tr>
<tr>
<td>61</td>
<td>Murraya koenigii (L.) Spreng.</td>
<td>Rutaceae</td>
<td>Gandela</td>
<td>L,F</td>
<td>S</td>
</tr>
<tr>
<td>62</td>
<td>Nosturtium officinale R. Br.</td>
<td>Brassicaceae</td>
<td>Chhuchh</td>
<td>L, Sh</td>
<td>H</td>
</tr>
<tr>
<td>63</td>
<td>Ocimum basilicum L.</td>
<td>Lamiaceae</td>
<td>Bhabri</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>64</td>
<td>Opuntia dillenii (Ker Gawl.) Haw.</td>
<td>Cactaceae</td>
<td>Nagphani</td>
<td>F</td>
<td>S</td>
</tr>
<tr>
<td>65</td>
<td>Osyris quadripartite Salz. Ex Deene.</td>
<td>Santalaceae</td>
<td>Kaila</td>
<td>B, L</td>
<td>S</td>
</tr>
<tr>
<td>66</td>
<td>Oxalis corniculata L.</td>
<td>Oxalidaceae</td>
<td>Malori</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>67</td>
<td>Oxalis latifolia Kunth.</td>
<td>Oxalidaceae</td>
<td>Malori</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>68</td>
<td>Phoenix acaulis Roxb.</td>
<td>Areceae</td>
<td>Khajoori</td>
<td>F</td>
<td>T</td>
</tr>
</tbody>
</table>
69. **Phoenix sylvestris** Roxb.  
   Arecaceae  
   Khajoor  
   F  
   T  
   August- Oct.  
   Ripe fruits are eaten.

70. **Physalis minima** L.  
   Solanaceae  
   Rashbari  
   F  
   H  
   August- Sept.  
   Ripe fruits are eaten.

71. **Phyllanthus emblica** L.  
   Euphorbiaceae  
   Ambla  
   F  
   T  
   Oct.- March  
   Ripe fruits are eaten raw and pickled.

72. **Pinus roxburghii** Sarg.  
   Pinaceae  
   Cheel  
   Sd  
   T  
   May- July  
   Seeds are eaten.

73. **Portulaca oleracea** L.  
   Portulacaceae  
   Saloud  
   R  
   C  
   May- June  
   Fresh young root tubers are eaten.

74. **Pueraria tuberosa** (Roxb. ex Willd.) DC.  
   Papilionaceae  
   Kainth  
   F  
   T  
   Ripe fruits are eaten.

75. **Punica granatum** L.  
   Punicaceae  
   Daran/ Daru  
   Sd  
   S  
   July- Sept.  
   Ripe seeds with flashy testa are eaten and used to make “chatni”. Seeds also used to add sourness in food items.

76. **Pyrus pashia** Buch. - Ham. Ex D. Don  
   Rosaceae  
   Kainth  
   F  
   T  
   Ripe fruits are eaten.

77. **Rhododendron arboretum** Smith.  
   Ericaceae  
   Bra  
   Fl  
   T  
   April- May  
   Flowers are used to make chatani and squash.

78. **Rosa bractonii** Lindl.  
   Rosaceae  
   Kuja  
   Fl  
   S  
   May- July  
   Flowers used to make squash.

79. **Rubus ellipticus** Smith.  
   Rosaceae  
   Heer, Akhe  
   F  
   S  
   March- May  
   Ripe fruits are eaten.

80. **Rubus niveus** Thunb.  
   Rosaceae  
   Heer, Akhe  
   F  
   S  
   May- July  
   Ripe fruits are eaten.

81. **Rumex hastatus** D. Don  
   Polygonaceae  
   Malora  
   L  
   H  
   Throughout year  
   Leaves are used to make “chatni” and added to remove irritating chemicals of Zimikand cooking.

82. **Rumex nepalensis** Spreng.  
   Polygonaceae  
   Ubad Palak  
   L  
   H  
   Jan.- April  
   Leaves are used to make pot herb “saag”.

83. **Silene conoidea** L.  
   Caryophyllaceae  
   Chhota Takla  
   L  
   H  
   Feb-March  
   Leaves are used to make pot herb “saag” along with *Brassica*.

84. **Sisymbrium irio** L.  
   Brassicaceae  
   Ubad Sarson  
   L  
   H  
   Dec- March  
   Leaves are used to make pot herb “saag” along with *Brassica*.

85. **Solanum nigrum** L.  
   Solanaceae  
   Cheyin  
   F  
   H  
   April- June  
   Ripe fruits are eaten.

86. **Spondias pinnata** (L. f.)Kurz.  
   Anacardiaceae  
   Ambara  
   F  
   T  
   Sept.- Oct.  
   Ripe fruits are eaten.

87. **Stellaria media** (L.)Vill.  
   Caryophyllaceae  
   Badyala  
   L  
   H  
   Feb-March  
   Leaves are used to make pot herb “saag” along with *Brassica*.

88. **Syzygium caryophyllatum** (L.) Alston.  
   Myrtaceae  
   Kathaman  
   F  
   T  
   July  
   Ripe fruits are eaten.

89. **Syzygium cumini** (L.) Skeels  
   Myrtaceae  
   Jamun  
   F  
   T  
   July  
   Ripe fruits are eaten.
<table>
<thead>
<tr>
<th>No.</th>
<th>Scientific Name</th>
<th>Family</th>
<th>Part Used</th>
<th>Mode of Consumption</th>
<th>Season</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td><em>Tamarindus indica</em> L.</td>
<td>Caesalpinioideae</td>
<td>Imli</td>
<td>Fruits are used make chutney and also used to add sourness to food dishes.</td>
<td>April-May</td>
</tr>
<tr>
<td>91</td>
<td><em>Terminalia bellirica</em> (Gaertn.) Roxb.</td>
<td>Combretaceae</td>
<td>Bahedi</td>
<td>Dry seeds are eaten.</td>
<td>Nov.- Jan.</td>
</tr>
<tr>
<td>93</td>
<td><em>Trichosanthes cucumaria var.</em></td>
<td>Cucurbitaceae</td>
<td>Bhed</td>
<td>Unripe fruits are used to make vegetable.</td>
<td>July-August</td>
</tr>
<tr>
<td></td>
<td><em>cucumaria</em> L.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94</td>
<td><em>Tulipa stellata</em> L. f.</td>
<td>Liliaceae</td>
<td>Tulip</td>
<td>Bulbs are eaten.</td>
<td>March-April</td>
</tr>
<tr>
<td>95</td>
<td><em>Urtica dioica</em> L.</td>
<td>Urticaceae</td>
<td>Bichhu</td>
<td>Tender branches are boiled squeezed and fried to make vegetable.</td>
<td>April-June</td>
</tr>
<tr>
<td>96</td>
<td><em>Vicia hirsuta</em> (L.) S. F. Gray</td>
<td>Papilionaceae</td>
<td>Chhoti</td>
<td>Leaf and tender shoots are used to make “saag”.</td>
<td>Feb-March</td>
</tr>
<tr>
<td>97</td>
<td><em>Vicia sativa</em> L.</td>
<td>Papilionaceae</td>
<td>Badi Rodi</td>
<td>Leaf and tender shoots are used to make “saag”.</td>
<td>Feb-March</td>
</tr>
<tr>
<td>98</td>
<td><em>Viola serpens</em> Wall. Ex Roxb.</td>
<td>Violaceae</td>
<td>Vanksha</td>
<td>Flowers are added in tea and also eaten raw.</td>
<td>March-April</td>
</tr>
<tr>
<td>99</td>
<td><em>Woodfordia fruticosa</em> (L.) S. Kurz</td>
<td>Lythraceae</td>
<td>Dhavi</td>
<td>Flowers are used to prepare vegetable and “rayata”. Nectar is sucked by children.</td>
<td>May-June</td>
</tr>
<tr>
<td>100</td>
<td><em>Zizyphus hybrids</em> (Edgew.) Hole.</td>
<td>Rhamnaceae</td>
<td>Baer</td>
<td>Ripe fruits are eaten.</td>
<td>Jan.- March</td>
</tr>
</tbody>
</table>

**Abbreviations Used:**
- **Hb**: Habit
- **PU**: Part used
- **T**: Tree
- **H**: Herb
- **S**: Shrub
- **C**: Climber
- **G**: Gum
- **L**: Leaf
- **F**: Fruit
- **R**: Root
- **Fl**: Flower
- **Sh**: Shoot
- **Bl**: Bulb
- **Sd**: Seed
- **St**: Stipule
- **W**: Wood

Among the plant parts, fruits of 49 species, leaves of 30, tender shoots of 12, root tubers of 4, flower of 11, seeds of 8, gum of 3, bark, wood, stipule and bulb of one species each were consumed. Trees (41%) made the highest proportion of the edible species followed by herbs (35%), shrubs (17%) and climbers (7%). Among the total studied plants, maximum species were used as fruit (40.77%) followed by leaf (17.47%), flower (6.79%), seed (5.82%), shoot (5.82%), root (2.91%), gum (1.94%), bulb (0.97%), leaf and shoot (4.85%), leaf and fruit (3.88), fruit and flower (1.94%), fruit and stipule, flower and seed, leaf and seed, leaf and bark, leaf and root, wood and gum (0.97% each); flower, fruit and shoot (0.97%) by the inhabitants of the area. (Figure 2) According to mode of utilization plant eaten raw (53 spp.), pot herb “saag/bhuju” (17 spp.), vegetable, (21 spp.), pickle (9 spp.), beverages “tea/sharvat/squash/mhani” (8 spp.) “chutni” (8 spp.), “pakoda” (5 spp.), “rayata” (4 spp.), flavour (3 spp.), additive (3 spp.), special dishes “behadi/patrodu/bharuni/panjeeri” (5 spp.) and one species used in removal of grittiness of *Amaranthus tuber* during cooking. During the survey, it was recorded that the local people of the area are not dependent on wild plant resources for food now but about 35-40 years earlier they were more dependent on wild plants. They collected these food resources during their activities like farming, visit to forest for fuel wood, fodder and grazing their live stocks. The time and frequency of collecting various plants and plant parts varied from plant to plant depending upon their availability. Results revealed maximum consumption of wild edible plant during summer season i.e. April-June when cultivated fruits and vegetable...
are less available. Pot herb preparation is more during February and March when winter weeds are in abundance. Some plants were found consumed specially on festivals like Dioscorea beelophylla tubers on “Shivratri”, Cannabis in form of ‘ghota” on “Holi”. Consumption of wild food plants has considered as preventive and curative medicine for health. Study reveals that traditional knowledge of wild plants as food is present only with elder people above 50 years while younger generations are ignorant of their tradition. There is a big common lapse in exchange of traditional knowledge between older and younger generations. This is due to gradual transformation of socio-cultural environment of society and more dependence on modern market resources. It is evident from the present study that traditional knowledge of wild edible plants is vanishing among modern generations of district Bilaspur, and reached at the verge of its complete erosion.

In the present study, it is observed that uses of some of wild food plants are same as indicated in literature while some of them are new in records. Many edible uses of documented plants has also recorded in studies of surrounding areas. The edible uses of Accacia catechu, Adhatoda vasica, Callicarpa macrophylla, Cassia spp., Cerpegia bulbosa, Litsaea monopetala, Osyris quadripartita, Pinus roxburghii, Viola serpens, Woodfordia fruticosa are reported for first time in the study area. The use of leaves of Morus spp. and Murraya koenigii for making “pakoda”and stipules of Ficus religiosa are reported for first time.

CONCLUSION: The present study provides first-hand information on 103 wild edible plant species and their indigenous uses by the rural communities of district Bilaspur. Results concluded that the area has high diversity of wild edible plant species and rich tradition of their consumption. Wild edible plants play an important role in the nutrition of people and children in rural communities as they are considered as excellent sources of carbohydrates, proteins, fibers, vitamins, minerals and health care medicines. The indigenous uses and availability of wild edible plants is declining gradually due to socio-cultural transfor-
mation of society and more dependence on modern market resources. So there is an urgent need to recognize, conserve and comprehensively study these wild plants for phytochemical analysis and nutraceutical potential. This study is an important effort to document invaluable piece of traditional knowledge on wild edible plants of the area and to pass the information to scientific community for further investigation and preservation.

REFERENCES:


