

# Wild Edible Plants used by the Zou Tribe in Manipur, India

H. Esther Gangte\*, N.S. Thoudam\*, Ginzamang T. Zomi\*\*

\*Department of Botany, Churachandpur College, Churachandpur- 795 128, Manipur, India.

\*\*Department of Sociology, Churachandpur College, Churachandpur- 795 128, Manipur, India.

**Abstract-** A survey of wild edible plants used by the Zou tribe was undertaken during 2011-2012 in Manipur. The Zou's are one of the recognised tribes in Manipur settling along the Burma border. "Zou" being translated as "Lofty hill ranges" are the hill people, with a population of 20,567 (Census 2001). Oral traditions and culture reveals that most of their economies have been engaged in subsistence agriculture, hunting and gathering. This paper documents 84 species belonging to 36 families. All plants are arranged alphabetically in a tabular form, followed by families, vernacular name(s), plant part(s) and used methods. The nutritional aspects of less familiar wild edible plants can be further analysed to meet the food and nutritional needs of the people. The present study is the first of its kind among the Zou tribe.

**Index Terms-** Wild edible plants, Zou tribe, Traditional, Manipur.

## I. INTRODUCTION

India is extremely rich in its floristic wealth and native plant genetic resources. About 800 species of wild edible plants occur in different floristic regions and are consumed by the tribal communities (Singh & Arora, 1978). Tribal dominated tracts are the storehouse of knowledge about the multiple uses of plants. Such ethno botanically/agro-ecologically distinct pockets are found in North Eastern region, parts of Western Himalayas, Central India and Western and Eastern Peninsular tract. (Arora R.K. 1981). Manipur is one of the eight states of North Eastern region. It lies in the extreme Northeast of India bordering Burma within 23°51' N and 25°41' N Latitudes and 93°03' E and 94°04' E longitude (Singh et al. 1996) Manipur falls in the biogeographically tri-junction of three distinctive biogeographical regions : oriental regions of India, extensions of the Himalayan region and Malayan archipelago. Consequently this region forms an active centre for transfer of gene pools between India and other South East Asian countries, which may lead to speciation and evolution of new and novel gene pools. Manipur is rich in flora and fauna and falls in the Indo-Burma Global Biodiversity Hotspots (Myers et. al. 2000). It covers a geographical area of 22,327 sq. km of which 90% are hilly region largely characterised by dense forests and inaccessible terrains. This hilly region are inhabited by 34 ethnic tribes practising their own culture, traditions and had survived through successive generations depending on wild plants and animals. Several works have been done on wild edible plants used by different communities in India such as Dietary uses of wild plant

resources Sikkim, Himalaya. (Sundriyal et. al., 2004) ; Karbi Anglong of Assam (Kar. and Borthakur, 2007); Annamalais of Coimbatore district ( Ramachandran, 2007 ) ; Meghalaya, North East India (Kayang, 2007); Majuli Island and Darrang district, Assam (Baruah et. al., 2007); Traditional edible bio-resources Imphal, Manipur (Sunnanda et. al., 2010); Melghat Forest, Maharashtra (Bhogaonkar et. al., 2010); Nokrek Biosphere Reserve, Meghalaya (Bikarma et. al., 2011); Ethnobotany of western Mizoram (Lalfakzuala et. al., 2007). Some plants reportedly used in the Melghat forest, western Mizoram, Chothe and Garo tribes are also used by the Zous. However, this is the first report on the Zou tribe in Manipur. The present work is an attempt to access and study the wild edible plants consumed by the Zous. The Zous are recognised as a Scheduled Tribes of Manipur in 1956. They are one of the indigenous communities of Mongoloid race inhabiting the border areas of India and Burma. They are concentrated in Chandel and Churachandpur district of Manipur with a population of 20,567 (Census 2001). 'Zou' being translated as 'Lofty Hill Ranges' are hill people living and maintaining close link with their plant environment, practising their own culture, custom and traditions. Oral traditions and culture reveals that most of their economies have been engaged in subsistence agriculture, hunting and gathering (Mannuamching, 1999). In remote Zou villages, they still depend on Jhum cultivation where rice, maize, beans, chillies, yam etc., are cultivated. Jhum or slash and burn cultivation is a major component of the larger agro system that comprises of agriculture, forestry, hunting and fishing. It is a land used system based on a traditional method, year round, community wide, largely self contained and ritually sanctioned way of life (Vishal Gupta, 2005). They make a sustainable use of available plant resources directly or indirectly for their livelihood. Wild edible plants and fruits are consumed as a supplement for cultivated crops and also as a survival strategy during 'Mau tam' (famine due to flowering of bamboos which occur after every 45-50 years). They gather different wild edible plants from the forest for their own food and also sell them in the local make shift markets.

## II. METHODOLOGY

An extensive field work was carried out during 2011-2012 covering all seasons of the year. Prior to this, literatures were thoroughly searched for references on the subject. Knowledgeable informants were identified with the help of village chiefs, church leaders and philanthropic organisation leaders of different villages. 50 males and 25 females between

the age group of 40-85 years were personally contacted. Prior consent was obtained from the informants before collection of data through oral questioning and repeated discussion. The information collected on wild edible plants, local name(s), part used and use methods were recorded in a data sheet following standard ethnobotanical methods (Jain and Rao, 1997). As far as possible photographs were taken in their natural habitats.

Collected specimens were identified with the help of experts, relevant published papers and books such as (Singh & Arora, 1978); (Sukla et. al., 1982) and (Deb DB, 1961). The specimens are deposited in the Herbarium, Department of Botany, Churachandpur College.

**Table 1. Wild edible plants used by the Zous Tribe of Manipur**

Sl. No	Plant Name & Family	Local name(s)	Part(s) used	Use Method
1	<i>Allium hookerii</i> Thw. Liliaceae	Phulun pah, Kaisuon	Leaves, Roots	Cooked or raw eaten
2	<i>Amaranthus spinosus</i> Linn. Amaranthaceae	Bawnggeh tehliah	Tender shoots, leaves	Cooked as vegetables
3	<i>Amaranthus viridis</i> Amaranthaceae	Bawnggeh tehneu	Tender shoots, leaves	Cooked as vegetables
4	<i>Amomum dealbatum</i> Roxb. Zingiberaceae	Aigia	Inflorescence	Cooked or steamed
5	<i>Amorphophallus campanulatus</i> Blume, Ex. Decne Araccae	Kolbot	Corm	Cooked as vegetable and food.
6	<i>Aporosa dioica</i> Muell. Arg. Euphorbiaceae	Sawntuol	Tender shoots, leaves	Cooked as Vegetable
7	<i>Anisomeles indica</i> Linn. Lamiaceae	Sii	Seeds	<ul style="list-style-type: none"> <li>• Roast and make into paste. Used as side dish</li> <li>• Fermented for future use.</li> </ul>
8	<i>Argyria nervosa</i> (Burm. f.) Boj. Convolvulaceae	Uisul	Pods	Scrape the black pods. Boiled the pods and discard water. Used as vegetable or in chutneys.
9	<i>Arisaema leschenaultia</i> Araceae	Telong	Tuber	Roasted, pounded and soaked in ash water for about 3 nights. Washed off the ash water. Add salt and chillies to consume.
10	<i>Asparagus racemosus</i> Wild. Liliaceae	Aipah	Inflorescence	Cooked as vegetable.
11	<i>Bambusa arundinaceae</i> (Retz.) Wild. Poaceae	Gokhatuoi	Tender shoots	<ul style="list-style-type: none"> <li>• Boiled and discard the water. Then, cooked as vegetable.</li> <li>• Fresh shoots fermented as food.</li> <li>• Dried for future use.</li> </ul>
12	<i>Bambusa tulda</i> Roxb. Poaceae	Govatuoi	Tender shoots	<ul style="list-style-type: none"> <li>• Boiled and discard the water. Then, cooked as vegetable.</li> <li>• Fresh shoots fermented as food.</li> <li>• Dried for future use.</li> </ul>
13	<i>Benincasa hispida</i> Thunb Gogn. Cucurbitaceae	Maipuong	Fruit	Cooked as vegetable
14	<i>Brassica campestris</i> Linn.	Ankam	Leaves, tender	<ul style="list-style-type: none"> <li>• Boiled as vegetable</li> </ul>

	Brassicaceae		shoots, Inflorescence	<ul style="list-style-type: none"> <li>• Tender shoots eaten raw.</li> <li>• Leaves dried for future use.</li> </ul>
15	<i>Cajanus cajan</i> Linn. Papilionaceae	Behieng	Pods	Cooked as vegetable
16	<i>Calamus erectus</i> Roxb. Arecaceae	Chingpi ngeh	Stem pith	Cooked as vegetable
17	<i>Calamus latifolia</i> Roxb. Arecaceae	Taichiing	Stem pith	Cooked as vegetable
<b>SL. NO</b>	<b>Plant Name &amp; Family</b>	<b>Local name(s)</b>	<b>Part(s) used</b>	<b>Used method</b>
18	<i>Capsicum frutescens</i> Linn. Solanaceae	Malta	Fruit	<ul style="list-style-type: none"> <li>• Used as spices/condiments.</li> <li>• Fruits dried for future use.</li> </ul>
19	<i>Caryota urens</i> Linn. Arecaceae	Tuum	Stem pith	Cooked as vegetable
20	<i>Centella asiatica</i> Linn. Apiaceae	Tangkuongte h	Whole plant except roots	Cooked or eaten raw as vegetable
21	<i>Cinnamomum verum</i> Presl. Lauraceae	Singguithah	Bark	Used as spices and condiments
22	<i>Cissus repanda</i> Vahl. Vitaceae	Khaupuong, Lenpuong teh	Tender shoots, Leaves	Cooked as vegetables
23	<i>Citrus latipes</i> (Swingle). Tanaka. Rutaceae	Hatkora	Rind of the fruit.	Dried and used as spices/condiments.
24	<i>Clerodendrum</i> (Li). Kuntze. Verbanaceae	Anphui	Leaves	Cooked as vegetable.
25	<i>Conyza stricta</i> Wild. Asteraceae	Buoththah Buoldap	Tender shoots, Leaves	Cooked as vegetable
26	<i>Colocasia esculenta</i> (Linn.) Schott. Araceae	Baal	Corm, Petioles , leaves	<ul style="list-style-type: none"> <li>• Corm used as food and vegetables.</li> <li>• Petioles and leaves dried and preserve for future use.</li> </ul>
27	<i>Colocasia laurentii</i> Schott. Araceae	Dol sielngheh	Petiole	<ul style="list-style-type: none"> <li>• Cooked or eaten raw as vegetable</li> </ul>
28	<i>Curcuma longa</i> Linn. Zingiberaceae	Ai-eng	Rhizome	Used as species/condiments
29	<i>Cucurbita maxima</i> Duchesne. Cucurbitaceae	Maai	Leaves, fruits, Inflorescence, seeds	Cooked as vegetable
30	<i>Cycas pectinata</i> Griff. Cycadaceae	Tanglu	Tender buds, shoots	Cooked as vegetable
31	<i>Derris wallichii</i> Prain Papilionaceae	Huihu	Tender shoots	Tender shoots boiled and water discarded. Tender shoots then fried as vegetable or used in chutney.
32	<i>Dioscorea alata</i> Linn. Dioscoreaceae	Hakai san	Tuber	Cooked as food
33	<i>Dioscorea glabra</i> Roxb. Dioscoreaceae	Hakaingou	Tuber	Cooked as food
34	<i>Dioscorea sativa</i> Hook Dioscoreaceae	Gam hakai	Tuberous root	Cooked and used as food during famine.
35	<i>Dolichos lablab</i> Linn. Papilionaceae	Bepi	Pods, Leaves	Cooked as vegetable

36	<i>Dryopteris marginate</i> (Wall) Christ. Polypodiaceae	Tekoh	Fronde	Cooked as vegetable
37	<i>Dysoxylum gobara</i> Buch. Meliaceae	Singthupi	Tender shoots	Boiled and the water is discarded. Used as vegetable.
38	<i>Entada scandens</i> Benth. Mimosaceae	Kaang	Tender shoot	Boiled and the water is discarded. Used as vegetable.
39	<i>Eryngium toetidum</i> Lam. Umbelliferae	Pasikhawm	Leaves	Used as spices/condiments.
<b>SL. NO</b>	<b>Plant Name &amp; Family</b>	<b>Local name(s)</b>	<b>Part(s) used</b>	<b>Used method</b>
40	<i>Eurya acuminata</i> DC. Fl. Br. Theaceae	Sizou	Leaves, Tender shoots	<ul style="list-style-type: none"> <li>• Cooked as vegetable.</li> <li>• Tender shoot eaten raw as salad</li> <li>• Leaves dried for future use.</li> </ul>
41	<i>Ficus roxburghii</i> . Moraceae	Theiba	Tender shoots, leaves	Cooked as vegetable
42	<i>Ficus rumphii</i> Linn. Moraceae	Mawnglaw	Tender shoot, Inflorescence	Cooked as vegetable
43	<i>Glycine max</i> Merr. Papilionaceae	Bekan	Seeds	Fermented and eaten
44	<i>Hibiscus aculeatus</i> Roxb. Malvaceae	Mehnal	Fruit	Cooked or fried as vegetable
45	<i>Hibiscus sabdariffa</i> Linn. Malvaceae	Vaianthuh	Leaves, seeds	<ul style="list-style-type: none"> <li>• Cooked as vegetable</li> <li>• Seeds fermented</li> <li>• Leaves dried and preserved</li> </ul>
46	<i>Hordeum vulgare</i> Linn. Poaceae	Tangbuang	Grains	<ul style="list-style-type: none"> <li>• Cooked as food.</li> <li>• Pounded into powder. Make paste with water. Wrap with banana leaves and cooked</li> </ul>
47	<i>Houttuynia cordata</i> Thunb. Saururaceae	Aithanglou	Leaves, roots	Cooked or eaten raw as spieces/condiments
48	<i>Ipomoea botatas</i> Linn. Convolvulaceae	Kawlkai	Tuber	Cooked as food
49	<i>Lagenaria vulgaris</i> Cucurbitaceae	Uum	Fruit	Cooked as Vegetable
50	<i>Lepionurus sulvestris</i> BL. Olacaceae	Anapangthum, Anmang	Leaves	Cooked as vegetable
51	<i>Leucaena leucocephala</i> (Lam.) De Wit. Mimosaceae	Jongta lem	Pods	Eaten raw in salads
52	<i>Litsea cubeba</i> (Louv.) Pres Lauraceae	Sehnam	Leaves, fruits	Used as spices/condiments
53	<i>Luffa cylindrica</i> (Linn.)MJ. Roem. Cucurbitaceae	Umpawng, Tangmui	Fruit	Tender fruit cooked as vegetable
54	<i>Lycianthes laevis</i> Bun. Solanaceae	Ansingteh	Leaves	Cooked as vegetable
55	<i>Manihot esculenta</i> Crantz Euphorbiaceae	Singkawkai	Leaves, fruit	Cooked as vegetable
56	<i>Meriandra strobilifera</i> Benth Lamiaceae	Lengmasel	Leaves , Inflorescence	<ul style="list-style-type: none"> <li>• Cooked or eaten raw</li> <li>• Leaves dried for future</li> </ul>

				use
57	<i>Mimosa himalayansis</i> Mimosaceae	Linguih, Khangkhuh	Tender shoots	Cooked as vegetable
58	<i>Momordica charanita</i> Linn. Cucurbitaceae	Tangkha	Fruit	Cooked or fried as vegetable
59	<i>Momordica cochinchinesis</i> Lour. Cucurbitaceae	Tangkawt	Fruit	Cooked as vegetable
60	<i>Musa paradisiaca</i> Musaceae	Nahtang	Inflorescence, soft stem	Cooked as vegetable
61	<i>Musa superba</i> Roxb. Musaceae	Saisuong	Soft stem	Cooked as vegetable
<b>SL. NO</b>	<b>Plant Name &amp; Family</b>	<b>Local name(s)</b>	<b>Part(s) used</b>	<b>Used method</b>
62	<i>Osimum americanum</i> Linn. Lamiaceae	Lunmui	Leaves	<ul style="list-style-type: none"> <li>• Cooked or eaten raw in salad</li> <li>• Leaves dried for future use.</li> </ul>
63	<i>Oroxylum indicum</i> Linn. Bignoniaceae	Bahlawng	Tender shoot, young pods	Cooked as vegetable.
64	<i>Panicum miliaceum</i> Linn. Poaceae	Taang	Seeds	Cooked as food.
65	<i>Parkia roxburghii</i> G. Don. Mimosaceae	Jongta	Pods	Cooked or eaten raw after scrapping off the epidermal layer
66	<i>Passiflora edulis</i> Sims. Passifloraceae	Sapthei	Leaves	Cooked as vegetable
67	<i>Piper longum</i> Linn. Piperaceae	Singmalta	Fruits	Used as spices and condiments
68	<i>Plantago depressa</i> Linn. Plantaginaceae	Vohpibil the	Leaves	Cooked as vegetable
69	<i>Rumex vesicarius</i> Linn. Polygonaceae	Anbongteh	Leaves	Cooked as vegetable
70	<i>Schima wallichii</i> (DC.) Korth. Thaeaceae	Khieng	Tender shoots	Eaten raw or boiled vegetable
71	<i>Semecarpus suspendiriformis</i> Anacardiaceae	Uilusiin, Kawtebel	Fruits	Cooked as vegetable
72	<i>Sesbania sesban</i> Merr. Papilionaceae	Leiphagah, Leihoihsing	Tender fruits	Cooked or eaten raw in chutneys and salads
73	<i>Solanum indicum</i> Linn. Solanaceae	Anjangkha neu, Samphoh	Berry (fruit)	Cooked or eaten raw
74	<i>Solanum melongena</i> Linn. Solanaceae	Vohbual, Manta	Fruit	Cooked as vegetable
75	<i>Solanum nigrum</i> Linn. Solanaceae	Anjou	Leaves	Cooked as vegetable
76	<i>Solanum torvum</i> Swartz. Solavaceae	Anjang kha	Berry (fruit)	Cooked as vegetable
77	<i>Spilentes acmella</i> Linn. Asteraceae	Ansateh	Leaves, stem	Cooked as vegetable
78	<i>Trichosanthes anguira</i> Linn. Cucurbitaceae	Begul	Fruits	Cooked as vegetable
79	<i>Vigna sinensis</i> Savi ex Hassk. Papilionaceae	Belawi	Leaves, pod	<ul style="list-style-type: none"> <li>• Cooked as vegetable</li> <li>• Leaves dried for future use.</li> </ul>
80	<i>Xanthosoma sagithifolia</i>	Dolsielngheh	Petiole	Cooked or eaten raw in chutney

	Schott. Araceae	vom		
81	<i>Zanthoxylum armatum</i> DC. Rutaceae	Ah hihlou, Lingnamsia	Leaves	Cooked or eaten raw as spices/condiments
82	<i>Zanthoxylum budranga</i> Rutaceae	Singzual	Tender stem, leaves	Cooked as vegetable
83	<i>Zeamays</i> Linn. Poaceae	Vaimiim	Corn	Cooked as food
84	<i>Zingiber officinals</i> Rose. Zingiberaceae	Siing	Rhizome, Inflorescence	Used as spices and condiments

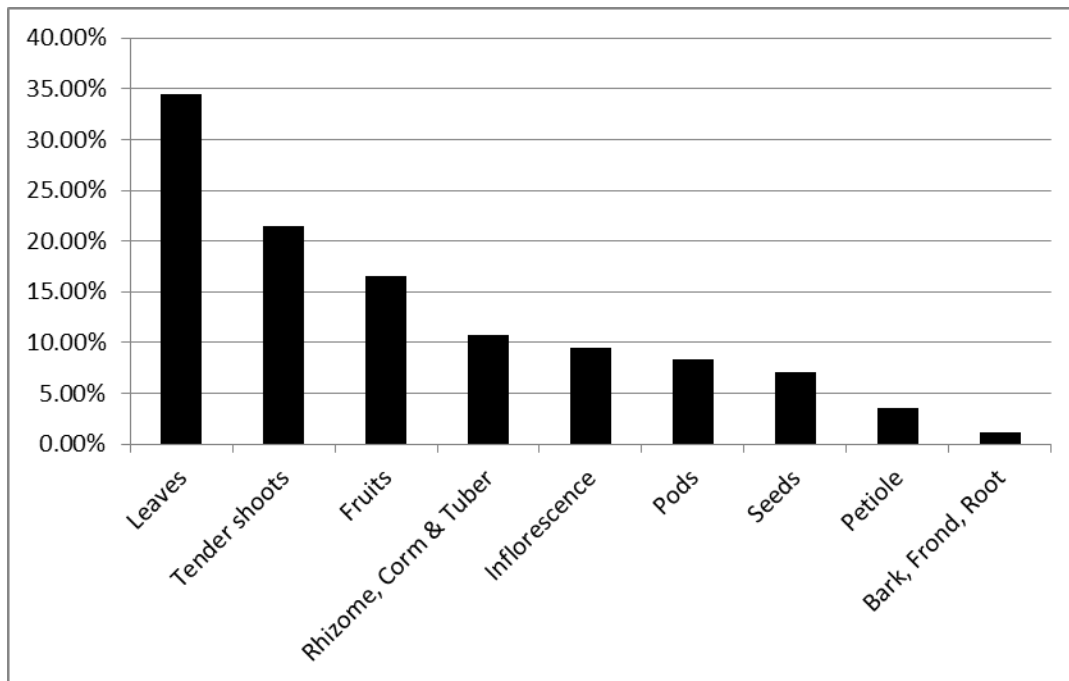


Fig. 1. Percentage of Plant parts used by the Zou tribe, Churachandpur, Manipur.

### III. RESULTS AND DISCUSSIONS

The present study is a pioneering work among the Zou's in Manipur. It reveals that 84 wild edible plants belonging to 36 families are being used by the Zou's. Out of these 84 species, 70 species are used as vegetables & food, 13 species are used as spices and condiments and 1 species *Dioscorea sativa* is used as famine food (Table. 1).

The most common part of the plant consumed is leaves with 29 species (34.5%), tender shoots with 18 species (21.4%), fruits with 14 species (16.6%), rhizome, corm and tuber with 9 species (10.7%), inflorescence with 8 species (9.5%), pods with 7 species (8.3%), seeds with 6 species (7.14%), petioles with 3 species (3.5%) and fruit cover (rind), bark, frond and root with 1 species (1.19%) each (Fig. 1).

The study also found that maximum of the plant species belongs to Cucurbitaceae and Araceae with 7 species each, Papilionaceae and Solanaceae with 6 species each, Poaceae with 5 species, Mimosaceae with 4 species, Zingiberaceae, Rutaceae, Lamiaceae and Dioscoreaceae with 3 species each. Theaceae, Convolvulaceae, Liliaceae, Amarantheaceae, Asteraceae, Malvaceae, Lauraceae, Moraceae, Musaceae and Euphorbiaceae

with 2 species each. The rest of the family is represented by 1 species each.

Some plant parts such as seeds and tender shoots are traditionally fermented and preserved, leaves of certain plants are also dried under the sun or above the Chulha(thuh) and preserved to be used during off seasons. Plants such as *Derris wallichii*, *Argyrea nervosa*, *Entada scandens*, *Dysoxylum gobara* are pre boiled and the water discarded before consumption. Tuber of *Arisaema speciosum* needs special treatment before used. They are roasted, pounded and soaked with ash water (a substitute for Sodium bicarbonate) for about 72 hours. Then the ash water is washed off many times. The lump tuber mixed with salt and chillies is the consumed.

The following plants used by different communities are also used by the Zou tribes such as *Amomum dealbatum*, *Capsicum frutescens*, *Caryota urens*, *Dysoxylum gobara*, *Eryngium foetidum*, *Litsea cubeba*, *Spilanthes acemella*, *Centella asiatica*, *Arisaema leschenaulti* in Western Mizoram (Lalfakzuala, R.et.al.,2007) *Amaranthus spinosus*, *Amorphophallus campanulatus*, *Bambusa tulda*, *Benincasa hispida*, *Colocasia esculenta*, *Cucurbita maxima* and *Musa paradisiaca* by the chothe tribe (Purbashree.S.et. al., 2012) *Asparagus racemosus*, *Calamus erectus*, *Eurya acuminata* & *Houttuynia cordata* by



Garo tribe.(Bikarma S. et. al., 2012) *Amaranthus spinosus*, *Amaranthus viridis* and *Oroxylum indicum* in Melghat forest (Bhogaonkar P.Y. et. al.,2010).

It is found that the collections of wild edible plants from deep forest were mostly done by the males. Though some of the forest products having high commercial value are gradually domesticated, many are still growing wild and over exploited. These wild edible plants with high commercial value are also threatened by many factors such as deforestation, repeated Jhum cultivation, forest fire and rapid land transformation etc. The Study also found out that this traditional knowledge on wild edible plants is now mostly confined to elderly persons only, as the new generations have adapted to consuming and cultivating the modern high yielding varieties. In general, traditional knowledge exists among the Zou tribe on preparing nutritionally rich food items from various indigenous crop plants and forest products. These foods are part and parcel of their social spectrum of life (Devi and Suresh, 2012). They are not only rich in nutrients but also have certain curative properties against many diseases and disorders.

#### IV. CONCLUSION

Therefore, efforts made to collect this information will provide avenues for future work and further investigation of the nutritional aspects of less familiar wild edible plants. With the spread of high yielding varieties and due to many factors these valuable plant genetic resources vis-à-vis traditional knowledge has been depleting at an alarming rate. It is therefore necessary to readvocate the domestication of wild edible plant and to take up proper conservative measures to preserve these local gene pools before they are lost forever from the face of earth.

#### ACKNOWLEDGEMENT

We heartily thank all the village chiefs, church leaders, philanthropic organisation leaders and the knowledgeable informants for their help and sincere cooperation during the survey and field trips in their respective villages.

#### REFERENCES

- [1] Arora R.K  
1981 Native food plants of North eastern tribals. In Glimpses of Indian Ethnobotany.(Ed.) Jain, S.K. 91-106. Oxford & IBH, New Delhi.
- [2] Barua,U.,Hore,D.K., Sarma,R,  
2007 Wild edible plants of Majuli island and Darrang districts of Assam,Ind.J. Tradit. Knowl,6(1): 191-194.
- [3] Bhogaonkar, P.Y., Vishal, R.M. and Prachi,P.K.  
2010 Documentation of Wild Edible Plants of Melghat Forest, Dist.Amravati, Maharashtra State, India, J.Ethnobotanical Leaflets 14: 751-58.
- [4] Bikarma,S.,Sinha,B.K., Phukan,S.J.,Borthakur,S.K. and Singh, V.N.  
2012 Wild edible plants used by Garo tribes of Nokrek Biosphere Reserve in Meghalaya,India, Ind.J.Tradit.Knowl,11(1): 166-171.
- [5] Census of India 2001 : Manipur series,Imphal.  
Directorate of Census Operations,Manipur.
- [6] Deb,D.B.

- 1961 Dicotyledonous plants of Manipur Territory, Bull. Bot. Surv. India,3 – 115.
- [7] Devi, P. and Suresh, K.P.  
2012 Traditional, ethnic and fermented foods of different tribes of Manipur, Ind.J. Tradit. Knowl, 11(1) : 70 – 77.
- [8] Gupta, V.  
2005 Jhum cultivation practices of the Bangnis (Nishis) of Arunachal Pradesh, Ind. J. Tradit. Knowl, 4(1) : 47 – 56
- [9] Jain, S.K. and Rao , R.R.  
1977 A handbook of Field and Herbarium methods, Today and Tomorrow's Printer Publisher, New Delhi.
- [10] Kar, A and Borthakur, S. K.  
2007 Wild vegetables sold in local markets of Karbi Anglong, Assam, Ind. J. Tradit. Knowl, 6(1) : 169 – 172
- [11] Kayang, H.  
Tribal Knowledge on wild edible plants of Meghalaya, Northeast India, Ind. J. Tradit. Knowl, 6(1) : 177 – 181
- [12] Lalfakzuala, R., Lalramghinglova, H and Kayang, H.  
2007 Ethnobotanical usage of plants in Western Mizoram, Ind. J. Tradit. Knowl, 6(3): 486 – 493.
- [13] Mannuamching  
1999 Zou Culture (Past and Present), Published by the Author under the financial assistance of the Director of Tribal and Backward classes, Govt of Manipur.
- [14] Myers, N., Mittermeir, R., Mittermeir, C., Fonseca, G.da and Kent, K.  
2000 Biodiversity hotspot for conservation priorities, Nature 403 : 853 – 858.
- [15] Purbashree, S., Roshni, R.M. and Arun, K.P.  
2012 Ethnobotany of Chothe tribe of Bishnupur district (Manipur) Ind. J of Natural Products and Resources. Vol 3(3) pp 414 – 425.
- [16] Ramachandran, V.S  
2007 Wild edible plants of the Anamalais, Coimbatore district, Western Ghats, Tamil Nadu, Ind. J. Tradit. Knowl, 6(1) : 173 – 176
- [17] Singh, H.B and Arora, R.K  
1978 Wild edible plants of India, ICAR. New Delhi.
- [18] Singh, B.H., Singh, P.K., Singh, S.S and Elangbam, B.  
1996 Indegenous bio-folklores and practices. Its role in biodiversity conservation in Manipur, J.Hill Research,9(2): 359 – 362.
- [19] Sukla, U and Baishya, A.K  
1982 A contribution to the flora of Manipur J. of Bombay Natural History Society, 76:224 – 230.
- [20] Sunanda Devi, O., Puspa, K and Dhritiman, D. 2010 A check list of traditional edible bio-resources from Ima market of Imphal Valley, Manipur, India, J. of threatened taxa, 2(11): 1291 – 1296.
- [21] Sundriyal, M., Sundriyal, R.C and Sharma, E. 2004 Dietary use of wild plant resources in the Sikkim Himalayas, India, Econ.Bot, 58(4) : 626 – 638.

#### AUTHORS

**First Author** – H. Esther Gangte. M.Phil., Department of Botany, Churachandpur College.

**Second Author** – Dr Nabachandra Singh Thoudam (N.S. Thoudam) Ph.D., Department of Botany, Churachandpur College.

**Third Author** – Ginzamang T. Zomi, M.A., Department of Sociology, Churachandpur College.

**Correspondence Author** – H. Esther Gangte, Department of Botany, Churachandpur College, Churachandpur, Manipur – 795

128, India., **Mobile No.** : +919856969078, **Email** :  
[estherctm@yahoo.com](mailto:estherctm@yahoo.com)