



Documentation of Wild Leafy Vegetable Plants of Chitwan, Nepal

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Abstract

Wild leafy vegetables are an important source of carbohydrates, proteins, minerals and fibers. Local people of Chitwan rely on wild leafy vegetables. Knowledge of wild leafy vegetables is part of traditional practice. This paper revealed total 38 plant species belonging to 32 Genera under 30 families which are consumed by local inhabitants of Chitwan. Out of 38 plants species consumed as leafy vegetable, 26 taxa were herbs, 6 species are climbers, 5 plant species as to trees and only one was climbers. The harvesting season of leafy vegetables are variable. 15 leafy vegetables plants were harvested during rainy season, 8 spp. were harvested in summer season. 12 plant species were harvested throughout the year. Similarly; 32 plant species were used for vegetables; 3 spp. were used for spices. A few spp. was consumed as raw, pickle and topping purpose.

Keyword WLVPs, species herbs, shrubs, trees.

1. Introduction

Wild leafy vegetable plants (WLVPs) refer to plant species that are not cultivated or domesticated but are accessible from various natural habit and are used as the source of green leafy vegetables (Mallick et al. 2020). WLVPs are rich source of minerals, vitamins and fibers. So, these plants are necessary to include in our diet plan. They have rich in medicinal value (Singh 2015). The cultivation process is not necessary for WLVPs. They are usually propagated into barren lands, like road sides, river bank, forest areas and in fresh water reservoirs. Most of these plants are herbs like *Amaranthus spinosus* A few WLVPs are trees as *Bauhania purpurea* and climbers like *Ipoamaea aquatica*. They are consumed by both poorest and richest socio-economic groups of the people (Akhtar 2001). According to food and agricultural organization (FAO), WLVPs play a vital role in household level food security of the urban and rural people during the time of drought and famine.

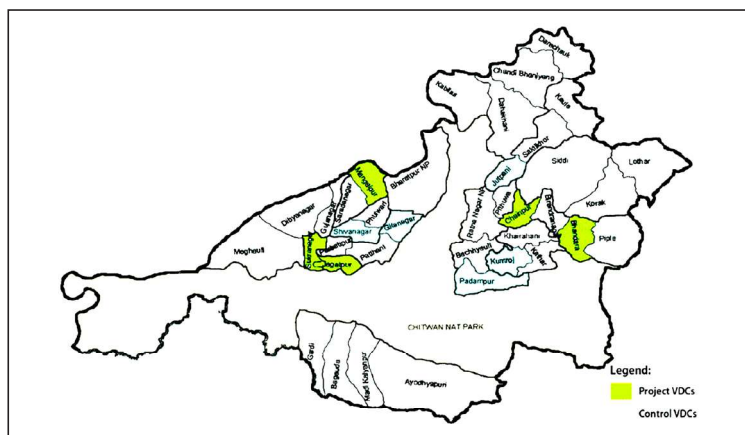
Human population growth is in geometrical progression but the agricultural products increase as arithmetical progression. So, we have need to consume wild edible plants including WLVPs. These plants are an alternative source of income of the poorest people of both urban and rural areas (Shrestha and Dhillion 2006). It has been suggested that WLVPs are nutritionally superior to some of the cultivated one (Acharya and Acharya 2010). These plants are absolute organic. No any chemical pesticides and fertilizers are used for these plants. During food scarcity period, the inhabitants of the both urban and rural areas heavily depend on the gathering of these plants from natural habitats (Manandhar 2002). These plants are also used as preparation of remedies for

several human and animal diseases (Singh 2015). It is therefore scientists are interested to understand the state of WLVPs plants and conserve for the future.

Chitwan District, Nepal was selected for the study of WLVPs because this district is highly rich in phyto-diversity and ethnic communities like Gurung, Magar, Tharu etc. people of this area have enormous traditional knowledge about WLVPs plants and their knowledge is mostly undocumented and transmitted orally from one generation the next generation. Most of the people of this district are farmers. Some ethnic communities depend upon the non-timber forest products and brought those from community forests. The first national park was established as Royal Chitwan National Park in 1973. But core area for this national park has been not utilized by people of buffer zone.

2. Materials and methods

Chitwan district lies in the inner terai region of Nepal. It covers an area of 2,238 km². It extends from 27°21'45" N to 27°52'30" N longitudes and 83°54'45" E to 83°48'15" E latitude. About 58.2% area lies below 300 m as' 32.6% of are between 30|- 1000 mas' and 6.7% between 100|- 2000 mas' with tropical, and subtropical climate zone respectively. The climate of this district has a tropical monsoon climate with humidity all throughout the year. The Chitwan is dominated by Sal (*Shorea robusta*) forests.



The current research work was based on primary and secondary data. The primary data were collected from the field study, interview with local inhabitant mainly housewife near the forest areas direct observation, informal discussion and secondary data were collected from the different websites and relevant literatures, and journals, for this research work. The study area was visited frequently for the collection of information from January to December 2021. Knowledge about the local name, harvesting season and form of use of leafy vegetables were collected during the field visit. Some photographs of WLVPs plants were captured.

3. Results

The flora of the study area is rich and provides diverse wild leafy vegetable plant species. A total of 38 species of 32 genera belongs to 30 families have been recorded as

wild leafy vegetable plants used by people from Chitwan district. Among 30 families documented were Amaranthaceae, Fabaceae Ophioglossaceae, Athyriaceae and Cucurbitaceae represented the highest number of species (2 species) followed by Asparagaceae, Meliaceae, Scrophuloreceae, Nyctaginaceae, Apiaceae, Parkerianaceae, Rutaceae, Lamiaceae, Polygoniaceae Asteraceae, Brassicaceae, Chenopodiaceae, Araceae, Malvaceae, Cappariaceae, Poaceae, Ascidiaceae, Convovulaceae, Moringaceae, Bigonaceae, Oxalidaceae, Liliaceae, Urticariaceae, Dryopteriaceae, and Portulaceae have only one species in each family.

Out of 38 plants of WLVPs recorded, 27 species are herbs, one species is shrubs, 5 plants species belong to trees and 3 plants species are climbers and gunners.

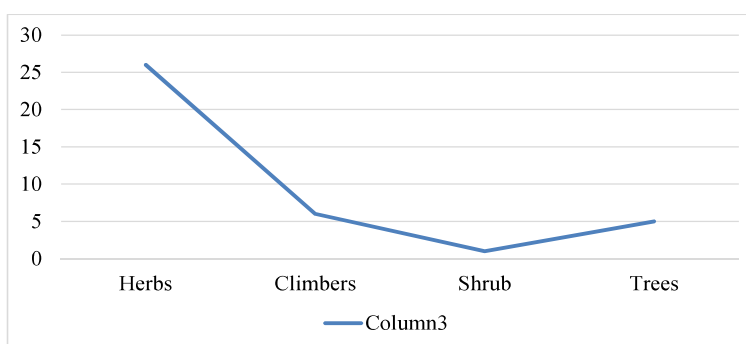


Fig. 1: Habits of WLVPs

The major species used as WLVPs are *Amaranthus spinosus*, *Impomea aquatica*, *Diplazium esculentum*, *D. maximum*, *Dryopteris cochleate*, *Ophioglossum reticulcum*, *Urtica dioecia*, *Bacopa mannieri*. Likewise; *Murraya koenigii* is the major WLVPs as Shrub. *Impomea aquatica* is the major species of climber and is available in local markets. Out of 38 WLVPs, species, 12 species are harvested throughout the year similarly; 13 species are also harvested in rainy season. Seven species are harvested in the summer season. Only 3 species are harvested during winter season.

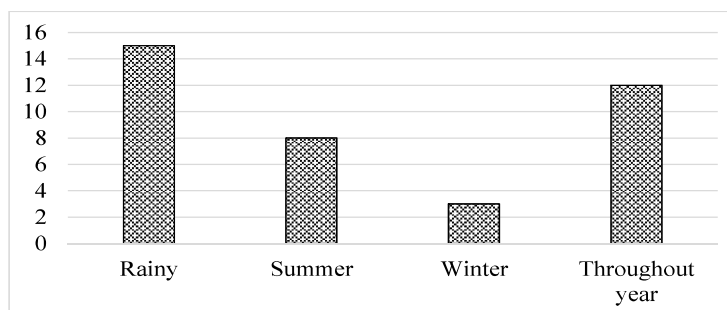


Fig. 2: x-axis-Seasonal Variation, y-axis-Number of WLVPs

Out of total WLVPs species, 32 species are cooked as vegetables, and one species is used as raw. Similarly, a species is used as topping and three plants are used as spices.

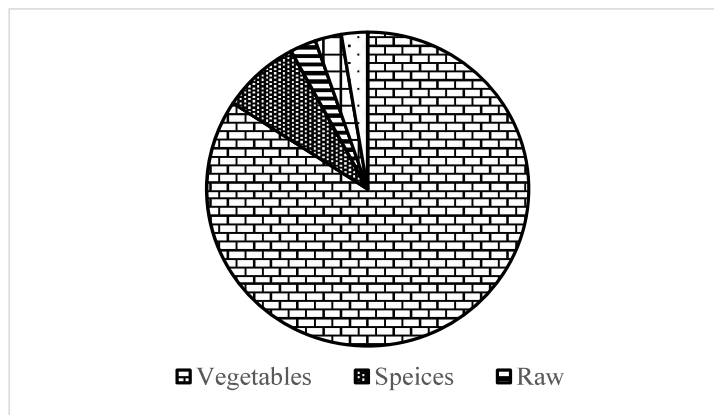


Fig. 3: Mode of Uses of WLVPs.

4. Conclusion

The inter-relationship between human and nature as well as the importance of environmental health are directly related on bio-diversity despite of agricultural societies. Primary reliance on domesticated plants and animals for food, the tradition of eating plants has not been forgotten.

The present study contributes to the information a knowledge of wild leafy vegetables, used by inhabitant of Chitwan District. Total 38 species of leafy vegetables belonging to 30 families. These plants have different specific food uses with vegetables followed by species and eating as raw in from. These plants are rich source of minerals fibers, vitamin, protein, etc. beside these, they have a lot of medicinal value. Almost all the inhabitant of Chitwan have good knowledge about wild leafy vegetable.

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Table 1: Wild Leafy Vegetable Plants of Chitwan District

| S. N. | Botanical Name | Common Name | Family | Habit | Harvesting season | Mode of uses |
|-------|--------------------------------------|--------------|------------------|----------|-------------------|--------------|
| 1 | <i>Alternanthera sessilis DC</i> | Saranchi sag | Amaranthaceae | Herb | Rainy | Vegetable |
| 2 | <i>Amaranthus spinosus L</i> | Kate Late | Amaranthaceae | Herb | WY | Vegetable |
| 3 | <i>Asparagus recemosus Wild</i> | Kurilo | Asparagaceae | Herb | Summer | Vegetable |
| 4 | <i>Azadirachta indica Juss</i> | Neem | Meliaceae | Tree | Summer | Vegetable |
| 5 | <i>Bacopa monnieri L.</i> | Khole sag | Scrophulariaceae | Herb | Rainy | Vegetable |
| 6 | <i>Bauhinia purpurea L.</i> | Tanki | Fabaceae | Tree | Summer | Vegetable |
| 7 | <i>Boerhaavia diffusa L.</i> | Punarnava | Nyctaginaceae | Creepers | Rainy | Vegetable |
| 8 | <i>Centella asiatica L</i> | Ghol tapre | Apiaceae | Herb | Rainy | Vegetable |
| 9 | <i>Ceratoperis thalictroides L</i> | Pani dhaniya | Parkeriaceae | Herb | Rainy | Pickle |
| 10 | <i>Chenopodium album L</i> | Bethe sag | Chenopodiaceae | Herb | Winter | Vegetable |
| 11 | <i>Coccinia grandis L</i> | Gol Kakari | Cucurbitaceae | Climber | WY | Vegetable |
| 12 | <i>Coccinia cordata L</i> | Tilkor | Cucurbitaceae | Climber | WY | Vegetable |
| 13 | <i>Colocasia esculenta L</i> | Karkalo | Araceae | Herb | WY | Vegetable |
| 14 | <i>Corchorus acutangulus L</i> | Nalu | Malvaceae | Herb | Summer | Vegetable |
| 15 | <i>Corchorus capsulari L</i> | Patuwa | Malvaceae | Herb | Summer | Vegetable |
| 16 | <i>Crateya unilocularis buch-Ham</i> | Sipligan | Capparaceae | Tree | Winter | Vegetable |
| 17 | <i>Cymbopogon citratus Stapt</i> | Lemon grass | Poaceae | Herb | WY | Spice |
| 18 | <i>Diplazium esculentum Sw</i> | Unyu | Thyriaceae | Herb | Rainy season | Vegetable |
| 19 | <i>Diplazium maximum Sw</i> | Unyu | Thyriaceae | Herb | Rainy season | Vegetable |
| 20 | <i>Dryopteris cochleate Adans</i> | Neuro | Asciaceae | Herb | Rainy season | Vegetable |
| 21 | <i>Ipomaea aquatica for</i> | Karmi sag | Convolvulaceae | Climber | Rainy season | Vegetable |
| 22 | <i>Moringa oleifera Lam</i> | Shital chini | Moringaceae | Tree | Summer | Vegetable |
| 23 | <i>Murraya koenigii L</i> | Kari pata | Rutaceae | Shrub | WY | Spice |
| 24 | <i>Ocimum basilicum L</i> | Basil | Lamiaceae | Herb | WY | Topping |
| 25 | <i>Ophioglossum reticulatum L</i> | Jibre sag | Ophioglossaceae | Herb | Rainy | Vegetable |
| 26 | <i>Oroxylum indicum Vent</i> | Tatelo | Bignoniaceae | Tree | Summer | Vegetable |
| 27 | <i>Oxalis corniculata L</i> | Chariamib | Oxallidaceae | Herb | WY | Raw |
| 28 | <i>Smilax aspera L</i> | Kukur diano | Liliaceae | Climber | Rainy | Vegetable |
| 29 | <i>Urtica dioica L</i> | Sishnu | Urticaceae | Herb | WY | Vegetable |
| 30 | <i>Tectaria coadunata C. Chr</i> | Kalo neure | Dryopteraceae | Herb | Rainy | Vegetable |
| 31 | <i>Ophioglossum petiolatum stook</i> | Jibre sag | Ophioglossaceae | Herb | Rainy | Vegetable |
| 32 | <i>Rumex dentatus L</i> | Rudilo | Polygoniaceae | Herb | Rainy | Vegetable |
| 33 | <i>Cichorium intybus L</i> | Chicory | Asteraceae | Herb | Rainy | Vegetable |
| 34 | <i>Taraxum officinale Wigg</i> | Dendolion | Asteraceae | Herb | WY | Vegetable |
| 35 | <i>Rorippa indica L</i> | Tori Ghans | Brassicaceae | Herb | Winter | Vegetable |
| 36 | <i>Cassia tora Rox</i> | Tanki | Fabaceae | Herb | Summer | Vegetable |
| 37 | <i>Amaranthus retroflexus L.</i> | Latte | Amaranthaceae | Herb | Throughout | Vegetable |
| 38 | <i>Portulaca oleracea L</i> | Loniya | Portulacaceae | Climber | Rainy season | Vegetable |

* WY= Whole Year