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INDIGENOUS WILD EDIBLE FRUITS: SUSTAINABLE RESOURCES FOR FOOD, MEDICINE AND INCOME GENERATION – A STUDY FROM NAGALAND, INDIA

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ABSTRACT

Indigenous Wild Edible Fruits (IWEF) plays a vital role in the daily life of the rural people as they provide sustainable resources. The present study aimed at the documentation of IWEF's of three districts of Nagaland, India viz., Kohima, Phek and Tuensang and assessment of market acceptability. A total of 47 IWEF's belonging to 29 family and 39 genera were collected and identified. Market survey was carried out to check the market acceptability of the collected IWEF's in these three districts of Nagaland. *Rhus. semialata*, *T. chebula*, *S. pinnata*, *D. indica*, *E. officinalis*, *F. semicordata*, *E. floribundus*, *J. regia*, *M. esculenta*, *P. pershia* are some fruits that are common used by the local inhabitants and some of these fruits are also used to treat different diseases through traditional methods.

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1 Introduction

Plants for human consumption account for ~5% of the total plant species of the world (Asfaw & Tadesse, 2001). Forest has a large and indispensable role in improving the food security and livelihood of the tribal society (Yesodharan & Sujana, 2007). During early days, man lived by hunting and fruit gathering collected from the wild (Tomar et al., 2015). Since, wild edible plants are freely accessible within natural habitats; indigenous people have more knowledge in gathering and preparing food items from these wild plant resources (Somnasang & Moreno-Black, 2000). Fruits being a major forest product, supplement human diet as they provide essential vitamins, minerals and fiber required for maintaining health (Kumari, 2008). They play a significant role in the wide range of agricultural system as a source of wild food and have an important socio-economic role through their uses in medicine, dyes, shelter, fibers, and religious and traditional ceremonies (FAO, 1999). Fruits being one of largest forest resource have the potentiality to uplift the economic condition as well as providing the food security to the local people of the region (Deb et al., 2013). World over, tribal population stores a vast knowledge on utilization of local plants as food and other specific uses (Sudriyal et al., 1998). A large number of wild spices used by the tribal in meeting their daily requirement are through the diverse vegetation of that area. Use of large number of wild species by the tribal to meet their diverse requirement is largely due to the prevalence of diversity of vegetation in the area (Katewa, 2003). The North-Eastern region of India is inhabited by mixed tribes and mostly dominated by the tribal people unlike the mainland of India. Nagaland state is situated in the North-Eastern part of India and is a hilly area surrounded by dense natural forest with warm and cool climatic condition and variation in rainfall thereby making it one of the richest and diverse flora and fauna in the North-East region of India. Nagaland state is inhabited mostly by the tribal's with distinct dialects and cultural features. Utilization of wild edible plants as a food source is an integral part of the culture of indigenous people of Naga tribe as the forest harbors rich and unique biodiversity with the state being a part of the Indo-Burma biodiversity hot spot (Deb et al., 2016). Since early times, edible wild fruits have played a very vital part in supplementing the diet of the people and to meet their basic need of food, mostly the tribal people, and some of which are preserved for use in dry period or sold in rural market (Deshmukh & Waghmode, 2011). They also form an additional income (for small landholders and landless) living near forest and fringes through sale in local market (Pradheep et al., 2016). The market price fluctuates according to the season of collection, climate and availability. A vendor earns their livelihood from the selling of these forest resources, thereby sustaining their livelihood - INR 1 lakh to 2.5 lakhs for a season (Sashimatsung et al., 2013). Some of the commonly abundant fruits and fruit products found in the

household as well as the local market are *Rhus semialata*, *Terminalia chebula*, *Spondias pinnata*, *Docynia indica*, *Emblia officinalis*, *Ficus semicordata*, *Elaeocarpus floribundus*, *Juglans regia*, *Myrica esculenta*, *Pyrus pershia*, *Castanopsis indica*, *Choerospondias axillaris*, *Diospyros kaki*, *Hodgsonia macrocarpa* etc. Wild fruits collection is not a gender oriented in the region, both young and old, men and women are equally involved or participate. Indigenous Wild Edible Fruits (IWEF) contributes immensely to the nutrition of the local inhabitants of Nagaland. Present study was undertaken to document the IWEF of three districts of Nagaland, India viz., Kohima, Phek and Tuensang, assess the market acceptability as a source of 'sustainable resources for food, medicine and income generation'.

2 Materials and Methods

2.1 Survey areas

The district of Kohima, Phek and Tuensang of Nagaland was considered for the present study. Kohima is the capital city of Nagaland located between 25.40°N and 94.08°E and is surrounded by the Assam state to the west, Zunheboto district to the east, Wokha district to the north and Manipur state to the south. It is the home of the Angamis Naga tribe and agriculture is the main occupation. Phek district lies in the South-East of Nagaland located between 25.40°N and 94.28°E bounded by Kohima district in the west, Zunheboto and Kiphire districts in the North, Myanmar in the South East and Manipur state in the South. The district is inhabited by the Chakhesang Naga tribe and agriculture is the main occupation with 80.84% of the population engaged in agriculture. While, Tuensang district is the largest district of Nagaland located between 26.14°N and 94.49°E. The district shares an international border with Myanmar all along its eastern sector and is bounded by Mon district in the north east, Longleng in the north, Mokokchung in the south. Chang, Sangtam, Yimchunger and Khiamniungan are the main indigenous tribes of the district. Jhum is the main agricultural practice of the district. Figure 1 showing the three study areas viz., Kohima, Phek and Tuensang district.

2.2 Field work/data collection

Intensive field works were undertaken along with the local field guide in different fruiting seasons in the districts of Kohima, Phek and Tuensang during the year 2014-2016. The primary aim of the study is to collect, identify and document the wild edible fruits used by the local inhabitants of these districts of Nagaland. The authentic identification of the collected wild fruits was done with the help of the available authentic literature and also the experts in the concern fields. Information based on the mode of consumption and uses as food or medicines by the locals were also recorded by interacting with the local inhabitants. Both conventional and

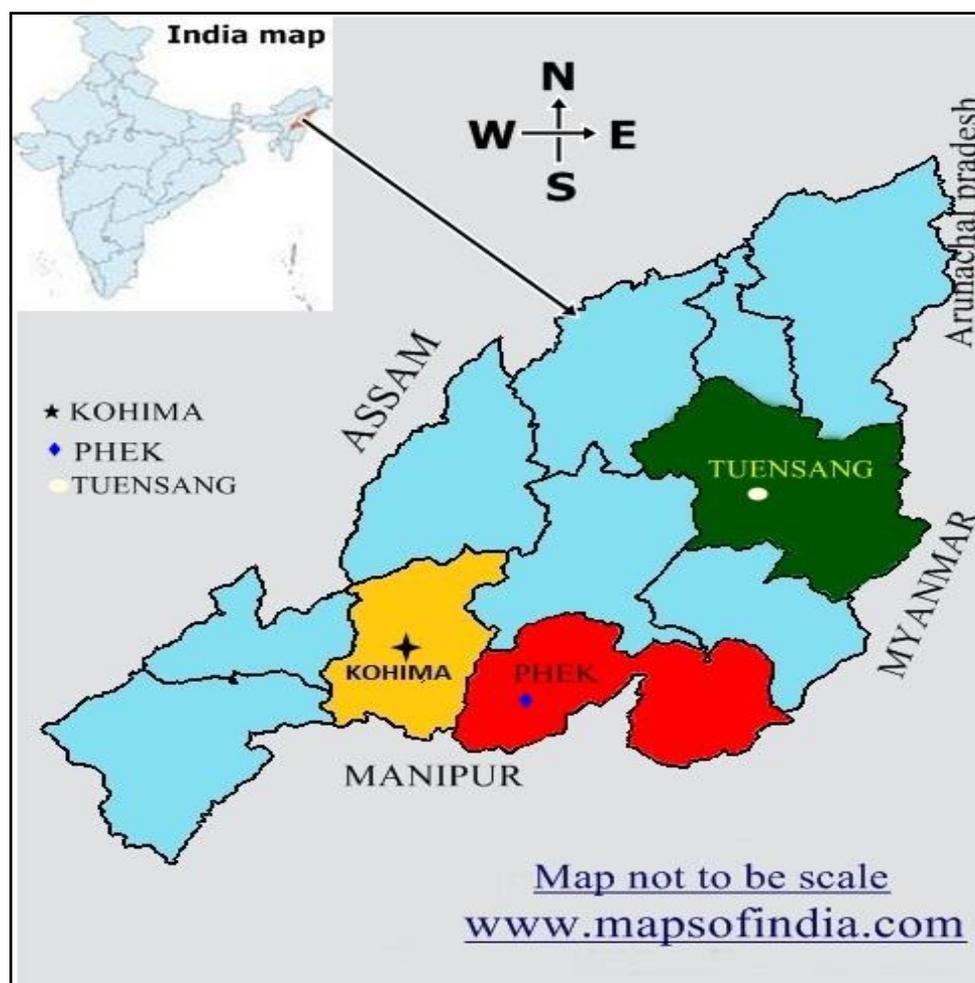


Figure 1 Map of Nagaland showing the three study areas (Kohima, Phek and Tuensang district)

digital herbariums were maintained for future study. The collected fruits were preserved in 2% formalin (v/v) in the jar bottles and deposited in the Department of Botany, Nagaland University for future references. Market survey was also carried out in the local market of these districts to check the market acceptability of the indigenous wild edible fruits. During the market survey, the marketed plants and their product were recorded along with their marketed rate/price as the products are sold either in packets, plate, bunch or cup (local system of marketing). There is no specify standard measurement units exist as the price varies according to different seasons of the collection, area to area etc.

3 Results

In the present study, a total of 47 IWEFs have been collected belonging to 29 family and 39 genera (Table 1). The collected IWEF belongs to the family Actinidiaceae, Anacardiaceae,

Berberidaceae, Caesalpiniaceae, Cannabaceae, Capparaceae, Combretaceae, Cornaceae, Clusiaceae, Cucurbitaceae, Ebenaceae, Elaeocarpaceae, Euphorbiaceae, Fagaceae, Juglandiaceae, Lauraceae, Moraceae, Myricaceae, Myrtaceae, Olacaceae, Oxalidaceae, Passifloraceae, Phyllanthaceae, Rhamnaceae, Rhizophoraceae, Rosaceae, Rutaceae, Solanaceae, Urticaceae. The family Rosaceae exhibits the maximum number with 8 species (18%) followed by the family Actinidiaceae Anacardiaceae, Cucurbitaceae, Moraceae with 3 species each (7.2%). The distribution of families is shown in table 2. Some of common fruits are shown in figure 2. The collected plants are arranged in alphabetical order with their common name, family, flowering and fruiting season and mode of consumption along with their accession number (Table 1). Table 3 shows some of IWEF's used in different traditional methods of food and medicine by the inhabitants of these three districts. Some of the fruit products were found to be sold fresh, dried or cooked in the

Table 1: List of Indigenous Wild Edible Fruits of three districts of Nagaland

Scientific name & family	Common name	Flowering & Fruiting	Mode of consumption	Accession No.
<i>Aphananthe cuspidata</i> (Blume) Planch. (Cannabaceae)	Aphananthe	March-September	Ripped fruit eaten raw	NU-BOT-UCK-NK-10056
<i>Actinidia callosa</i> Lindl. (Actinidiaceae)	Wild kiwi	May-July	Ripped fruit eaten raw	NU-BOT-UCK-NK-10050
<i>Antidesma bunius</i> (L.) Spreng. (Phyllanthaceae)	Antidesma	April-August	Ripped fruit eaten raw	NU-BOT-UCK-NK-1002
<i>Bauhinia variegata</i> Linn. (Caesalpiniaceae)	Bauhinia	February-May	Immature fruit eaten fresh	NU-BOT-UCK-NK-10023
<i>Carallia brachiata</i> (Lour.) Merr. (Rhizophoraceae)	Carallia	October-April	Mature fruit taken raw	NU-BOT-UCK-NK-10065
<i>Castanopsis indica</i> (Roxb. ex Lindl.) A.DC. (Fagaceae)	Chestnut	April-December	Mature nuts is roasted or eaten raw	NU-BOT-UC-NK-10041
<i>Choerospondias axillaris</i> (Roxb.) B.L Burt & A.W. (Anacardiaceae)	Hill Hog plum	January-June	Ripped fruit eaten raw	NU-BOT-UC-NK-10018
<i>Cucumis hystrix</i> Chakrav. (Cucurbitaceae)	Wild Cucumber	September-December	Young fruits eaten raw	NU-BOT-UC-NK-10030
<i>Debregeasia longifolia</i> (Burm.f.) Wedd.(Urticaceae)	Orange Wild Rhea	June-November	Ripped fruit eaten raw	NU-BOT-UCK-NK-10062
<i>Cornus capitata</i> Wall (Cornaceae)	Evergreen dogwood	May-December	Mature fruit eaten raw	NU-BOT-UC-NK-10086
<i>Diospyros kaki</i> L.F (Ebenaceae)	Asian persimmon	August-December	Mature fruit eaten raw	NU-BOT-UC-NK-10027
<i>Docynia indica</i> (Wall.) Decne. (Rosaceae)	Wild apple	February-October	Mature fruit eaten raw	NU-BOT-UC-NK-10032
<i>Elaeocarpus floribundus</i> Blume (Elaeocarpaceae)	Indian olive	March-September	Mature fruit eaten raw	NU-BOT-UC-NK-10083
<i>Eleaegnus latifolia</i> L. (Elaeagnaceae)	Wild olive	November-June	Ripped fruit eaten raw	NU-BOT-UC-NK-10024
<i>Embllica officinalis</i> Gaertn. (Euphorbiaceae)	Goose berry	March-April	Mature fruit eaten raw or dried	NU-BOT-UC-NK-10070
<i>Tetradium fraxinifolium</i> (Hook. f.) T.G. Hartley (Rutaceae)	-	May-November	Mature fruit taken as spice	NU-BOT-UC-NK-10057
<i>Ficus hispida</i> Linn. (Moraceae)	Wild fig	June-October	Ripped fruit eaten raw	NU-BOT-UC-NK-10069
<i>Ficus racemosa</i> Linn. (Moraceae)	Fig	January-July	Mature fruit eaten raw	NU-BOT-UC-NK-10011
<i>Ficus semicordata</i> Buch-Ham ex J.E. Smith (Moraceae)	Drooping fig	May-October	Mature fruit eaten raw	NU-BOT-UC-NK-10012
<i>Garcinia xanthochymus</i> Hook.f. ex T.Anderson (Clusiaceae)	Sour mangosteen	March-July	Ripped fruit eaten raw	NU-BOT-UC-NK-10044

Scientific name & family	Common name	Flowering & Fruiting	Mode of consumption	Accession No.
<i>Hodgsonia macrocarpa</i> (Blume) Cogn. (Cucurbitaceae)	Lard Seed	March-May	Ripped fruit eaten after	NU-BOT-UC-NK-10063
<i>Hovenia dulcis</i> Thunberg (Rhamnaceae)	Japanese raisin	May-June	Mature pedicles eaten raw	NU-BOT-UC-NK-10087
<i>Juglans regia</i> Linn. (Juglandaceae)	Local walnut	March-October	Mature fruit eaten raw	NU-BOT-UC-NK-10013
<i>Litsea cubeba</i> (Lour.) Pers. (Lauraceae)	Mountain pepper	December-February	Mature fruit taken as spice	NU-BOT-UC-NK-10064
<i>Mahonia nepaulensis</i> DC. (Berberidaceae)	Blue berry	October-April	Ripped fruit eaten raw	NU-BOT-UC-NK-10035
<i>Myrica esculenta</i> Buch-Ham ex. D. Don (Myricaceae)	Box-myrtle	January-May	Ripped fruit eaten raw	NU-BOT-UC-NK-10036
<i>Olox imbricata</i> Roxb. (Olacaceae)	Olox	April-October	Ripped fruit eaten raw	NU-BOT-UC-NK-10071
<i>Oxalis corniculata</i> Linn. (Oxalidaceae)	Wood Sorrel	February-August	Young fruit eaten raw	NU-BOT-UC-NK-1008
<i>Passiflora sulpeltata</i> Ortega (Passifloraceae)	Wild granadilla	October-May	Ripped fruit eaten raw	NU-BOT-UC-NK-10090
<i>Physalis peruviana</i> L. (Solanaceae)	Cape goose berry	October-January	Ripped fruit eaten raw	NU-BOT-UC-NK-10037
<i>Prunus carmesina</i> H. Hara (Rosaceae)	Wild cherry	March-June	Ripped fruit eaten raw	NU-BOT-UC-NK-10053
<i>Prunus nepaulensis</i> (Ser.) Steud. (Rosaceae)	-	April-August	Ripped fruit eaten raw	NU-BOT-UC-NK-10043
<i>Pyrus pashia</i> Buch-Ham. Ex D. Don (Rosaceae)	Himalayan pear	March-October	Mature fruit eaten raw	NU-BOT-UC-NK-10085
<i>Rhus semialata</i> Murr. (Anacardiaceae)	Nutgall Tree	August-January	Mature fruit eaten raw	NU-BOT-UC-NK-10014
<i>Rubus ellipticus</i> Sm. Rosaceae (Rosaceae)	Golden Raspberry	February-April	Ripped fruit eaten raw	NU-BOT-UC-NK-10040
<i>Rubus indotibetanus</i> Koidz. (Rosaceae)	-	March-May	Ripped fruit eaten raw	NU-BOT-UC-NK-10068
<i>Rubus niveus</i> Thunb. (Rosaceae)	Hill raspberry	April-June	Ripped fruit eaten raw	NU-BOT-UC-NK-10039
<i>Saurauia macrotricha</i> Kurt ex Dyer (Actinidiaceae)	Saurauia	May-August	Ripped fruit eaten raw	NU-BOT-UC-NK-10059
<i>Saurauia punduana</i> Wall. (Actinidiaceae)	Saurauia	April-August	Ripped fruit eaten raw	NU-BOT-UC-NK-10058
<i>Spondias pinnata</i> (L. f.) Kurz (Anacardiaceae)	Wild mango	March-May	Ripped fruit eaten raw	NU-BOT-UC-NK-10020
<i>Stixis suaveolens</i>	Stixis	September-April	Mature fruits eaten raw	NU-BOT-UC-NK-10019
<i>Syzygium cumini</i> (L.) Skeels (Myrtaceae)	Black Plum	February-August	Ripped fruit eaten raw	NU-BOT-UC-NK-10042
<i>Terminalia bellerica</i> (Gaertn.) Roxb. (Combretaceae)	Bastard myrobalan	March-July	Mature nuts eaten raw	NU-BOT-UC-NK-10067
<i>Terminalia chebula</i> Retz. (Combretaceae)	Myrobalan	April-July	Mature fruit eaten raw	NU-BOT-UC-NK-10015
<i>Toddalia asiatica</i> (L.) Lam (Rutaceae)	Orange climber	February-May	Ripped fruit eaten raw	NU-BOT-UC-NK-10060
<i>Trichosanthes dunniana</i> H. Lév. (Cucurbitaceae)	Trichosanthes	July-November	Ripped fruit eaten raw	NU-BOT-UC-NK-10066

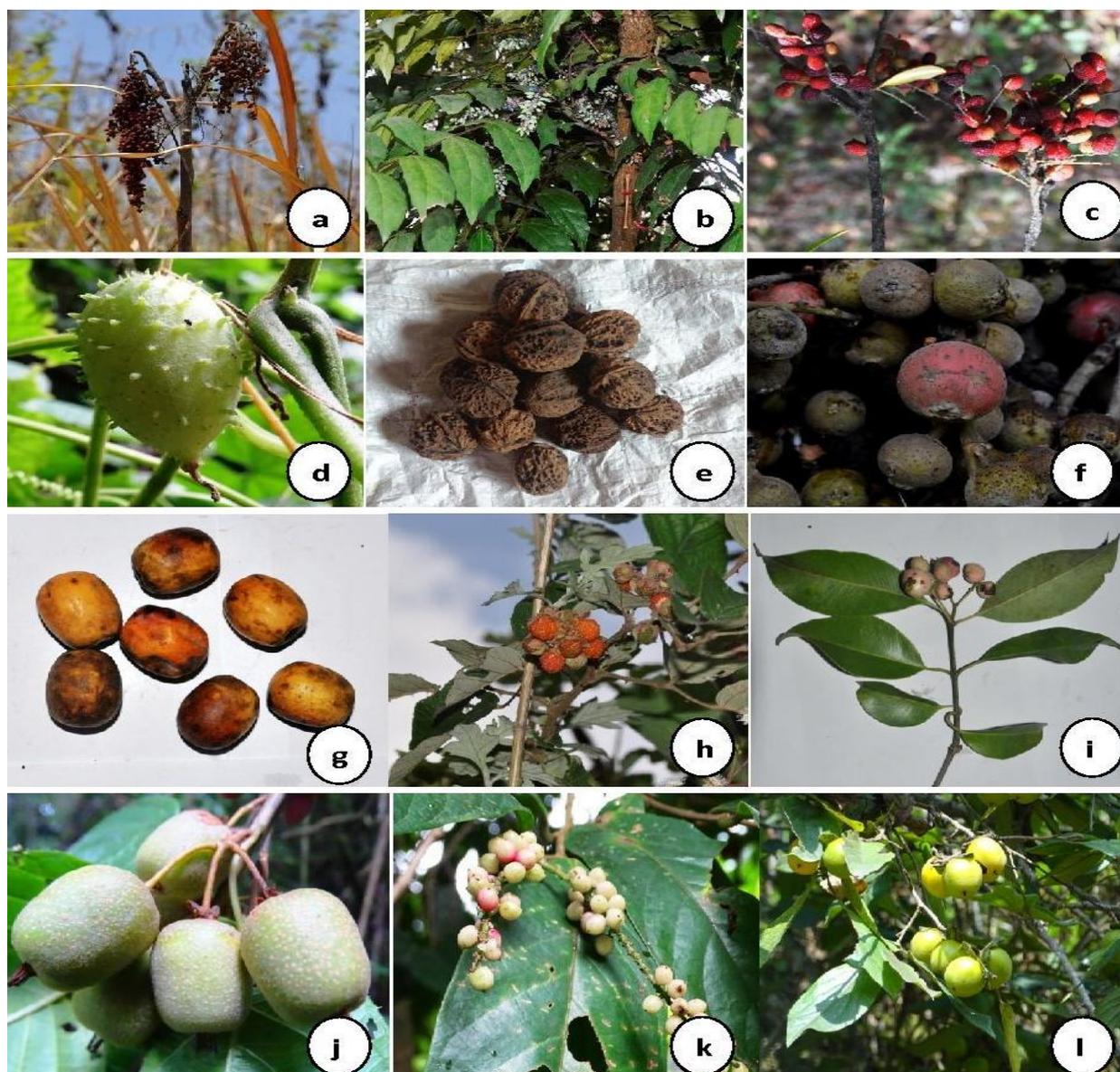


Figure 2 Some of the collected IWEF. a. *Rhus semialata* Murr., b. *Mahonia nepaulensis* DC., c. *Myrica esculenta* Buch-Ham ex. D. Don, d. *Cucumis hystrix* Chakrav., e. *Juglans regia* Linn., f. *Ficus semicordata* Buch-Ham ex J.E. Smith, g. *Choerospondias axillaris* (Roxb.) B.L Burt & A.W. Hill, h. *Rubus ellipticus* Sm., i. *Syzygium cumini* (L.) Skeels, j. *Actinidia callosa* Lindl., k. *Antidesma bunius* (L.) Spreng., l. *Diospyros kaki* L.F.

local market during the market survey. Table 4 shows some of the indigenous wild fruits in rate per unit INR that were found selling in the local market of the three study area. The market price or rate of the fruits varies from area to area, from season to season and also supply of the product in the market by the locals.

The market price of the product ranges from INR 10-100 per packet/cup/plate. The market price also varies in all the local markets of these districts. During the market survey in the local market of these three districts, it was found that there was no

standard measurement exists for the products that are marketed. The market survey shows that some of these fruits sold are highly accepted and demanded due to its good taste and medicinal value.

4 Discussion

In India especially the North-Eastern region, the majority of the rural communities are dependent on the forest product to meet their food needs even during food crisis. The diverse biodiversity of Nagaland plays an important and significant role in providing

Table 2 Family distribution pattern of collected fruits during field survey

Family	No. of species	Distribution Frequency (%)	Family	No. of species	Distribution Frequency (%)
Actinidiaceae	3	7.1	Lauraceae	1	2.1
Anacardiaceae	3	7.1	Moraceae	3	7.1
Berberidaceae	1	2.1	Myricaceae	1	2.1
Caesalpiniaceae	1	2.1	Myrtaceae	1	2.1
Cannabaceae	1	2.1	Olacaceae	1	2.1
Capparaceae	1	2.1	Oxalidaceae	1	2.1
Combretaceae	2	4.1	Passifloraceae	1	2.1
Cornaceae	1	2.1	Phyllanthaceae	1	2.1
Clusiaceae	1	2.1	Rhamnaceae	1	2.1
Cucurbitaceae	3	7.1	Rhizophoraceae	1	2.1
Ebenaceae	1	2.1	Rosaceae	8	18
Elaeocarpaceae	1	2.1	Rutaceae	2	4.1
Euphorbiaceae	1	2.1	Solanaceae	1	2.1
Fagaceae	1	2.1	Urticaceae	1	2.1
Juglandiaceae	1	2.1			

Table 3 Some IWEP's used in traditional methods of food and medicine

Botanical Name	Traditional Food and Medicine
<i>Choerospondias axillaris</i> (Roxb.) B.L. Burtt & A.W. Hill	Mature fruit is dried and cooked as vegetable. Bark water extract is use to treat second degree burn.
<i>Juglans regia</i> Linn.	Nut is roasted to make pickle from the kernel. Oil from fruit is used in Cough, weakness in legs, dysentery and constipation
<i>Rhus semialata</i> Murr.	Fruit is grinded into powder which is used in some local made sweets. Powder taken during indigestion, stomachache, and food poisoning by Ao-Naga tribes
<i>Terminalia chebula</i> Retz.	Fruit is slightly cooked with salt, chili and dried and eaten. Dried or raw fruits used in stomach disorders, pneumonia, gastric and indigestion.
<i>Spondias pinnata</i> (L. f.) Kurz	Dried fruit is taken as vegetable, pickle is made from the mature fruit. Fruit juice is taken by diabetic patients.
<i>Ficus semicordata</i> Buch-Ham ex J.E. Smith	Mature fruit is use to make juice, decoction of bark is used for diabetes.
<i>Emblica officinalis</i> Gaertn.	Mature fruit is use to make juice, fruits dried and eaten. Fruit juice is used in dysentery, conjunctivitis, constipation, piles and is a natural source of vitamin C.
<i>Docynia indica</i> (Wall.) Decne.	Mature fruit is use to make juice, fruits dried and eaten. Fruit used against cold and cough. Leaves used in dysentery and diarrhea.
<i>Hodgsonia macrocarpa</i> (Blume) Cogn.	Seed is roasted or baked and eaten, also used to make pickle. Decoction of leave is drank to treat fever and also for ulcer.
<i>Litsea cubeba</i> (Lour.) Pers.	Fruit is used as spice and used in making pickle. Powdered root and bark is used to relieve pain.
<i>Elaeocarpus floribundus</i> Blume	Mature fruit slightly cooked with salt/sugar and dried and eaten
<i>Stixis suaveolens</i> (Roxburgh) Pierre	The seed is remove from the seed coat and slightly cooked with salt, chili and dried it and eaten.
<i>Bauhinia variegata</i> Linn.	Young raw pods used in making salad or mix with pickle and eaten.
<i>Castanopsis indica</i> (Roxb. ex Lindl.) A.DC.	Nuts is roasted with salt and eaten as snack along with red tea.

Table 4 Some indigenous wild fruits sold in the local market of Kohima, Phek and Tuensang district.

Name of Plant	Rate per unit* in INR
<i>Bauhinia variegata</i> Linn	20-50/plate or packet
<i>Castanopsis indica</i> (Roxb. ex Lindl.) A.DC.	20-50/packet
<i>Choerospondias axillaris</i> (Roxb.) B.L Burt & A.W. Hill	10-20/plate or cup
<i>Docynia indica</i> (Wall.) Decne.	20-50/plate or packet
<i>Elaeocarpus floribundus</i> Blume	20-50/plate or cup or packet
<i>Elaeagnus latifolia</i> L.	20-50/plate
<i>Emblica officinalis</i> Gaertn	20-50/plate or packet
<i>Ficus semicordata</i> Buch-Ham ex J.E. Smith	20-30/plate
<i>Hodgsonia macrocarpa</i> (Blume) Cogn.	20-50/plate or packet
<i>Juglans regia</i> Linn.	50-100/cup or packet
<i>Litsea cubeba</i> (Lour.) Pers	20-50/plate or packet
<i>Prunus nepalensis</i> (Ser.) Steud.	20-50/bunch or plate
<i>Rhus semialata</i> Murr.	20-50/cup or packet
<i>Spondias pinnata</i> (L. f.) Kurz	20-50/plate or cup
<i>Stixis suaveolens</i> (Roxburgh) Pierre	20-50/plate or packet
<i>Terminalia chebula</i> Retz.	20-50/packet

Note: No standard measurement system exists. Units for sale approximately only: *1plate or cup or packet = Approx. 500gm.

various wild edible plants specially people living in the core remote areas that faces lesser opportunities and chances as compare to those living in the town. Since the forest resources are freely accessible to the local, wild edible fruits become an important source of food and nutrient to the locals. The uses of wild edibles fruits are different among the tribes of Nagas. They have their use of tradition food and medicine which are passed down from generation to generation. The present study shows that both young and old indulge in collecting IWEF's for various purposes such as food, medicine and marketing. Some of the collected fruits are documented in figure 2. The market survey shows that the plants and products are well accepted in the local markets of these districts. The market rate also varies from area to area, season to season collection and abundance and availability of the plants and plant products in the local market (Deb et al., 2016).

Collection and utilization of IWEF's has become an important part in the daily lives of the rural people as they represent a cheaper and easy accessible and also offering opportunities for income generation to the local people uplifting the socio-economic status of the local people. But with the passage of time, the rich biodiversity of the state is facing extensive threats due to ever growing population leading to more demand for land and

space, forest fires, unplanned urbanization, forest products and timber collection, 'Jhum cultivation' and many anthropogenic activities. Therefore, proper strategy needs to be implemented for conservation of the forest to prevent extinction of plants in the near future. Many plants which are considered underutilized or neglected are important crops at national and regional level; therefore availability of information on plant species with potentiality for food, medicine and income generation should be promoted through sustainable collection and trade which will enable resource development and better management of these plants. Wild edible fruits contribute significantly to the nutritional security of mankind across the world (Bhatt et al., 2017). Many collected fruits have been used for traditional medicine purposed by the locals (Table 3), therefore phytochemical and nutraceutical studies of these wild edible fruits will provide better nutritional source for the future. Also, many local products have been produce from the wild fruits that has been collected but their product outputs may be missing for various reasons, therefore it is the need of hour for the policy and decision makers to take initiative steps to improve the processing of the local products, to create awareness for better market acceptability, proper commercial scale cultivation, proper conservation strategies (Deb et al., 2016) and promote them to global level. Wild edible plant persists as they are in use by the local people in different means.

Conclusion

The present study is an approach made to promote the wild edible plants that are richly available in the rural areas to the higher level (regional, national and also global) and an attempt to widen the shrinking food basket which mankind has been relying upon for generations. At the same time, taking in consideration that they be use judiciously so it sustains the near future generation as the study shows that these plants are growing under pressure from various anthropogenic activities. Therefore, public awareness and community based management needs to be encouraged as well. Research on indigenous fruits should also be taken up and disseminate the results so to have diversity in diet.

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Declaration

Authors declare that there is no conflict of interest exists. Further, declare that the manuscript has not been published in any journal/book or proceedings or in any other publication or offered for publication elsewhere in substantially the same or abbreviated form, either in print or electronically.

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