

Traditional knowledge of plant classification among Dimasa tribe of Dima Hasao district, Assam, India

Sangeeta Haflongbar and Aparajita De✉

Department of Ecology & Environmental Science, Assam University, Silchar- 788011, India

✉Corresponding author: aparajitade.ecology@gmail.com

भारत के असम राज्य में दिमा हासावो जनपद की दिमासा जनजाति का पादप वर्गीकरण का पारम्परिक ज्ञान

संगीता हफलोंगबार एवं अपराजिता दे

सारांश

लोकजीवविज्ञान के संज्ञानात्मक पहलू जैसे पारम्परिक लोग किस प्रकार प्रकृति को देखते हैं, यह आज के लोकजीवन विज्ञान के अनुसंधान के लिये महत्वपूर्ण है। प्रस्तुत शोध पत्र असम राज्य के दिमा हासाओ जनपद की दिमासा जनजाति में प्रचलित लोकजीव विज्ञान के संज्ञानात्मक पहलुओं पर प्रकाश डालता है। इस हेतु कुल 161 पादप जातियों को के आंकड़े अभिलेखित किये गये हैं। पौधों की पारम्परिक वर्गीकरण पद्धति का बर्लिन वर्गीकरण सिद्धान्तों के साथ तुलना की गई है। पौधों के विभिन्न जीवन चक्रीय भागों एवं उनके दिमासा जनजातिय नामों को भी वर्णित किया गया है। जनपद में निवासित दिमासा जनजाति समुदाय में स्थानिक पौधों की पहचान के लोक वर्गिकी ज्ञान को गहन अध्ययन को दर्शाया गया है।

ABSTRACT

The cognitive aspect of ethnobiology *i.e.* how the traditional people view nature is very significant in ethnobiological research. The present paper deals with the cognitive attribute of ethnobiology prevalent amongst the Dimasa tribe of Dima Hasao district, Assam, India. A total of 161 plant species were recorded. A comparison of the traditional classification system of the plants with Berlin's classification principle was also made. The various life forms of plants and their corresponding Dimasa names also categorized. The study depicts the deep knowledge base of Dimasa tribe of the district and the potential of folk taxonomy in identification of local species found in a community.

Keywords: Dima Hasao district, Dimasa, Ethnobiology, Folk taxonomy

INTRODUCTION

The traditional knowledge of recognising and grouping of the biological resources has been observed and studied in various traditional communities all over the world (Hunn, 1982; Turner, 1988; Turner, 2000; Morris, 2000;

Atran & al., 2004; Luna-Jose & Aguilar, 2012). Along with conventional taxonomy, there is a parallel knowledge base that exists among indigenous people of different regions of the world. This can be termed as 'folk taxonomy' or folksonomy which is less known and its potential is yet to be achieved as against conventional taxonomy. Folk

taxonomy or folk classification refers to how members of a language community, i.e. the folk name and categorise plants and animals (Brown 2000). Folk taxonomies are powerful cultural tools for the categorization and utilization of the real world in which people live.

During a detailed ethnobiological survey of the Dimasa community of Dima Hasao district, Assam, India, it was observed that the indigenous people of this tribe have been using a logical method of classifying the plant kingdom. They also use the binomial nomenclature system for naming organisms. According to Berlin & al., (1973), taxonomic hierarchy consisted of unique beginner, life form, generic, specific and varietal. He also opined that generics were found sometimes without a parent life form class and were usually a borrowed word. Various workers (Begossi & al., 2008; Brown 1974; Costa-Neto, 1998; Hiepko, 2006) have studied the techniques of classification and nomenclature among the indigenous people of different communities and have reported a more or less similar pattern of classification of life forms as reported by Berlin & al., (1973) in their publications. Rivera & al., (2007) has worked upon the empirical basis of ethnoclassification in Mediterranean region. They have observed that plants were classified on the basis of different usage profile. Their classification corresponds to specific use patterns of species and not to the conventional ethnoclassification as proposed by Berlin (1992).

In the present study, it was observed that the indigenous people of the Dimasa community not only depend upon a large number of plants and animals for their daily requirement, they also follow a very practical, organized and methodical way of naming them. The classification partly conformed to Berlin's model (1992). In the present communication the Berlin's model was partially adopted with certain changes such as naming of plants on the basis of the disease for which the treatment of those plants were being used to cure, use of polysemic words and identification of monotypic and polytypic names in the folk taxonomy of Dimasas.

METHODS

Study Site

Field study was carried out during 2012-2014 in Dima Hasao district. The district lies in Southern part of Assam. The geographical location of the district is between 24°58' & 25°45' North Latitude & 92°32' E & 93°28' East

Longitude. The total geographical area is 4,888 km² covering an area of about 6.23% of the total area of the state of Assam, having its boundaries in the west with the Meghalaya state & part of Karbi-Anglong district; in the east with Nagaland & Manipur states & part of Karbi Anglong; in the North, the district of Naogaon & in the South, the district of Cachar (Fig. 1). The climate is typically tropical to sub-tropical, the average annual rainfall ranges between 2200-2700 mm, and the average maximum temperature varies between 24°C to 30°C. The average minimum temperature varies from 10°C to 14°C and average relative humidity varies from 73% to 84%. The forests are generally evergreen, semi evergreen to deciduous type (Tamuli & Sarma, 2010). The population of the district as per 2011 Census is 214,102 with average literacy rate is 77.54%. As per the land statistics, the district has total cropped area of 36,095 ha with net area sown as 28,316 ha. The district is occupied by 67,487 ha of forest and total cultivable land is 28,316 ha. The major lands are built up land, agriculture land and land for shifting cultivation (Central Ground Water Board, 2008). The study area is inhabited by several communities viz., Dimasa, Naga, Hmar, etc. The community practices shifting cultivation or slash and burn type of subsistence agriculture. They clear forest patches and grow crops like paddy, pumpkin, cucumber, banana and some tuber yielding species.

Since the aim of the study was to know the rationale behind the naming of the plants species by the Dimasa people. Respondents belonging to Dimasa community from different age group ranging from 20-80 years were interviewed. Prior verbal consent of the informants was taken before conducting the interview.

A total of 50 individuals from 50 households were selected by systematic random sampling method. The proportion of male and female respondents was kept equal. Semi-structured interview was conducted in the Dimasa dialect.

The collected information through interview process was then collated using Berlin's hierarchical model (1992). Identification of polytypic and monotypic taxa, polysemous and pragmatic terms were also established following Morris (1984) and Luna-Jose & Aguilar, (2012). Some plants were identified with the help of respondents in the field. In case of plants that could not be identified in the field, herbarium was prepared following standard method by Jain & Rao, (1977). Additionally, scientific names of all the plant species were verified and crosschecked using www.plantlist.org (version 1.1 September 2013)

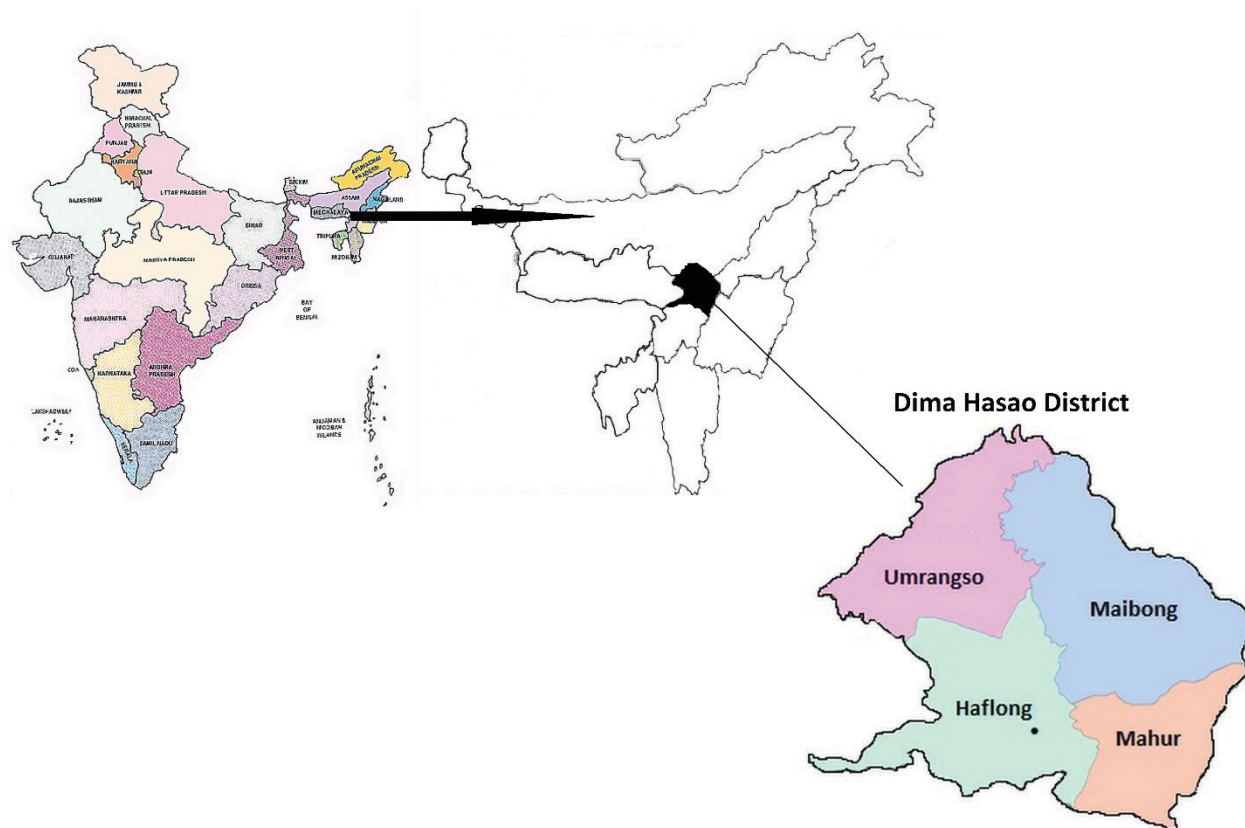


Fig. 1: The Study area : Dima Hasao District.

RESULTS

Ethnobotanical System of Classification

Out of the 161 plants studied, about 71.43%, were placed under various life form categories following Berlin (1992). The hierarchical structure enables us to know about the life forms which are an explicit term of the name applied to each species (Luna-Jose & Aguilar, 2012). The life forms commonly used in Dimasa dialect has been described in Table 1.

The terms may be used either as prefix i.e. as primary name or as suffix i.e. as secondary name. In case of the life form “thai”, a special kind of pattern was observed. Thai was used as a primary word for fruits eaten raw. For instance, ‘thaiphlung’ is fruit of *Artocarpus heterophyllus* and ‘thaigundi’ is fruit of *Ziziphus jujuba*. ‘Thai’ as secondary term defines a product of tree which can be either eaten raw or cooked (‘hanga thai’ i.e. fruits of *Momordica dioica* eaten cooked and ‘khusmai thai’ i.e. fruits of *Baccaurea ramiflora* eaten raw).

Similarly, in ‘sadhin dukha’ (*Mikania micrantha*), the secondary term ‘dukha’ gives us the idea that it is a strong climber that can be used for tying up things. Likewise flower (‘khim’), soft climber (‘biding’), bamboo (‘wah’), tuber (‘tha’), trees (‘phang’) and leaf (‘lai’) were denoted. The terms viz., ‘phang’, ‘lai’, ‘tha’, ‘thai’ were not used in their original form which is ‘bophang’ for ‘phang’ (moreover, ‘phang’ is the term which is used to indicate any plant species), ‘blai’ for ‘lai’, ‘tha’ for ‘batha’ and ‘thai’ for ‘bathai’. These abbreviated forms were used for ease of communication. There were some other plants which bore habitat information along with its name, for example, ‘tha gong’ (*Colocasia esculenta*) where ‘tha’ mean tuber and ‘gong’ derived from the word ‘hagong’ which mean land or terrestrial environment and other meaning may be, since plant is developed as a single stalk (‘gong’ is used as a unit to denote a single stalk). It was observed that for large tree, a specific term ‘bongphang’ was used (where ‘bong’ derived from ‘bongra’ meaning dense forest) but there was no differentiation observed between

Table 1: Life forms recognised by Dimasa community

Life form	Species	Botanical name/ Family	Interpretation
'biding' meaning soft climber	'mithi biding'	<i>Piper betle</i> L./ Piperaceae	Soft climbers are sometimes eaten or has no use
	'gala biding'	<i>Momordica charantia</i> L./	
	'miphrai biding'	Cucurbitaceae	
		<i>Basella alba</i> L./ Basellaceae	
'dukha' meaning hard climber	'du (dukha)	<i>Thunbergia grandiflora</i> (Roxb. ex	Climbers which can also be used as rope
	mangkhlong'	Rottl.) Roxb./ Acanthaceae	
	'sadhin dukha'	<i>Mikania micrantha</i> Kunth/	
	'dukha thai'	Compositae <i>Coccinia grandis</i> (L.) Voigt/ Cucurbitaceae	
'khim' meaning flower	'khim khathai'	<i>Solanum anguivi</i> Lam./	'khim' is a common term used for flowering plant.
	'khim thaiflung'	Solanaceae	
	'khim daola'	<i>Catharanthus roseus</i> (L.) G. Don/ Apocynaceae	
		<i>Gloriosa superba</i> L./ Colchicaceae	
'lai' meaning leaf	'birshi lai'	<i>Dryopteris assamensis</i> (C. Hope)	Leaf is considered as primary plant part either consumed or used as medicine
		C. Chr. & Ching/ Dryopteridaceae	
	'daono lai'	<i>Diplazium esculentum</i> (Retz.) Sw./	
		Athyriaceae	
'phang' meaning tree	'khusao lai'	<i>Senna alata</i> (L.) Roxb./	'phang' is a suffix commonly use for any kind of tree. Say, 'bongphang' for large tree, 'bophang' for tree and shrub, and 'shamphang' for herb or weed level
		Leguminosae	
	'satrai phang'	<i>Canarium bengalense</i> Roxb./	
		Burseraceae	
'sbai' meaning bean	'bonju phang'	<i>Bombax ceiba</i> L./ Malvaceae	'sbai' is a common term for bean. Secondary term denotes the variety or nature of a bean
		<i>Acorus calamus</i> L./ Acoraceae	
	'Basi phang'		
	'sbai daograng'	<i>Canavalia ensiformis</i> (L.) DC./	
'sham' meaning weed		Leguminosae	'sham' implies all the varieties of weeds. It may be invasive in nature too. Mostly found in roadsides.
	'sbai fer'	<i>Lablab purpureas</i> (L.) Sweet/	
		Leguminosae	
	'sbai ha'	<i>Vigna mungo</i> (L.) Hepper/	
'tha' meaning tuber		Leguminosae	'tha' is a primary term for tuber. Secondary term indicate the variety, nature or habitat of a tuber
	'sham abudi'	<i>Euphorbia hirta</i> L./ Euphorbiaceae	
	'sham gari'	<i>Lantana camara</i> L./ Verbenaceae	
	'sham gablao'	<i>Mimosa pudica</i> L./ Leguminosae	
'thai' meaning fruit	'tha gong'	<i>Colocasia esculenta</i> (L.) Schott/	'thai' defines fruits, berries or other plant parts that is either eaten raw or cooked
		Araceae	
	'tha munglai'	<i>Ipomoea batatas</i> (L.) Lam./	
		Convolvulaceae	
'wah' meaning bamboo	'tha thai'	<i>Solanum tuberosum</i> L./	'wah' is a common term used for bamboo and the conjoint word will always denote the variety.
		Solanaceae	
	'thai gundi'	<i>Ziziphus jujuba</i> (L.) Mill./	
		Rhamnaceae	
'wah' meaning bamboo	'thai ju'	<i>Mangifera indica</i> L./	
		Anacardiaceae	
	'hamlai thai'	<i>Phyllanthus emblica</i> L./	
		Phyllanthaceae	
'wah' meaning bamboo	'wah shim'	<i>Bambusa balcooa</i> Roxb./ Poaceae	
	'wah shu'	<i>Bambusa bambos</i> (L.) Voss/ Poaceae	

names of trees and shrubs. They are commonly indicated by the term 'bophang'. Likewise, herbs, grasses and weeds by 'sham' or 'sham phang', for instance, 'sham phrang' is onion (*Allium cepa*) and it is an edible herb and 'sham khabli' (*Chromolaena odorata*) is a shrub and weed in nature. Hence it can be concluded that the dimasa folk taxonomists used ecological information to name plants, as was observed by Morris (1984) in Chewa folk biological classification.

Monotypic and polytypic names were used for the further classification of plants. This classification system helps to organise and provide knowledge about the diversity. These names can also help to establish a nomenclatural relationships (Berlin, 1992). A total of 79 polytypic names were obtained where polytypes of 43 species belonged to the same family (Araceae, Cucurbitaceae, Leguminosae, Amaryllidaceae, Lamiaceae, Musaceae,

Euphorbiaceae, Solanaceae, Oxalidaceae, Rutaceae) and 36 belonged to different families.

Monotypes were only observed in case of agricultural varieties, thus indicating that the main occupation of the Dimasa community was subsistence agriculture. Berlin (1992) observed that the recognition of subgeneric taxa is associated with the society's form of subsistence. In case of monotypic names, a few species have varietal nomenclature such as *Colocasia*, *Cucumis*, *Citrus*, *Bambusa* and *Oryza*. For instance, varietal taxa of *Oryza sativa* where generic term is 'mai' are 'maisha' and 'mai ju' and (Fig. 2).

In Dimasa folk taxonomy, the classification of life forms showed some deviations from the Berlin's (1992) model. An additional category has been added to the present classification following Atran & *al.*, (2004). It is named as independent folk species.

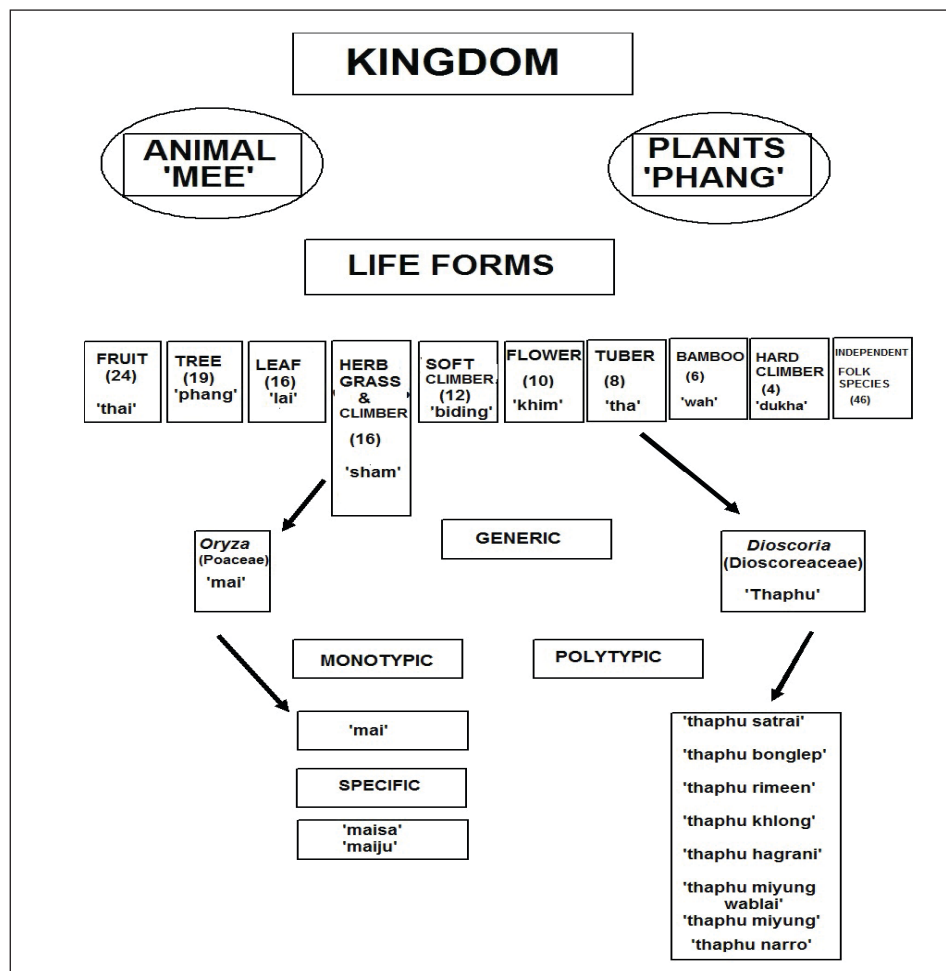


Fig. 2: Hierarchical structure in Dimasa Folk taxonomy.

ETHNOTAXONOMY

Independent folk species

There are some species that are independently named and could not be affiliated to any life form taxa found to be commonly used in Dimasa dialect. Such species have been separately categorised as independent folk species. Table 2 lists some of the independent folk species found in the study area.

Out of the 161 species, it was observed that 28.57% of the species could be classified under the independent category. For instance, herb, shrub and tree is denoted by the secondary term 'phang'. But some plants like 'bakhor' (*Eryngium*

foetidum) do not indicate its life form. It cannot be said that plants which have use only have names as Hargreaves (1976) reported. However, local people of this region were assigning names to many weeds which do not really have a good use. This may be because these plants were associated with some problems they encountered while practising agriculture. In some cases, it was found that the name of the disease itself was the name of the concerned plant species used for curing that disease. For instance 'uthar' (*Stephania japonica*) is used to treat tumours in human beings and tumours are locally known as uthar. It was observed by Morris (1984) that independent folk names of plants were relevant to the culture of the indigenous communities.

Table 2: Some of the independent folk species and their life forms in Dimasa folk taxonomy

Dimasa name (Botanical name/ family)	Life form
'bahanda' <i>Ocimum basilicum</i> L./ Lamiaceae	Shrub/ 'bophang'
'balangshi' <i>Thysanolaena latifolia</i> (Roxb. ex Hornem) Honda /Poaceae	Herb/ 'shamphang'
'bon khankhrai' <i>Elaeocarpus serratus</i> L./Elaeocarpaceae	Tree/ 'bophang'
'gidibao' <i>Solanum lycopersicum</i> L./Solanaceae	Shrub/ 'bophang'
'phantao bilati' <i>Abelmoschus esculentus</i> (L.) Moench/Malvaceae	Shrub/ 'bophang'
'khna ringma' <i>Solanum spirale</i> Roxb./Solanaceae	Tree/ 'bophang'
'mithep' <i>Senna tora</i> (L.) Roxb./Leguminosae <i>Crotalaria pallida</i> Aiton/Leguminosae	Shrub/ 'bophang'
'mishi mao' <i>Clerodendrum glandulosum</i> Lindl. /Lamiaceae	Shrub/ 'bophang'
'mojo khamao' <i>Houttuynia cordata</i> Thunb./Saururaceae	Herb/ 'shamphang'
'rdao khlong' <i>Jatropha curcas</i> L./Euphorbiaceae	Tree/ 'bophang'
'ser muli' <i>Aegle marmelos</i> (L.) Corrêa/Rutaceae	Tree/ 'bophang'
'sidi gubur' <i>Stephania glabra</i> (Roxb.) Miers/Menispermaceae	Climber/ 'biding'
'skain yaopha' <i>Clerodendrum infortunatum</i> L. /Lamiaceae	Shrub/ 'bophang'
'thikri' <i>Oxalis debilis</i> var. <i>corymbosa</i> (DC.) Lourteig /Oxalidaceae	Herb/ 'shamphang'
'yao jora' <i>Justicia gendarussa</i> Burm.f./Acanthaceae	Shrub/ 'bophang'

POLYSEMIC WORDS IN DIMASA FOLK TAXONOMY

The concept of using polysemic words was well established by Morris (1984) in his study. In folk taxonomy it has been observed that plants and animals are named on the basis of their use for treatment of specific diseases. Carrington (1981) also reported that plant names in some local floras are the names of some local disease or complaint. During the group discussions it was noted that many plant names were assigned because the plants were being used in the treatment of some specific disease. Table 3 gives an account of some polysemic words used in Dimasa folk taxonomy. For instance, 'khusao' in Dimasa dialect indicates ringworm and the plant used for the treatment of ringworm infestation is known as 'khusao lai' (*Senna alata*). Similarly other disease names such as 'birshi' (eczema), 'khabli' (skin ailments), 'arghum' (stomach ache) etc. are used in naming the plants that are being used to treat these diseases in the community.

Naming of plant names in Dimash tribe are extremely versatile, also not a strictly utilitarian system of classification. There are many weeds which have very little use in their culture that have been assigned very pragmatic names (eg. 'sham berma' and 'sham gari' for *Ageratum conyzoides*, *Lantana camara* respectively, Table 4). The classification system is in accordance to the rich and varied culture of the Dimasa folk. The life forms are not always referred to by the same term. For instance the term 'du' or 'dukha' indicates a vine that can be used as cordage (*Thunbergia grandiflora*, Table 4). Other vines that are not woody are referred to as 'biding' (*Lablab purpureus*).

Similarly the fruit as a life form 'thai' have been found to have different usages and interpretations, as described earlier in this paper.

DISCUSSION

Dimasa folk taxonomists reveal a deep analytical thought process while naming the plants. For instance, 'khna ringma' (*Solanum spirale*) is an independent folk species not conforming to any lifeform taxa. Secondly this plant is of spiritual significance. 'khna' means to listen and 'ringma' means to learn. It is believed that leaves of this plant should be added to the meals that are cooked as part of the religious ceremonies taking place after the death of a person in the community. The leaves are believed to help the deceased soul to listen and learn about what his or her relatives have to say, Hargreaves (1976) propounded the utilitarian concept of naming plants by stating that many plants in Chitipa, Malawi had no local names because they had no use. However other workers began to realise that folk taxonomy was not only utilitarian in its approach. Several communities showed considerable pragmatism while naming their local flora, as reported by Morris (1984). Malinowsky (1974) was of the opinion that only the edible plants were named by the local communities. This has been proved to be otherwise time and again by several ethnobiologists working in different parts of the globe.

The present paper thus reveals that folksonomists of the Dimasa tribe of Dima Hasao district possesses a sound knowledge of both classifying and naming plants. In the study local people could name almost all type of plants used for different purpose. In the present study

Table 3: Some polysemic words used in Dimasa Folk Taxonomy

Dimasa Name	Botanical Name	Family	Polysemic word
'khusao lai'	<i>Senna alata</i> (L.) Roxb.	Leguminaceae	'khusao' (Ringworm)
'arghum gajao'	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurtz.	Apocynaceae	'arghum' (Stomach ache)
'birshi lai'	<i>Dryopteris marginalis</i> (L.) A. Gray	Dryopteridaceae	'birshi' (Eczema)
'sham khabli'	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Compositae	'khabli' (Skin problem)
'yaojora phangsa'	<i>Justicia gendarussa</i> Burm.f.	Acanthaceae	'yao jora' (Joint bone fracture)
'uthar'	<i>Stephania japonica</i> (Thunb.) Miers	Menispermaceae	'uthar' (Tumour)
'musha lai'	<i>Oldenlandia diffusa</i> (Willd.) Roxb.	Rubiaceae	'musha' - pupil of eye (Cataract)

Table 4: Some Dimasa folk names of plants reflecting pragmatism of folk taxonomists

Dimasa name	Botanical name	Family	Pragmatic meaning
'du mangkhlong' Du (Dukha)- Climber Mangkhlong- Cemetery	<i>Thunbergia grandiflora</i> (Roxb. ex Rottl.) Roxb.	Acanthaceae	The twiner is used as rope to tie up the bier
'hamlai thai' Hamlai- Goodness Thai- Fruit	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	The whole tree is worshipped for the goodness of children and after the ritual parents are forbidden to consume the fruit of the plant until their children become adolescents.
'khna ringma' Khna- To listen Ringma- To learn	<i>Solanum spirale</i> Roxb.	Solanaceae	The leaf of the plant is cooked and offered as food to a dead person. It is considered to act as a medium of communication between the living and the dead.
'phorong thai' Phorong- Morning Thai- Fruit	<i>Luffa cylindrica</i> (L.) M.Roem.	Cucurbitaceae	Usually the flower of the plant open in the early morning
'satrai phang' Satrai- Stars Phang- Tree	<i>Canarium bengalense</i> Roxb.	Burseraceae	Resin secreted from the plant when burnt, it sparkles like stars
'sham berma' Sham-weed Berma (Burma)- Myanmar (Country)	<i>Ageratum conyzoides</i> (L.) L.	Asteraceae	It is believed by the local folk that the plants were brought from Myanmar
'morsai berma' Morsai- Chilli Berma (Burma)- Myanmar	<i>Capsicum annuum</i> L. syn. <i>Capsicum frutescens</i> L.	Solanaceae	
'sham gari' Sham- Weed Gari- Transport mode (Train)	<i>Lantana camara</i> L.	Verbenaceae	The advent of train brought the weed into notice

dealing with a detailed analysis on the folk taxonomy of the Dimasa tribe of North East India, it was clearly evident that the Dimasa folksonomists also revealed considerable pragmatism in choosing the local names of the plants.

The paper also reveals that folks taxonomy has the potential of being a powerful tool in identifying plants and animals. It can help in filling the gap of paucity of trained taxonomists in the field. They can serve as "para-taxonomists" similar to paramedics. They can therefore help in initial identification which would facilitate the trained taxonomists in final correct identification of the species. In addition, since the folk taxonomists are people who inhabit the area for generations, they are able to recall the other identifying features of the plant. This information then becomes indispensable for the trained taxonomists. Folk taxonomy can therefore be utilized to reveal many unknown and interesting facts of social and cultural relevance. This type of study can also help

to draw information on occurrence/ growth form/ useful parts of the plant. The folksonomists should be encouraged to share their rich traditional knowledge base on plant and animal classification and identification and also train the younger generations in this technique. It is the need of the hour to duly recognise and respect the folk taxonomists in the scientific community as they have a valid ground to view nature.

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