ETHNO-MEDICINAL PLANTS IN WEST GARO HILLS DISTRICT IN MEGHALAYA

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2018

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A THESIS SUBMITTED TO THE MIZORAM UNIVERSITY IN FULFILLMENT OF THE DEGREE OF DOCTOR OF PHILOSOPHY
IN
FORESTRY

BY
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Registration No. MZU/Ph.D./654 of 02.05.2014

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2018

DECLARATION

I, Naldarine M. Marak, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to do the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to the Mizoram University for the Degree of Doctor of Philosophy in Forestry

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ACKNOWLEDGEMENT

I take this opportunity to express my heartfelt gratitude to those who have some way or the other have helped me in making this research a successful one.

First and foremost i would like to acknowledge my abysmal indebtedness to God the Almighty for all the blessings that i am today.

I am very much beholding to my esteem supervisor Dr. Lalnundanga, Professor, Department of Forestry, Mizoram University, Aizawl, who has been a great inspiration, his valuable venture in times of need and also to his guidance, suggestions, encouragement and constructive conscience for the success of my research work.

I convey my gratitude to respected Shri Hambert G. Momin, (Assistant Conservator of Forest, East and West Garo Hills Wildlife Division, Tura, Meghalaya), for his assistance and valuable help in preparation of map.

I extend my gratitude to Office of the Additional Principal Chief Conservator of Forests, Wildlife and Chief Wildlife Warden, Government of Meghalaya, for giving me the permission to carry out research within the Reserve Forests of West Garo Hills district.

I would like to express my very great appreciation to Miss Zorinpuii Khiangte, Ph.D. Research Scholar, Department of Environmental

Science, Mizoram University, for her unending valuable and constructive suggestions of this research work.

I sincerely thanked all the faculty members who have contributed immensely to the success of this study in one way or other.

Special thanks to all the local practitioners or oja of each village studied who have shared their experiences and co-operate with me during my data collection. And, also to all my fellow scholars for their wonderful friendship and kind gestures throughout the course.

Lastly, my love and gratitude to my parents and family members who are source of inspiration and encouragement and have helped me to make my dream comes true. The work would have been incomplete without those people who have contributed in many ways. With their collaboration only, my work comes into play.

The authors are thankful to University Grants Commission for providing financial assistance through National Fellowship for Higher Education (NFHE) of ST students.

Dated: /04/2018

Place: Aizawl (MISS. NALDARINE M. MARAK)

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ABBREVIATIONS USED

ENT and H and N	= Ear, Nose Throat, Head and Neck
IUCN	=International Union for the Conservation of Nature
KVK	= Krishi Vigyan Kendra
M.C	=Moisture Content
N	=Naldarine M. Marak
p., pp.	=*pegina:* page or pages
SOC	=Soil Organic Carbon
SOM	=Soil Organic Matter
STDs	=Sexually Transmitted Diseases
UTI	=Urinary Tract Infection
ºC	= Degree Celcius
µg	=Microgram
et al.,	=*et alii;* and others

CHAPTER 1

INTRODUCTION

1.1. DEFINITION AND CONCEPT:

Ethnomedicine is a study of the traditional medicine practiced by different ethnic groups especially by indigenous people. And sometimes the word "ethnomedicine" is used as a synonym for traditional medicine. Ethnomedicine of the Garos is a type of medicine which is more ancient, more widely practised and equally efficacious at least in the eyes of its adherents. It has been handed down by word of mouth from one generation to the next, though some preserve it in the form of writings at present. The World Health Organization (WHO) defines traditional medicine as "the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses" (WHO,TraditionalMedicine:WHO:FactSheetNo.134. available at (http://www.who.int/medicines/areas/traditional/definitions/en/) accessed on 24th November 2016). Medicinal plants may be defined as those plant species that are commonly used in treating and preventing specific ailments and diseases, including those that are generally considered to play a beneficial role in health care and maintenance. Different definitions and explanations of the term "Ethnobotany" are given by different workers are: the term ethnobotany deals with "the study of plants used by primitive and aboriginal people" (Annonymous, 1985; Harshberger, 1896); study of the direct relationship between humans and plants (Ford, 1978); the study of the relations which exist between human and their ambient vegetation (Gilmour, 1932; Castetter 1944); the ethnomedicine is concerned with the study of medical systems from the native's point

of view. Native categories and explanatory models of illness, including aetiologies, symptoms, courses of sickness, and treatments are investigated (Kleinman, 1978 & 1980).

1.2. IMPORTANCE

Medicinal plants play an important role in the livelihood of the people of West Garo Hills as they provide a source of cash income and are generally used at the household level in a self-help mode. The herbal practitioners used medicinal plants in preventive and curative application. Traditional health-care system is an age-old performed since ancient time by the people in the West Garo hills district of Meghalaya. Different plant species were ethno-biologically used by the local people to overcome the complication of various ailments which are dreadful disease of the state. West Garo Hills is rich in traditional health practices. The numerous folk healers serve the population in the primary health care sector and reach them with life saving treatment in areas where communication is difficult. The information on medicinal plants serve as useful base to prepare development and action plan for herbal drug industry for improving and uplifting the life and economy of the state. Meghalaya has also been identified as one of the seven states in the country where intensive research on medicinal plants will be taken up by the United Nation Development Programme (UNDP) in associate with Meghalaya Government with a sole aim to conserve medicinal plants. The state possesses a variety of plant wealth that is yet to be tapped on commercial scale, which in turn could accrue benefits to the farmers too. In fact, Meghalaya has a great potential for the plantation of medicinal plants because of its ideal agro-climatic condition and suitable soil.

The use of traditional medicines and medicinal plants in most developing countries as therapeutic agents for the maintenance of good health has been widely observed (UNESCO,

1996). Search for new medicines for the prevention and cure of deadly diseases provides prospects for developing medicinal plants. The unique richness of ethnoculturo-biodiversity of the northeastern region is a great challenge to the scientist to explore the region (Lalramnghinglova, 2000). Through the ethnobotanical surveys, many of the medicinal plants can be recorded, analysed and preserved for posterity. Since primitive man does have some knowledge as yet unknown to us, there is no response to suppose that man in primitive society possesses nothing more than a very limited intuition about the properties of plants. It therefore, behoves us to push forward, along with ethnobotanical investigation, studies on the flora in general (Schultz, 1962; Lalnundanga *et al*., 1997; Lalnundanga, 2000; Lalramnghinglova & Jha, 1999).

1.3. IMPACT ON GARO HILLS

The impact of the outside world on the Garo medicine started before 1789 when Eliot, the first European who set his foot on the Garo habitat to fall upon even much before the extension of the British administration to the Garo Hills in 1867, though presumably after the commencement of the British regime in the Indian sub-continent in 1757 (Playfair 1909). This means, the Garo medicine, like the people itself, started its journey towards the threshold of 'history' from its stage of 'pre-historical' cocoon with the more or less beginning of the British regime in India. Visible changes in the cultural and traditional practices of medicines are observed due to the direct impact on urbanization. It is also observed that some of the herbal healers can produce innumerable words to define many western diseases names. Many of the diseases recognized traditionally by the Garos have no exact modern equivalent names. The Garo 'ojas' classified diseases based on different types of criteria like symptoms related to animals or influence of spirits and other supernatural beings. The idea of the Garos regarding the common

aetiology of diseases varies. Some of the changes in the material part of the Garo medicine have not only been mere straight forward borrowing but rather adaptations of the knowledge of the neighbouring civilized communities who have entered the land in large numbers in all kinds of economic pursuits during the colonial and post-colonial periods (Pratibha, 2013).

1.4. RESEARCH ON INDIGENOUS RELATED TO ETHNOMEDICINE

Ayurveda is a medical system primarily practised in India that has been known for nearly 5000 years. It includes diet and herbal remedies, while emphasizing the body, mind and spirit in disease prevention and treatment (Morgan, 2002). Early studies on indigenous medical systems were limited in focus on witchcraft and illness caused by super-natural forces, and on specialists such as folk healers, and shamans (Fortune, 1932; Evans-Pritchard, 1937; Turner, 1967; Fabrega & Silver, 1973). During this period the emphasis was put on the meaning of the illnesses and on the symbolism of the curing rituals performed by the folk healers with the result that scholars mostly overlooked empirical aspects of indigenous medical cultures (Waldstein & Adams, 2006). The pharmacological treatment of disease began long ago with the use of herbs (Schultz *et al*., 2001).

Meghalaya is well known for the existence of large varieties of plant species. Many of which have medicinal properties (Haridasan & Rao, 1985 & 1987). More than 200 forest plants have been used by the people of Meghalaya for food, medicines, dye and for ornamental and construction purpose (Tiwari *et al.,* 2004). Ethno-medicines and medicinal plant of Meghalaya have received some attention of researcher (Rao, 1981; Dolui *et al*., 2004).

Garos have hardly any records on people's diseases and medicine since most of the informations are passed on to the next generations through mouth. So far as their oral literature is

concerned, a “Creation” myth mentioned ‘skin diseases’ but without telling anything about its medicine “material or non-material (Playfair, 1909). The first historical records on the Garo disease and medicines were produced towards the end of the eighteenth century by Mr. John Eliot, the first European visitor to the Garo land. There were evidences about the practice of Garo medicines by oja or local herbal healers even since before the European contact (Eliot, 1972).

1.5. PROFILE OF THE GAROS IN RELATION TO ETHNOMEDICINE

To the tribal community of India, of which the Garos are a part, health is viewed as a part of the bipolar conceptualization and is juxtaposed to disease at the other pole. According to the ancient herbal healers’ perceptions, most of the diseases were primarily caused by two kinds:

a) Objective perceptions may include contaminated food and water, poor economic conditions and other physical ailments.

b) Supernatural perceptions may include their beliefs in the possession by witchcraft, demon or evil spirit and punishment by some deity for knowingly or unknowingly offending it by the patient because they considered medicine would have no effect, unless the deity interfered on their favour and that a sacrifice was to procure such interposition.

The various impinging factors in the health care practices of the Garos have resulted in the emergence of Medical Pluralism among them. The Garos dichotomized the world of illness into natural and supernatural. There are certain process of diagnosis of diseases and specific ritual action in the identification of disease and illness. Some herbal healers of the rural area resort to various forms of divination both for diagnosis and treatment of various diseases more particularly those diseases believed to be caused by supernatural factors. The Garos have been

still practicing various indigenous methods for identification of health and diseases on the lines of the traditional way of thinking. Besides analyzing symptoms and dreams, interrogating, checking of pulse, divination or the magical practice directed towards obtaining useful information.

Tribal communities living in isolation are very knowledgeable in using various herbs and natural products as medicine. The solution of the problems in the perspective of the interactions of man, nature and environment as the basic principle of ethnomedicine, has trigged the necessity to explore the extent of which health and treatment are intimately linked with environment particularly with the forests.

Garo traditional medicine also involves the use of both material and non-material components. The material components invariably comprise parts or organs of plants and their products. They also consist of animal organs, minerals and other natural substances. The non-material components, which constitute important items of religious and spiritual medicine that include charms, magic, incantations, religious verses and amulets. The Garo herbal healers or ojas also used non-biological materials such as kerosene, mustard oil and palm candy because the basic principle of Garo ethnomedicine is involved with the fact that it strives to treat the whole person rather than his isolated parts, and think of him in relation to his emotional sphere and physical environment as well.

The introduction of modern medical system has given rise to medical pluralism in view of the fact that there exists a traditional ethnomedical system amongst them. The Garos are therefore exposed to multiple treatment options and have no qualms about submitting themselves to more than one form of therapy at the same time. They also believed that certain diseases can

be cured by traditional ethnomedicine of the Garos and the others by modern medicine or both the systems of medicine. Though the modern medical facilities available to the Garos, they are also accustomed to the use of the services of the Garo ethnomedical experts and the traditional birth attendants who have gained reputation in their society as specialists.

Although a lot of work has been done on medicinal plants used by the indigenous people of Meghalaya, ethnomedicinal plants used by the Garo community particularly in West Garo Hills district have not been properly documented yet. Research attention is particularly required on the rural poor partially or fully dependent on the medicinal plants for their health care and those living in the forest fringes to diversify their livelihood opportunities through sustainable production and trade of medicinal plants. Therefore, the present study is designed with the following objectives:

1) To survey and document important medicinal plants in West Garo Hills District of Meghalaya.
2) To determine the soil characteristics and micro-environmental factors in association with distribution of medicinal plants.
3) To study conservation status of selected medicinal plants.

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Chapter 2

REVIEW OF LITERATURE

2.1. AN OVERVIEW

Researches on medicinal plants are one of the most sensitive commodity areas in the modern world today. Ethno-botanical literature has been growing rapidly over the last hundred years but ethnobotany has drawn attention of human society of the country and abroad since the primitive time. There are reportedly 100,000 medicinal manuscripts of traditional medicines lying in Oriental libraries and private collections including several magazines, journals and newsletters which satisfy the needs of researchers and others engaged in various aspects of ethnobotany (Trivedi, 2002).

2.2. ABROAD

Ethnobotanical investigations on medicinal plants contributed by various ethnobotanists abroad are mentioned such as, Plants of the Bible (Moldenke and Moldenke, 1952); Documentation of 121 medicinal plant species used by the Akha tribes of Thailand (Anderson,1985); notes on Medicinal Plants and other uses of Plants in Egypt (Osbom, 1968); current folk remedies of Northern Venezuela (Morton, 1975); studied on total relationship of human society with plants mainly use of plants as folk medicine contributed by Aikman (1977); the traditional folk medicine of Taos New Mexico (Belcove, 1976); medicinal plants of North Africa (Boulos, 1983); ethnobotany of the Island Caribs of Dominica (Hodge and Taylor, 1956); medicinal Plants of Samoa (George, 1974 and Colombia Gonzalvez, 1980); native medicine in the Sudan (Ahmed, 1970); traditional Medicines in the Turkey (Sezik *et al.*, 1992 and Western Washington (Gunther, 1945); herbal Folk medicine in North-western Argentina (Gbati, 1983);

medicinal plants of Raratonga, Cook Island (Holdsworth, 1991); medicinal plants to cure Hepatitis in Taiwan (Lin and Kan, 1990); Iranian plants for antimicrobial activity (Aynehchi *et al.,* 1982); phytomedicine of the Madang Province, Papua New Guinea (Holdsworth, 1984); herbal medicine in Cook Islands (Whistler 1985); plants with antifertility properties of South America (Gonzalez and Silva, 1987); plants to cure leprosy in Africa (Nwude and Ebong, 1980); medicinal plants of Seberida Ria province, Sumatra and Indonesia (Mahyar *et al.,* 1991); Traditional Amazonia Nerve tonics (Elisabetsky *et al.,* 1992); African medicinal plants with emphasis on Conservation and primary health care (Cunningham, 1993); medicinal plants of the of Africa (Iwu, 1993); ethnomedicine in the Tongan Island reported by George *et al.,*1995.

The medicinal plants have been used by the indigenous people from the pre-historical times. Studies have pointed out that many drugs that are used in commerce have come from folk-use and use of plants by indigenous cultures (Anon, 1994). People mostly those who are living in the rural areas are more familiar with the medicinal plants and their properties. Out of the 350,000 plant species identified so far, about 35,000 (some estimated upto 70,000) are used worldwide for medicinal purpose (Comer and Debus, 1996).

The well-known ethnobotanist of the World, Dr. Richard Evan Schultes conducted ethnobotanical exploration in Oklahama, Oaxala, Amazon, Mexico and in other regions. He had spent almost 12 year among the tribals and worked on hallucinogens, medicinal and toxic plants (Schultes, 1938, 1954, 1962). Some other important contributions are mentioned below:

Halbarstein and Saunders (1978) have reported traditional medicinal practices and medicinal plant usage on a Bahamian Island. Medicinal plants of Madagascar and Senegal reported by Bonati (1980).

Medicinal plants of Central Region of Nepal contributed by Joshi and Edington (1990).

Abbas *et al.,* (1992) reported 52 medicinal plants in tradition medicine of Bahrain. Capitanio *et al.,* (1989) also reported 100 anti-leucodermic traditional medicines consisting of 80 medicinal plant species being employed by Caucasians of Mediterranean.

Safaa *et al.,* (2015) documented 124 plant species of Mount Flora which are being used by the Communities of Mount Hermon, Lebanon.

Liya Hong *et al.,* (2015) reported 368 medicinal plant species used by the Maonan people in China.

Youngken *et al.,* (1970) documented plants for antimalarial activity. Ethnobotanical studies from Central Nigeria includes 52 plant species having ethnobotanical importance (Bhat *et al.,* 1990).

Weniger *et al.,* (1986) have documented popular medicinal plants of the Central Plateau of Haiti. The ethnomedicinal plants from Garifuna of Eastern Nicaragua is reported by Coce and Anderson (1996). The folk herbal medicine used by Fiji Indians is documented by Singh (1986).

Caceres *et al.,* (1990) have screened 84 plants which are used to cure gastrointestinal disorders caused by Enterobacteria in Guatemala. Giron *et al*., (1991) have reported medicinal flora used by the Caribs of Guatemala. The 16-ethnomedicinal plants used by the people of Guatemala against Gram-Positive Bacteria, (causing agent of respiratory diseases) were evaluated by Caceres *et al.,* (1993).

Ethnobotanical observation on 71 plant species from Tharu tribe of Chitwan District, and 86 plant species from Makawanpur District of Nepal were reported by Dangol and Gurung (1991) and Bhattarai (1990).

Quisenberry (1960) lists more than eight hundred known medicinal plants in the Philippines alone, including flora efficacious in the treatment of a number of maladies such as asthma, diarrhoea, dysentery, malaria, diabetes etc.

Hilaly *et al*., (2003) worked on economic evaluation of medicinal plants in Northern Morocco. Tilahun and Mirutse (2010) studied the wild edible plants of Ethiopia.

Some other significant contribution in the field of Ethnobotany was done by workers like Galeano (2000) investigated the forest use of Pacific Coast of Chococlombia. Huyin *et al.* (2000) compared the ethno-botany of Lahu people of China & Thailand. Kambizi and Afolayan (2001) studied the use of plants in sexually transmitted disease in Zimbabwe. Chhetri and Devakota (2007) investigated the plants of ethnobotanical importance in Nepal. Yunheng *et al.*, (2000) studied the traditional utilization of Chinese Chellera (*Stellera chamacjasme* L.) in North West Yunan, China.

Some important books of foreign authors on various aspects of ethnobotany are: Indo-European folk tales & Green legends (Halliday, 1933); Ethnobotany of Western Washington (Gunther, 1945); An introduction to ethnobotany (Faulks, 1958); Poisonous plants of Venezuela (Blohm, 1962); The nature and status of ethnobotany (Ford, 1978); Medicinal plants of the West Indies (Ayensu, 1981); Ethnobotany: Principles and applications (Cotton, 1996); Medicinal plants of the world: An illustrated scientific guide to important medicinal plants and their uses (Wyk & Wink, 2004).

2.3. INDIA

Written records of the use of plants for curing human and animal diseases in India dates back to the earliest times (4500-1600 BC). Scripture of the Hindus viz., The Rigveda (Jain, 1994), Ayurveda, the indigenous systems of medicine dating back to the Vedic ages (1500-800 BC), has been an integral part of Indian culture (Lalramnghinglova and Jha, 1999). The Rigveda claims about 99 medicinal plants, the Yajurveda 82 and the Atharvaveda 28, which were used to cure lots of deadly diseases (Jain, 1994). In the ancient classical treatise like Charaka Samhita (1000-800 B.C), Sushruta Samhita (800-700 B.C) and Astanga Hridayam Samhita of Vaghatta contain valuable information regarding the medicinal use of plants. The Unani system which originated in Greece in about 400 B.C, came to India through Arab Physicians who accompanied Mogul invaders came to be known as Yunani-Tibb. The Siddha system, with a record history from about 2000 B.C is believed to have originated from Lord Shiva and to have been passed on through his wife Parvati to a number of disciples. Its use became common in Dravidian civilization. Books in English written usually include plants from all these systems (Jain, 1994). More than 1200 herbal plants are mentioned in ancient Indian texts (Jain and Mudgal, 1999).

Studies on ethnobotany in India was initiated by the economic botany section of Botanical Survey of India since 1954. Dr. E.K.Janki Ammal (1956) had published a paper on subsistence economy of India. Dr.S.K.Jain started intensive field studies among the tribals of Central India in 1960 and published a number of papers on ethnobotany (Jain, 1963a-c; 1964 a-b; 1965). Ved Prakash (1998) reviewed status of Indian medicinal plants.

The growth and development of ethnobotany in India owes much to the painstaking works done by the eminent botanist like S.K. Jain, K.V. Billore, P.V.N. Kurup, S.L. Kapur, V.P.

Kamboj, R.R. Rao, Ved Prakash, N.C. Shah, K.C. Tewary, Anil Goel, P.K.Hajra, Virendra Nath, Momim Ali, Usha Shome, S. K. Borthakur, B.N. Dhawan, K. Himadri, A.K. Pandey, H. Santapau, K.C. Audichya, D.S. Bhakuni, Archana Godbole, K.S. Manilal, M.L. Dhar. In addition to these, a good number of investigations by different researchers have enriched Indian ethnomedicobotany. Some notable among them are: Nadkami (1976); Boddings (1927); Moss (1952, 1976, 1978); Ragunathan (1976); Janardhanan (1963); Uniyal &Chauhan (1971); Malhotra & Moorthy (1973); Mao *et al.,* 2009; Kolammal (1979); Joshi *et al.,(*2012); Jain (1984, 1994); Ramchandran & Nair (1981); Vartak (1981);Yoganarasimhan et al. (1982); Tribedi *et al.*, (1982); Tarafder (1983a-e, 1984a-b); Dar G. H *et al.,* (1983); Singh & Maheshwari (1983); Anandan & Veluchamy (1986); Hemadri *et al.,* (1987); Das & Misra (1987, 1988); Das & Kant (1988); Joshi (1988); Dagar (1989a); Reddy *et al.,* (1989); Kapahi (1990); Vedavathy *et al.,* (1991); Sivarajan & Balachandran (1994); Hajra *et al.,* (1982); Mohanty *et al.* (1996); Singh & Pandey (1996); Singh *et al*., (1996); Chaudhari et al., (1980); Chakraborty *et al.,* (1988); Ignacimuthu *et al.,(*2006).

2.4. NORTHEAST INDIA

The research and documentation of traditional knowledge of North Eastern states has increased but in comparison to rest of India, the survey is very less though it is a vast source of indigenous knowledge (Chakraborty *et al.,* 2012). The information on ethnobotanical studies contributed by various ethnobotanist are mentioned below: viz., Tiwari *et al.,* (1978); Jain & Borthakur (1980); Hajra & Chakraborty (1982); Bennet (1983); Barua & Sharma (2007); Sinha (1987); Bhuyan (1989); Elangbam *et al.,* (1989); Rao (1989); Rao &Jamir (1989b); Gangwar & Ramakrishnan (1990); Lallianthanga (1990); Sinha (1990); Hajra (1981); Lalnundanga *et al.,*

(1997); Jamir (1997); Rao & Shampru (1997); Jha & Lalnundanga (1998); Lalnundanga & Jha (2000); Dutta & Dutta (2005).

Some of the ethnobotanical survey of North Eastern states are:

Saikia *et al.,* (2006) reported 85 plants which are used to cure different types of skin diseases and also as cosmetics in Assam; Hajra & Baishya (1997) reported ethnobotanical note on 29 plants on the Miris (Mishings) of Assam plains; Sajem & Gosai (2006) worked on Jaintia tribes and reported 39 plants which are used by the tribes of North Cachar Hills of Assam; Namsa *et al.,* (2011) reported 22 plants which are used for their anti-malarial properties in Sonitpur district in Assam.

Pandey *et al.,* (1996) explored the traditional knowledge of Tai Alton, Tai Khamyang, Tai Trung, Sonowal Kachari and Tangal Kachari; Tiwari & Tiwari (1996) studied the traditional knowledge of use plants of tribes of Arunachal Pradesh; Panda & Srivastava in 2010 studied on 7 plants that are used by the Aks, Nepalese and Dirang Monpas communities of West Kameng of Arunachal Pradesh; Kala (2005) reported 158 plants which are used by the Apatani tribe of Ziro valley of Lower Subansiri, Arunachal Pradesh.

Lalramnghinglova (1999) studied on the indigenous knowledge of the tribes of Mizoram; Lalfakzuala *et al.,* (2007) worked on ethnobotanically important plants of Mamit district of Mizoram and reported 89 plants which are used as folk medicine, food and other purposes.

Devi *et al.,* (2011) explored 51 plant species belonging to 33 families which are used by Meitei community of Manipur for the treatment of Diabetes; Khumbongmayum (2005) reported 120 plants used to treat skin disorders, ulcer, rheumatism, bronchitis etc. of Manipur.

Rao & Jamir (1982a) reported 51 medicinal plants which are used by the Aos tribe in Nagaland; Jamir *et al.,* in 2010 studied on ethnomedicine of Lotha-Naga tribes of Nagaland and enlisted 55 ethnomedicinally important plant species.

Singh *et al.,* (2002) reported 64 plants that are used by the ethnic groups of Sikkim; Lepcha *et al.,* in 2011 reported 25 plants which are used by the ethnic groups of East Sikkim in their daily life.

Majumder *et al., (*2006) reported 33 ethnomedicinal plants used by non-tribal and tribal medicine men of Tripura; Majumdar & Datta (2007) reported 50 plants that are prescribed by the traditional people of South & West Tripura of Tripura; Das *et al.,* (2009) also reported some medicinal plants that are used by Tripuri and Reang tribes of Tripura.

2.5. MEGHALAYA

Although a lot of ethnobotanical research has been on various tribes of Northeast India but there are very few published records on ethnobotany of Garo tribes (Kumar Y, 1991; Rao MKV and Shanpru R, 1981; Singh JN and Mudgal V, 2000; Singh, B.K and Debnath HS, 2008; Singh Bikarma and Shanpru R. 2010)

Some of the notable works done by the ethnobotanist in the state of Meghalaya are enlisted below:

Kharkongor & Joseph (1997) explored medico-botany or rural Khasi and Jaintia tribes in Meghalaya. Agrahar-Murugkar & Subhulakshmi (2005) reported 7 wild edible mushrooms that commonly having nutrition values in Khasi hills of Meghalaya.

Laloo *et al.,* (2006) worked on Swer Mairang sacred groves of Meghalaya and identified 80 medicinally important woody species; Rao, R.R. 1981 also added 34 plant species having medicinal value from the Meghalaya.

Sawian *et al.,* (2007) reported 249 wild edible plants of Meghalaya; Hynniewta & Kumar (2008) surveyed on Khasi traditional healers and reported 54 plants used by the Khasi traditional healers of Ri-Bhoi, West & East Khasi Hill, Meghalaya; Hynniewta S.R and Yogendra Kumar 2008 also documented 54 plant species from the Khasi herbal healers; Kayang H *et al.,* 2005, mentioned 57 medicinal plants of Khasi Hills of Meghalaya, India.

Chhetri (2010) reported 19 plants that are used by tribes of Khasi, Garo & Jaintia hills of Meghalaya ; Bikarma *et al.,*2014, mentioned 157 medicinal plant species from the Nokrek Biosphere Reserve in Garo hills, Meghalaya.

Vasudeva & Shampru (1997) explored the indigenous knowledge of Garo tribe.

Pratibha Mandal (2013) also studied a Glimpse of the Garo tangible Medicine from the Ruga community of South Garo Hills.

Dolui *et al.,* (2004) reported 46 Plants used by Garo, Khasi & Jaintia tribe of Ri-Bhoi & Jaintia Hill of Meghalaya.

Sharma M *et al.,* (2014) also documented 66 medicinal plants in North Garo Hills, Meghalaya.

Hazarika *et al.,* (2015) mentioned 66 ethnomedicinal value underutilized and unexploited fruits among the Garo tribes

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CHAPTER 3

STUDY AREA

3.1. GEOGRAPHICAL LOCATION:

The study area falls under the dense Tropical mixed forest and a small patch of Temperate forest in the higher parts of the Tura range. West Garo Hills district covers an area of 3677 sq.km, lies between latitudes 90°30' and 89°40' E and the longitudes of 26° and 25°20' N, which is located in the westernmost part of Meghalaya. The district is bounded by East Garo Hills district on the east, by South Garo Hills district on the South-East, Goalpara district of Assam on the North and North-West and Bangladesh on the South. There are three important mountain ranges under this district viz., Tura Range, Arbella Range and Ranggira Range.

3.1.1. Tura Range: This is one of the most important mountain range in West Garo Hills. The Tura range is about 50 kms long and extends in the east-west direction from Tura to Siju in the South Garo Hills district. The mountain peaks that are located in this range are Tura Peak, Nokrek Peak, Meminram Peak, Nengminjok Peak, and Chitmang Peak. The highest peak of this range is the Nokrek (altitude 1412 m above sea level) lying 13 km southeast of Tura. To the west of the Tura range low hill ranges run from north to south, and to the north of the Tura range hill ranges run parallel to it, gradually increasing in height till they meet in the south. Now the entire Tura range comes under the management of Nokrek National Park: These high ranges are strictly protected as Catchment areas right from the time of British Administration in Garo Hills.

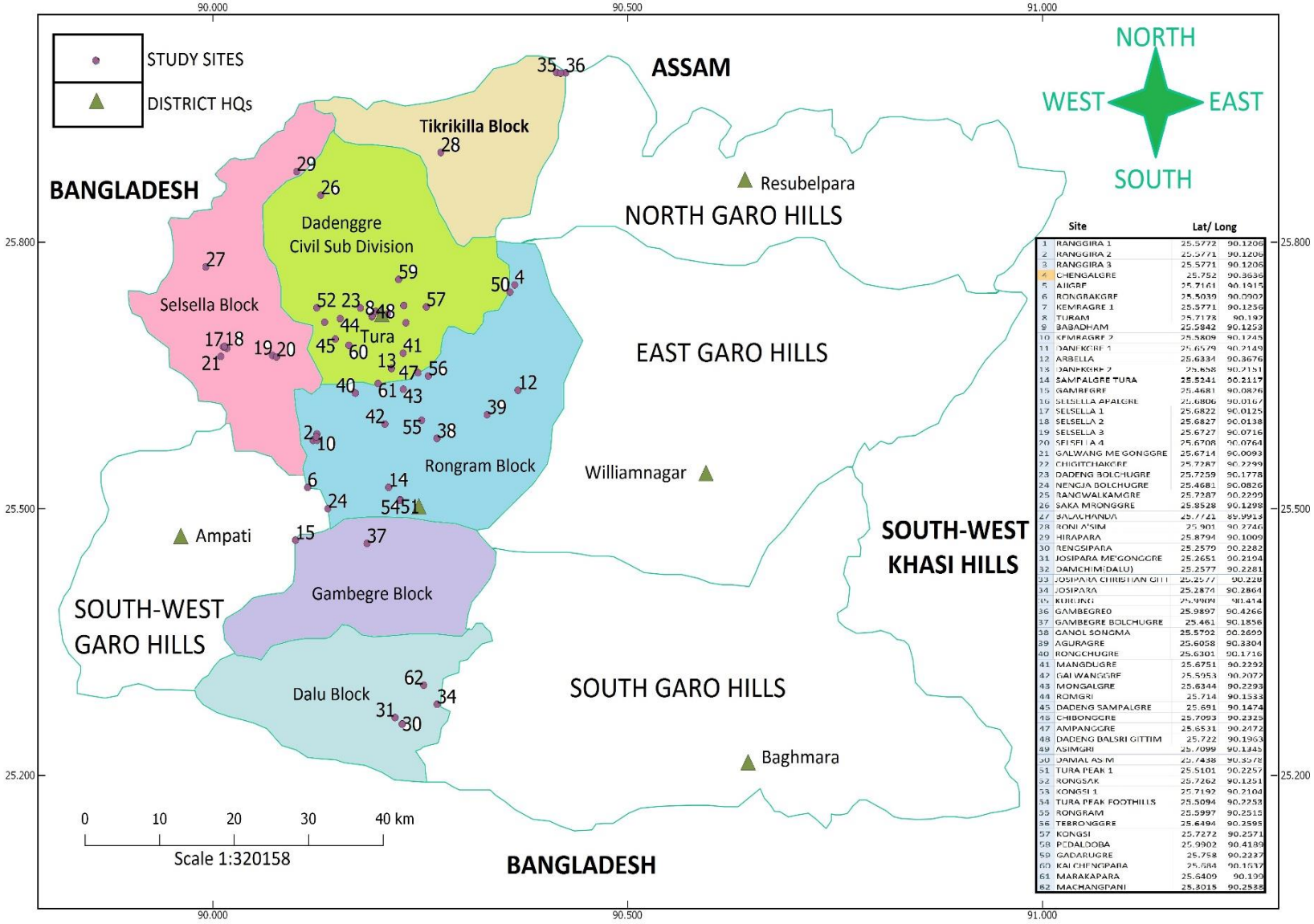
3.1.2. Arbella Range: Arbella Peak is 999 metres high above sea level. It lies on the northern side of Asananggre village on the Tura-Guwahati road. Most of the peaks in this mountain range fall in the East Garo Hills district.

3.1.3. Ranggira Range: This mountain range lies on the western fringe of the district and ends in Hallidayganj village. The height of this peak is 673 metres above sea level. On the topmost part of the range vegetation is mainly composed of bamboos.

3.2. RAINFALL AND CLIMATE:

Generally the district has a mildly tropical climate which is controlled by southwest monsoon and seasonal winds. The district being the relatively lower altitude to the rest of Meghalaya it experiences a fairly high temperature for most part of the year. The average rainfall is 2800-3300 mm of which more than two-thirds occur during the monsoon, winter being practically dry with lower diurnal range of temperature in the northern and southern foothills, whereas central upland experiences temperate climate and the places of medium altitude of the northern, southern and western part of the district experiences sub-tropical climate (Source: Automatic Weather Station, KVK, Tura, 2014). Rainy season starts with the onset of southwest monsoon in April and lasts up to October. The summer season extends from the end of March to mid-May, which is characterized by relatively high temperature. This is followed by short autumn from mid-October to November.

Fig.1. Map showing Study area and places of ethno-medicinal collections



	Site	Lat/ Long	
1	RANGGIRA 1	25.5772	90.1206
2	RANGGIRA 2	25.5771	90.1206
3	RANGGIRA 3	25.5771	90.1206
4	CHENGALGRE	25.752	90.3636
5	AIIGRE	25.7161	90.1915
6	RONGRAKGRE	25.5039	90.0902
7	KEMRAGRE 1	25.5771	90.1256
8	TURAM	25.7178	90.192
9	BABADHAM	25.5842	90.1253
10	KEMRAGRE 2	25.5809	90.1245
11	DANFKGRE 1	25.6579	90.2149
12	ARBELLA	25.6334	90.3676
13	DANFKGRE 2	25.658	90.2151
14	SAMPALGRE TURA	25.5241	90.2117
15	GAMBEGRE	25.4681	90.0826
16	SELSELLA APALGRE	25.6806	90.0167
17	SELSELLA 1	25.6822	90.0125
18	SELSELLA 2	25.6827	90.0138
19	SELSELLA 3	25.6727	90.0716
20	SELSELLA 4	25.6708	90.0764
21	GALWANG ME GONGGRE	25.6714	90.0093
22	CHIGITCHAKGRE	25.7287	90.2299
23	DADENG BOLCHUGRE	25.7259	90.1778
24	NENGJA BOLCHUGRE	25.4681	90.0826
25	RANGWALKAMGRE	25.7287	90.2299
26	SAKA MRONGGRE	25.8528	90.1298
27	BALACHINDA	25.7741	89.9914
28	RONI A'SIM	25.901	90.2746
29	HIRAPARA	25.8794	90.1009
30	RENGSIPARA	25.2579	90.2282
31	JOSIPARA ME'GONGGRE	25.2651	90.2104
32	DAMCHIM(DALU)	25.2577	90.2281
33	JOSIPARA CHRISTIAN GITT	25.2577	90.228
34	JOSIPARA	25.2874	90.2864
35	KURUNG	25.9909	90.414
36	GAMBEGRE0	25.9897	90.4266
37	GAMBEGRE BOLCHUGRE	25.461	90.1856
38	GANOL SONGMA	25.5792	90.2699
39	AGURAGRE	25.6058	90.3304
40	RONGCHUGRE	25.6301	90.1716
41	MANGDUGRE	25.6751	90.2292
42	GAI WANGGRE	25.5953	90.2072
43	MONGALGRE	25.6344	90.2293
44	RONGRI	25.714	90.1533
45	DADENG SAMPALGRE	25.591	90.1474
46	CHIBONGGRE	25.7093	90.2325
47	AMPANGGRE	25.6531	90.2472
48	DADENG BALSRI GITTIM	25.722	90.1963
49	ASIMGRI	25.7099	90.1345
50	JAMAL A'SIM	25.7438	90.3578
51	TURA PEAK 1	25.5101	90.2257
52	RONGSAK	25.7262	90.1251
53	KONGSI 1	25.7192	90.2104
54	TURA PEAK FOOTHILLS	25.5094	90.2253
55	RONGRAM	25.5997	90.2515
56	TEBRONGGRE	25.6494	90.2595
57	KONGSI	25.7272	90.2571
58	PODALDOBA	25.9902	90.4189
59	GADARUGRE	25.758	90.2237
60	KAI CHENGPARA	25.584	90.1617
61	MARAKAPARA	25.5409	90.199
62	MACHANGPANI	25.3015	90.2538

Coordinate Reference System used :EPSG:4326,WGS84

3.3. SOILS:

The soils in Meghalaya are derived from the underlying gneisses, schists and granites. They have been grouped under latosols (Oxisol) type (Pascoe 1950). In general, district is mostly hilly with alluvial plains fringing northern, western and south-western borders. The district shows different types of soil. Red Gravelly and Red Sandy Loam in the hilly slopes and Clayey Loam in the plain belt areas. The soils are acidic in nature with comparatively rich in organic matter content.

3.4. VEGETATION:

The district has a forest cover area of 1650 sq.km i.e, about 45% of the total geographical area (Source: Directorate of Economics and Statistics, Meghalaya). According to Champion and Seth (1968) forest vegetation of Meghalaya can be broadly grouped into two types:

1) Tropical moist deciduous forest
2) Sub-tropical broadleaved forest.

Inventory Report of FSI (1990) categories forests of Meghalaya into six types. The district has mostly dense tropical mixed forest, and a small patch of temperate forest in the higher parts of the Tura range. The forest area in West Garo Hills district falls in two categories viz., reserved forest and protected forest (Source: District Statistical Hand Book, 2015, Tura). The vegetation can be classified into Tropical and Sub-tropical zones based on the altitude. The main trees in the tropical zones are *Schima wallichii, Cryptocarya andersonii, Talauma hodgsonii, Gmelina arborea, Munronia pinnata, Leea macrophylla, Ficus spp., Schleichera trijuga, Butea monosperma, Lagerstroemia parviflora, Terminali chebula, Toona ciliate, Capparis zeylanica, Hibiscus macrocarpus, Engelhardtia spicata, Garcinia lancifolis,*etc.

Some lianas found in the region are: *Aristolochia cathcartii, Haematocarpus validus*, *Fissistigma wallichii, Paederia scandens,* etc. Certain species of epiphytic climbers are *Rhaphidophora spp.,* members of Gesneriaceae, etc. Some orchids found in the region are: *Aeridis spp., Bulbophyllum spp., Dendrobium spp., Thunia spp., Vanda spp.* etc.

The sub-tropical vegetations are mainly evergreen forests but few deciduous forests are also seen. The main trees are *Castanopsis hystrix, Betula culindristachus, Kayea floribunda, Talauma phellocarna, Garuga pinnata, Machilus gamblei, Quercus semiserrata, Betula alnoides, Ebretia acuminata, Pasania spicata, Premna multiflora, Aglata roxburghii,* etc. Shrubs like *Munronia pinnata, Flemingia latifolia, Eriobotya angustissima, Blumea balsamifera, Antistrophe oxyantha, Rauvolfia serpentine, Strobilanthes glomeratus and Erianthus spp.,* are also found.

3.5. SOCIO-ECONOMIC CONDITION:

The total number of villages within this study area are 1223 with a total population of 6, 42,923 with male population of 3, 24,900 and female population of 3, 18,023 (As per the 2011 Census). The population is pre-dominantly inhabited by the Garos, a tribe with a matrilineal society. Agriculture is the main occupation of Garos.

The health care facilities in the West Garo Hills district provided through 5 hospitals (3 Government and 2 Private hospitals), 3 dispensaries, 18 public health centres, 7 community health centres, 5 family welfare centres, 82 sub-centres and others one (Source: The District Medical & Health Officer, Lower Babupara, Tura, Meghalaya, Pin: 794001)

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CHAPTER 4

MATERIALS AND METHODS

4.1. COLLECTION OF INFORMATION THROUGH LOCAL LITERATURE

The information were collected in different ways i.e., through ancient literatures, traditional notes of local practitioners, plant collectors and record in the state department of West Garo hills district, Tura. The literature pertaining to any kind of literature, published and unpublished research papers, journals, newspapers, relevant official reports and other publication from government and non-government sources which can be found to give information on the traditional use of medicinal plants.

The local literatures which have collected and consulted for this particular work are as follows: *Handbook on Local Health Traditions in Meghalaya* (Rynjah P.S.1995); *Journal of Garo Medicines* (Samachik) ,Dr.Vidyanist Marak .2008; *Samachik ni Ki'tap* (Therapeutical Notes on Sam A'chik or Traditional Herbal Garo Medicines) , Dr.Vidhyanist Marak.2006.

4.2. CONDUCTING PERSONAL OR GROUP INTERVIEWS:

The study was based on the primary survey and data collected through conducting personal interviews at different places, occasions and according to conveniences. The chief/main informants in these interviews were real practitioners or oja, people who use their knowledge of medicinal plants on their immediate families and knowledgeable persons of men, women, young folks who had some knowledge on the subjects handed down by their parents and who were being treated with medicinal plants. A total of 160 individuals from 150 villages were interviewed who were identified with the help of local administrators and community leaders. Some homoeopathists and faith-healers were also interviewed.

4.3. ETHNOBOTANICAL FIELD WORK

During the fieldwork, primary information were collected from real practitioners or oja or local medicine men, authentication of voucher specimens and preservation of plant samples for proper identification were also done.

The principle guidelines followed in plant collections and herbarium techniques were given by Jain and Rao (1977); Womersley (1981); Mehrotra (1989); Martin (1995) and Cotton (1996).

4.3.1. Collection and Processing of Plant Samples

The following equipment and chemicals were used during the collection and processing of plant samples:

4.3.1.1) Field equipment:

(i) Field note book (22cm x 12cm), (ii) Wooden plant press (50cm x 34cm x 3cm), (iii) Portable plant press (48cm x 32cm x 1cm), (iv) Camera, (v) Rucksack, (vi) Knife, (vii) Scissor, (viii) Altimeter, (ix) Old newspaper, (x) Scale and pencils, (xi) Polythene bags, (xii) Small spade for collecting soil sample.

4.3.1.2) Laboratory equipment and chemicals:

(i) Plastic or Enamel tray (40cm x 30cm x 3cm), (ii) Dissecting box, (iii) Cane forceps, (iv) Fevicol / Dendrite or quick fix, (v) Specimen jars, (vi) Ethyl alcohol (98%), (vii) Rectified spirit, (viii) Formaldehyde, (ix) Mercuric chloride, (x) Paraformaldehyde, (xi)Sodium carbonate.

4.3.1.3) Herbarium equipment:

(i) Genus cover (48cm x 32cm), (ii) Species cover (42cm x 30cm), (iii) Mounting boards (42cm x 30cm), (iv) Absorbers or blotters (46cm x 30cm), (v) Cardboards (45cm x 30cm), (vi) Labels (11cm x 9cm), (vii) Straps and Needles, (viii) Napthalene balls, and (ix) Pigeon-hole herbarium cabinets (170cm x 62cm x 50c).

4.4. CONSERVATION AND PROCESSING OF PLANT SAMPLE:

It includes the collection of plant sample, herbarium techniques, identification and preservation of plant samples.

4.4.1. Collection and Preparation of Herbarium:

The plant specimens that are collected from different study areas were pressed at the spot or they were kept in vasculum or polythene bags and pressed after leaving the station. They were tagged immediately and recorded the field characters and locality. The twigs of the plants were immersed in an enamel or plastic tray containing the solution of 4% of Parafolmaldehyde (100gms of Paraformaldehyde+ 5gms of Sodium Carbonate + 1 litre of boiled water). The plants were pressed in between of the blotting paper and pressed for about 24-48 hours. The pressed plant specimens were dried in sunlight and the blotting paper was changed frequently till the plant specimens are dried (Subramanyam, 2005). Poisoning of the plant was done after the drying process. For poisoning the specimens, Mercuric Chloride, Lauryl pentachlorophenate (LPCP), Formalin, Fumigate like Methyl Bromide, Carbon disulphide, Carbon tetra chloride, Para dichlorobenzene (PDB) were used.

After drying, the specimens were mounted for permanent record on herbarium sheet of the standard size 29cm×42cm and pasted a label (10cm×12cm) on the lower right hand corner.

These herbarium sheets were stored in especially constructed areas or compactors. The specimens were arranged in their cases according to the well-known system of classification (Bentham and Hooker, 1883).

4.4.2. Identification and Preservation of plant samples:

Plant species collected from the area has been identified with the help of available floras such as: (i) Flora of British India (Hooker 1872-1897), (ii) Indian Trees (Brandis, 1906), (iii) Flora of Assam (Kanjilal *et al*., 1934-1940), (iv) Flora of Tripura State (Deb 1981 & 1983), (v) Forest Flora of Meghalaya (Haridasan & Rao, 1985 & 1987).

In addition to these, for confirmation and to identify the unidentified species, plant specimens were taken to Botanical Survey of India (Eastern Circle) Shillong, Central National Herbaria (CNH) Howrah, Kolkata. The collected plant specimens were preserved in the form of a voucher specimen in the Herbarium of Mizoram University, Aizawl and in life forms in the Botanical Garden of Mizoram University, Aizawl.

4.5. SOIL ANALYSIS

4.5.1. Collection of Soil: Soil samples were collected where the plant grows, at the time of actual field work that the soil sample are digged with the help of sampling tool, i.e. small spade, at the depth of at least 10cms and about 500 gms were collected and packed in a clean polythene bag.

4.5.2. Processing: The collected samples were air dried. Here care has been taken to prevent any contamination. The air dried soil is passed through 2mm mesh screen for analysis. Before sieving, the clods were crushed in wooden pestle and mortar so as to pass it through sieves of finer mesh size (0.2-0.5mm) (Ghost *et al.,* 1983).

4.5.3. Determination of pH:

The pH of the soil sample has been measured by the methods of soil to water ratio of 1:2 (Ghost *et al.,* 1983). By this method 20gms of soil is taken in a 100ml beaker to which 40ml of water is added. The suspension is stirred using magnetic stirrer and pH is recorded with help of pH meter.

4.5.4. Estimation of Organic Carbon:

For the estimation of Soil Organic Carbon the method given by Walkley and Black (1934) is adopted. The dried soil is grounded and completely passed through 0.2mm sieve and 0.5g sample is placed at the bottom of a dry 500ml conical flask. 10ml of 1N potassium dichromate was added in the conical flask and the flask was swirled gently to disperse the soil in the dichromate solution. The flask is kept on asbestos sheet. 20ml of conc. Sulphuric acid was carefully added from a measuring cylinder and was swirled 2 – 3 times. The flask was allowed to stand for 30 minutes. 200ml of distilled water and 10ml of ortho-phosphoric was added to get a sharper end point of titration. After the addition of 1ml diphenylamine indicator, the content was titrated with ferrous ammonium sulfate solution till the colour flashed from blue-violet to green. Simultaneously, a blank is run without soil. The soil organic carbon content was calculated by the following formula,

$$\text{Organic Carbon (\%)} = \frac{10(\text{B} - \text{T})100}{\text{B}} \times \frac{0.003}{S}$$

Where, B = Volume of ferrous ammonium sulfate solution required for blank titration in ml.

T = Volume of ferrous ammonium sulfate solution required for soil sample in ml.

S = Wt. of soil in gram.

4.5.5. Estimation of Available Phosphorus:

For the estimation of available phosphorus Olsen's method (Olsen *et al.,* 1954) is followed. 2-5gm fresh soil in 100ml Olsen's reagent is taken and shaken for 20mins. The contents are filtered through Whatman No.44 into clean and dry beakers. 5ml aliquat is taken in 50ml volumetric flask and doubled the distil water (10ml) and 2ml Ammonium Molybdate is added to it. To that 1ml stannous chloride (working std.) is added and made the volume up to 50ml with distilled water. Optical Diffraction is taken by Spectrophotometer at 700nm within 30mins.

For preparation of standard curve different concentration of phosphorus (1, 2, 3, 4, 5 and 10 ml of 2 ppm phosphorus solution) were taken in 25ml volumetric flask. The standard concentration of phosphorus was prepared in the range of 0.08ug/ml to 0.80ug/ml. The curve was plotted taking the spectrophotometer reading on the vertical axis and the amount of phosphorus (in µg P/ml) in the horizontal axis.

Calculations:

$$\mathrm{P}(\%) = \frac{\mathrm{X} \times \text{Solution } 50\text{ml}}{10 \times \text{aliquat } (5\text{ml}) \times \text{Sample wt.} (\text{gm})}$$

Where,

X= Wt. of the aliquot in µg (from standard)

4.5.6. Determination of Available Potassium

The estimation of K (Potassium) of water soluble forms are determined with the help of Flame Photometer (Ghosh *et al*., 1983). 5g of soil sample is taken with 25ml of neutral ammonium acetate (pH 7) for 5 minutes and filtered immediately through a dry filter paper

(Whatman No.1). First few drops of the filtrate were rejected. Potassium concentration in the extract was determined in the flame photometer.

4.5.6.1. Preparation of standard curve:

10 to 60 ppm K solutions was prepared from the stock solution by adding ammonium acetate solution. After attaching the appropriate filter, gas and air pressure in the flame photometer were also adjusted. The reading was adjusted to zero for the blank in flame photometer. The readings at the different conc. for K solution were noted. The readings were plotted against the concentrations.

4.5.7. Determination of Total Nitrogen:

The total nitrogen was determined by Kjeldahl method which involves three steps which were done as follows:

4.5.7.1) Digestion

5g of air dried soil sample was transfer to the digestion tube.10-15ml of conc. Sulphuric acid (H_2SO_4) was added and 5-7g of catalyst mixture of the sample. The digestion tubes were loaded in the Digester and the digestion block was heated to 410 °C till the sample colour turns colourless or light green colour.

4.5.7.2) Distillation

The main AC power and the Rear side Green colour of the distillation unit was switched on. The distilled water tap was kept in ON condition. The power was switched in control panel. The Digestion tube large (DTL) was taken with digested sample. After the addition of 10ml distilled water it was shaken well. The DTL was loaded in Distillation Unit using the slider mechanism. 25 ml of 40% Boric acid plus 3 drops of Methyl red and 3 drops of Bromocresol green was taken in a 250ml conical flask and kept in the receiver end. Then, 40ml of 40% NaOH

was added by using the control panel. The timer was set at 20 sec. on the upper button. After the process was over the boric acid turned colourless. After the READY signal was glowing, the tap water inlet was opened for condensation. The required process time was set at 6 minutes for distillation on the lower button. The run key was pressed at the lower button. After the process time was over, steam was automatically cut off and the condensation tap water inlet was closed. The conical flask containing boric acid was taken out from the receiver end and the sample was ready for titration.

4.5.7.3) Titration.

The solution of Boric acid was titrated against 0.1N HCl. Or 0.1N H_2SO_4 until the Boric acid turned pink. The burette reading was taken and the percentage of Total Nitrogen was calculated with the help of the formula.

$$\text{Percentage of N2} = \frac{14 \times \text{Normality of acid} \times \text{Titrant value} \times 100}{\text{Sample weight} \times 1000}$$

4.5.8. Estimation of Ammoniacal-Nitrogen (NH_4-N) by Indophenol Blue Method

Chemicals:

1) Standard Stock: 0.1910gm of NH_4Cl (Ammonium chloride) dissolved in 1L of distilled water (1-2ml of Chloroform were used as preservative)
2) Working Standard :(1ml=0.001mg NH_4-N) is diluted to 100 times the stock.
3) Sodium phenate Reagent: 50gm Phenol in 250 ml 40% NaOH and diluted to 400ml with distilled water.
4) Rochelle's Reagent: 60gm of sodium-potassium tartarate in 600ml of distilled water.
5) Sodium nitro-prusside: 0.16%w/v (0.16gm in 1000ml of distilled water).
6) Sodium hypochlorite solution 5% is used.

4.5.8.1) Procedure: 1-10ml was taken for working standard graph.

20gm of fresh soil is taken in 100ml 2N KCl (or deionised water).Shaken well for 30 minutes and filtered through Whatman No.1 in 50ml volumetric flask.5ml of extract is taken and to that 8ml Rochelle's reagent +1ml sodium nitroprusside solution+2ml sodium phenate is added and kept it for some time. 0.5ml of sodium hypochlorite is added and made up the volume upto 50ml by adding distilled water. Mixed well and kept the flask in a water bath at 40°C for 20 minutes. Cooled it down and O.D is taken at 625nm.

Calculation:

$$\text{NH4 \%} = \frac{\text{X} \times \text{extractant volume (50ml)}}{10 \times \text{aliquat(5ml)} \times \text{Sample dry weight}}$$

4.5.9. Estimation of Nitrate-Nitrogen (NO_3-N) by Phenol disulphonic acid Method

Chemicals:

1) Standard stock: 0.7216gm of $KN0_3$ is dissolved in 1L of distilled water.

2) Working standard (1ml=0.02mg $N0_3$-N) is diluted to 10 times the stock.

3) Phenol disulphonic acid: 25gm phenol in 225ml Conc.H_2SO_4 a hot water bath for 6 hours.

4) Ammonium hydroxide: Ammonia (1): deionised water (1) (1:1)

5) Soil extraction: 20gm of fresh soil is taken in 100ml deionised water. Shaken well for 15 minutes and filtered in Whatman No.1.

4.5.9.1. Procedure: 1-10ml is taken for working standard graph.

10ml of aliquat is taken in a 100ml beaker and kept in hot water bath to dryness. Cooled and 2ml of phenol disulphonic acid is added and shaken well. 20ml of distilled water is added followed by ammonium hydroxide until the yellow colour persists. Made up the volume upto 50ml using deionised water. O.D is taken at 410nm (blue filter).

Calculations:

$$NO3 - N = \frac{X \times \text{extractant volume} \times 1^{c}}{\text{Aliquat(ml)} \times \text{dry weight of sample(gm)}}$$

4.6. PREPARATION OF MAP:

In the course of study the measured latitudes and longitudes were used to delineate on the map using the ARCVIEW software. It has the following procedures:

1) The GPS data of the study sites are entered into an excel sheet in Degree Decimal Format.

2) The excel data is then imported into Erdas Arc GIS.

3) Coordinate reference system used is EPGS 4326, WGS 84.

4) Shapefiles of Garo Hills demarcating District Blocks and districts headquarters is opened in ArcGIS.

5) Imported excel data is overlaid in step 4.

6) Printable map which is to scale is then composed using ArcGIS.

7) Image is edited in Image Editing Program for final presentation.

4.7. MICRO-CLIMATIC CONDITION:

Light intensity has been measured using the Lux meter and relative humidity were measured by using the hygrometer. Ambient temperature were measured using the glass thermometer.

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CHAPTER 5

RESULTS AND DISCUSSION

5.1. DESCRIPTION OF PLANTS:

5.1.1. Presentation of Data:

The documented plant species having ethnomedicinal values are altogether two hundred and ten in numbers.

Scientific names of the plants are arranged alphabetically, where an effort has been made to give the latest botanical names (given by Botanical Survey of India, Shillong) and accessed numbers given by Botanical Survey of India is incorporated within the bracket. Description of the plant species are made in the sequence of : Scientific name followed by accessed number from Botanical Survey of India, Local name, Family, Locality, Disease, Parts Used, Botanical description, micro-climatic status/condition (Ambient temperature, Location with latitudes and longitudes, Humidity, Light intensity is taken at 10X, 100X and 1000X) of the growing site of the plant species, Phenology, Associates, Silvicultural character, Analysis of soil (Soil pH; Soil Moisture Content in %; Content of Nitrogen in percentage ; Content of Phosphorus in % ; Content of Potassium in ($\mu g\ g^{-1}$); Soil Organic carbon and Soil organic matter in %; Ammoniacal nitrogen in ($\mu g\ g^{-1}$); Nitrate nitrogen in ($\mu g\ g^{-1}$); uses, their mode of preparation, mode/route of application and Conservation status.

Taxonomic descriptions of the plants follow successively.

1. Botanical Name: *Achyranthes aspera* L. (23318)

Local Name: Me'mang katchi

Family: Amaranthaceae

Locality: A'simgre

Disease: Fibroid tumour of uterus, High fever

Parts Used: Whole plant parts

Botanical Description: A stiff erect perennial herb. Leaves are opposite, elliptic, obovate or suborbicular, usually rounded at apex and tomentose or velvety on both surfaces. Flowers are bisexual, greenish-white and are borne along spikes which elongate in fruits. Seeds are subcylindrical with a truncate brown apex.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25.709926 and E-90.134499

c) Humidity: 65%

d) Light Intensity: 38100 lux (100X)

PHENOLOGY:

a) Flowering: Throughout the year

b) Place of Flower: Terminal

c) Fruiting: Throughout the year

d) Silvicultural character: Moderately light demander, abundant as weeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C %=12.57 c) SOC=4.05% d) SOM=6.99 % e) P=5.2(%)

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Citrus maxima* Linn, *Artocarpus heterophyllus* L

USES: For fibroid tumour of uterus, leaves are pounded properly along with *Curcuma longa* Linn, *Flacourtia jangomas* (Lour) and this has to be taken orally by adding water. For high fever, infusion of whole plant parts can be taken orally at the rate of 1 cup daily after food.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

2. Botanical Name: *Acorus calamus* L (57115)

Local Name: Pachi

Family: Acoraceae

Locality: Bolchugre

Diseases: Diarrhoea, Dysentery, Vomiting

Parts Used: Leaves, root-stock

Botanical Description: It is a semi-aquatic herb with underground stem and root-stocks. Leaves are bright green, acute, thickened in the middle with wavy margins. Sepals are as long as the ovary the scarious; anthers yellow. The fruits are turbinate and prismatic with pyramidal tips. Seeds are oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N- 25.725899 and E-90.17778257

c) Humidity: 58%

d) Light Intensity: 34100 lux (100X)

PHENOLOGY:

a) Flowering: May-June

d) Place of Flower: Axillary/Terminal

e) Fruiting: July-August

f) Silvicultural character: Moderately light demander, mostly grown near the ponds or moist areas and it can be propagated through roots.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.9% e) P=5.2 (%)

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Colocasia* spp., *Monochoria hastaefolia* Prest.

USES: For diarrhoea, dysentery and vomiting, root-stocks and leaves are pounded along with tender leaves of *Erythrina stricta* Roxb and *Eryngium foetidum* Linn. The fresh mixture is then filtered through a clean and fine cloth and this can be taken at 1-2 teaspoonfuls twice daily after food. The pounded mixture can also be make pellets and this has to be drink by soaking in hot water.

CONSERVATION STATUS: Not cultivated and abundant near the pond, Least Concern under IUCN Red List.

3. Botanical Name: *Aegle marmelos* (Linn.) Correa ex.Schultz (36456)

Local Name: Bel/Selpri/Belati

Family: Rutaceae

Locality: Mangdugre

Diseases: Gastric ulcer, Smallpox.

Parts Used: Leaves, Fruits.

Botanical Description: It is a moderate-sized aromatic tree. Leaves are alternate, borne singly or in trifoliate. Flowers occur in clusters along the young branchlets, fleshy petals. Fruit is spherical in shape. The seeds are small, hard, flattened-oblong, bearing wooly hairs embedded in a mass of sweet aromatic mealy pulp.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.6750998 and E-90.2291653

c) Humidity: 44%

d) Light Intensity: 14000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: December-January

b) New Leaf: February-March

c) Flowering: April-May

d) Place of Flower: Axillary/Terminal

e) Fruiting: March-June

f) Silvicultural character: Light demander, frost hardy, drought resistant, susceptible to heavy rainfall.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c) SOC=5.0% d) SOM=8.62% e) P=5.9 (%)

f) K=89.4($\mu g\ g^{-1}$) g) N=0.45 % h) NH_4-N=6.02 ($\mu g\ g^{-1}$) i) NO_3-N=1.8($\mu g\ g^{-1}$)

ASSOCIATES: *Ficus* spp., *Toona ciliate* M Roem, *Lagerstroemia speciosa* L

USES: The leaves are to be boiled with leaves of *Asparagus officinalis* Willd, *Centella asiatica* L and seeds of *Cajanus cajan* Linn. The mixture can be taken at 1 cup daily against gastric ulcer. For smallpox, extracted juice from green or ripen fruits has to be taken at 1 cup in a day before food.

CONSERVATION STATUS: Cultivated in their home gardens, not yet been assessed for the IUCN Red List.

4. Botanical Name: *Aeschynanthus parasitica* Wall (20812)

Local Name: Tiˈbi gron /Gominda bitchil

Family: Gesneriaceae

Locality: Balsri gittim

Parts Used: Whole plant parts

Diseases: Asthma

Botanical Description: An epiphytic with arching and hanging stems. Leaves accumbent, petiolate, blade fleshy, orbicular, ovate, obovate or elliptic, apex apiculate to acuminate, base cuneate to rounded, margin entire, sometimes undulate, tertiary venation obscure. Inflorescence axillary or subterminal, peduncle absent, bracts elliptic. Calyx with a tube at base and with free lobes, glandular puberulent to glabrous. Filaments with glandular hairs or few sessile hairs. Seed grain and warty.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 42%

d) Light Intensity: 38100 lux (100X)

PHENOLOGY:

a) Leaf shedding: An epiphyte

c) Flowering: July-August

d) Place of Flower: Axillary/ Terminal

e) Fruiting: July-August

f) Silvicultural character: Shade demander, mostly grows on trunks of trees and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 b) SOC=4.05% c) SOM=6.99 % d) P=5.2(%)

e) K= 224.1(μg g^{-1}) f) N=0.32% g) NH_4-N= 4.04 (μg g^{-1}) h) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: Grows on trunks of trees

USES: Whole plant parts are pounded with leaves of *Portulaca oleraceae* L, *Tradescantia apathacea* SW. Infusion of the above mixture can be drink at the rate of 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

5. Botanical Name: *Aesculus punduana* Wall (10972)

Local Name: Babare

Family: Sapindaceae

Locality: Arbella

Parts Used: Leaves

Diseases: Fever/Headache

Botanical Description: It is a large evergreen tree with dark green umbrella-crown. Leaves are palmate, acuminate, shiny dark green with white venation. Inflorecence is much branched panicle bearing many small white flowers. Fruit an irregularly shaped like those of mangoes attached at the broadest end on a pendulous stalk.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29˚C

b) Location: N-25.633425 and E-90.367587

c) Humidity: 41%

d) Light Intensity: 10200 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) Flowering: June-July

c) Place of Flower: Pseudo-terminal

d) Fruiting: June-October

e) Silvicultural character: Moderate light demander, susceptible to rainfall, regeneration by natural methods.

SOIL CHARACTERISTICS:

a) pH=4.7 b)M.C=18.7 c)SOC=3.67% d) SOM=6.32% e) P=4.30(%)

f) K=99.3(μg g^{-1}) g) N=0.5% h) NH_4-N=1.35(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn., *Solanum nigrum* L., *Lantana camara*

USES: Infusion of leaves can be applied on forehead and all over the body.

CONSERVATION STATUS: Rare in the wild (As per the field survey), not yet been assessed for the IUCN Red List.

6. Botanical Name: *Ageratum conyzoides* Linn (35788)

Local Name: Samkore

Family: Asteraceae

Locality: A'jrigre

Disease: Cuts

Parts Used: Whole plant

Botanical Description: An annual herb, stems and leaves are glabrous. The leaves are ovate, acute at apex, heads corymbs. Fruits crypsels blackish brown. Flowers are purple, blue, pinkish or white and appears almost throughout the year.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29˚C

b) Location: N-25.7161159 and E-90.1914509

c) Humidity: 45%

d) Light Intensity: 47300lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: Throughout the year

c) Place of Flower: Terminal

e) Fruiting: Throughout the year

f) Silvicultural character: It is very common in the disturbed sites and degraded areas, thrives in any garden. It reproduces mainly by seed.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e)P=6.2(%) f) K=226.7(µg g^{-1}) g) N=0.36% h)NH_4-N=3.29(µg g^{-1}) i)NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Chromolaena odorata* King, *Spilanthes acmella* L

USES: A paste made from whole plant can be directly applied on the cuts as an antiseptic.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

7. Botanical Name: *Aglaonema hookerianum* Schott (85019)

Local Name: Dotmi jaˈpa daˈlgipa (N)

Family: Araceae

Locality: Danekgre

Parts Used: Leaves

Disease: Fractures

Botanical Description: An evergreen climbing herbs with stems growing decumbent and creeping. Stems that grow along the ground may root at the nodes. Leaf blade narrowly elliptic, slightly asymmetric, shortly acuminate, spathe green, convoluate at base. Flowers are in a spadix with short zone of female flowers near the base and male flowers near the tip. Fruit a fleshy berry and is one seeded.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.657911 and E-90.214900

c) Humidity: 44%

d) Light Intensity: 6500 lux (100X)

PHENOLOGY:

a) Flowering: March-April

b) Place of Flower: Terminal

c) Fruiting: April-May

d) Silvicultural character: Shade demander, it can be propagated with cuttings and also by dividing basal shoots, it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e)P=5.9 (%)

f) K=89.4(μg g^{-1}) g) N=0.45% h) NH_4-N=6.02(μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: *Stereospernum tetragonum* D.C, *Schima wallichii* Kurtz

USES: Leaf pastes are tied on the fractured portion of the bones.

CONSERVATION STATUS: Available in the wild, not yet been assessed for the IUCN Red List.

8. Botanical Name: *Albizzia lebbeck* Benth (9228)

Local Name: Siris

Family: Fabaceae

Locality: Me'gonggre

Disease: Diarrhoea

Parts Used: Bark

Botanical Description: A deciduous tree, having pale bark with glabrous young shoots. Leaves are compound, bipinnate, shortly stalked, glabrous glands are raised, elliptic to circular. Flowers greenish-white, fragrant in pedunculate heads with stamens free above the corolla. Pods pale yellow straw to light brown at maturity.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28˚C

b) Altitude: N-25˚40 and E-90˚55′

c) Humidity: 43%

d) Light Intensity: 10800lux (100X)

PHENOLOGY:

a) Leaf shedding: December-February

b) New Leaf: March-April

c) Flowering: April-September

d) Place of Flower: Axillary and Terminal

e) Fruiting: September-October

f) Silvicultural character: Moderate light demander, susceptible to droughts and some frosts. It regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37(%)

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Careya arborea* Roxb, *Derris robusta* Roxb.

USES: Infusion of barks can be taken at 2 teaspoonfuls twice daily after food.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

9. Botanical Name: *Albizzia chinensis Roxb.* (11778)

Local Name: Bolpu

Family: Fabaceae

Locality: Me'gonggre

Disease: Piles

Parts Used: Bark

Botanical Description: This is an evergreen tree having flat and spreading crown. Branchlets angular in the distal parts, terete and glabrascent. Leaves bipinnate, pubescent, with filiform tail and rachis stout. Inflorescence in termianal, flowers yellow-green, tomentose to hirsute panicle, peduncled. Seeds flattened.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25˚C

b) Altitude: N-25.72 and E-90.14

c) Humidity: 42%

d) Light Intensity: 10900lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen tree

b) Flowering: September-June

d) Place of Flower: Terminal

e) Fruiting: October-August

f) Silvicultural character: Moderately light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37(%)

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Bidens pilosa* L, *Mikania micrantha* H.B.K

USES: Infusion of bark can be taken orally at 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Available in the wild, not yet been assessed for the IUCN Red List.

10. Botanical Name: *Alocasia fornicata* (Roxb.) Schott. (20215)

Local Name: Matchi Kingbak

Family: Araceae

Locality: Subdivision area

Parts Used: Tuber

Diseases: Beri beri

Botanical Description: A perennial rhizomatous herb. Leaves large or sagittate, ovate, apex acute, shortly peltate, proximal lobes triangular, intercostae regular, canaculate, base sheathing. Flowers grow at the end of a short stalk but are not conspicous often hidden behind the leaf petioles.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25˚ C

b) Altitude: N-20˚16′ and E-83˚34′

c) Humidity: 54%

d) Light Intensity: 47300lux (100X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Axillary

c) Fruiting: September-October

d) Silvicultural character: Shade demander, mostly found in moist shady places and dense forests.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Mikania micrantha* H.B.K, *Spilanthes acmella* L

USES: Paste of tubers is used to massage on the affected portion of the legs.

CONSERVATION STATUS: Not cultivated but preserved in their gardens, not yet been assessed for the IUCN Red List.

11. Botanical Name: *Aloe barbadensis* Mill (25363)

Local Name: Krito kumara/Aloevera

Family: Liliaceae

Locality: Galwanggre

Diseases: Leaves

Parts Used: Burns, Urinary tract infection, Mouth ulcer

Botanical Description: A succulent plant having yellow flecks on their lower and upper stem surfaces. The leaves are thick and fleshy. Flowers are produced on a spike up and each flower being pendulous. Fruits are multicarpulate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Altitude: N-25˚40 and E-90˚55′

c) Humidity: 51%

d) Light Intensity: 1950 lux (10X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) Flowering: February-March

d) Place of Flower: Axillary

e) Fruiting: February-March

f) Silvicultural character: It can tolerate full sun to partial shade. It can propagate by division or rarely propagated by seeds.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0%

f) K=67.8(μg g^{-1}) g) N=0.30% g) NH_4-N=7.21(μg g^{-1}) h) NO_3-N=1.78(μg g^{-1})

ASSOCIATES: Cultivated as ornamentals.

USES: For burns and mouth ulcer, paste made from leaves can be directly applied to the affected parts of the body till the injury is healed. Crushed leaves can also be taken orally for urinary tract infection.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

12. Botanical Name: *Alstonia scholaris* (Linn.) R.Br (15076)

Local Name: Sokchon

Family: Apocynaceae

Locality: Galwanggre

Diseases: Malaria, High pressure, Lactation.

Parts Used: Bark

Botanical Description: A middle-sized evergreen tree, whorled branches and bitter milky juice. Leaves are in whorls and coriaceous. Flowers are greenish-white in terminal umbellate-corymbose cymes. Fruits are pendulous clusters, paired, slender. Seeds are hairy.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Altitude: N-25˚40 and E-90˚55′

c) Humidity: 47%

d) Light Intensity: 12070 lux (10X)

PHENOLOGY:

a) Leaf shedding: September-October

b) New Leaf: February-March

c) Flowering: February-March (However, flowering in Oct-Dec and fruiting in Jan-March is also observed by P K Valsalakumari *et al*., 2008)

d) Place of Flower: Terminal

e) Fruiting: April-May

f) Silvicultural character: Light demander, resistant to high rainfall, susceptible to jhum fire, artificial and natural regeneration is easy.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0(%)

f) K=67.8(μg g^{-1}) g) N=0.30% g) NH_4-N=7.21(μg g^{-1}) h) NO_3-N=1.78(μg g^{-1})

ASSOCIATES: *Dillenia indica* L, *Areca catechu* L, *Phyllanthus emblica* Linn

USES: For malaria, barks are to be boiled with 1litre of water along with barks of *Delonix regia* (B.Hook), *Punica granatum* L. The mixure has to be taken at 3 cups a day. Decoction of bark is used for promoting the flow of milk in nursing of mothers. For high blood pressure, decoction of bark can be taken twice daily.

CONSERVATION STATUS: Not cultivated but preserved in their betel nut plantations, not yet been assessed for the IUCN Red List.

13. Botanical Name: *Ananus cosmosus* L (4165)

Local Name: Anaros/Sakal

Family: Bromeliaceae

Locality: Saka Mronggre

Disease: Stomachache

Parts Used: Leaves

Botanical Description: It is a perennial herbaceous plant. It has a short, stocky stem with tough, waxy leaves. Leaves are stiff, spiny, arranged in a circular cluster. Inflorescence is terminal, hermaphroditic and actinomorphic trimerous flowers. Fruits are capsules that contain small naked, winged seeds with a reduced endosperm and a small embryo.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.852849 and E-90.129825

c) Humidity: 48%

d) Light Intensity: 4870 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: November-December

c) Place of Flower: Terminal

d) Fruiting: December-March

e) Silvicultural character: Light demander, can be propagated by crowns, cultivated in the homegardens.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=15.5 c)SOC=4.0% d) SOM=6.89% e) P=4.50(%)

f) K=236.7(μg g^{-1}) g) N=0.3% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=1.67 (μg g^{-1})

ASSOCIATES: Cultivated along with *Areca catechu* L

USES: Tender leaves or stock can be eaten raw for stomachic.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

14. Botanical Name: *Andrographis paniculata* (Burm.f.Nees) (16558)

Local Name: Kalmek

Family: Acanthaceae

Locality: Rongchugre

Disease: Fever, Malaria, Tuberculosis

Parts Used: Whole plant

Botanical Description: It is an erect and unbranched annual herb with 4-angled branches. Leaves are lanceolate, tapering to the base and acute pale beneath. Flowers are small and solitary and are arranged in lax spreading axillary and terminal racemes or panicles. Capsules are long

and tapering at each end. Seeds are numerous, subquadrate, yellowish brown, rugose and glabrous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Location: N-25.6301108 and E-90.1715775

c) Humidity: 43%

d) Light Intensity: 72100 lux (100X)

PHENOLOGY:

a) Flowering: October-November

d) Place of Flower: Axillary/Terminal

e) Fruiting: November-May

f) Silvicultural character: The plant is gregarious and grows abundantly in moist, shady waste lands and also in dry forests.

SOIL CHARACTERISTICS:

a) pH= 4.5 b) %= 12.57 b) SOC=4.05% c) SOM=6.99 % d) P=5.2 (%)

e) K= 224.1(μg g^{-1}) f) N=0.32% g) NH_4-N= 4.04(μg g^{-1}) h) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Cultivated in their homegardens, not yet been assessed for the IUCN Red List

USES: For fever, malaria, tuberculosis, decoction of whole plant parts can be drink at the rate of 1-2 cups twice daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

15. Botanical Name: *Antidesma diandrum* Roth (49566)

Local Name: Adurak/Arobak

Family: Phyllantaceae

Locality: Sampalgre

Disease: Blood purifier, Constipation

Parts Used: Fruits

Botanical Description: It is an evergreen shrub. Leaf below villous with curled hairs. Leaves elliptic or obovate, base attenuate, apex shortly acuminate. Spikes terminal, single or 2-branched. Perianth greenish-yellow. In male flowers stamens 2, attached in depressions on the disc in female flowers ovary obovoid, 1-loculed; ovules 2. Seeds globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Altitude: N-25˚31′ and E-090˚12′

c) Humidity: 40%

d) Light Intensity: 7900 lux (100X)

PHENOLOGY:

a) Flowering: November-December

b) Place of Flower: Axillary/Terminal

c) Fruiting: December- February

d) Silvicultural character: Grown in optimum temperature, artificial and natural regenerations have no problems.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e)P=5.9(%)

f) K=89.4(μg g^{-1}) g) N=0.45% h) NH_4-N=6.02(μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: *Tamarindus indica* Linn, *Euphorbia cotinifolia* L

USES: For blood purifier and constipation, fruits can be eaten raw.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List.

16. Botanical Name: *Ardisia solanacea* Roxb (42927)

Local Name: Nagri

Family: Myrsinaceae

Locality: Balsri gittim

Diseases: Carminative

Parts Used: Leaves, Flowers

Botanical Description: It is a large shrub or small tree. Leaves are simple, alternate, apex acuminate or acute, margin entirely or obscurely crenate. Inflorescence in axillary corymb-like bisexual racemes. Sepals are depressed ovate, almost circular or kidney-shaped, dotted and ciliated. The corolla lobe is ovate-elliptical, assymetrical, dotted with small scattered glands.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26˚C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 53%

d) Light Intensity: 38000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: An evergreen shrub

b) Flowering: May-July

d) Place of Flower: Axillary

e) Fruiting: June-April

f) Silvicultural character: Moderate light demander, susceptible to heavy rainfall and can be regenerate naturally and artificially as well.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C %=12.57 b) SOC=4.05% c) SOM=6.99 % d) P=5.2(%)

e) K= 224.1(μg g^{-1}) f) N=0.32% g) NH_4-N= 4.04(μg g^{-1}) h) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Hibiscus rosa-sinensis* L, *Mangifera indica* Linn.

USES: Leaves and flowers can be eaten raw as carminative.

CONSERVATION STATUS: Domesticated, not yet been assessed for the IUCN Red List.

17. Botanical Name: *Aristolochia bracteata* Lam (66752)

Local Name: Sokso budu

Family: Aristolochiaceae

Locality: Rongkhon

Disease: Antiemetic, Diarrhoea, Dysentery.

Parts Used: Leaves

Botanical Description: A perennial, prostrate, slender herbs. Inflorescence in axillary, flowers incomplete and actinomorphic. Leaves are simple, apex acuminate. Fruits capsule, ablong-ellipsoid, glabrous. Seed deltoid with slightly connate base.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Altitude: N-25°53 and E-90.22`

c) Humidity: 48%

d) Light Intensity: 8190 lux (10X)

PHENOLOGY:

a) Leaf shedding: A perennial herb

b) Flowering: August-May

c) Place of Flower: Axillary

d) Fruiting: August-November

e) Silvicultural character: Moderately light demander, propagated through seeds, artificial and natural regeneration have no problems.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%=10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35(%)

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Psidium guajava* Linn, *Tridax procumbens* L

USES: For antiemetic, diarrhoea and dysentery, leaves are pounded properly and this can be drink by adding little amount of hot water.

CONSERVATION STATUS: Domesticated, not yet been assessed for the IUCN Red List.

18. Botanical Name: *Aristolochia cathcartii* Hook.F (69129)

Local Name: Golbera budu

Family: Aristolochiaceae

Locality: Balsri gittim

Diseases: Asthma

Parts Used: Bark, Roots

Botanical Description: A lianas having corky furrowed bark. Leaves are simple, acuminate at apex, broadly ovate, sometimes ovate-lanceolate, base cordate, slightly lobed. Flowers usually in short brown villous cymes from axils of existing or fallen leaves. Pedicels long, capsule bluntly apiculate, softly tomentose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 52%

d) Light Intensity: 5650 lux (10X)

PHENOLOGY:

a) Flowering: May-July

b) Place of Flower: Axillary

e) Fruiting: July-March

f) Silvicultural character: Light demander, propagated through stem cuttings and it regenerates artificially.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=12.57 b) SOC=4.05% c) SOM=6.96% d) P=5.2(%)

e) K= 224.1(μg g^{-1}) f) N=0.32% g) NH_4-N= 4.04(μg g^{-1}) h) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Curcuma spp., Hibiscus spp., Ageratum conyzoides* Linn

USES: For asthma, infusion of bark and roots can be taken orally daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

19. Botanical Description: *Artemisia vulgaris* Linn (62304)

Local Name: Kil pul

Family: Asteraceae

Diseases: Malaria, stomachachic, sores.

Parts used: Whole plant

Locality: Turam

Botanical Description: A tall aromatic herb or undershrub, with many thin lateral roots. Stem leafy, paniculately branched and solid. Leaves sessile, alternate, aromatic, ovate, lobed and deeply pinnatisect. Heads ovoid or sub-globose, solitary or gascicled, heterogamous or homogamous. Fruit minute, oblong and ellipsoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29˚C

b) Altitude: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 45%

d) Light Intensity: 3860 lux (10X)

PHENOLOGY:

a) Leaf shedding: June-November

b) New Leaf: February-March

c) Flowering: December-March. However, flowering in the month of August-November is reported by Chatterjee & Prakashi (1997)

d) Place of Flower: Axillary

e) Fruiting: April-May

f) Silvicultural character: Light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=4.9 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e)P=6.2(%)

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Careya arborea* Roxb.

USES: For malaria, the juice extracted from the roots can be taken at 2 tablespoonfuls twice daily after food. Decoction of leaves is used against stomachic. For sores, a paste made from the whole plant can be gently applied to the affected parts daily after properly washing the sores.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

20. Botanical Name: *Artocarpus heterophyllus* Lam (88780)

Local Name: Te'brong

Family: Moraceae

Locality: Sampalgre

Disease: High blood pressure

Parts Used: Leaves

Botanical Description: This is a large evergreen tree having dense canopy. Leaves are coriaceous, glossy, dark green, alternate, leathery, elliptic to oval. Inflorescence borne on axillary. Flowers are tiny, pale green; female flowers are larger, elliptic or rounded with a tubular calyx. Fruit is syncarp. Seeds are light brown to brown, enclosed in a thin, whitish membrane.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Altitude: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 56%

d) Light Intensity: 12300 lux (100X)

PHENOLOGY:

a) Flowering: February-April

b) Place of Flower: Axillary

c) Fruiting: July-October

d) Silvicultural character: Light demander, it can tolerate high pH soils, rocky and laterite soils.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e)P=5.9(%)

f) K=89.4 ($\mu g\ g^{-1}$) g) N=0.45% h) NH_4-N=6.02($\mu g\ g^{-1}$) i) NO_3-N=1.8($\mu g\ g^{-1}$)

ASSOCIATES: *Baccaurea ramiflora* Lour, *Mangifera indica* Linn

USES: For hypertension, 1-2 tender leaves are boiled and juice can be taken at 1-2 cups daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

21. Botanical Name: *Artocarpus lakucha* Roxb (88802)

Local Name: Arimu

Family: Moraceae

Locality: Bolchugre

Disease: High fever

Parts Used: Bark

Botanical Description: A large deciduous tree with a spreading crown. Leaves simple, alternate, elliptical, acute and leathery. Infloresence on axillary and flowers are unisexual. Fruit is a syncarp, irregularly rounded, turning yellow when mature and later brown. The arrangement of seeds is somewhat like jackfruit containing sticky white latex.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 21°C

b) Altitude: N-25°734732`and E-90°180036`

c) Humidity: 67%

d) Light Intensity: 1870 lux (10X)

PHENOLOGY:

a) Leaf shedding: December-January

b) New Leaf: February-March

c) Flowering: March-April

d) Place of Flower: Axillary

e) Fruiting: May-July

f) Silvicultural character: Light demander, artificial and natural regeneration has no problems, susceptible to heavy rainfall.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=12.57 b) SOC=4.05% c) SOM=6.95% d) P=5.2(%)

e) K= 224.1(µg g^{-1}) f) N=0.32% g) NH_4-N= 4.04(µg g^{-1}) h) NO_3-N=1.36(µg g^{-1})

ASSOCIATES: *Tetrastigma lanceolarium* Planch, *Urena lobata* L

USES: Infusion of bark can be taken by adding a pinch of sugar in order to make it sweet (extracted juice is bitter).

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List.

22. Botanical Name: *Arundo donax* Linn (40276)

Local Name: Ratop

Family: Poaceae

Locality: Dallangre

Parts Used: Roots

Disease: High fever

Botanical Description: It is a tall, perennial grass. Stem is hollow, many-noded, simple or scantily branched. Rhizomes are tough and fibrous and form knotty, spreading mates that penetrate deep into the soil. Leaves linear-lanceolate from the broad base, alternate, hairy tuft at the base, panicles erect, branches scaberulous, erect or drooping, glumes glabrous. Seeds are rarely fertile.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 20°C

b) Location: N-25°737065` and E-90°227002`

c) Humidity: 52%

d) Light Intensity: 61400 lux (100X)

PHENOLOGY:

a) Flowering: October-November

b) Place of Flower: Terminal

c) Fruiting: November-December

f) Silvicultural character: It reproduces by underground rhizomes, seeds are rarely fertile, forms dense mostly on disturbed sites, sand dunes and in wet lands.

SOIL CHARACTERISTICS:

a) pH=4.0 b) M.C%=17.64 c)SOC=3.66% d) SOM=6.33% e) P=5.7(%)

f) K=334.5(μg g^{-1}) g) N=0.28% h) NH_4-N=4.95(μg g^{-1}) i) NO_3-N=1.32(μg g^{-1})

ASSOCIATES: *Imperata cylindrica* Linn, *Saccharum arundinaceum* Retz

USES: Roots are pounded along with *Phyllanthus urinaria* Linn., *Elephantopus scaber* Linn, and *Tricosanthes multiloba* CB.Clarke. The juice of mixture can be drink and also used to massage the whole body.

CONSERVATION STATUS: Rare in the wild (As per the field survey), not yet been assessed for the IUCN Red List.

23. Botanical Name: *Asparagus officinalis* Willd (50911)

Local Name: Me'mang ta'matchi

Family: Liliaceae

Locality: Ampanggre

Dieseases: Urinary tract infections, Jaundice, Piles, Liver problems, Blood pressure.

Parts used: Whole plant

Botanical Description: A plant with a woody stem that sends runners out, has needle like leaves with small flowers. Inflorescence solitary or in spike, raceme or panicle. It has an adventitious

root system with tuberous roots. Flowers regular, bisexual, anthers often versatile. Ovary superior, tricarpellary, ovules many, exile placentation. Fruits berry or capsule.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25°37.356` and E-90°11.5777`

c) Humidity: 60%

d) Light Intensity: 67600 lux (100X)

PHENOLOGY:

a) Flowering: February-March

b) Place of Flower: Axillary

c) Fruiting: April

g) Silvicultural character: Light demander, can withstand drought, susceptible to pest and diseases.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5(%)

f) K=88.3 ($\mu g\ g^{-1}$) g) N=0.31% h) NH_4-N=7.08($\mu g\ g^{-1}$) i) NO_3-N=1.9($\mu g\ g^{-1}$)

ASSOCIATES: *Hollarhena antidysenterica* Wall, *Chromolaena odorata* King

USES: Decoction of roots is used against Urinary Tract Infection, lowering blood pressure and Liver problems. An infusion of whole plant is also recommended to treat jaundice and liver problems. For piles, decoction of whole plant parts can be taken twice daily after food.

CONSERVATION STATUS: Abundant in the wild and some even cultivated, not yet been assessed for the IUCN Red List.

24. Botanical Name: *Averrhoa carambola* Linn (85483)

Local Name: Amlengga

Family: Oxalidaceae

Diseases: Piles, jaundice

Parts used: Fruits, leaves

Locality: A'jrigre

Botanical Description: A small evergreen tree, multi-branched, stems irregularly fluted, rounded crown; leaves spirally arranged, imparipinnate, exstipulate, subopposite, ovate, rhomboid or lanceolate, acuminate, finely hairy. Flowers small, white and purple in short axillary and terminal panicles.Calyx glabrous and petals twisted. Stamens usually shorter and antherless. Fruits oblong in outline, sharply angled.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26˚C

b) Location: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 56%

d) Light Intensity: 14900lux (100X)

PHENOLOGY:

a) Leaf shedding: February-March

b) New Leaf: March-April

c) Flowering: August-September

d) Place of Flower: Axillary/terminal

e) Fruiting: November-January

f**) Silvicultural character:** It can grow in warm locations, limited tolerance to drought, intolerant of constantly windy conditions, can survive under a wide range of light intensities.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7(μg g^{-1}) g) N=0.36 % h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Citrus maxima* L., *Ficus hispida* Linn, *Ageratum conyzoides* Linn.

USES: For bleeding piles, paste made from the fruits can be applied to the affected parts twice daily. For jaundice, fruit juice can be taken daily after meals. Fruits can also be eaten at 3-4 slices daily after meals.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

25. Botanical Name: *Azadirachta indica* A. Juss (35428)

Local Name: Neem

Family: Meliaceae

Locality: Chigitchakgre

Diseases: Skin diseases, Diabetes, Abscess

Parts Used: Leaves

Botanical Description: A middle-sized deciduous tree, with a short erect trunk and broad crown, branchlets slender. Leaves are pinnate, accumbent, petioles are short, subglabrous; rachis channelled above, ovate to lanceolate, glossy serrate. Inflorescence on axillary, flowers bisexual, actinomorphic, pentamerous. Fruit ellipsoidal, exocarp thin, mesocarp pulpy, endocarp cartilaginous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25.722994 and E-90.195989

c) Humidity: 52%

d) Light Intensity: 61200 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-January

b) New Leaf: February-March

c) Flowering: April-May

d) Place of Flower: Axillary

e) Fruiting: June-August

f) Silvicultural character: Frost tender, shade bearer, drought resistant, fire susceptible, and coppices well, produces root suckering.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e)P=5.67 (%)

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Euphorbia neriifolia* L, *Chromolaena odorata* King

USES: Fresh leaves are eaten raw against diabetes. For skin diseases, decoction of fresh leaves is recommended for taking bath. Infusion of leaves can be applied on abscess.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

26. Botanical Name: *Bauhinia variegata* L (40633)

Local Name: Me'gong gipok

Family: Caesalpiniaceae

Locality: A'jrigre

Diseases: Breathing problems

Parts Used: Seeds

Botanical Description: It is a semi evergreen medium-sized tree, with deeply slender, zig-zag branches. Leaves are deeply emarginated and auriculate. Flowers are white, usually with 4 white petals and 1 pink or variegated petal. Inflorescence are in short axillary or terminal racemes.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Altitude: 20˚1676058′ and E-83˚34.217898′

c) Humidity: 44%

d) Light Intensity: 47500 lux (100X)

PHENOLOGY:

a) Leaf shedding: October-November

b) Flowering: October-November

c) Place of Flower: Axillary/Terminal

d) Fruiting: November-December

e) Silvicultural character: Light demander, capable of growing on wide range of soils and it can be propagated by cutting or seed.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78 % e) P=6.2(%)

f) K=226.7 ($\mu g\ g^{-1}$) g) N=0.36 % h) NH_4-N=3.29($\mu g\ g^{-1}$) i) NO_3-N=1.2($\mu g\ g^{-1}$)

ASSOCIATES: *Chromolaena odorata* King, *Ageratum conyzoides* Linn

USES: Infusion of seeds can be taken orally at the rate of 1-2 teaspoonfuls daily after food or massaged all over the body.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List.

27. Botanical Name: *Bombax malabaricum* L (2624)

Local Name: Bolchu

Family: Bombaceae

Locality: Josipara

Parts Used: Bark

Diseases: UTI

Botanical Description: This is a large to medium-sized deciduous tree. Leaves are palmately compound, digitately arranged, oblong to oblong-lanceolate, acuminate and glabrous. Inflorescence borne on the terminal/axillary and conspicuous. Fruits a capsule, ovoid, pointed, longitudinally ribbed, densely covered with greyish white hairs, cottony and silky. Seeds small, black, embedded in cottony material.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.2874408 and E-90.2864163

c) Humidity: 62%

d) Light Intensity: 53000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: December

b) New Leaf: March-April

c) Flowering: February-March

d) Place of Flower: Axillary/Terminal

e) Fruiting: March-May

f) Silvicultural character: Strong light demander, resists slight frost, can tolerate heavy rainfall and they are anemophilous and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.9 b)M.C%=9.6 c)SOC=2.67% d) SOM=4.60% e) P=4.42(%)

f) K=1911.2 ($\mu g\ g^{-1}$) g) N=0.3% h) NH_4-N=2.6($\mu g\ g^{-1}$) i) NO_3-N=3.1($\mu g\ g^{-1}$)

ASSOCIATES: *Chromolaena odorata* King, *Clerodendrum squamatum* Wall

USES: Barks are pounded well along with barks of *Cajanus cajan* Linn, *Zea mays* Linn , *Asparagus officinalis* Willd.,and roots of *Lygodium flexuosum* Linn. The infusion of mixture can be drink at the rate of 1 cup daily after food against UTI.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List.

28. Botanical Name: *Buettneria pilosa* Roxb (45780)

Local Name: Du'machok

Family: Sterculiaceae

Locality: A'jrigre

Parts Used: Leaves

Diseases: Burns

Botanical Description: It is a large woody and prickly climber with grooved, strigose, branchlets. Leaves prickly, palmate, suborbicular, and pilose on both surfaces. Inflorescence in

axillary. Flowers minute and campanulate. Capsules globose, studded with subulate barbed prickles. Seeds ovoid and angular.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Altitude: 20˚1676058′ and E-83˚34.217898′

c) Humidity: 47%

d) Light Intensity: 47900 lux (100X)

PHENOLOGY:

a) Leaf shedding: Perennial

a) Flowering: November-December

b) Place of Flower: Axillary

c) Fruiting: December-January

d) Silvicultural character: Moderately light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2 (%)

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Macaranga indica* R.W, *Gmelina arborea* Roxb.

USES: Leave paste along with leaves of *Govania tiliaefolia* Lamk. are used to tie on the burns.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

29. Botanical Name: *Butea monosperma* (Lam.) Kuntze (83060)

Local Name: Bolrure/Bolkui/Bolapal

Family: Fabaceae

Locality: Selsella

Diseases: Piles, Goiter, Skin diseases

Parts Used: Bark, Root, Flowers

Botanical Description: It is a medium-sized semi-deciduous tree. Leaves are trifoliate, stipulate, long petiole. Leaflets are obtuse, glabrous above and rigidly coriaceous. Racemes axillary, crowded towards the extremeties of leaflets branchlets. The fruit of palas is flat legume. Pods are stalked, thickened at the sutures. The seeds are oval, encloses two large, leafy cotyledons.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 21°C

b) Altitude: N-25˚40.836′ and E-90˚00.748

c) Humidity: 46%

d) Light Intensity: 72100 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: March-April

c) Flowering: January-April

d) Place of Flower: Axillary

e) Fruiting: May-June

f) Silvicultural character: Light demander, frost hardy, drought resistant, not susceptible to browsing, coppices well, produces root suckering, pollarding well.

SOIL CHARACTERISTICS:

a) pH=3.8 b)M.C%=23.67 c)SOC=4.0% d) SOM=6.90% e) P=4.2(%)

f) K=2341.7(μg g^{-1}) g) N=0.32 % h) NH_4-N=5.84(μg g^{-1}) i) NO_3-N=1.52(μg g^{-1})

ASSOCIATES: *Careya arborea* Roxb, *Mikania micrantha* H.B.K

USES: Crushed barks are boiled with 1litre of water along with leaves of *Centella asiatica* L, *Asparagus officinalis* Willd and *Cajanus cajan* L. The mixture has to taken orally for piles at the rate of 1 cup daily after food. For goiter, the paste roots can be used as an ointment for external application. For skin diseases, decoction of flower can be taken orally.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List.

30. Botanical Name: *Bryophyllum pinnatum* (Lam.) (35669)

Local Name: Wal'kam/Mata sam (bijakoni chagipa N)

Family: Crassulaceae

Locality: Chenggalgre

Diseases: Cuts, Bruises, Burns

Parts Used: Leaves

Botanical Description: A succulent perennial herb, having fleshy or glossy leaves. Leaves are reticulate, obovate and opposite. From the margin of the leaves small adventitious buds with tiny roots may detach themselves from the leaves of the mother plant and falls to the ground and grow into new plant. Seeds small-smooth oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Altitude: N-25.804858 and E-90.260876

c) Humidity: 46%

d) Light Intensity: 12900 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) Flowering: December-April

c) Place of Flower: Terminal

d) Fruiting: December-April

e) Silvicultural character: Moderate light demander, cannot withstand to heavy rainfall and is a drought tolerant species.

SOIL CHARACTERISTICS:

a) pH=5.6 b)M.C%=15.1 b)SOC=3.6% c) SOM=6.20% d) P=6.5(%)

e) K=77.1(μg g^{-1}) f) N=0.29 % g) NH_4-N=6.06(μg g^{-1}) h) NO_3-N=1.68(μg g^{-1})

ASSOCIATES: Cultivated as an ornamental.

USES: For cuts, burns and bruises, fresh leaves are smashed on palms and applied directly on the affected parts of the body.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

31. Botanical Name: *Cajanus cajan* Linn (34297)

Local Name: Mendu

Family: Papilionaceae

Locality: Bolchugre

Diseases: Evil spirit/Demon possessed, Piles, Gastric ulcer

Parts Used: Stem bark, Bark, Seeds, Pods

Botanical Description: An erect shrub with many branches provided with silky hair. Leaves are compound, pulvinate, leaflets oblong-lanceolate, entire densely silky beneath. Inflorescence in terminal panicles or corymbose racemes. Fruits pods, tipped with the persistent lower half of the style, seeds vary in colour from yellow and red to brown or black.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Location: N- 25.725899 and E-90.17778257

c) Humidity: 54%

d) Light Intensity: 39200lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual shrub

b) Flowering: November-December

c) Place of Flower: Terminal

c) Fruiting: January-March

d) Silvicultural character: Moderately light demander, propagated through seeds and it regenerates artificially.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 b) SOC=4.05% c) SOM=6.99% d) P=5.2 (%)

e) K= 224.1(μg g^{-1}) f) N=0.32% g) NH_4-N= 4.04(μg g^{-1}) h) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: It is cultivated in the jhum field.

USES: For infested by evil spirit/possessed by deities, stem barks are used to tie up on the wrist and ankle. For piles, decoction of bark can be taken orally at the rate of1-2 cups daily after food. For gastric ulcer, decoction seeds and pods can be taken orally.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

32. Botanical Name: *Callicarpa arborea* Roxb (97299)

Local Name: Makanchi

Family: Verbenaceae

Locality: Chigitchakgre

Diseases: Internal bleeding, Nerve problems, Blood cloth

Parts Used: Bark

Botanical Description: It is a medium-sized deciduous tree having trunk stout. Leaves are decussate-opposite, elliptic-lanceolate, ovate, acute, simple, ternate, exstipulate, sub-sessile or petiolate. Inflorescence on axillary cymose, solitary pedunculate or sessile. Flowers pale purple, fruit drupe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 20°C

b) **Location:** N-25°43'43.2" and E-90°13'47.8"

c) Humidity: 50%

d) Light Intensity: 18500 lux (100X)

PHENOLOGY:

a) Leaf shedding: October-December

b) New Leaf: March

c) Flowering: April-June

d) Place of Flower: Axillary

e) Fruiting: July-August

d) Silvicultural character: Moderate light demander, resistant to jhum fire and heavy rainfall, regenerate naturally.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67(%)

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Artocarpus lacucha* L, *Diospyros toposia* Ham

USES: Decoction of barks can be taken orally against the internal bleedings, nerve problems and blood clot.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List.

33. Botanical Name: *Calotropis gigantean* R.Br. (37660)

Local Name: Sengrip/Akon/Me'mang te'brong

Family: Asclepiadaceae

Locality: Rongbakgre

Diseases: Dysentery, Piles, Paralyse, Dislocation of joints

Parts Used: Root-bark, Leaves

Botanical Description: It is a shrub having blaze yellow exuding white milky latex. Leaves are subsessile, ovate or oblong-acute, shortly acuminate or obtuse, glabrate when matured. Bark is thick, rough and corky; twigs are green and may have a covering of tomentum. Inflorescence on axillary and terminal umbellate or sub-corymbose cymes covered with hoary floccose. Seeds ovate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 65%

d) Light Intensity: 24800 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen shrub

b) Flowering: April-May

c) Place of Flower: Axillary/Terminal

d) Fruiting: July-August

e) Silvicultural character: Light demander and it is cultivated as ornamental plants. It prefers hot and moist climate.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.50% d) SOM=7.75% e)P=4.48(%)

f) K=2120.7 ($\mu g\ g^{-1}$) g) N=0.4 % h) NH_4-N=3.2($\mu g\ g^{-1}$) i) NO_3-N=1.47($\mu g\ g^{-1}$)

ASSOCIATES: *Vitex negundo* Linn, *Clitoria ternatea* Linn

USES: For dysentery, infusion of dried root-bark can be taken orally. For piles, infusion of leaves can be drink. For paralyse, fresh leaves are warmed in a low flame and massaged on the body every day. For dislocation of joints, crushed leaves are bandage on the joints with the cloth or can also do massage service.

CONSERVATION STATUS: Cultivated in their home garden, not yet been assessed for the IUCN Red List.

34. Botanical Name: *Canna indica* L (66328)

Local Name: Te'rik pul/Bakra biholi

Family: Cannaceae

Locality: Selsella a'palgre

Diseases: Arthritis, Paralyse

Parts Used: Whole plant

Botanical Description: Large, tall herb having big fleshy rhizome, stem leafy. Leaves are alternate, elliptic lanceolate, acuminate, base sheathing. Inflorescence in terminal raceme, flowers red in colour. Seeds many and rounded black.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 19°C

b) Location: N-25˚40.959 and E-090˚04.296

c) Humidity: 61%

d) Light Intensity: 74150 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Whole year round

b) Place of Flower: Terminal

c) Silvicultural character: Moderately light demander, propagated through bulb and it regenerates artificially.

SOIL CHARACTERISTICS:

a) pH=3.3 b)M.C%=19.54 c)SOC=4.02% d) SOM=6.93% e) P=4.3(%)

f) K=1921.2(μg g^{-1}) g) N=0.34 % h) NH_4-N=5.18(μg g^{-1}) i) NO_3-N=1.56(μg g^{-1})

ASSOCIATES: It is cultivated in their home garden as ornamentals.

USES: For arthritis and paralyse, decoction of whole plant parts can be taken orally until the patient recovers.

CONSERVATION STATUS: Cultivated as an ornamental, not yet been assessed for the IUCN Red List.

35. Botanical Name: *Careya arborea* Roxb. (46303)

Local Name: Gimbil

Family: Verbenaceae

Locality: Chidekgre

Diseases: Blood clot, Internal bleeding, Puerperal fever, Cough and cold

Parts Used: Bark, Flowers

Botanical Description: Medium-sized deciduous trees with thick, dark grey bark having shallow cracks. Leaves alternate, obovate or oblanceolate, shortly acuminate or obtuse, glabrous, found in clusters at the ends of the branches. Flowers are borne in thick, hard terminal spikes. Fruits are large, fleshy and rounded. Seeds are embedded in the fleshy pulp of the fruit.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.6301108 and E-90.1868983

c) Humidity: 44%

d) Light Intensity: 3210 lux (10X)

PHENOLOGY:

a) Leaf shedding: October-December

b) New Leaf: March

c) Flowering: April-June

d) Place of Flower: Terminal

e) Fruiting: August-September

f) Silvicultural character: Light demander, resistant to jhum fire, heavy rainfall and drought, it regenerate naturally.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9 (%)

f) K=1240.2(μg g^{-1}) g) N=0.3 % h) NH_4-N=6.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: *Bambusa bambos* Retz, *Ageratum conyzoides* Linn

USES: Decoction of bark can be taken orally against internal bleeding, blood clot and puerperal fever at 2 teaspoonfuls daily after food. The juice is considered as local syrup. For cough and cold, juice made from flowers and fresh bark mixed with pure honey is effective.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

36. Botanical Name: *Carica papaya* Linn. (24818)

Local Name: Modipol

Family: Caricaceae

Locality: A'jrigre

Diseases: Pneumonia

Parts Used: Roots

Botanical Description: It is a soft-wood tree. Leaves glabrous, palmatified and flowers are fragrant, in axillary panicles. Fruit indehiscent, fleshy, sulcate, seeds black, embedded in sweet pulp. Embryo straight and cotyledons are flat.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Altitude: N-20˚1676058′ and E-83˚34.217898′

c) Humidity: 44%

d) Light Intensity: 60000lux (1000X)

PHENOLOGY:

a) Leaf shedding: February-March

b) Flowering: Throughout the year

c) Place of Flower: Axillary

d) Fruiting: Throughout the year

e) Silvicultural character: Light demander, resistant to fire, propagated through seeds, it regenerates artificially and naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 ($\mu g\ g^{-1}$) g) N=0.36% h) NH_4-N=3.29($\mu g\ g^{-1}$) i) NO_3-N=1.2($\mu g\ g^{-1}$)

ASSOCIATES: Cultivated in their home garden.

USES: Root paste can be massaged on the forehead. If the person is having high fever, crushed roots is wrapped in clean and fine clothes and smelt it (While smelling, in order to prevent direct reaching of odour or scent to the head some portions of the paste is to tied with clad on the forehead). This has to be applied morning and evening.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

37. Botanical Name: *Carum khasianum* C.B.Clarke (12316)

Local Name: Ajowan/ Dania dakgipa (N)

Family: Apiaceae

Locality: Selsella

Diseases: Dysentery

Parts Used: Seeds

Botanical Description: A perennial herb, leaves alternate, simple or compound, petioles generally sheathing at the base. Flowers somewhat similar to that of cumin, regular/irregular, hermaphrodite or polygamous in umbels, rarely in heads or whorls. Seeds solitary in each carpel, pendulous; testa thin, albumin cartilaginous, embryo minute near hilum, radical superior.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25˚40.836′ and E-90˚00.748′

c) Humidity: 43%

d) Light Intensity: 87100 lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: December-February

c) Place of Flower: Terminal

d) Fruiting: January-February

e) Silvicultural character: Moderately light demander, non-resistant to fire, propagated through seeds.

SOIL CHARACTERISTICS:

a) pH=3.8 b)M.C%=23.67 c)SOC=4.0% d) SOM=6.90% e) P=4.2(%)

f) K=2341.7 (μg g^{-1}) g) N=0.32 % h) NH_4-N=5.84(μg g^{-1}) i) NO_3-N=1.52(μg g^{-1})

ASSOCIATES: It is cultivated in the vegetable gardens.

USES: Seeds are soaked in water over night and that water can be drink against the dysentery at the rate of 1 glass daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

38. Botanical Name: *Carex cracimeta* L (64276)

Local Name: Gnengsi

Family: Poaceae

Locality: A'jrigre

Diseases: Demon possessed, Puerperal fever, Hydrophobia

Parts Used: Leaves

Botanical Description: A grass in which leaves are comprise of a blade, extends away from the stalk and a sheath which encloses part of the stalk. The blade is normally long and flat, may be folded and inrolled. The leaves have parallel veins and a distinct midrib, where the blade meets the culm there is a strcucture called ligule. The flowers are small and combined into spikes. The fruit is dry, one-seeded indehiscent achene or nut.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 44%

d) Light Intensity: 3870 lux (10X)

PHENOLOGY:

a) Leaf shedding: A perennial herb

b) Flowering: September

c) Place of Flower: Terminal

d) Fruiting: October

f) Silvicultural character: Light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 (μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: It grows mostly in the lakes or paddy fields.

USES: Infusion of leaves along with leaves of *Elephantopus scaber* Linn can be taken orally at the rate of 1-2 teaspoonfuls per day. Amulet can also be made from paste and used as wearing service. For hydrophobia, leaf paste can be applied on the top of the head and massage all over the body.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

39. Botanical Name: *Cassia alata* Linn. (8769)

Local Name: Katri bijak dal'gipa (N)

Family: Leguminosae

Locality: Selsella a'palgre

Diseases: Ringworms

Parts Used: Leaves

Botanical Description: It is an evergreen shrub with very thick downy branches. Leaves are simple, pinnate and subsessile. Leaflets oblong, obtuse, minutely mucronate, sub coriaceous and glaucous or obscurely downy beneath. Flowers are large yellow in peduncled racemes. Pods are straight, membranous, dehiscent and glabrous with numerous seeds.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25˚40.246′ and E-090˚00.999′

c) Humidity: 43%

d) Light Intensity: 43200 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b**) Flowering:** October-November

c) Place of Flower: Terminal

d) Fruiting: December-January

e) Silvicultural character: Light demander, susceptible to heavy rainfall, it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=3.3 b)M.C%=19.54 c)SOC=4.02% d) SOM=6.93% e) P=4.3(%)

f) K=1921.2(μg g^{-1}) g) N=0.34 % h) NH_4-N=5.18(μg g^{-1}) i) NO_3-N=1.56(μg g^{-1})

ASSOCIATES: *Imperata cylindrica* L, *Saccharum arundinaceum* Retz

USES: Paste made from the leaves can be directly applied on the affected parts of the body.

CONSERVATION STATUS: Available in the wild and some even cultivated, not yet been assessed for the IUCN Red List.

40. Botanical Name: *Cassia fistula* L (83198)

Local Name: Snaru

Family: Caesalpiniaceae

Locality: Dallanggre

Diseases: Arthritis, Paralyse

Parts Used: Leaves

Botanical Description: It is a medium-sized evergreen tree. Leaves are pinnately compound, acuminate and ovate-lanceolate. Inflorescence in lax pendulous racemes and fragrant yellow. The pods are cylindrical, shortly stipitate, nearly straight, hard, indehiscent and brownish black when matured. Seeds broadly ovate, horizontally immersed in dark coloured sweetish pulp.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 45%

d) Light Intensity: 3760 lux (10X)

PHENOLOGY:

a) Flowering: April-July

b) Place of Flower: Axillary/Terminal

c) Fruiting: August-September

d) Silvicultural character: Light demander, susceptible to heavy rainfall and it regenerate naturally.

SOIL CHARACTERISTICS:

a) pH=4.0 b) M.C%=17.64 c)SOC=3.66% d) SOM=6.33% e) P=5.7(%)

f) K=334.5 ($\mu g\ g^{-1}$) g) N=0.28% h) NH_4-N=4.95($\mu g\ g^{-1}$) i) NO_3-N=1.32($\mu g\ g^{-1}$)

ASSOCIATES: *Artocarpus heterophyllus* L, *Ziziphus mauritiana* Lamk.

USES: For arthritis and paralyse, decoction of leaves along with leaves of *Erythrina stricta* Roxb, roots of *Moringa oleifera* Lam can be taken orally till the patient recovers.

CONSERVATION STATUS: Wild but preserved in their garden, not yet been assessed for the IUCN Red List.

41. Botanical Name: *Cassia occidentalis* Linn. (41101)

Local Name: Katri chongipa (N)

Family: Caesalpinaceae

Locality: Dadeng Bajar Rama

Parts Used: Leaves

Diseases: High fever/Headache

Botanical Description: It is an evergreen, foetid shrub. Leaves are coumpound, lanceolate or ovate-lanceolate, glacuous, recurved. Inflorescence on axillary. Sepals are green and petals are yellow. The seeds are in pods, dark brown, curved slightly upward and are flattened on both ends.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 45%

d) Light Intensity: 37700 lux (100X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Axillary

c) Fruiting: September-October

d) Silvicultural character: Light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%=12.57 c)SOC=4.05% d) SOM=6.99% e) P=5.2(%)

f) K=224.1 (μg g^{-1}) g) N=0.32 % h) NH_4-N=4.04 (μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Cassia tora* L, *Asparagus officinalis* Willd.

USES: Pounded leaves are use to tied with clad on the forehead against high fever and headache.

CONSERVATION STATUS: Available in the wild, not yet been assessed for the IUCN Red List.

42. Botanical Name: *Cassia tora* Linn (24785)

Local Name: Dadaret

Family: Papilionaceae

Locality: Machangpani

Parts Used: Whole plant

Diseases: Antiemetic

Botanical Description: It is an annual foetid dicot legume.Leaves are accumbent pinnate with trifoliate, obovate and oblique at apex. Stems have smelling foliage when young. Inflorescence on axillary, flowers comprised of 5-petals, occur in pairs with stamens of unequal length producing pods, flattened and sickle shaped. Seeds are rhombohedral and brown, and many seeds within a pod.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 31°C

b) Location: N-25.3015148 and E-90.2538313

c) Humidity: 61%

d) Light Intensity: 356100 lux (100X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Axillary

c) Fruiting: October-November

d) Silvicultural character: It is a wide range of tolerant species and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.9 b)M.C%=9.6 c)SOC=2.67% d) SOM=4.60% e) P=4.42 (%)

f) K=1911.2 ($\mu g\ g^{-1}$) g) N=0.3 % h) NH_4-N=2.6($\mu g\ g^{-1}$) i) NO_3-N=3.1($\mu g\ g^{-1}$)

ASSOCIATES: *Cassia occidentalis* L, *Asparagus officinalis* Willd.

USES: Infusion of whole plant can be taken orally at the rate of 1-2 teaspoonfuls till the patient recovers.

CONSERVATION STATUS: Available in the wild, not yet been assessed for the IUCN Red List.

43. Botanical Name: *Castanopsis tribuloides* Sm (47511)

Local Name: Cha'ku

Family: Fagaceae

Locality: Ampanggre

Parts Used: Bark

Diseases: Pulmonary tuberculosis

Botanical Description: It is a medium-sized evergreen tree. Leaves elliptic to ovate, base acute to rounded, margin entire or rarely with 1 or 2 teeth, apex acute. Their flowers are unisexual, and the male flowers are in erect catkins. Cupules loosely arranged, globose to ellipsoid, lamellate, waxy scalelike trichomes. The fruit is calybium, the calybium looks like an acorn; the cupule is hard and spiny.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Location: N-25.6531188 and E-90.2471783

c) Humidity: 45%

d) Light Intensity: 3760 lux (10X)

PHENOLOGY:

a) Flowering: April-May

b) Place of Flower: Terminal/Axillary

c) Fruiting: September-October

d) Silvicultural character: It can grow in semi-shade, prefers moist soil, propagated through seed and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5(%)

f) K=88.3 ($\mu g\ g^{-1}$) g) N=0.31% h) NH_4-N=7.08($\mu g\ g^{-1}$) i) NO_3-N=1.9($\mu g\ g^{-1}$)

ASSOCIATES: *Macaranga denticulata* Roxb., *Holarrhena antidysenterica* Wall

USES: Decoction of bark can be drink or it can be used to massage the body

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List.

44. Botanical Name: *Catharanthus roseus* (Linn).G.Don (37559A)

Local Name: Aski pul

Family: Apocynaceae

Locality: A'jrigre

Diseases: Allergy, Cancer

Parts Used: Leaves, Flowers

Botanical Description: An evergreen herbaceous plant. Leaves accumbent, obovate, and glossy. Flowers white or pink in axillary cluster. The fruits are found to be pair of follicles of about 2.0-4.0 cm long and 3mm broad.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Altitude: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 56%

d) Light Intensity: 3890 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Axillary

c) Silvicultural character: Light demander, plant tolerates heat, acceptable to heavy rainfall.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 ($\mu g\ g^{-1}$) g) N=0.36 % h) NH_4-N=3.29($\mu g\ g^{-1}$) i) NO_3-N=1.2($\mu g\ g^{-1}$)

ASSOCIATES: Cultivated as an ornamental.

USES: For allergy, paste from leaves can be directly applied to the body. For cancer, juice from leaves and flowers can be taken orally at 2 teaspoonfuls daily after food.

CONSERVATION STATUS: Cultivated as an ornamental, not yet been assessed for the IUCN Red List.

45. Botanical Name: *Cayratia japonica* (Thunb.) Gagnep (37287)

Local Name: Amanggu

Family: Vitaceae

Locality: Turam

Parts Used: Whole plant parts

Diseases: Cancer

Botanical Description: It is a slender, an evergreen, herbaceous climbers with subterete branches, tendrils slender. Leaves accumbent, 3-5 foliolate, pedate, leaflets ovate, coarsely-toothed, acuminate or acute at apex, cuneate to acute or rounded base, serrated margins. Inflorescence on axillary, on long peduncles. Berries 3-4 seeded. Seeds obovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 43%

d) Light Intensity: 3840 lux (10X)

PHENOLOGY:

a) Flowering: March-April

b) Place of Flower: Axillary

c) Fruiting: April-June

d) Silvicultural character: Moderately light demander, the plant mostly climbs into the surrounding vegetation, supporting itself by means of tendrils, it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.5% d) SOM=7.78 % e) P=6.2(%)

f) K=226.7 ($\mu g\ g^{-1}$) g) N=0.36% h) NH_4-N=3.29($\mu g\ g^{-1}$) i) NO_3-N=1.2($\mu g\ g^{-1}$)

ASSOCIATES: *Mikania micrantha* H.B.K., *Bidens pilosa* L, *Ageratum conyzoides* Linn

USES: Infusion of whole plant parts along with palm candy can be taken orally at the rate of 2-3 teaspoonfuls daily after food are used against cancer.

CONSERVATION STATUS: Both domesticated and wild, not yet been assessed for the IUCN Red List.

46. Botanical Name: *Centella asiatica* Linn. (73103)

Local Name: Manamuni/mese nachil

Family: Apiaceae

Locality: Gambegre

Diseases: Urinary tract infection, Dysentery, Bleeding, Elephantiasis, Piles

Parts Used: Whole plant, Leaves

Botanical Description: A slender herb with long stolons. Leaves orbicular, crenate, palmately nerved, deeply cordate and reniform. Flowers pale pink in clusters or umbels. Fruits ovoid, rugose, crowned by persistent petals; seeds compressed.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.4680699 and E-90.0826311

c) Humidity: 63%

d) Light Intensity: 436000 lux (1000X)

PHENOLOGY:

a) Flowering: April-May

b) Place of Flower: Axillary

c) Fruiting: May-June

d) Silvicultural character: It prefers moist to wet in sun or partial shade.

SOIL CHARACTERISTICS:

a) pH=5.1 b)M.C%=16.7 c)SOC=3.4% d) SOM=5.86% e) P=5.15(%)

f) K=98.3(μg g^{-1}) g) N=0.33 % h) NH_4-N=7.0(μg g^{-1}) i) NO_3-N=1.59(μg g^{-1})

ASSOCIATES: *Eryngium foetidum* Linn

USES: Infusion of leaves can be used orally at the rate of 1-2 teaspoonfuls for dysentery and bleeding. For UTI and piles, decoction of whole plant parts can be taken orally. For elephantiasis, leave paste can be used as plaster.

CONSERVATION STATUS: Cultivated in their home garden, not yet been assessed for the IUCN Red List.

47. Botanical Name: *Chromolaena odorata* (L.) King (46623)

Local Name: Sambangguri/ Amok

Family: Asteraceae

Locality: Dallanggre

Diseases: Cuts, Wounds, Burns

Parts Used: Leaves, shoots

Botanical Description: An erect coarse perennial, aromatic undershrub, stems vilose-pubescent, petioled, angulate branches. Leaves accumbent, triangulate-ovate, deltoid, ovate-lanceolate, acuminate, lateral nerves almost obscure. Flower heads more or less cylindrical, corymbose, homogamous, in terminal. Fruit truncate, pappus white and stiff.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 43%

d) Light Intensity: 32100 lux (100X)

PHENOLOGY:

a**) Flowering:** September-November

b) Place of Flower: Terminal

c) Fruiting: January-March

d) Silvicultural character: Moderate light demander, resistant to jhum fire, heavy rainfall and mostly grow as weeds.

SOIL CHARACTERISTICS:

a) pH=4.0 b) M.C%=17.64 c)SOC=3.66% d) SOM=6.33% e) P=5.7(%)

f) K=334.5 ($\mu g\ g^{-1}$) g) N=0.28% h) NH_4-N=4.95($\mu g\ g^{-1}$) i) NO_3-N=1.32($\mu g\ g^{-1}$)

ASSOCIATES: *Ageratum conyzoides* Linn, *Spilanthes acmella* Non (L.)Murr.

USES: The juice or paste of the fresh leaves is applied externally on fresh cuts and wounds as haemostatic and antiseptic. For burns, leaves and young shoots are pounded together with lime and this can be apply on the affected parts till the burn injury is healed.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

48. Botanical Name: *Cissampelos pareira* L. (89934)

Local Name: Do'pantak

Family: Menispermaceae

Locality: A'jrigre

Diseases: Joint pains

Parts Used: Whole plant

Botanical Description: The plant is woody creeper, slender and strong aromatic odour. Leaves peltate or orbicular reniform with a truncate-cordate base. Male flowers in axillary, fascicled. Females in long pendulous racemes. Drupes small, ovoid, sub globose or obovoid, compressed.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-20˚1676067′ and E-83˚34.217568′

c) Humidity: 43%

d) Light Intensity: 3730 lux (10X)

PHENOLOGY:

a) Flowering: January

b) Place of Flower: Axillary

c) Fruiting: February

d) Silvicultural character: Moderately light demander, propagated through seeds, commonly found in warm areas as weeds.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 ($\mu g\ g^{-1}$) g) N=0.36% h) NH_4-N=3.29($\mu g\ g^{-1}$) i) NO_3-N=1.2($\mu g\ g^{-1}$)

ASSOCIATES: *Urena lobata* L, *Bidens pilosa* L

USES: Partially smashed/beaten twine can be used as wearing service on waist.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List.

49. Botanical Name: *Cissus quadrangularis* L (10833)

Local Name: Jakriting/Char siri

Family: Vitaceae

Locality: Rongbakgre

Diseases: Fractured/Dislocated bones

Parts Used: Whole plant

Botanical Description: A tendril climber with stout fleshy jointed quadrangular stem, tendrils simple, long, slender and leaf opposite. Leaves are cordate or reniform, crenate-serrate. Flowers are small and are borne in short peduncle cyme and are greenish-white in colour. Fruits are globose, succulent, apiculate berries and red when ripe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 35°C

b) Location: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 61%

d) Light Intensity: 14180 lux (10X)

PHENOLOGY:

a) Flowering: May-August

b) Place of Flower: Axillary

c) Fruiting: June-September

d) Silvicultural character: Light demander, propagated through stem cuttings, regenerates artificially and naturally.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.50% d) SOM=7.75% e)P=4.48(%)

f) K=2120.7 ($\mu g\ g^{-1}$) g) N=0.4% h) NH_4-N=3.2($\mu g\ g^{-1}$) i) NO_3-N=1.47($\mu g\ g^{-1}$)

ASSOCIATES: Cultivated in their home garden as an ornamental.

USES: Paste of whole plant parts is tied to unite fractured and dislocated bones along with *Justicia gendarussa* L.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

50. Botanical Name: *Citrus maxima* L (81642)

Local Name: Jambura

Family: Rutaceae

Locality: A'jrigre

Diseases: Diarrhoea, Dysentery

Parts Used: Fruits

Botanical Description: A medium-sized evergreen tree, branches low, irregular and spreading. Young branchlets angular, pubescent. Leaves alternate, glandular, unifoliate, ovate-oblong, crenate, shining above. Flowers fragrant, borne singly or in clusters, in terminal racemes or sometimes in leaf axils. Fruits irregular, spongy white inside. Seeds many and wrinkled.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-20˚1676058′ and E-83˚34.217898′

c) Humidity: 43%

d) Light Intensity: 3710 lux (10X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) Flowering: June-July

c) Place of Flower: Terminal/Axillary

d) Fruiting: August-January

e) Silvicultural character: Light demander, susceptible to heavy rainfall, non-resistant to jhum fire and it can propagated by seeds.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 ($\mu g\ g^{-1}$) g) N= 0.36% h) NH_4-N=3.29($\mu g\ g^{-1}$) i) NO_3-N=1.2($\mu g\ g^{-1}$)

ASSOCIATES: *Citrus* spp, *Passiflora quadrangularis* L

USES: Extracted juice from fruits adding little amount of salt is recommended 1 glass at 2 times a day or 3 times a day if the patient is severe.

CONSERVATION STATUS: Cultivated in their home garden, not yet been assessed for the IUCN Red List.

51. Botanical Name: *Clerodendrum colebrookianum* Walp. (8008)

Local Name: Donggam

Family: Verbenaceae

Locality: Chibonggre

Diseases: Hypertension

Parts Used: Leaves, Flowers, Twigs

Botanical Description: It is an evergreen shrub. Leaves are simple, big, ovate-orbicular, acuminate, opposite or rarely whorled. Flowers are white, loosely cymose or capitates in terminal or rarely axillary paniculate thyrses. Fruit drupes, globose, dark green when young, bluish black when ripe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.709312 and E-90.232458

c) Humidity: 44%

d) Light Intensity: 24100 lux (100X)

PHENOLOGY:

a) Flowering: September-October (Flowering in August-December is reported by Nath S C *et al.,* 1991)

b) Place of Flower: Terminal/Axillary

c) Fruiting: October-January (Fruiting during June-December is reported by Jain *et al.,* 1991)

d) Silvicultural character: Moderate light demander, resistant to heavy rainfall, regeneration by artificial and natural methods.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5(%)

f) K=88.3 ($\mu g\ g^{-1}$) g) N=0.31% h) NH_4-N=7.08($\mu g\ g^{-1}$) i) NO_3-N=1.9($\mu g\ g^{-1}$)

ASSOCIATES: Cultivated in their home garden as vegetables.

USES: Leaves are eaten as vegetables against the hypertension.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

52. Botanical Name: *Clerodendrum hastatum* Linn. (22475)

Local Name: Chiram Gonchu

Family: Verbenaceae

Locality: Chigisilgre

Parts Used: Leaves

Diseases: Colic in babies

Botanical Description: It is medium-sized evergreen shrub, stem and branches lenticellate, obtuse quadrangular and pubescent. Leaves are hairy, lower leaves (midribs) are scattered with purple colour, accumbent, ternate, hastate, hastate-oblong, lobed or angled, base hastate or narrow triangular shape, apex acute or acuminate. Purplish hairy on twigs and peduncle. Inflorescence on corymbose terminal panicles, bracts linear-elliptic. Flowers bisexual, pedicel slender, corolla hypocrateriform, lobes ovate-oblong, filiform, recurved. Fruit subglobose and succulent.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-20°16.76058` and E-83˚34.217898

c) Humidity: 56%

d) Light Intensity: 5970 lux (10X)

PHENOLOGY:

a) Flowering: March-May

b) Place of Flower: Terminal

c) Fruiting: April-June

d) Silvicultural character: Moderately light demander, susceptible to heavy rainfall and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Castanopsis indica* A.D.C, *Syzygium cumini* Lam

USES: Leaves are recommended to keep under the pillow where the baby sleeps.

CONSERVATION STATUS: Rarely found in the wild (As per the field survey), not yet been assessed for the IUCN Red List.

53. Botanical Name: *Clerodendrum serratum* Spreng. (22403)

Local Name: Samsureng

Family: Verbenaceae

Locality: Sropgre

Parts Used: Leaves

Diseases: Swelling of legs

Botanical Description: It is shrub with thick woody rootstocks. Leaves are sessile, usually in whorls, oblong-elliptic or obovate with a subcordate or rounded base and glabrous. Flowers are

bluish or purplish white and are borne in axillary cymes forming a terminal leafy panicle. The fruit is a succulent drupe which is globose and black when ripe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 62%

d) Light Intensity: 7800 lux (100X)

PHENOLOGY:

a) Flowering: May-August

b) Place of Flower: Axillary/Terminal

c) Fruiting: September-November

d) Silvicultural character: Light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 4.6 b)m.C%=13.5 c)SOC=3.9% d) SOM=6.72% e) P=5.8(%)

f) K=79.4 ($\mu g\ g^{-1}$) g) N=0.7 % h) NH_4-N=2.6($\mu g\ g^{-1}$) i) NO_3-N=2.4($\mu g\ g^{-1}$)

ASSOCIATES: *Mangifera indica* Linn, *Ageratum conyzoides* Linn.

USES: Infusion of leaves along with leaves of *Oxalis corniculata* Linn., *Acorus calamus* Linn., and *Justicia gendarussa* Linn., can be taken orally against the swelling of legs.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List.

54. Botanical Name: *Clerodendrum squamatum* Wall (53107)

Local Name: Samaki/Do'dimdim

Family: Verbenaceae

Locality: Saka Mronggre

Diseases: Vitiligo, Ascarids, Cuts

Parts Used: Roots, tender leaves

Botanical Description: It is a terrestrial shrub having blackish stem and simple, opposite, decussate, petiolate, and exstipulate, coriacious, hairy leaves. Flowers are bluish-purple often white in pyramid shaped terminal panicles. Fruits are 4-lobed purple dupe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.852849 and E-90.129825

c) Humidity: 61%

d) Light Intensity: 36700 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen shrub

b) Flowering: March-April

c) Place of Flower: Terminal

d) Fruiting: April-May

e) Silvicultural character: Light demander, susceptible to heavy rainfall and drought. It regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=15.5 c)SOC=4.0% d) SOM=6.89% e) P=4.50(%)

f) K=236.7 ($\mu g\ g^{-1}$) g) N=0.3% h) NH_4-N=2.4($\mu g\ g^{-1}$) i)NO_3-N=1.67($\mu g\ g^{-1}$)

ASSOCIATES: *Bidens pilosa* L, *Spilanthes acmella* L, *Ageratum conyzoides* Linn.

USES: For vitiligo, a paste made from roots can be applied to the affected parts of the body. For ascarids, the juice of the leaves can be used by injecting into the rectum. For cuts smashed tender leaves along with leaves of *Mikania micrantha* H.B.K are applied against tetanus.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

55. Botanical Name: *Clerodendrum wallichi* Wall (16830)

Local Name: Samdukatchi/Samtikatchi

Family: Verbenaceae

Locality: Ganol songma

Diseases: Leaves

Parts Used: Antiemetic, Diarrhoea

Botanical Description: A shrub or small tree, bark dark brown or reddish brown, leaves oblong-lanceolate, oblong-elliptic, acuminate, based narrowed, cuneate, glaucous beneath, entire or sub serrate; panicles racemose, usually drooping. Flowers ovoid, deep purple supported by persistent red calyx.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Location: N-25.5792378 and E-90.2698983

c) Humidity: 43%

d) Light Intensity: 38000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) Flowering: August-September

c) Place of Flower: Terminal

d) Fruiting: September-October

e) Silvicultural character: Moderate light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9(%)

f) K=59.2 (μg g^{-1}) g) N=0.3% h) NH_4-N=6.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: *Diospyros toposia* Ham, *Thysanolaena maxima* Roxb.

USES: For antiemetic and diarrhoea, leaves are grinded well and a little amount of water is added to it. The mixture can be taken orally at the rate of 1 cup twice daily after food.

CONSERVATION STATUS: Rarely found in the wild, some even cultivated (As per the field survey), not yet been assessed for the IUCN Red List

56. Botanical Name: *Clitoria ternatea* L (63558)

Local Name: Kali budu

Family: Fabaceae

Locality: Rongbakgre

Diseases: Ascites, Fever, Snake bite

Parts Used: Seeds, Roots, Leaves

Botanical Description: A slender herbaceous plant which has white/blue flowers. Leaves are elliptic and obtuse. Flowers solitary or in clusters. Fruits are linear, oblong pod, compressed, apically beaked, reniorm.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 35°C

b) Location: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 65%

d) Light Intensity: 27700 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Axillary

c) Silvicultural character: Moderately light demander, grows well in moist neutral soil, propagated through seeds and it regenerates artificially and naturally.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.50% d) SOM=7.75% e)P=4.48(%)

f) K=2120.7(μg g^{-1}) g) N=0.4% h) NH_4-N=3.2(μg g^{-1}) i) NO_3-N=1.47(μg g^{-1})

ASSOCIATES: Cultivated as an ornamental.

USES: For ascites and fever, infusion of powdered roots can be taken orally. In case of snake bite, 1 teaspoonful of root powder mixed with pure ghee has to be taken immediately to prevent poisoning of the affected part. To prevent poisoning of blood, a teaspoonful of root powder mixed with ½ cup of milk should be taken twice a day.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

57. Botanical Name: *Costus speciosus* Koenig Smith (81267)

Local Name: Gokarek

Family: Costaceae

Locality: Te'bronggre

Diseases: Urinary tract infection, Kidney stone, Gallstone, Diabetes, Insect bite

Parts Used: Leaves, Rhizome

Botanical Description: A perennial herb, grows to a height of about 1.2-2.7 metres. Leaves elliptic-oblong, spirally arranged, cuspidate, acute, and silky pubescent beneath. The spike are solitary, terminal and the bracts are ovate and deep pink in colour.The capsule is ovoid, red and crowned by the calyx. The seeds are black with white aril.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.649396 and E-90.259514

c) Humidity: 45%

d) Light Intensity: 48700 lux (100X)

PHENOLOGY:

a) Flowering: June-October

d) Place of Flower: Terminal

e) Fruiting: October-March (Flowering and fruiting during August-September is reported by Jain *et al.,* 1991)

f) Silvicultural character: Shade bearer, can withstand heavy rainfall and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5(%)

f) K=88.3(μg g^{-1}) g) N=0.31% h) NH_4-N=7.08(μg g^{-1}) i) NO_3-N=1.9(μg g^{-1})

ASSOCIATES: *Hedychium* spp., *Phyllanthus urinaria* Linn.

USES: Decoction of rhizome is used for Urinary tract infection and diabetes at the rate of 3-4 teaspoonfuls per day. For kidney stone and gallstone, juice of the crushed leaves can be taken orally after food at the rate of 1 cup daily after food. For insect bite, paste made from leaves is bandage on the affected area with cloth.

CONSERVATION STATUS: Available in the wild, not yet been assessed for the IUCN Red List

58. Botanical Name: *Crataeva nurvala* Buch-Ham (1089)

Local Name: Bolnaban

Family: Capparaceae

Locality: Bolchugre

Parts Used: Leaves, Barks

Diseases: Headache

Botanical Description: It is a moderate-sized evergreen tree. Leaves trifoliate, lanceolate, acute or acuminate. The bark smooth and horizontally cracked. Inflorescence on terminal corymbs, flowers white or cream coloured. Fruits have multiple seeds and ovoid, seeds are embedded in the fleshy pulp of the fruits.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N- 25.725899 and E-90.17778257

c) Humidity: 40%

d) Light Intensity: 37800 lux (100X)

PHENOLOGY:

a) Flowering: March-May

b) Place of Flower: Terminal

c) Fruiting: June-August

d) Silvicultural character: Light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 b) SOC=4.05% c) SOM=6.99% d) P=5.2(%)

e) K= 224.1(µg g^{-1}) f) N=0.32% g) NH_4-N= 4.04(µg g^{-1}) h)NO_3-N=1.36(µg g^{-1})

ASSOCIATES: *Mikania micrantha* H.B.K, *Ageratum conyzoides* Linn.

USES: Leaves and barks are pounded with along with leaves of *Stereospernum tetragonum* D.C and tied with clad on the forehead.

CONSERVATION STATUS: Rarely available in the wild and some even cultivated, not yet been assessed for the IUCN Red List

59. Botanical Name: *Crinum defixum* L (19574)

Local Name: Rajamori Dalˈgipa (N)

Family: Amaryllidaceae

Locality: A'jrigre

Parts Used: Leaves

Diseases: Fractured, Contusion

Botanical Description: It is a large tunicate ovoid herb. Leaves linear with parallel veins and slightly waved margins, obtuse or acute, leaf blade wide. Inflorescence in umbellate at the end of a cylindrical, scapes long, flowers are white, lobes as long as the tube, narrowly linear-lanceolate, subacute, reflexed or drooping, filaments shorter than the corolla-lobes. Fruits subglobose. Seeds rugose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 46%

d) Light Intensity: 7600 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-January

b) New Leaf: March-April

c) Flowering: April-May

d) Place of Flower: Terminal

e) Fruiting: May-August

f) Silvicultural character: Moderately light demander, it can be propagated by bulb and it is grown as ornamentals.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Ziziphus mauritiana* Lamk. *Citrus maxima* Linn

USES: For fractured bones, leaves are warmed in a low flame and tied on the broken portion of bones for overnight and repeated till the patient recovers. For contusion, leaves are warmed in a low flame by smearing some mustard oils and massage on the affected portion.

CONSERVATION STATUS: Cultivated as an ornamental, not yet been assessed for the IUCN Red List

60. Botanical Name: *Crotalaria tetragona* Roxb (28167)

Local Name: Matri bol Chongipa (N)

Family: Papilionaceae

Locality: Danekgre

Parts Used: Bark, Leaves

Diseases: Hydrophobia

Botanical Description: An erect ascending perennial shrub, appressed hairy and tetragonous stem with sulcate silky branches. Leaves are simple, accumbent, short-petioled, linear or oblong-lanceolate, obtuse, mucronate at apex, rounded at base, thinly appressed-hairy above, densely

appressed-pubescent beneath. Inflorescence on axillary or terminal, arranged in loose racemes. Pods sub-sessile and oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.657911 and E-90.214900

c) Humidity: 46%

d) Light Intensity: 64000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: An annual shrub

b) Flowering: October-November

c) Place of Flower: Axillary/Terminal

d) Fruiting: December-January

e) Silvicultural character: Light demander, propagated through seeds, artificial and natural regenerations has no problem.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37(%)

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Euphorbia pulcherrima* Linn, *Cajanus cajan* Linn

USES: Leaves and barks are pounded well along with barks of *Dysoxylum binectiforum* H.K.F, roots of *Clerodendrum squamatum* Wall and *Drynaria quircifolia* (L). The infusion of pounded mixture has be tied with clad on the forehead and also be taken orally at the rate of 2-3 teaspoonfuls. The mixture can also be used to massage all over the body.

CONSERVATION STATUS: Cultivated in their garden for medicinal purposes, not yet been assessed for the IUCN Red List

61. Botanical Name: *Croton caudatus* Geisel (76505)

Local Name: Samstap

Family: Euphorbiaceae

Locality: Tura range

Parts Used: Leaves, Roots

Diseases: Cuts and wounds

Botanical Description: It is an evergreen large scandent shrub. Leaves oval, ovate to oblong-ovate, crenate-serrate, with stipitate gland at base. Inflorescence axillary in a rather long stellate-pubescent raceme at the end of the branchlets. Capsules large and woody. Obscurely 3-cornered.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25°30'16.4" and E-90°14'34.3"

c) Humidity: 40%

d) Light Intensity: 10800lux (100X)

PHENOLOGY:

a) Flowering: September-October

b) Place of Flower: Axillary

c) Fruiting: October-December

d) Silvicultural character: Shade bearer, propagated through seeds, non-resistant to jhum fire and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=29.5 c)SOC=4.09% d) SOM=7.05% e) P=4.50(%)

f) K=254.6(μg g^{-1}) g) N=0.8% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Ajuga macrosperma* Wall, *Eranthemum indicum* Clarke

USES: Pastes made from leaves and roots are applied on fresh cuts and wounds to cease bleeding and as an antiseptic.

CONSERVATION STATUS: Rarely found in the wild (As per the field visit), not yet been assessed for the IUCN Red List

62. Botanical Name: *Curcuma amada* Roxb (19286)

Local Name: Dikge te'gatchu

Family: Zingiberaceae

Locality: Galwanggre

Diseases: Stomachic, Food poisoning, carminative

Parts Used: Rhizome

Botanical Description: It is a perennial herb, rhizome having a raw mango flavour. The leaves are oblong, lanceolate, sheathed, petiolate and in tufts. Rhizomes are buff coloured, demarcated into nodes and internodes. At the rhizome nodes scaly leaves are arranged circularly giving the appearance of growth rings with scars on the surface. The rhizomes are branched and sympodial.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 44%

d) Light Intensity: 31200 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-February

b) New Leaf: March-April

c) Flowering: March-May

d) Place of Flower: Terminal

f) Silvicultural character: Shade bearer, propagated through rhizomes.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0(%)

f) K=67.8(μg g^{-1}) g) N=0.3% g) NH_4-N=7.21(μg g^{-1}) h)NO_3-N=1.78(μg g^{-1})

ASSOCIATES: Cultivated in home gardens

USES: For stomachic, food poisoning and flatulence, rhizomes are eaten raw.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

63. Botanical Name: Curcuma caesia Roxb (19123)

Local Name: Dikge Biholi

Family: Zingiberaceae

Locality: Ampanggre

Parts Used: Rhizome

Diseases: Rheumatism

Botanical Description: A perennial herb with black rhizome. Leaves are deep violet red patch which runs through the length of the lamina. The upper side of the leaves is quite rough. Bracts are green with a ferruginous tinge. Petals are deep pink and rhizome is bitter with pungent smell.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.6531188 and E-90.2471783

c) Humidity: 62%

d) Light Intensity: 36100 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-February

b) New Leaf: March-April

c) Flowering: February-March

d) Place of Flower: Terminal

f) Silvicultural character: Shade bearer and propagated through rhizomes.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5(%)

f) K=88.3($\mu g\ g^{-1}$) g) N=0.31% h) NH_4-N=7.08($\mu g\ g^{-1}$) i) NO_3-N=1.9($\mu g\ g^{-1}$)

ASSOCIATES: Cultivated in their garden.

USES: Rhizome pastes are used to massage on the rheumatic patients every morning.

CONSERVATION STATUS: Cultivated.

64. Botanical Name: *Curcuma longa* Linn (75473)

Local Name: Haldi

Family: Zingiberaceae

Locality: Balsri gittim

Parts Used: Rhizome

Diseases: Lung problems (Bronchitis), Bleeding, gastritis

Botanical Description: A rhizomatous perrenial herb, fibrous roots, leaves large, broadly lanceolate or oblong. A characteristic ligule is present between petiole and blade. Flowers bracteate, distichous or spirally arranged, bisexual, trimerous epigynous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 43%

d) Light Intensity: 34100 lux (100X)

PHENOLOGY:

a) Leaf shedding: June-July

b) New Leaf: March-April

c) Flowering: March-April

d) Place of Flower: Terminal

e) Silvicultural character: Shade bearer and propagated through rhizomes.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C %=12.57 b) SOC=4.05% c) SOM=6.99% d) P=5.2(%)

e) K= 224.1(μg g^{-1}) f) N=0.32 % g) NH_4-N= 4.04(μg g^{-1}) h) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Cultivated in their garden.

USES: Infusion of fresh rhizome mixed with 1 glass of water/milk can be taken twice a day against bronchitis, gastritis and for bleeding.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

65. Botanical Name: *Cuscuta reflexa* Roxb. (21910)

Local Name: Do'rimit/ Nawang budu/Moila

Family: Convolvulaceae

Locality: Turam

Diseases: Jaundice, Incessant crying in babies

Parts Used: Whole plant

Botanical Description: It is a leafless, climbing, yellowish green and thread-like twining herb which germinates in coil but becomes parasitic on the plant which it meets. The flowers are sub racemose; bracts small and fleshy. The fruit is a globose capsule which is acute with black warts. Seeds are black.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 42%

d) Light Intensity: 3760 lux (10X)

PHENOLOGY:

a) Flowering: October-December

b) Place of Flower: Axillary

c) Fruiting: December-February

d) Silvicultural character: It grows as parasitic on the plant which it meets.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 (μg g^{-1}) g) N=0.3% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Ziziphus mauritiana* Lamk.

USES: For jaundice, infusion of whole plant parts can be taken orally at the rate of 1-2 teaspoonfuls twice daily. For incessant crying of babies, paste of whole plant parts can be applied all over the body.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

66. Botanical Name: *Cymbopogon citratus* (D.C) (22128)

Local Name: Mipanat

Family: Poaceae

Locality: Galwanggre

Diseases: Body weakness

Parts Used: Leaves

Botanical Description: A perennial, densely tufted, aromatic grass. Stems underground, short, whitish or pale-violet. Leaves in dense clusters, linear, rough margined, glaucous, green on both sides. Inflorescence in many-branched panicles without stalk. All parts of the grass is lemon flavoured.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25˚40.281′ and E-090˚00.558′

c) Humidity: 42%

d) Light Intensity: 34100 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: May-June

b) Place of Flower: Terminal

c) Silvicultural character: Moderately light demander, it can be propagated by seeds and vegetative methods.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0(%)

f) K=67.8(μg g^{-1}) g) N=0.30% g) NH_4-N=7.21(μg g^{-1}) h)NO_3-N=1.78(μg g^{-1})

ASSOCIATES: Cultivated in their home garden.

USES: Leaves are put in the tea and can be drink or decoction of leaves can be drink at the rate of 1 glass daily.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

67. Botanical Name: *Cynodon dactylon* L (Pers.) (85725)

Local Name: Du'blabon

Family: Poaceae

Locality: Sampalgre Tura

Diseases: Haribanga (excessive bleeding after delivery)

Parts Used: Leaves

Botanical Description: A prostrate extensively creeping, highly branched perennial grass, rooting at every node, forming matted tufts. Leaves narrow, linear, soft, distincchous at base, ligule a very fine cliate rim. Inflorescnce in terminal spikes. Fruit grains and oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 43%

d) Light Intensity: 3600 lux (100X)

PHENOLOGY:

a) Flowering: August-December

b) Place of Flower: Terminal

c) Fruiting: August-december

d) Silvicultural character: Moderately light demander, can be propagated through seeds and vegetative method.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.9% d) SOM=5.01% e) P=3.3(%)

f) K=84.3 (μg g^{-1}) g) N=0.4% h)NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: Grown chiefly in the field or open places.

USES: Decoction of leaves can be taken orally at the rate of 1 cup till the patient recovers.

CONSERVATION STATUS: Not cultivated, some even cultivated for medicinal purposes.

68. Botanical Name: *Cyperus rotundus* L (75320)

Local Name: Midamdil

Family: Cyperaceae

Locality: Turam

Parts Used: Whole plant parts

Diseases: Puerperal fever

Botanical Description: It is a perennial rhizomatus halophytic plant. Rhizome slender, succulent when young, hard when mature and culm glabrous. Leaves clustered at the base of the stem, linear, acute, glaucus, no auricles or ligules are present. The leaves taper abruptly to sharp point.

Inflorescence in large spikelets, flowers are bisexual and has three stamina and a three-stigma carpel. Fruit oblong ovate and three-angled achene.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 44%

d) Light Intensity: 3860 lux (10X)

PHENOLOGY:

a) Leaf shedding: A perennial herb

b) Flowering and Fruiting: March-April

c) Place of Flower: Terminal

d) Silvicultural character: It grows on dry soils, can tolerate moist soils as well and it can be propagated through seed and vegetative.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.5% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 ($\mu g\ g^{-1}$) g) N=0.36% h) NH_4-N=3.29($\mu g\ g^{-1}$) i) NO_3-N=1.2($\mu g\ g^{-1}$)

ASSOCIATES: *Bidens pilosa* L, *Ageratum conyzoides* Linn.

USES: Paste made from whole plant parts can be tied with clad on the forehead and also use to massage on the body.

CONSERVATION STATUS: Available in the wild and some even cultivated, Least concern under IUCN Red List.

69. Botanical Name: *Cycas pectinata* Buch-Ham (37207)

Local Name: Bolbanji

Family: Cycadaceae

Locality: Sampalgre Tura

Parts Used: Bark

Disease: Birth control, Cancer

Botanical Description: It is an evergreen arborescent cycad, branched towards apex and gradually thickened towards base. Leaves 1-pinnate, leaf blade oblong-lanceolate, semiglossy, leathery midvein flat adaxially, sulcate when dry, raised abaxially, base decurrent, margin slightly recurved, apex acute. Cataphylls triangular, soft, pilose, articulated.Microsporophylls cuneate while megasporophylls tightly grouped, silky hairy, sterile blade deltoid-ovoid or suborbicular. Seeds 2-4, obovoid, compressed, sclerotesta smooth and sarcotesta with a mixed thick fibrous layer.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 48%

d) Light Intensity: 37200 lux (100X)

PHENOLOGY:

a) Flowering: June-July

b) Place of Flower: Terminal

c) Fruiting: February-March

d) Silvicultural character: It is easy to grow but slow growth rate, prefers light exposure, and thrives well in less than ideal conditions.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.3(%)

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: Cultivated in their garden.

USES: For birth control, decoction of bark is recommended to drink at the rate of 1-2 cups. For cancer, infusion of barks can be taken orally at the rate of 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Rarely found (As per the field survey), Vulnerable under IUCN Red Data List

70. Botanical Name: *Dalbergia sissoo* L (65450)

Local Name: Sisoo

Family: Papilionaceae

Locality: Rongˈsak

Diseases: Antiobesitis

Parts Used: Bark

Botanical Description: This is medium to large deciduous tree having grey yellow trunk, longitudinal crack and downcast twig. Leaves are acuminate, glabrescent, broad ovate, petioles 3-5mm long. Flowers are whitish to pink, fragrant, nearly sessile. Pods are oblong, flat, thin, and strap-like and kidney shaped.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 23°C

b) Altitude: N-25.726189 and E-90.125058

c) Humidity: 49%

d) Light Intensity: 8900 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: January-February

c) Flowering: April

d) Place of Flower: Axillary

e) Fruiting: May

f) Silvicultural character: Frost hardy, strong light demander, moderate fire tender, seedlings drought sensitive, coppices strongly, susceptible to grazing.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e) P=5.9(%)

f) K=89.4(μg g^{-1}) g) N=0.45 % h) NH_4-N=6.02(μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: *Derris robusta* Roxb, *Hedyotis scandens* D.Don

USES: Decoction of bark is taken orally against obesity.

CONSERVATION STATUS: Available in the wild, not yet been assessed for the IUCN Red List

71. Botanical Name: *Dalbergia tamarindifolia* Roxb (58572)

Local Name: Du'kentri

Family: Papilionaceae

Locality: Me'gonggre

Diseases: Puerperal fever

Parts Used: Leaves, Bark

Botanical Description: A woody climber, having bracnches long, flexuose, leaves rachis and petioles densely puberelent as short petiolules, stipules lanceolate. Inflorescence in axillary, congested with corym-like branches, peduncles short. Flowers small, calyx campanulate and glabrescent. Seeds narrow.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Altitude: N-25˚40.281 and E-090˚00.558s′

c) Humidity: 41%

d) Light Intensity: 12300 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) Flowering: March

c) Place of Flower: Axillary

d) Fruiting: May

e) Silvicultural character: Moderately light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37(%)

f) K=79.1 ($\mu g\ g^{-1}$) g) N=0.4% h) NH_4-N=2.3($\mu g\ g^{-1}$) i) NO_3-N=3.2($\mu g\ g^{-1}$)

ASSOCIATES: *Chromolaena odorata* King, *Ageratum conyzoides* Linn.

USES: Infusion of barks and leaves can be taken orally (Before drinking extracted juice has to be tied with clad on the forehead in order to stop reaching directly to the head) Note: For tieing on the forehead *Costus speciosus* Koenig and *Zingiber officinale* Rosc has to be added along with extracted juice of *Dalbergia tamarindifolia* Roxb.

CONSERVATION STATUS: Very rarely found in the wild (As per the field visit), not yet been assessed for the IUCN Red List

72. Botanical Name: *Datura stramonium* Linn (35738)

Local Name: Datura gipok

Family: Solanaceae

Locality: Rongbakgre

Diseases: Eczema, Boils, Pain and swelling

Parts Used: Leaves, Roots

Botanical Description: It is an annual shrub, having light hairy stem. Leaves sinuate or obscurely, lobed, oval glabrous, stalked, ovate, sparingly hairy on the nerves beneath. Inflorescence is funnel shaped with 5 stamens and ovary superior. Calyx tubular 5-angled. Corolla is funnel shaped. Seeds are black having kidney-shaped and flat.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Altitude: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 61%

d) Light Intensity: 14670 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual shrub

b) Flowering and fruiting: Throughout the year

c) Place of Flower: Axillary

d) Silvicultural character: Moderately light demander, susceptible to heavy rainfall and it regenerate naturally.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.50% d) SOM=7.75% e)P=4.48(%)

f) K=2120.7(μg g^{-1}) g) N=0.4% h) NH_4-N=3.2(μg g^{-1}) i) NO_3-N=1.47(μg g^{-1})

ASSOCIATES: *Vinca rosea* Linn, *Canna indica* Linn

USES: Infusion of leaves along with leaves of *Azadirachta indica* A. Juss and *Piper betel* L, and the mixture can be use for eczema. For boils, paste bark is applied directly. For pain and swelling, crushed leaves along with rice grains are applied on the affected part of the body at least 2 times in a day.

CONSERVATION STATUS: Cultivated in their garden, not yet been assessed for the IUCN Red List

73. Botanical Name: *Delonix regia* (B.Hook) (83207)

Local Name: April bol

Family: Fabaceae

Locality: Gadarugre

Diseases: Malaria

Parts Used: Leaves

Botanical Description: Large deciduous tree, bark brown or greyish brown, crown umbrella-like, leaves pinnate, oblong obtuse, base rounded, oblique, glabrescent beneath. Pods very large, laterally compressed, black when ripe, transversely many seeded.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 21%

b) Altitude: N-25°45'28.9" and 90°13'25.2"E

c) Humidity: 67%

d) Light Intensity: 1870 lux (10X)

PHENOLOGY:

a) Leaf shedding: March-April

b) Flowering: April-May

c) Place of Flower: Axillary/Terminal

d) Fruiting: May-August

e) Silvicultural character: Fast growing species, thrives in open areas, propagated by seeds or cuttings.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%=12.57 c)SOC=4.05% d) SOM=6.99% e) P=5.2(%)

f) K=224.1 ($\mu g\ g^{-1}$) g) N=0.32% h) NH_4-N=4.04($\mu g\ g^{-1}$) i) NO_3-N=1.36($\mu g\ g^{-1}$)

ASSOCIATES: *Ageratum conyzoides* Linn

USES: Decoction of leaves along with barks of *Alstonia scholaris* Linn, *Punica granatum* Linn has to be taken at the rate of 3 cups per day.

CONSERVATION STATUS: Cultivated along the roadside, not yet been assessed for the IUCN Red List

74. Botanical Name: *Derris robusta* Roxb (71964)

Local Name: Pal'wang

Family: Fabaceae

Locality: Sadolpara

Parts used: Bark

Diseases: Puerperal fever

Botanical Description: It is an evergreen small tree, having spreading crown and tops of branches finely pubescent. Leaves pinnately compound, puberulous on both surfaces when young but often glabrescent above, elliptic-oblong, mucronate. Inflorescence on axillary, flowers white in slender, pubescent racemes. Fruit a pod, strap-shaped, linear and narrowed at both ends.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.6750998 and E-90.2291653

c) Humidity: 46%

d) Light Intensity: 3400 lux (100X)

PHENOLOGY:

a) Flowering: December-January

b) Place of Flower: Axillary

c) Fruiting: February-March

d) Silvicultural character: Shade bearer, propagated through seeds, resistant to heavy rainfall, and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e) P=5.9(%)

f) K=1922.2(μg g^{-1}) g) N=0.45% h) NH_4-N=6.02 (μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: *Bambusa bamboos* Retz, *Chromolaena odorata* King

USES: Juice extracted from the barks can be drink (Before drinking extracted juice along with leaves of *Costus specious* Koenig, *Knema linifolia* (Roxb), *Citrus aurantium* Linn have to tied with clad on the forehead)

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

75. Botanical Name: *Desmodium gyroides* D.C (11375)

Local Name: Samchrok

Family: Papilionaceae

Locality: Balsri gittim

Diseases: Asthma

Parts Used: Leaves

Botanical Description: An evergreen shrub, having alternate leaves, trifoliate, smooth and obovate. Inflorescence in lax terminal and axillary racemes, flowers yellow. Fruits slightly falcate and inconspicuous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 20°C

b) Altitude: N-25.722038 and E-90.196286

c) Humidity: 52%

d) Light Intensity: 6450 lux (10X)

PHENOLOGY:

a) Leaf shedding: An evergreen shrub

b) Flowering: June-July

c) Place of Flower: Axillary/Terminal

d) Fruiting: August-September

e) Silvicultural character: Moderately light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2(%)

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Drymaria cordata* Willd.

USES: Infusion of leaves can be taken orally at the rate of 1-2 teaspoonfuls twice daily after food.

CONSERVATION STATUS: Cultivated in their garden, not yet been assessed for the IUCN Red List

76. Botanical Name: *Dillenia indica* Linn (85334)

Local Name: Agatchi

Family: Dilleniaceae

Locality: Selsella

Diseases: Diarrhoea

Parts Used: Fruits

Botanical Description: A medium-sized evergreen tree, often buttressed at the base with a large oval crown. Leaves are petiolate, glabrous with narrow wings, oblanlanceolate of narrow elliptic. Flowers are large, 5 petals and numerous yellow stamens. Fruits are hard, carpels tightly enclosed inside the much thickened sepals. Seeds compressed.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 21°C

b) Altitude: N-25˚40.959′ and E-090˚04.296′

c) Humidity: 46%

d) Light Intensity: 72100 lux (100X)

PHENOLOGY:

a) Flowering: May-June

b) Place of Flower: Terminal

c) Fruiting: July-August ripens in November-December

d) Silvicultural character: Light demander, susceptible to heavy rainfall and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=3.8 b)M.C%=23.67 c)SOC=4.0% d) SOM=6.90% e) P=4.2(%)

f) K=2341.7(μg g^{-1}) g) N=0.32% h) NH_4-N=5.84(μg g^{-1}) i) NO_3-N=1.52(μg g^{-1})

ASSOCIATES: *Phyllanthus emblica* Linn, *Areca catechu* L

USES: Fruits are steeped in water for whole day and that water can be drink at 3 times a day. Fruits can also be eaten raw.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List

77. Botanical Name: *Diospyros embryopteris* Pers (24836)

Local Name: Bolkisin

Family: Ebenaceae

Locality: Chenggalgre

Diseases: Dysentery

Parts Used: Fruits, Leaves, Barks

Botanical Description: A medium-sized evergreen tree, fluted in old trees, short trunk and spreading crown. Leaves elliptical or ovate to oblong; coriacous, glossy green, base rounded, petiole often twisted. Flowers tetramerous. Male flowers in pubescent cymes, female flowers solitary subsessile larger than the male flowers, peduncles pubescent, stout. Fruit globose, velutinous but glabrescent.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 22°C

b) Altitude: N-25.752011 and E-90.363643

c) Humidity: 77%

d) Light Intensity: 1890 lux (10X)

PHENOLOGY:

a) Flowering: February-June

b) Place of Flower: Axillary

c) Fruiting: April-May

d) Silvicultural character: Moderately light demander, resistant to fire, natural and artificial regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.6 b)M.C%=15.1 b)SOC=3.6% c) SOM=6.20% d) P=6.5(%)

e) K=77.1(μg g^{-1}) f) N=0.29% g) NH_4-N=6.06(μg g^{-1}) h) NO_3-N=1.68(μg g^{-1})

ASSOCIATES: *Imperata cylindrica* Linn, *Chromolaena odorata* King

USES: Equal proportions of bark, leaves and fruits are boiled for 10-15 minutes. The juice can be taken orally at 2 teaspoonfuls 3 times a day.

CONSERVATION STATUS: Found in the wild, Vulnerable under IUCN Red List

78. Botanical Name: *Diospyros toposia* Ham (17600)

Local Name: Bolgisim

Family: Ebenaceae

Locality: Rongchugre

Parts Used: Bark

Diseases: Skin Diseases (Ringworm like)

Botanical Description: Middle-sized evergreen tree, bark black with horizontal wrinkles. Leaves broadly elliptic, elliptic-oblong, or oblong-lanceolate, shortly acuminate or sub-acute, base obtuse or rounded, glabrous, coriaceous, male flowers in short, peduncled cymes, white, corolla lobes recurved, berries globose, golden yellow when ripe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Altitude: N-25.6301108 and E-90.1715775

c) Humidity: 57%

d) Light Intensity: 4750 lux (10X)

PHENOLOGY:

c) Flowering: January-March

d) Place of Flower: Axillary

e) Fruiting: February-April

f) Silvicultural character: Moderate light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2(%)

f) K= 224.1($\mu g\ g^{-1}$) g) N=0.32% h) NH_4-N= 4.04($\mu g\ g^{-1}$) i) NO_3-N=1.36($\mu g\ g^{-1}$)

ASSOCIATES: *Schima wallichi* Kurtz, *Rhus semialata* Miller, *Chromolaena odorata* King

USES: For skin diseases, decoction of the bark can be applied on the skin externally.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

79. Botanical Name: *Drynaria quircifolia* (L) J.Sm (36853)

Local Name: Do'reng gangpak

Family: Polipodiaceae

Locality: Turam

Diseases: Hydrophobia

Parts Used: Leaves, Rhizome

Botanical Description: This is medium to large epiphytes having rhizome thick, fleshy covered with thin narrow pseudopeltate scales, appressed or patent. Fronds monomorphic or dimorphic, sub coriaceous with or without a dilated large pinnatified or pinnate. Each pinna prominently raised on both surface.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Altitude: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 45%

d) Light Intensity: 3760 lux (10X)

PHENOLOGY: Epiphyte, no flower.

Silvicultural character: Forms a ring shaped-basket around tree trunks and dilated frond base sometimes developed some plants.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7 (μg g^{-1}) g) N=0.36% h)NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Artocarpus heterophyllus* L

USES: Paste of leaves and rhizomes are tied with clad on the forehead. Juice can also be extracted and taken orally and sometimes massaged it all over the body every day.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

80. Botanical Name: *Duabanga grandiflora* DC (32786)

Local Name: Bolchim

Family: Lythraceae

Locality: Rongbakgre

Parts Used: Bark

Diseases: Tuberculosis

Botanical Description: It is a tall evergreen tree with large spreading leaves. Leaves are accumbent, rigid, distichous, ovate to oblong, abaxially glaucous, base chordate, acute at apex. Inflorescence on axillary or terminl panicles. Floral tube broadly campanulate, Sepals are bell-shaped and persistent. Fruits are more or less globose and leathery capsule.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 35°C

b) Altitude: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 62%

d) Light Intensity: 14520 lux (10X)

PHENOLOGY:

a) Flowering: January-February

b) Place of Flower: Axillary/Terminal

c) Fruiting: February-April

d) Silvicultural character: Light demander, fast growing species, grows well on poor soils, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.50% d) SOM=7.75% e)P=4.48(%)

f) K=2120.7(μg g^{-1}) g) N=0.4% h) NH_4-N=3.2(μg g^{-1}) i) NO_3-N=1.47(μg g^{-1})

ASSOCIATES: *Bambusa tulda* Roxb, *Ageratum conyzoides* Linn.

USES: Decoction of bark along with bark of Syzygium cumini Linn. The mixture can be taken orally daily after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

81. Botanical Name: *Dysoxylum binectiforum* Roxb (43550)

Local Name: Bolnasin

Family: Meliaceae

Locality: Bolchugre

Parts Used: Bark

Diseases: Hydrophobia

Botanical Description: This is an evergreen large tree. Leaves are pinnately compound, imparipinnate, apex acuminate, base asymmetric-attenuate, elliptic-oblong, obscurely dentate along margins, coriaceous, intercostate reticulate and prominent. Inflorescence on long axillary panicles. Flowers bisexual, white and fruit a capsule, obovoid, depressed at apex, smooth. Seeds 4 with a large yellow hilum and shiny.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N- 25.725899 and E-90.17778257

c) Humidity: 44%

d) Light Intensity: 283100 lux (100X)

PHENOLOGY:

a) Flowering: January-March

b) Place of Flower: Axillary

c) Fruiting: March-April

d) Silvicultural character: Moderately light demander, propagated through nursery raised seedlings, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2(%)

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Chromolaena odorata* King, *Bidens pilosa* L, *Mucuna bracteata* L

USES: Leaves and barks are pounded well along with barks of *Crotalaria tetragona Roxb*, roots of *Clerodendrum squamatum* Wall and *Drynaria quircifolia* (L). The infusion of pounded mixture has be tied with clad on the forehead and also be taken orally at the rate of 2-3 teaspoonfuls. The mixture can also be used to massage all over the body.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

82. Botanical Name: *Elephantopus scaber* Linn (13732)

Local Name: Achak sre/ Samramma

Family: Asteraceae

Locality: Te'bronggre

Diseases: High fever

Parts Used: Leaves

Botanical Description: A rigid herb, usually perennial with short root-stock. Leaves obovate-oblong, mostly radical forming a spreading rosette on the ground, hairy on both surfaces. Flowers purple in heads, heads numerous, closely packed. Fruits achenes.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 23°C

b) Altitude: N-25.649396 and E-90.259514

c) Humidity: 56%

d) Light Intensity: 4850 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering and fruiting: Throughout the year

c) Place of Flower: Terminal

d) Silvicultural character: Moderate light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5(%)

f) K=88.3(μg g^{-1}) g) N=0.31% h) NH_4-N=7.08(μg g^{-1}) i) NO_3-N=1.9(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Euphorbia hirta* Linn

USES: Leaves are pounded with leaves of *Phyllanthus urinaria* Linn, *Gomphostemma ovatum* Wall and the paste can be tied with clad on the forehead. The infusion of leaves can also be drink at the rate of 1 teaspoonful morning and evening.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

83. Botanical Name: *Euphorbia cotinifolia* L (32468)

Local Name: Anˈte sam (N)

Family: Euphorbiaceae

Locality: Tura Sampalgre

Parts Used: Branches, Leaves

Diseases: Skin tags

Botanical Description: It is a broadleaf evergreen shrub. Leaves oval-shaped or rounded, leaf colour dark burgundy, glossy, base rounded, apex acute or acuminate. Inflorescence on terminal. Flowers small, white with creamy bracts. Cup-like involucres consisting of fused-together bracts and peripheral nectar glands, surrounding a ring of male flowers, each a single stamen. In the middle of cyathium stands a female flower, single pistil with branched stigmas. Fruit a schizocarp but sometimes a drupe, seeds small.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 59%

d) Light Intensity: 36800 lux (100X)

PHENOLOGY:

a) Flowering: April-August

b) Place of Flower: Terminal

c) Fruiting: August-September

d) Silvicultural character: Strong light demander, drought tolerant, can be propagated through seeds and stem cuttings, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35(%)

f) K=84.3 (μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Artocarpus heterophyllus* L, *Saraca asoca* L, *Gmelina arborea* Roxb

USES: Latex from branches and leaves are extracted and then applied externally on the scratched skin tags.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

84. Botanical Name: *Euphorbia hirta* Linn (72065)

Local Name: Arambit/ Dut leng kerai

Family: Euphorbiaceae

Locality: Chigisilgre

Diseases: Cancer, UTI, conjunctivitis, Gums bleeding

Parts Used: Leaves, Roots

Botanical Description: An erect annual herb, stem is covered with yellowish hair. Leaves simple, accumbent, sessile or stalked, elliptic, hairy on both sides, denser pilosity along the veins. Flowers unisexual, solitary or grouped together in an axillary cyme, stalked petals absent. Fruit is a capsule with 3 valves and produces tiny oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Altitude: N-20°16.76058` and E-83˚34.217898`

c) Humidity: 56%

d) Light Intensity: 6000 lux (100X)

PHENOLOGY:

a) Flowering: June-July

b) Place of Flower: Axillary

c) Fruiting: August-September

d) Silvicultural character: Moderate light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Scoparia dulcis* L, *Mimosa pudica* L

USES: Decoction of leaves and roots are used against any type of cancer and UTI. Milk juice extracted from the leaves is used for the treatment of eye problems. For bleeding gums, extracted milky juice can be taken orally or applied on the affected portion of the gum.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

85. Botanical Name: *Euphorbia neriifolia* L (34873)

Local Name: Mandal suˈchi

Family: Euphorbiaceae

Locality: Turam

Parts Used: Leaves, Stem

Diseases: Bone abnormalities, Osteoarthritis, UTI

Botanical Description: A large fleshy, branched or a small tree with pairs of stipular spines. The leaves re fleshy, deciduous, obovate, spathulate, shortly acute, nerves visible only in transmitted light. Involucres usually in threes on a short fleshy peduncle, the glands transversely oblong. Fruits trichous, seeds greenish brown, about the size of a mustard.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 43%

d) Light Intensity: 3750 lux (10X)

PHENOLOGY:

a) Leaf shedding: December-January

b) New Leaf: February

c) Flowering: February-March

d) Place of Flower: Terminal

e) Fruiting: April-May

f) Silvicultural character: Moderately light demander, it can be propagated through stem cuttings and it is cultivated in their homegardens.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: Cultivated as an ornamental.

USES: For osteoarthritis, leaves are pounded along with leaves of *Schima wallichii* Kurtz, *Solanum anguivi* L and *Solanum melongena* Linn. The paste mixture has to be applied externally on the affected portion of the bones. For bone abnormalities leave paste can be used to massage the affected bones. For UTI, decoction of stem adding some amounts of palm candy can be drink at the rate of 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

86. Botanical Name: *Eryngium foetidum* Linn (73178)

Local Name: Samskal

Family: Apiaceae

Locality: Tura Sampalgre

Diseases: Swollen glands, Sprains and spasms, Diarrhoea, Dysentery, Weakness and dizziness

Parts Used: Leaves

Botanical Description: It is an evergreen spine scent herb with spiny toothed leaves. Leaves are long, simple and narrow. Inflorescence in terminal, flowers are small, whitish to pale in colour.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 23°C

b) Altitude: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 57%

d) Light Intensity: 4640 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Terminal

c) Silvicultural character: Shade bearer, propagated through seeds and stalk, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35(%)

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: It is cultivated as spices in their home gardens.

USES: For swollen glands, sprains and spasms, pastes made from the leaves are applied on the affected parts of the body. For diarrhoea and dysentery, leaves are pounded along with leaves o *Erythrina stricta* Roxb and 1-2 drops of *Mucuna bracteata* DC ex.Kurz. The mixture is then filtered and can be drink at 1-2 teaspoonfuls twice daily after food. The mixture can also be make pellets and this has to be taken after soaking in hot water. For weakness and dizziness, infusion of leaves can be taken orally.

CONSERVATION STATUS: Both cultivated and found in the wild as well, not yet been assessed for the IUCN Red List

87. Botanical Name: *Erythrina stricta* Roxb (83229)

Local Name: Mandal gitchak

Family: Fabaceae

Locality: Romgiri

Diaseases: Dysentery

Parts Used: Leaves, Roots

Botanical Description: A medium-sized deciduous tree with conical prickles, branches apically stellate, pubescent. Leaves are trifoliate, rhomboid-ovate, thin coriacious, glabrascent, base deltoid or truncate. Inflorescence in terminal racemes, flowers scarlet-red, crowded at branched ends. Fruits spindle-shaped pods, narrowed at both ends. Seeds reniform.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Altitude: N-25.713962 and E-90.153253

c) Humidity: 44%

d) Light Intensity: 47800lux (100X)

PHENOLOGY:

a) Leaf shedding: December-January

b) New Leaf: March

c) Flowering: February-March

d) Place of Flower: Terminal

e) Fruiting: March-May

f) Silvicultural character: Light demander, propagated through seeds and stem cuttings, resistant to jhum fire and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2(%)

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Citrus maxima* L, *Terminalia chebula* Retz

USES: Decoction of tender leaves and roots can be drink at 2 teaspoonfuls daily after food.

CONSERVATION STATUS: Cultivated and planted as fencing, not yet been assessed for the IUCN Red List

88. Botanical Name: *Ficus elastica Roxb.ex* Hornem (27892)

Local Name: Gonok/Prap

Family: Moraceae

Locality: Sampalgre Tura

Diseases: Blood sugar, Rheumatism and Lumbago

Parts Used: Leaves, Bark

Botanical Description: A large evergreen tree, sending down aerial roots from the branches. Bark is light grey-white, smooth, young parts softly pubescent. Leaves are coriaceous, ovate-elliptic with sub-cordate or rounded base, green and glossy above. Male flowers borne near the mouth of receptacle. Gall flowers are with perianth and the elongated styles. Fruits are sessile in pairs, puberulous, sub-globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Altitude: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 62%

d) Light Intensity: 46730 lux (10X)

PHENOLOGY:

a) Flowering: July -September

b) Place of Flower: Terminal

c) Fruiting: October

d) Silvicultural character: Moderately light demander, drought tolerant, cannot withstand frost, can be propagated by rooting tip cuttings or eye cuttings.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35(%)

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Bambusa vulgaris* Schrad

USES: For blood sugar, decoction of leaves can be taken orally at 2 teaspoonfuls mixed with 1 glass of water daily after food. For rheumatism and lumbago, milk juice extracted from the bark and can be applied to the affected parts to relief pain and bruises two times in a day.

CONSERVATION STATUS: Cultivated in their garden, not yet been assessed for the IUCN Red List

89. Botanical Name: *Ficus hispida* Linn (28122)

Local Name: Sa'kap

Family: Moraceae

Locality: Turam

Diseases: Ringworms

Parts Used: Leaves

Botanical Description: A medium-sized tree with hollow branchlets. Leaves are opposite, obovate, obovate-oblong, elliptic, shortly acuminate, hispid, pubescent beneath. Male flowers sepal 3, broad, concave, hyaline, stamen 1, filament short. Gall flowers pedicellate. Female flowers perianth similar to male flowers. Inflorescence syconia.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 23°C

b) Altitude: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 49%

d) Light Intensity: 7500 lux (100X)

PHENOLOGY:

a) Flowering: September-May

b) Place of Flower: Terminal

c) Fruiting: Ocober-May

d) Silvicultural character: Moderate light demander, propagated through seeds, resistant to heavy rainfall and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2(%)

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Grewia microcos* Linn, *Chromolaena odorata* King

USES: Leaves are used to scrub the affected parts of the body. And paste made from leaves can also be applied to the affected parts externally.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

90. Botanical Name: *Flacourtia jangomas* (Lour.) (1695)

Local Name: Darechik

Family: Flacourtiaceae

Locality: Arbella

Diseases: Ecchymosis

Parts Used: Fruits

Botanical Description: A large evergreen climbing shrub having dark brown and flaky bark. Leaves simple, oblong or ovate, acuminate, crenate-serrate, glabrous, glossy above. Inflorescence in axillary racemes. Male flowers glabrous, stamens with 2-3 mm filaments. Female flowers with flasked-shaped to sub globose. Flowers smell of honey. Fruits is red to dark purple and juicy.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Altitude: N-25.633425 and E-90.367587

c) Humidity: 43%

d) Light Intensity: 10800 lux (100X)

PHENOLOGY:

a) Flowering: April-May

b) Place of Flower: Axillary

c) Fruiting: May-October

e) Silvicultural character: Light demander and sensitive to frost. Artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=4.7 b)M.C%=18.7 c)SOC=3.67% d) SOM=6.32% e) P=4.30(%)

f) K=99.3(μg g^{-1}) g) N=0.5% h) NH_4-N=1.35(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Magnolia hodgsonii* H.K.F, *Schima wallichii* Kurtz.

USES: Juice extracted from fully ripens fruits can be taken at 2 teaspoonfuls twice a day after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

91. Botanical Name: *Garcinia kydia* Roxb (1695)

Local Name: Dengga doti

Family: Clusiaceae

Locality: Tura Peak

Diseases: Dysentery

Parts Used: Fruits

Botanical Description: A small to medium-sized tree with an oval crown and dark green foliage. Leaves are simple, opposite, elliptical lanceolate, gradually or abruptly acuminate cuneate at base. Flowers dioecious; male flowers occur on short, slender peduncles in axillary or terminal umbels. Fruit globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Altitude: N-25°30'16.4" and E-90°14'34.3"

c) Humidity: 50%

d) Light Intensity: 500 lux (10X)

PHENOLOGY:

a) Flowering: November-February

b) Place of Flower: Axillary/Terminal

c) Fruiting: March-June

d) Silvicultural character: Moderately light demander, artificial and natural regenerations has no problems.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=29.5 c)SOC=4.09% d) SOM= 7.05% e) P=4.50%

f) K=254.6(μg g^{-1}) g) N=0.8% h) NH_4-N=1.32(μg g^{-1}) i) NO_3-N=1.24(μg g^{-1})

ASSOCIATES: *Dendrocnide sinuata* Blume, *Castanopsis indica* Roxb.

USES: Fruits can be eaten raw. Fruits can be preserved sundried and during the off season dried fruits can be boiled with water and that juice can be taken orally twice a day after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

92. Botanical Name: *Gaultheria fragrantissima* Wall (16617)

Local Name: Tangsim bite (N)

Family: Ericaceae

Locality: Tura Range

Diseases: Diarrhoea

Parts Used: Leaves

Botanical Description: An evergreen small tree or large shrub having thin brownish bark. Leaves are simple, faintly aromatic, oblong-lanceolate to elliptic lanceolate or elliptic rhomboid, acute or acuminate, serrate or serrulate. Flowers are short stalked, solitary or in racemes, bell shaped. Fruit is a fleshy berry, dry capsule, with numerous small seeds.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 20°C

b) Altitude: N-25.505584 and E-90.239582

c) Humidity: 41%

d) Light Intensity: 450 lux (10X)

PHENOLOGY:

a) Flowering: April-May

b) Place of Flower: Axillary

c) Fruiting: May-June

d) Silvicultural character: Moderate light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=29.5 c)SOC=4.09% d) SOM= 7.05% e) P=4.50%

f) K=254.6(µg g^{-1}) g) N=0.8% h) NH_4-N=1.26(µg g^{-1}) i) NO_3-N=1.28(µg g^{-1})

ASSOCIATES: *Ficus subulata* Blume, *Merrenia vitifolia* Burmf.

USES: Infusion of dried or fresh leaves can be taken orally at 2 teaspoonfuls till the patient recovers.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

93. Botanical Name: *Gmelina arborea* Roxb (82039)

Local Name: Gambari

Family: Verbenaceae

Locality: A'jrigre

Diseases: Allergy, Malaria, Cough

Parts Used: Bark, Roots, Leaves

Botanical Description: A fast growing deciduous tree with a straight trunk, subcoriacious, glabrescent above, fairly tomenose or almost glaucous. Flowers scented, in terminal and axillary,

flowered cymes on the panicle branches. Fruit a drupe, succulent, obovoid or pyriform, pulp aromatic, endocarp bony.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Altitude: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 56%

d) Light Intensity: 60300 lux (100X)

PHENOLOGY:

a) Leaf shedding: January-February

b) New Leaf: March-April

c) Flowering: April-July

d) Place of Flower: Axillary/ Terminal

e) Fruiting: August

f) Silvicultural character: Strong light demander, moderately frost and drought hardy, susceptible to water logging, coppices well, produce root suckers, susceptible to browsing.

SOIL CHARACTERISTICS:

a) pH=4.7 b)M.C%=18.7 c)SOC=3.67% d) SOM=6.32% e) P=4.30%

f) K=99.3(μg g^{-1}) g) N=0.5% h) NH_4-N=1.35(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Tetrameles nudiflora* R Br., *Gmelina oblongifolia* Roxb.

USES: Decoction of bark is used to massage the body or can be drink against allergy. For malaria, juice from roots can be drink at 3 teaspoonfuls 3 times a day. For cough, infusion of tender leaves can be taken orally at 2 teaspoonfuls 3 times in a day.

CONSERVATION STATUS: Cultivated in their garden, not yet been assessed for the IUCN Red List

94. Botanical Name: *Gossypium herbaceum* L (2615)

Local Name: Kil

Family: Malvaceae

Locality: Chenggalgre

Parts Used: Leaves

Diaseases: Hydrophobia

Botanical Description: It is an annual shrub.Leaves palmately 3-lobed, spirally arranged, stipules ovate to lanceolate, leaf blades orbicular, base cordate, lobes broadly ovate to triangular, apex acute to acuminate. Inflorescence on terminal, usually on sympodial branches, pedicels not articulated, calyx campanulate to cupula. Fruit an ovoid or globose capsule, rostrate at the apex, seeds ovoid, acute at the hilum, woolly hairs and with a fine.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 22°C

b) Altitude: N-25.752011 and E-90.363643

c) Humidity: 83%

d) Light Intensity: 18240 lux (10X)

PHENOLOGY:

a) Flowering: September-December

b) Place of Flower: Terminal

c) Fruiting: November-January

d) Silvicultural character: It is a dry land crop; it is cultivated in the jhum fields mainly for wools.

SOIL CHARACTERISTICS:

a) pH=5.6 b)M.C%=15.1 b)SOC=3.6% c) SOM=6.20% d) P=6.5%

e) K=77.1(μg g^{-1}) f) N=0.29% g) NH_4-N=2.06(μg g^{-1}) h) NO_3-N=1.68(μg g^{-1})

ASSOCIATES: *Capsicum annum* L, *Solanum melongena* L, Zea mays L

USES: Leaves are pounded well along with leaves of *Acorus calamus* Linn, *Centella asiatica* Linn, *Carex cracimeta* Linn. The paste mixture has to applied on forehead first and then massaged to whole body.

CONSERVATION STATUS: Cultivated in their jhum field, not yet been assessed for the IUCN Red List

95. Botanical Name: *Govania tiliaefolia* Lamk (88394)

Local Name: Klaram gitchak

Family: Rhamnaceae

Locality: Danekgre

Parts Used: Whole plant parts

Diseases: Contusion

Botanical Description: It is a large struggling semi-deciduous shrub with lateral tendrils. Leaves simple, accumbent, petiolate, ovate, subcoriaceous, crenate, acuminate, base subcordate, lateral veins, arched, stipules oblong. Inflorescence in axillary or terminal racemes. Fruit a schizocarp, glabrous, 3-angled, separating from the axis as 3-indehiscent cocci. Seeds obovate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Altitude: N-25.657911 and E-90.214900

c) Humidity: 49%

d) Light Intensity: 1650 lux (10X)

PHENOLOGY:

a) Leaf shedding: January

b) New Leaf: March-April

c) Flowering: July-December

d) Place of Flower: Axillary/Terminal

e) Fruiting: August-January

f) Silvicultural character: Moderately light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89 % e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Vitex pinnata* L, *Oroxylum indicum* Vent.

USES: Infusion of whole plant parts can be taken orally for contusion during fractured bones.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

96. Botanical Name: *Grewia microcos* Linn (59728)

Local Name: Bolchupret

Family: Tiliaceae

Locality: Turam

Diseases: Skin diseases

Parts Used: Leaves

Botanical Description: It is a medium-sized semi-deciduous tree or sometimes shrubby. Leaves are alternate, elliptic-oblong, acuminate, entire or slightly and irregularly toothed. Flowers are small, yellow, in terminal panicles and axillary towards the apex. Fruits globose or slightly obovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Altitude: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 45%

d) Light Intensity: 3830 lux (10X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: February-March

c) Flowering: April-May

d) Place of Flower: Axillary/ Terminal

e) Fruiting: June-August

f) Silvicultural character: Light demander, susceptible to heavy rainfall and drought and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Moringa oleifera* Lam, *Tamarindus indica* Linn

USES: For skin diseases like white patch/leprosy on skin, paste made from fresh leaves can be applied externally on the affected parts of the body.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List

97. Botanical Name: *Gomphostemma ovatum* Wall (43075)

Local Name: Kimprang

Family: Lamiaceae

Locality: Arbella

Diseases: High fever

Parts Used: Leaves, Roots

Botanical Description: It is a stout evergreen shrub having quadrangular stem with glandular hairs. Leaves are simple, glabrous, opposite, short petioled, ovate and acuminate. Inflorescence in axillary, zygomorphic, row of cymes, the pairs forming false whorls and are sessile in clusters round the stem and flowers are fade yellow.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Altitude: N-25.633425 and E-90.367587

c) Humidity: 41%

d) Light Intensity: 10600lux (100X)

PHENOLOGY:

b) Flowering: September-October

c) Place of Flower: Axillary

d) Fruiting: November

e) Silvicultural character: Susceptible to heavy rainfall and drought, artificial and natural regenerations has no problems.

SOIL CHARACTERISTICS:

a) pH=4.7 b)M.C%=18.7 c)SOC=3.67% d) SOM=6.32% e) P=4.30%

f) K=99.3(μg g^{-1}) g) N=0.5% h) NH_4-N=1.35(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Elaeagnus conferta* Roxb, *Thunbergia grandiflora* Roxb.

USES: Leaves and roots are pounded together and tied with clad on the forehead. The juice can also be extracted and taken orally every day.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

98. Botanical Name: *Gymnopetalum* cochinensis Kurz (62897)

Local Name: Apolka

Family: Cucurbitaceae

Locality: Bolchugre

Parts Used: Roots

Diseases: Weakness

Botanical Description: A perennial monoecious herb, branches slender, hispid or villous. Leaves ovate-cordate, membranous, triangular, base cordtae, apex acuminate. Male flowers solitary or in a raceme. Female flowers solitary; pedicels 1-4 cm, ovary oblong, stigmas 3. Fruit oblong-ovoid, ribbed, acute at both ends. Seeds oblong, both ends obtuse.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Altitude: N- 25.725899 and E-90.17778257

c) Humidity: 49%

d) Light Intensity: 39400 lux (100X)

PHENOLOGY:

a) Flowering: July-September

b) Place of Flower: Axillary

c) Fruiting: September-December

d) Silvicultural character: Light demander, it climbs on any supporting poles or on the ground, artificial and natural regeneration has no difficulty.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99 % e) P=5.2 (%)

f) K= 224.1(μg g^{-1}) g) N=0.32 % h) NH_4-N= 4.04 (μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Merrenia umbelata* L, *Mikania micrantha* H.B.K

USES: Infusion of roots can be drink to regain weakness when a person becomes old.

CONSERVATION STATUS: Found in the open places and field and some even cultivated, not yet been assessed for the IUCN Red List

99. Botanical Name: *Hedyotis scandens* D.Don (68213)

Local Name: Samritchi/Samriching/Samreting/Mikrisim

Family: Rubiaceae

Locality: Romgri

Parts Used: Whole plant parts

Disease: Navel diseases

Botanical Description: It is a perennial, much-branched climbing shrub. Leaves sessile or shortly petioled, elliptic or lanceolate, acuminate or caudate, base cuneate, glabrous with thickened revolute margin, stipules connate. Inflorescence on axillary and terminal compound compact trichotomous leafy cymes. Calyx has short tube, lobes strap shaped, minute appressed puberelent outside, white farinose near apex. Style excerted, wolly below bifid stigma. Fruit capsular and globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 31°C

b) Location: N-25.713962 and E-90.153253

c) Humidity: 43%

d) Light Intensity: 13400 lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual shrub

b) Flowering: May-November

d) Place of Flower: Axillary/Terminal

e) Fruiting: October-April

f) Silvicultural character: Moderately light demander, grows in sparse forest, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Callicarpa arborea* Roxb, *Phlogacanthus thyrsiflorus* Nees.

USES: Whole plant parts are pounded along with *Stephania japonica* (Thunb) Miers. The mixture can be used to massage on the navel.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

100. Botanical Name: *Hemidesmus indicus* Br. (26848)

Local Name: Sokchon budu

Family: Asclepiadaceae

Locality: Rangwalkamgre

Parts Used: Leaves, Bark

Diseases: Anthelmintic, Conjunctivitis

Botanical Description: A perennial climbing herb with thickened roots, twinning or prostrate, terete stems, lacticiferous. Leaves are simple, opposite, variegated with white above, silvery white and pubescent beneath. Flowers are small, in axillary subsessile cymes. The roots are tortous with transversely cracked and longitudinally fissured bark. Seeds are ovate-oblong and thick.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Altitude: N-25.728667 and E-90.229943

c) Humidity: 40%

d) Light Intensity: 4500 lux (100X)

PHENOLOGY:

a) Flowering: July-August

b) Place of Flower: Axillary

c) Fruiting: October-November

d) Silvicultural character: Moderately light demander, grows in moist area and it regenerate naturally.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9%

f) K=59.2(μg g^{-1}) g) N=0.3% h) NH_4-N=6.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: *Lithocarpus elegans* Blume, *Chromolaena odorata* King.

USES: For conjunctivitis and as anthelmintic, infusion of leaves and barks can be taken orally at 1 teaspoonful daily after food. And also the paste can be used as wearing service.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

101. Botanical Name: *Hibiscus rosa-sinensis* L (32157)

Local Name: Joba/China rose

Family: Malvaceae

Locality: Sampalgre Tura

Parts Used: Leaves

Diseases: Dandruff, Hair conditioner

Botanical Description: It is an evergreen woody, showy shrub mostly planted as ornamental. Leaves are glossy, ovate entire below, coarsely toothed above. Inflorescence in axillary or solitary, bellshaped, with pistils and stamens projecting from the centre; capsules roundish.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Altitude: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 56%

d) Light Intensity: 65800 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen shrub

b) Flowering and fruiting: Throughout the year

c) Place of Flower: Axillary/Terminal

d) Silvicultural character: Moderately light demander, propagated through stem cuttings and it regenerate artificially.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35%

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: Planted as an ornamental.

USES: For dandruff and hair conditioner, crushed leaves are applied directly on hair and washed off after 1-2 hours.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

102. Botanical Name: *Hibiscus sabdariffa* L (45760)

Local Name: Gal'da gitchak

Family: Malvaceae

Locality: Turam Village

Parts Used: Leaves

Diseases: Cataract

Botanical Description: It is a small, annual herb. Leaves simple, palmate, alternate, petiolate and red. Inflorescence in terminal or axillary, flowers pedicellate and pentamerous. Seeds small and many.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-20°16.76058` and E-83˚34.217898`

c) Humidity: 56%

d) Light Intensity: 5970 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual shrub

b) Flowering: October-November

c) Place of Flower: Axillary/Terminal

d) Fruiting: November-December

e) Silvicultural character: Moderately light demander, propagated through seeds, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: Cultivated in their home gardens and jhum field.

USES: Decoction of leaves can be drink at the rate of 2-3 cups daily.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

103. Botanical Name: *Hiptage madablota* Gaertn (3477)

Local Name: Du'grak

Family: Malphigiaceae

Locality: Bolchugre

Parts Used: Fruits

Diseases: Diarrhoea

Botanical Description: A large evergreen scandent shrub with white or yellowish hairs on the stem. Leaves are oblong or ovate lanceolate, acuminate, coriaceous, glabrous, dark green shining above. Inflorescence in large terminal or smaller axillary leafy panicles or racemes. Seeds globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Altitude: N- 25.725899 and E-90.17778257

c) Humidity: 46%

d) Light Intensity: 45300 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen foliage

b) Flowering: February-April and August-December

c) Place of Flower: Axillary/Terminal

d) Fruiting: Mach-May and September-January

e) Silvicultural character: Light demander, it can be propagated by cuttings and seeds.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 3.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Grewia microcos* Linn, *Cajanus cajan* Linn.

USES: Paste made from fruits can be taken at 1-2 teaspoonfuls daily. Fresh fruits also are taken raw.

CONSERVATION STATUS: Both domesticated and wild, not yet been assessed for the IUCN Red List

104. Botanical Name: *Holarrhena antidysenterica* Wall (31197)

Local Name: Bol'matra/Gol'matra

Family: Apocynaceae

Locality: Kongsi

Parts Used: Bark, Roots, Seeds

Disease: Dysentery, Malaria, Pneumonia

Botanical Description: A small deciduous tree, stems irregularly flutted, bark soft and warty. Leaves elliptic or elliptic oblong, acuminate or acute, coriaceous, glabrous or pubescent, petiole long. Flowers white, slightly fragrant, puberulous in lax terminal corymbose cymes which are 3-6 inch across, pedicels slender, bracts minute, lanceolate pubescent. Stigma united, ovules numerous. Seeds linear oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Altitude: N-25.728667 and E-90.229943

c) Humidity: 45%

d) Light Intensity: 25070 lux (10X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: March-April

c) Flowering: April-July

d) Place of Flower: Terminal

e) Fruiting: August-October

f) Silvicultural character: Light demander, susceptible browsing, moderately frost and hardy susceptible.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67%

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Cynodon dactylon* L, *Bambusa tulda* Roxb, *Ageratum conyzoides* Linn

USES: For dysentery, ½ kg of bark is to be boiled in 1litre of water till the solution becomes brownish, cooled it down and filtered it with fine and clean cloth. The extracted juice can be taken orally at 1 teaspoonful daily after food. For malaria, infusion of roots and seeds can be taken with water at 1 teaspoonful twice daily after food. For pneumonia, root paste can be used to massage all over the body.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

105. Botanical Name: *Hottuynia cordata* Thunb (35029)

Local Name: Matcha Duri

Family: Piperaceae

Locality: Kongsi

Parts Used: Leaves, Roots

Diseases: Irregular menstrual period/Painful menses (Dysmenorrhoea)

Botanical Description: It is a perennial herbaceous plant. Leaves alternate, leave bases auriculate, heart-shaped with stalk sheathing the stem, emitting a fishy smell when crushed. Inflorescence in axillary or the terminal spike. Flowers small, seeds oval and glabrous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Altitude: N-25.728667 and E-90.229943

c) Humidity: 46%

d) Light Intensity: 25600 lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering fruiting: Throughout the year

c) Place of Flower: Axillary/Terminal

d) Silvicultural character: Moderately light demander, propagated through seeds and stem cuttings, it grows commonly in damp situations and in wet places.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67%

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Imperata cylindrical* L, *Mikania micrantha* H.B.K

USES: Leaves and roots can be taken as vegetables or it can be directly eaten as salads**.**

CONSERVATION STATUS: Both cultivated and wild, not yet been assessed for the IUCN Red List

106. Botanical Name: *Hymenodictyon excelsum* Wall (13283)

Local Name: Wakginde/Wakkinte

Family: Rubiaceae

Locality: Barijong

Parts Used: Leaves

Diseases: Sores in between fingers and toes (Herpetic whitlow)

Botanical Description: It is a medium-sized evergreen tree. Leaves simple, stipules oblong with a broad base, caducous, lamina tapering at the base, elliptic-ovate, apex acuminate. Flowers

fragrant, bracteoles minute, pedicels slender, calyx minute, corolla pubescent abaxially. Fruits capsule, ellipsoid, many seeded. Seeds lenticular, winged around.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.727190 and E- 90.257140

c) Humidity: 45%

d) Light Intensity: 10900lux (100X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Axillary/Terminal

c) Fruiting: October-February.

d) Silvicultural character: Moderate light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=4.0 b) M.C%=17.64 c)SOC=3.66% d) SOM=6.33% e) P=5.7%

f) K=334.5(μg g^{-1}) g) N=0.28% h) NH_4-N=4.95(μg g^{-1}) i) NO_3-N=1.32(μg g^{-1})

ASSOCIATES: *Thunbergia grandiflora* Roxb, *Chromolaena odorata* King

USES: Paste made from leaves is applied to the affected portion of the body.

CONSERVATION STATUS: Rarely found in the wild (As per the field survey), not yet been assessed for the IUCN Red List

107. Botanical Name: *Hypoestes triflora* Roem and Seh (21851)

Local Name: Samgitchak/Samrima

Family: Acanthaceae

Locality: Balsri gittim

Parts Used: Leaves

Diseases: Colic in newly born babies

Botanical Description: It is a small shrub. Stem long and hairy.Leaves accumbent, ovate, acute or acuminate at apex, decussate, without stipules, cystoliths commonly present on leaves and other vegetative parts appearing as white streaks. Inflorescence usually in cymes, racemes or in axillary whorl. Fruit a loculicidal capsule, usually cylindrical or clavate in shale. Seeds flattened, glabrous and sometimes with elastic mucilgenous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Altitude: N- 25.725899 and E-90.17778257

c) Humidity: 54%

d) Light Intensity: 45630 lux (10X)

PHENOLOGY:

a) Flowering and Fruiting: Throughout the year

b) Place of Flower: Axillary/Terminal

c) Silvicultural character: Moderate light demander and propagated through stem cuttings.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 3.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Planted in their home gardens as ornamentals.

USES: Pounded leaves are used to massage the infant body. The pastes are also wrapped in a cloth and can be used to wear as an amulet.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

108. Botanical Name: *Hyptis suaveolens* Poit (25133)

Local Name: Samkiljeng/ Samspin

Family: Labiateae

Locality: A'jrigre

Parts used: Leaves

Diseases: Eye problems

Botanical Description: A strong aromatic annual herb with 4-angled stems. Stems hairy with squarish cross-sections. Leaves ovate, sinuate, conspicuous veins, crenate-denticulate and hairy. Inflorescence in axillary racemiform cymes or cymes collected into thyrsiform almost leafless panicles, flowers tubular. Fruits flattened, one seeded with V-shaped notched at one end.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-20˚1676058′ and E-83˚34.217898′

c) Humidity: 45%

d) Light Intensity: 14980 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: August-September

c) Place of Flower: Axillary

d) Fruiting: September-October

e) Silvicultural character: Light demander, grows along the roadsides, bare areas, propagated by seeds or cuttings and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Chromolaena odorata* King, *Urena lobata* Linn.

USES: Infusion of leaves is applied directly on eye irritation like itchy and watery eyes and conjunctivitis.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

109. Botanical Name: *Impatiens balsamina* L (21584)

Local Name: Balsram

Family: Balsaminaceae

Locality: Balsri gittim

Parts Used: Leaves

Diseases: Heart diseases (Lung problems)

Botanical Description: An annual pubescent herb. Leaves alternate, simple, acuminate at apex. Inflorescence in axillary. Spur long. Seeds reticulate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Altitude: N-25.722038 and E-90.196286

c) Humidity: 56%

d) Light Intensity: 3870 lux (10X)

PHENOLOGY:

a) Flowering: July-August

b) Place of Flower: Axillary

c) Fruiting: September-October

d) Silvicultural character: Shade bearer, propagated through seeds, artificial and natural regeneration has no difficulty.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 2.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Planted as an ornamental in their home gardens

USES: Crushed leaves can be taken orally and also can be use to massage on the chest.

CONSERVATION STATUS: Cultivated as an ornamental, not yet been assessed for the IUCN Red List

110. Botanical Name: *Imperata cylindrica* (L) (81420)

Local Name: Am'pang

Family: Poaceae

Locality: Balsri gittim

Parts Used: Roots

Diseases: UTI

Botanical Description: It is a perennial herb. Stem cylindrical, solid at the node, hollow in its internode. Leaves alternate, lanceolate. Spikelets in spiciform, panicles and white silky. Roots fibrous, emerging from the base of the culm and nodes on the rhizome.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 53%

d) Light Intensity: 38000lux (1000X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering and fruiting: September-November

c) Place of Flower: Terminal

d) Silvicultural character: Strong light demander, propagated through seeds and vegetative as well. It regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Macarang indica* Wight, *Clerodendrum squamatum* Wall

USES: For UTI, roots are pounded along with barks of *Neocinnamomum caudatum* Nees and *Ziziphus mauritiana* Lamk, seeds of Zanthoxylum budrunga Roxb, leaves of *Centella asiatica* Linn. To that some amounts of sugar or palm candy is added. The mixture can be taken orally at the rate of 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Wild, not yet been assessed for the IUCN Red List

111. Botanical Name: *Jatropha curcas* Linn (85886)

Local Name: Bolmandal/Bolbandong

Family: Euphorbiaceae

Locality: A'jrigre

Parts Used: Leaves, Bark, Branches

Diseases: Dysentery, Tuberculosis, Sores, Irregular menstruation

Botanical Description: It is a soft-wooded deciduous shrub. Leaves ovate, broadly cordate, and shortly acuminate/acute. Inflorescence in long-peduncled, panicled pubescent cymes. Fruits ovoid and seeds are oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-20˚1676058′ and E-83˚34.217898′

c) Humidity: 46%

d) Light Intensity: 149800 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: February-March

c) Flowering: March-July

d) Place of Flower: Terminal

e) Fruiting: July-September

f) Silvicultural character: Moderate light demander, susceptible to heavy rainfall, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: Planted as fencing in their gardens.

USES: For tuberculosis and irregular menstruation, latex/juice extracted from the leaves can be taken orally at 1-2 drops daily after food. For sores, infusion of leaves and barks are applied after washing the sores twice daily. For dysentery, milky juice is extracted by cutting the branches and 1-2 teaspoonfuls of water is added to it. The mixture can be taken at ½ cup twice daily.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

112. Botanical Name: *Jatropha gossypiifolia* L (18410)

Local Name: Bolmandal gitchak

Family: Euphorbiaceae

Locality: A'jrigre

Parts Used: Stem/branches

Diseases: Dysentery

Botanical Description: A soft-wooded shrub, mostly reddish-brown leaves. Leaves are palmately lobed and the yellow viscid glands present in the leaf margins, petioles and stipules. Small red flowers are seen in glandular corymbose cymes. The capsules are ovoid and the seeds small, mildly dotted.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-20˚1676058′ and E-83˚34.217898′

c) Humidity: 47%

d) Light Intensity: 60300 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: February-March

c) Flowering: July-March

d) Place of Flower: Terminal

e) Fruiting: July-March

g) Silvicultural character: Moderately light demander propagated through seeds, and it is planted in their home gardens.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=2.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: Planted as an ornamental.

USES: Fresh latex is extracted from the stem and mixed with water. The mixture can be taken orally at the rate of 2-3 teaspoonfuls twice a day.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

113. Botanical Name: *Justicia gendarussa* Linn (38406)

Local Name: Do'ja gipe

Family: Acanthaceae

Locality: A'jrigre

Parts Used: Leaves

Diseases: Burns, Muscle sprains, broken/fractured bones

Botanical Description: An evergreen undershrub, leaves lanceolate or bluntly acuminate, glabrous on maturity lateral nerves slender, base acute or cuneats petiole. Flowers in interrupted spikes from uppermost leaf axils often forming terminal panicles. Bracts linear, pubescent chaneled.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 46%

d) Light Intensity: 14680 lux (10X)

PHENOLOGY:

a) Flowering: February-April

b) Place of Flower: Terminal

c) Fruiting: February-May

d) Silvicultural character: Shade loving, quick growing, branched and evergreen shrub. Artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=1226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Bambusa vulgaris* Schrad, *Citrus maxima* L

USES: Leave pastes are used to tie on the infected portion of broken/fractured bones and burns. The fresh leaves are warmed by smearing little amount of mustard oil and massage on the muscle sprains.

CONSERVATION STATUS: Both cultivated and wild, not yet been assessed for the IUCN Red List

114. Botanical Name: *Kaempferia galanga* L (67432)

Local Name: Wakpatra/Samsimil

Family: Zingiberaceae

Locality: Tura sampalgre

Diseases: Skin diseases

Parts Used: Leaves

Botanical Description: It is a perennial herbaceous plant, rhizome is upright and large simple leaves. Leaves with broad blade, spreading flat on the ground, appearing annually in rainy season, hairy beaneath. Leaves are aromatic. Flowers white tinged with violet, sessile, arising from the axil.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 47%

d) Light Intensity: 43160 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: April-May

d) Place of Flower: Axillary

e) Silvicultural character: Moderate light demander and it is propagated through rhizomes.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35%

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: Planted in pot.

USES: For skin diseases like itch an irritation, leaves are smashed on the palm and applied directly on the affected parts of the body.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

115. Botanical Name: *Kaempferia parviflora* Wall.ex.Baker (67411)

Local Name: Dikge banji/Dikge me'kinte

Family: Zingiberaceae

Locality: Sropgre

Parts Used: Rhizome

Diseases: Birth Control

Botanical Description: It is a small rhizomatous perennial herb. Leaves obovate-elliptic, slightly unequal sided, acute or acuminate, base subcordate, short petiole. Inflorescence on axillary, flowers small, in a sessile central tuft, corolla white, lip ovate-cuneate, emarginated, white with purple blotch at the middle.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 61%

d) Light Intensity: 76200 lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: April-May

c) Place of Flower: Axillary

d) Silvicultural character: Moderate light demander, propagated through rhizomes and it is cultivated in their garden.

SOIL CHARACTERISTICS:

a) pH= 4.6 b)M.C%=13.5 c)SOC=3.9% d) SOM=6.72% e) P=5.81%

f) K=79.4(μg g^{-1}) g) N=0.7% h) NH_4-N=2.6(μg g^{-1}) i) NO_3-N=2.4(μg g^{-1})

ASSOCIATES: Cultivated as an ornamental.

USES: Infusion of rhizome is taken at the rate of 2-3 teaspoonfuls to prevent pregnancy or birth control.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

116. Botanical Name: *Kaempferia rotunda* L (67420)

Local Name: Chupal eksira dikge

Family: Zingiberaceae

Locality: Balsri gittim

Parts Used: Rhizome

Diseases: Orchitis

Botanical Description: It is a small herbaceous perennial plant. Leaves erect, oblong or ovate-lanceolate, usually variegated with darker and lighter green above along the midrib and tinged purple beneath. Flowers light purple bracts at the base inside which the three-parted white calyx can be seen. Petals are fused at the base into a tube with spreading linear lobes. Fruit is capsule and seeds globose which is enclosed by a thin fleshy covering.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 61%

d) Light Intensity: 37100 lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering and Fruiting: April-May

c) Place of Flower: Axillary

d) Silvicultural character: Moderate light demander, propagated through rhizomes and it is cultivated in their home gardens.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Planted in pot.

USES: Rhizomes are pounded along with *Stephania japonica* (Thunb) Miers and *Hedyotis* scandens D.Don. The infusion of above mixture can be drink at the rate of 1-2 teaspoonfuls daily after food and also it can be used to massage the body.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

117. Botanical Name: *Knema linifolia* Roxb (47268)

Local Name: Bolanchi

Family: Myristicaceae

Locality: Sropgre

Parts Used: Bark

Diseases: Puerperal fever

Botanical Description: A medium-sized evergreen tree. Leaves obovate-lanceolate, acute, base rounded, apex acuminate or long acuminate, lateral veins are prominent. Inflorescence on axillary or cauline, on woody pedunculate tubercles. Male inflorescence numerous flowered. Female inflorescence is shorter than male. Fruit neary sessile, globose to ellipsoid, thick and fleshy pericarp. One seeded, arillate, laciniate at apex**.**

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 46%

d) Light Intensity: 16300 lux (100X)

PHENOLOGY:

c) Flowering: August-September

d) Place of Flower: Axillary

e) Fruiting: September-October

f) Silvicultural character: Moderately light demander, not susceptible to jhum fire and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 3.04(μg g^{-1}) i) NO_3-N=1.37(μg g^{-1})

ASSOCIATES: *Engelhardtia spicata* Lesch ex Blume, *Beilschmiedia assamica* Meissn

USES: Juice extracted from the barks can be drink (Before drinking extracted juice along with leaves of *Costus specious* Koenig, *Citrus aurantium* Linn have to tied with clad on the forehead)

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

118. Botanical Name: *Leucas indica* (L) R.Br ex vatke (76388)

Local Name: Domkolos

Family: Lamiaceae

Locality: A'jrigre

Parts Used: Leaves

Diseases: Nose bleeding

Botanical Description: It is an annual herb, branched, leaves can be obtuse, linear or linearly lanceolate. Flowers sessile, in dense terminal or axillary whorls, bracts acute, ciliate with long slender hairs. Calyx tube curved, bottom half is glabrous and membranous, upper half is hispid and ripped. Fruits are nutlets and oblong in shape.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-20˚1676058′ and E-83˚34.217898′

c) Humidity: 44%

d) Light Intensity: 149800 lux (100X)

PHENOLOGY:

a) Leaf shedding: May

b) New Leaf: September

c) Flowering: February-March

d) Place of Flower: Terminal/Axillary

e) Fruiting: March-April

f) Silvicultural character: Moderately light demander, propagated through seeds, and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=1.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* L, *Cynodon dactylon* L

USES: Infusion of leaves around 2-3 drops is dropped into the nostrils to stop the nose bleeding.

CONSERVATION STATUS: Available in the wild, not yet been assessed for the IUCN Red List

119. Botanical Name: *Litsea citrata* Br (42719)

Local Name: Jengjil

Family: Lauraceae

Locality: Danekgre

Parts Used: Fruits, Bark

Disease: Weakness, Hydrophobia

Botanical Description: It is a small evergreen tree. The tree emits a scent of lemon. Leaves are alternate and simple. Inflorescence on axillary or terminal. Flowers are small greenish or yellowish. Fruits drupe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.658012 and E- 90.215092

c) Humidity: 59%

d) Light Intensity: 12070 lux (10X)

PHENOLOGY:

a) Flowering: June-July

b) Place of Flower: Axillary/Terminal

c) Fruiting: September-November

d) Silvicultural character: Light demander, resistant to rainfall and jhum fire, most of the time attacked by insects, it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Holarrhena antidysenterica* Wall, *Chromolaena odorata* King

USES: For weakness, decoction of fruits can be taken orally. For hydrophobia, infusion of barks along with leaves of *Stereospernum tetragonum* D.C, *Hottuynia cordata* Thunb, Crotalaria *tetragona* Roxb are use to apply all over the body.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

120. Botanical Name: *Litsea monopetala* Roxb.ex Baker Pers. (69574)

Local Name: Adakakki/Boldokakki

Family: Lauraceae

Locality: Babadam

Parts Used: Bark

Diseases: Adhesive plaster (on fractured bones), Muscle improve

Botanical Description: A small sized evergreen tree, bole straight to crooked, bark surface longitudinally fissured, inner bark brown mottled. Leaves alternate, acute, glabrous above, sparsely hair below, midrib sunken above, tertiary venation scalariform, distinct below. Flowers are soft in peduncled umbellules in short racemes. The fruits are globose-ellipsoid or oblong, seated on a small flat perianth cup.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25°35.053 and E-90°07.516

c) Humidity: 47%

d) Light Intensity: 12010 lux (10X)

PHENOLOGY:

a) Flowering: July-August

b) Place of Flower: Axillary

c) Fruiting: October-November

d) Silvicultural character: Light demander, resistant to heavy rainfall and jhum fire. It regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9%

f) K=59.2(μg g^{-1}) g) N=0.3% h) NH_4-N=6.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: *Careya arborea* Roxb, *Diospyros toposia* Ham.

USES: Barks are used as adhesive plaster on fractured bones. It has a potential for blood cell reproduction that helps muscle to improve quickly.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

121. Botanical Name: *Litsea salicifolia* Roxb. (72653)

Local Name: Laham

Family: Lauraceae

Locality: Danekgre

Parts Used: Bark

Diseases: Abscess

Botanical Description: It is a small tree or shrub. Leaves alternate, elliptic-lanceolate, oblong-lanceolate, simple, entire, and coriaceous. Inflorescence in axillary racemes. Flowers, umbel, fascicled, yellowish, actinomorphic. Fruits pale white, ellipsoid and obovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.657911 and E-90.214900

c) Humidity: 46%

d) Light Intensity: 12440 lux (10X)

PHENOLOGY:

a) Flowering: July-August

b) Place of Flower: Axillary

c) Fruiting: October-November

d) Silvicultural character: Light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Chromolaena odorata* King, *Costus specious* Koenig.

USES: Paste made from barks is warmed in a low flame and this has to be applied on the affected portion of the body.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

122. Botanical Name: *Litsea subifera* Pers. (37856)

Local Name: Adakakki/Boldokakki dal'gipa (N)

Family: Lauraceae

Locality: Chigitchak

Parts Used: Leaves and bark

Diseases: Dysentery

Botanical Description: A small evergreen tree. Leaves are aromatic, elliptic-ovate, or oblong lanceolate and pubescent. Flowers in umbellate heads or several on short branches. Peduncles pubescent or glabrescent, axillary or from the axils of caduceus bracts on the new shoots below the leaves. Fruits drupe, globose, pedicel; seeds straight.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25°43'43.2" E-90°13'47.8"

c) Humidity: 43%

d) Light Intensity: 12630 lux (10X)

PHENOLOGY:

a) Flowering: June-July

b) Place of Flower: Axillary

c) Fruiting: September-November

d) Silvicultural character: Light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67%

f) K=1324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Bambusa vulgaris* Schrad, *Chromolaena odorata* King.

USES: Equal proportions of leaves and bark is boiled together till it becomes concentrated. This mixture can be taken at ½ cup thrice daily. Infusion of the bark can also be taken.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

123. Botanical Name: *Ludwigia hyssopifolia* G.Don. (78497)

Local Name: Samja'lik

Family: Onagraceae

Locality: Dadeng Bajar Rama

Parts Used: Leaves, Roots

Diseases: Pneumonia

Botanical Description: It is an annual or woody perennial herb. The leaves are linear, alternate, lanceolate and entire. The flowers are small, yellow with 4-5 petals. Inflorescence is in the axils of the leaves and all the flower segments are on the top of the ovary. The fruit is a many-seeded capsule, narrowly ridged longitudinally on four sides.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: 14300 lux

c) Humidity: 53%

d) Light Intensity: 38000lux (1000X)

PHENOLOGY:

a) Leaf shedding: Perennial

b) Flowering and fruiting: Whole year round

c) Place of Flower: Axillary

d) Silvicultural character: Moderately light demander, sometimes semi-aquatic, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%=12.57 c)SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K=224.1(μg g^{-1}) g) N=0.32% h) NH_4-N=2.03(μg g^{-1}) i) NO_3-N=1.32(μg g^{-1})

ASSOCIATES: *Asparagus officinalis* Willd, *Chromolaena odorata* King

USES: Leaves and roots are crushed together and can be massaged on the body. If the patient is having severe headache, the paste is tied up in a cloth and patient has to smelt it for few minutes (In this case, while smelling in order to prevent the odour or scent directly reaching to the head some portions of the crushed roots is to tied with clad on the forehead). This has to be applied morning and evening.

CONSERVATION STATUS: Found in the wild, least concern under IUCN Red List.

124. Botanical Name: *Lygodium flexuosum* (L.) SW (80894)

Local Name: Ru'at tip

Family: Lygodiaceae

Locality: Rongram

Parts Used: Leaves, Rhizome, Whole plant

Diseases: Pneumonia, Antiseptic, Sprains, Bleeding

Botanical Description: A perennial climbing fern, with rachis upto 2.5cm thick, pinnae digitately lobed; pinnules ternate, bearing fertile and infertile parts; veins forked; spores marginal in biseriate spike, numerous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.599652 and E- 90.251470

c) Humidity: 54%

d) Light Intensity: 12470 lux (10X)

PHENOLOGY:

a) Spores: January-September

b) Silvicultural character: Moderate light demander and natural regeneration is seen.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5%

f) K=88.3(μg g^{-1}) g) N=0.31% h) NH_4-N=3.08(μg g^{-1}) i) NO_3-N=1.9(μg g^{-1})

ASSOCIATES: *Mikania micrantha* H.B.K, *Ageratum conyzoides* Linn.

USES: For pneumonia, leaves are crushed along with roots of *Carica papaya* (L.), and can be used as massage service on the head. Paste made from fresh leaves can be use as an antiseptic to cuts and wounds. Whole plant is used for sprains by tying around the waist. Leave pastes are also used externally for leech bites and to cease bleeding.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

125. Botanical Name: *Mangifera indica* Linn (24909)

Local Name: Te'gatchu

Family: Anacardiaceae

Locality: Balsri gittim

Parts used: Bark

Diseases: Dropsy, Dysentery

Botanical Description: It is a large evergreen tree with a dark green rounded canopy. Leaves alternate, simple, leathery, oblong-lanceolate, acuminate, and entire but often with wavy

margins, coriaceous. Flowers radially symmetrical, scented, partly male and partly bisexual. Fruit an irregularly egg-shaped and slightly compressed fleshy drupe. The single, compressed-ovoid seed is encased in the white fibrous inner layer of the fruit.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 43%

d) Light Intensity: 3950 lux (10X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) New Leaf: March-April

c) Flowering: January-April

d) Place of Flower: Terminal

e) Fruiting: May-August

f) Silvicultural character: The trees are drought tolerant, grows in any well-drained soil whether sandy, loam or clay. Trees shade out grasses because of their thick crowns.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Clerodendrum serratum* Spreng, *Areca catechu* Linn.

USES: For dysentery, leaves are crushed and juice is extracted. To that little amount of milk /or honey can be added. It should be taken 1 teaspoonful twice daily after food. For dropsy, decoction of bark can be drink at 1 glass twice daily after food.

CONSERVATION STATUS: Cultivated, Data deficient under IUCN Red List

126. Botanical Name: *Melastoma malabathricum* (Linn.) (76909)

Local Name: Kakku

Family: Melastomataceae

Locality: Turam

Parts Used: Fruits

Diseases: Cancer

Botanical Description: It is an evergreen shrub, generally bristly, covered with small rough scales. Branchlets are numerous, procumbent, densely covered with appressed scales. Leaves are blade ovate, elliptic or elliptic-lanceolate, stiffly papery, acuminate. Inflorescence in terminal, sub capitate corymbose. Fruit urceolate-globular, succulent. The seeds are dimorphic, with or without embryos.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 47%

d) Light Intensity: 3320 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Terminal

c) Silvicultural character: Light demander, susceptible to heavy rainfall and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%)

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Carex cracimeta* L

USES: The fruits are to be crushed and mix with water. The mixture can be taken orally at ½ cup twice a day during the initial stages of cancer.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

127. Botanical Name: *Mikania micrantha* H.B.K (84355)

Local Name: Samtip/Meghalaya budu

Family: Asteraceae

Locality: Chidekgre

Parts Used: Leaves

Diseases: Antiseptic

Botanical Description: A perennial scrambling or climbing vine. Leaves are opposite, petiolate, ovate, acute, crenate or angled, cordate to triangular with a broad cordate base. Flowers minute, borne in small densely packed heads which superficially resemble a single large flower.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.6301108 and E-90.1868983

c) Humidity: 39%

d) Light Intensity: 3860 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: November-December

c) Place of Flower: Axillary

d) Fruiting: December

e) Silvicultural character: Moderately light demander, it is a common weed of pastures, roadsides, fences, forest edges and wastelands.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9%

f) K=59.2(µg g^{-1}) g) N=0.3% h) NH_4-N=6.1(µg g^{-1}) i) NO_3-N=3.8(µg g^{-1})

ASSOCIATES: *Vitis spp*., *Tetrastigma lanceolarium* Roxb.

USES: Pounded fresh leaves are applied on cuts as an antiseptic.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

128. Botanical Name: *Mimosa pudica* L. (46002)

Local Name: Sammikchip

Family: Mimosaceae

Locality: Rongbakgre

Parts Used: Leaf, Stem, Roots

Diseases: Ovary weakness, Scorpion sting

Botanical Description: A straggling large herb or deciduous undershrub, stem and branches prickly and clothed with bristles. Leaves bipinnate, very sensitive, common petiole beset with assedning bristles, stipules linear lanceolate with bristly edges, flowers in globose head, peduncles prickly; pods flat, small and prickles on the sutures.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 61%

d) Light Intensity: 34210 lux (10X)

PHENOLOGY:

a) Leaf shedding: February

b) Flowering: March-October

c) Place of Flower: Axillary

d) Fruiting: May-November

e) Silvicultural character: Moderately light demander, is a common wasteland weed which grows well in many areas. Frequent to common in moist shady places.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=21.6 c)SOC=4.50% d) SOM=7.7% e)P=4.48%

f) K=2120.7(μg g^{-1}) g) N=0.4% h)NH4-N=3.2(μgg^{-1}) i)NO3-N=1.47(μgg^{-1})

ASSOCIATES: *Bidens pilosa* Linn, *Ageratum conyzoides* Linn.

USES: For ovary weakness, decoction of roots can be taken daily after food. For scorpion sting, paste made from leaves and stem is to be applied twice daily.

CONSERVATION STATUS: Found in the wild, Least concern under IUCN Red List.

129. Botanical Name: *Molineria recurvata* Colla (68279)

Local Name: Reˈkoksi

Family: Amaryllidaceae

Locality: Selsella A'palgre

Parts Used: Rhizome

Diseases: AIDS

Botanical Description: An evergreen perennial herb that produce a cluster of leaves from the roots. Leaf blades longitudinally ribbed or folded. Petiole deeply channelled on the upper surface. Inflorescence arising from the base of the plant. Ovary unilocular with parietal placentation near the apex but 3-locular with axile placentation towards the base. Style long , stigma about as wide at the style. Seeds dark brown immersed in a white pulp. Testa rugose and ribbed or grooved.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25˚40.836′ and E-90˚00.999′

c) Humidity: 63%

d) Light Intensity: 38200 lux (100X)

PHENOLOGY:

a) Flowering: May-June

b) Place of Flower: Axillary

c) Fruiting: June-July

d) Silvicultural character: Moderately light demander, plant is grown as an ornamental and it can be propagated through bulb or rhizome.

SOIL CHARACTERISTICS:

a) pH=3.3 b)M.C%=19.54 c)SOC=4.02% d) SOM=6.93% e) P=4.3%

f) K=1921.2(μg g^{-1}) g) N=0.34% h) NH_4-N=5.18(μg g^{-1}) i) NO_3-N=1.56(μg g^{-1})

ASSOCIATES: Planted in pot.

USES: Infusion of bulb/rhizome is given to AIDS patients at the rate of 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Rare (As per the field visit) and cultivated, not yet been assessed for the IUCN Red List

130. Botanical Name: *Momordica charantia* L (62912)

Local Name: Kerela

Family: Cucurbitaceae

Locality: Galwanggre

Parts Used: Fruits

Diseases: Diabetes, Rheumatism

Botanical Description: A herbaceous vine which bears tendrils and it creeps along the supports. Leaves lobulate or sinuate dentate, palmate, tendrils unbranched. Flowers staminate, hypanthium shallow and monoecious. Fruits ovoid, tapering at both ends. Seeds and pith appear white in unripe fruits.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 21°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 45%

d) Light Intensity: 450 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) New Leaf: April-May

c) Flowering: August

d) Place of Flower: Axillary

e) Fruiting: August-March

f) Silvicultural character: Moderately light demander, is a cultivated plant which can be raised at lower altitude. It can be propagated through direct seeding.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0%

f) K=67.8(μg g^{-1}) g) N=0.30% h) NH_4-N=1.21(μg g^{-1}) i) NO_3-N=1.78(μg g^{-1})

ASSOCIATES: Cultivated in their home gardens.

USES: Juice is extracted by grinding the fruits. Extracted juice can be taken at 5 teaspoonfuls once in a day till the sugar content is brought to normal level. For rheumatism, juice can be taken thrice in a day.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

131. Botanical Name: *Monochoria hastaefolia* Prest. (45666)

Local Name: Gara bokchi/Gachli

Family: Pontederiaceae

Locality: Pedaldoba

Parts Used: Roots

Diseases: Fractured bones

Botanical Description: It is an annual, aquatic herb, forming rosettes and spreading stolons. Leaves linear or lanceolate, in young plants without lamina, ovate-oblong, to broadly ovate, sharply acuminate, the base heart-shaped. Inflorescence is spicate, flowers are pedicelled, choripetalous, in racemes, initially inside the sheath of the apical leaf and recurved after anthesis. The ovary has a long style and the capsule splits between the partitions into three valves. Seeds are numerous and longitudinally ribbed.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 36°C

b) Location: N-25.990193 and E- 90.418932

c) Humidity: 48%

d) Light Intensity: 73000 lux (1000X)

PHENOLOGY:

a) Flowering: August-March

b) Place of Flower: Axillary

c) Fruiting: March-April

d) Silvicultural character: It is a plant of aquatic or sub-aquatic, mostly grown in swamps, marshes, open wet places and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%= 12.6 c)SOC=3.02% d) SOM=5.20% e) P=5.80%

f) K=66.8(μg g^{-1}) g) N=0.6% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=2.2(μg g^{-1})

ASSOCIATES: Grown in ponds/ lakes.

USES: Roots are pounded along with *Cissus quadrangularis* L., *Crinum purpurasians* Herb, and *Justicia gendarrusa* Burmf. The mixture has to be bandage on the broken bones supporting with bamboo.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

132. Botanical Name: *Morinda angustifolia* Roxb. (27599)

Local Name: Chenong/Chenrong Aˈga

Family: Rubiaceae

Locality: Rangwalkamgre

Parts Used: Bark

Diseases: Jaundice

Botanical Description: An evergreen shrubs upto 10m high, crown lax, bark yellowish brown. Leaves oblanceolate, oblong-lanceolate or oblong elliptic, acuminate, based narrowed to the petiole, nerves much prominent beneath, heads pedunculate. Flowers white, drupes turbinate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 43%

d) Light Intensity: 73200 lux (100X)

PHENOLOGY:

a) Flowering and Fruiting: February-October

b) Place of Flower: Terminal

c) Silvicultural character: Light demander, mostly grows in moist and damp areas and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9%

f) K=59.2(μg g^{-1}) g) N=0.3% h) NH_4-N=6.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: *Adathoda vasica* Nees, *Mikania micrantha* H.B.K

USES: Barks are pounded well along with barks of *Oroxylum indicum* Vent and *Terminalia bellirica* Roxb. The extracted mixture juice has to be drink with hot water at the rate of 1-2 cups daily after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

133. Botanical Name: *Moringa oleifera* Lam. (11095)

Local Name: Sojona

Family: Moringaceae

Locality: Gadaru

Parts Used: Roots, Barks

Diseases: Arthritis, Tooth-ache, Headache, Hypertension

Botanical Description: It is a deciduous to evergreen tree having white very softwood. Leaves alternate, tripinnate, leaflet ovate. Flowers bisexual in axillary panicles. Pods capsular, strongly ribbed, seeds triangled the angles winged.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25°45'28.9" and 90°13'25.2"E

c) Humidity: 57%

d) Light Intensity: 26310 lux (10X)

PHENOLOGY:

a) Leaf shedding: April-May

b) New Leaf: August

c) Flowering: December-January

d) Place of Flower: Axillary

e) Fruiting: January-March

f) Silvicultural character: Direct seeding and nursery productions are easy. The tree coppices well and reproduction from cuttings is easy.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%=12.57 c)SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K=224.1(μg g^{-1}) g) N=0.32% h) NH_4-N=3.01(μg g^{-1}) i) NO_3-N=1.30(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn

USES: Decoction of roots is taken orally daily after food against arthritis. Bark and roots are also used to treat toothache, headache and also to lower high blood pressure.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

134. Botanical Name: *Mucuna bracteata* (Linn.) DC (87594)

Local Name: Wakmi

Family: Leguminosae

Locality: Kongsi

Parts used: Stem (sap)

Diseases: Bleeding

Botanical Description: It is a leguminous climber, hairy, annual; leaves pinnately 3-foliolate, leaflets broadly ovate or rhomboid-ovate, unequal sided. Inflorescence in axillary pendulous racemes; pods curved. Seeds 5-6 black and ovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.727190 and E- 90.257140

c) Humidity: 46%

d) Light Intensity: 24100 lux (100X)

PHENOLOGY:

a) Flowering: October-November

b) Place of Flower: Axillary

c) Fruiting: December-February

d) Silvicultural character: Light demander, grows in high humidity, susceptible to heavy rainfall and drought.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67%

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Bidens pilosa* Linn, *Chromolaena odorata* King.

USES: Watery sap from the stem bark is used to cease bleeding from cuts.

CONSERVATION STATUS: Not cultivated, least concern under IUCN Red List.

135. Botanical Name: *Murdania elata* (Vahl) (52555)

Local Name: Samkusol

Family: Commelinaceae

Locality: Balsri gittim

Parts Used: Leaves, Rhizomes

Diseases: Mouth ulcer/Tongue ulcer

Botanical Description: It is a medium-sized perennial or annual herb. Stem erect to ascending to decumbent, branched or unbranched. Roots thin fibrous or thick fibrous to tuberous. Leaves basal or cauline, alternate to distichous to spirally arrange with a sessile lamina. Sheath mostly

fused along the margin with a line of cilia. Laminate ovate, elliptic, oblong to linear lanceolate. Inflorescence terminal or axillary thyrses. Capsules trilocular, trivalved and dehiscent. Seeds many, testa smooth, hilum dotted, elliptic, and oblong to linear.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 47%

d) Light Intensity: 25400 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-February

b) New Leaf: March-April

c) Flowering: September-October

d) Place of Flower: Axillary/Terminal

e) Fruiting: October-November

f) Silvicultural character: It grows on moist soil, moderate light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N=4.04(μg g^{-1}) i) NO_3-N=1.33(μg g^{-1})

ASSOCIATES: *Hypoestes triflora* Roem & Seh

USES: Leaves and rhizomes are crushed together to make a good paste. The paste can directly apply on the affected parts.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

136. Botanical Name: *Murraya koenigii* Spreng. (52026)

Local Name: Samchatchi/Samkatsi/Nolsing

Family: Rutaceae

Locality: A'jrigre

Parts Used: Leaves, Roots

Diseases: Toothache

Botanical Description: It is an evergreen and aromatic shrub. Leaves exstipulate, bipinnately compound, reticulate venation, lanceolate, leaf apex emarginate, leaf base oblique. Inflorescence on a terminal cyme. Flowers bisexual, funnel-shaped, pentamerous, hypogynous. Fruits round to oblong, sub globose berry.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 44%

d) Light Intensity: 32100 lux (100X)

PHENOLOGY:

a) Flowering: March-May

b) Place of Flower: Terminal

c) Fruiting: July-August

d) Silvicultural character: Moderately light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=2.29(µg g^{-1}) i) NO_3-N=1.3(µg g^{-1})

ASSOCIATES: *Acacia pennata* L, *Persea villosa* Mill.

USES: Infusion of leaves and roots can be taken orally against toothache at the rate of 2 teaspoonfuls daily after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

137. Botanical Name: *Musa sapientum* Linn (28313)

Local Name: Te'rik atigola

Family: Musaceae

Locality: A'jrigre

Parts Used: Fruits, Stem, Bracts

Diseases: Diarrhoea, Dysentery, Blood sugar, Abscess in the breast

Botanical Description: A tall herb with aerial pseudo stem dying after flowering, leaves oblong, narrowed to base; flowers unisexual in spikes, drooping, females at the bottom and males at the top, bracts conspicuous, falling off in succession; fruits bear in several clusters. The fruits are full of seeds and the peel is thicker than any other banana.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-20˚1676058′ and E-83˚34.216789′

c) Humidity: 43%

d) Light Intensity: 32100 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Terminal

c) Silvicultural character: Usually planted in the deep soil and should be planted at the end of dry season. They are fast growing and susceptible to rainfall and jhum fire.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Chromolaena odorata* King.

USES: For diarrhoea and dysentery, unripe fruits are baked inside the ember and it is recommended to eat to cease the loose motion. Boiled fruits are also recommended to use. For blood sugar, stem juice can be drink at the rate of 1-2 cups daily after food. For abscess in female breasts, bracts are warmed in fire/live ember and massage in the breast.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

138. Botanical Name: *Mussaendra roxburghii* H.K.F (37475)

Local Name: Garadek

Family: Rubiaceae

Locality: Kemragre

Parts Used: Leaves

Diseases: Dandruff

Botanical Description: It is a much branched shrub having stems glabrous or pilose. Leaves petiolate, elliptic, sometimes ovate or oblong, acuminate at both the ends, subglabrous, veins adpressed pilose on both surface, stipules broadly triangular. Inflorescence on terminal head. Calyx lobes filiform, tapering from base, lobes narrowly ovate, berry globose, glabrous calyx persistent until fruit is riped.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25˚34.853′ and E-090˚0907.534′

c) Humidity: 71%

d) Light Intensity: 800 lux (10X)

PHENOLOGY:

a) Leaf shedding: An evergreen

b) Flowering: May-August

c) Place of Flower: Terminal

d) Fruiting: July-September

e) Silvicultural character: Light demander, susceptible to heavy rainfall and it regenerate naturally.

SOIL CHARACTERISTICS:

a) pH= 4.6 b)M.C%=13.5 c)SOC=3.9% d) SOM=6.72% e) P=5.81%

f) K=79.4(µg g^{-1}) g) N=0.7% h) NH_4-N=2.6(µg g^{-1}) i) NO_3-N=2.4(µg g^{-1})

ASSOCIATES: *Mikania micrantha* H.K.F, *Chromolaena odorata* King.

USES: Leaf paste can be applied on hairs for 2-3 hours and then washed it off with water.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

139. Botanical Name: *Myrica nagi* Thunb. (22601)

Local Name: Bolmeseng

Family: Myricaceae

Locality: Tura range

Parts Used: Fruits

Diseases: Dysentery

Botanical Description: It is a moderate-sized evergreen tree havin finely fibrous bark, inside mottled with yellow streaks. Leaves are conjoint, lanceolate, oblanceolate or obovate, nearly entire or sharply spinous serrate, obtuse or acute, coriaceous, glabrous above, with resinous dots beneath.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 22°C

b) Location: N-25°30'16.4" and E-90°14'34.3"

c) Humidity: 33%

d) Light Intensity: 350 lux (10X)

PHENOLOGY:

a) Flowering: October-December

b) Place of Flower: Axillary/Terminal

c) Fruiting: February-April

d) Silvicultural character: Moderate light demander, propagated through seeds, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=29.5 c)SOC=4.09% d) SOM=7.05% e) P=4.50%

f) K=254.6(μg g^{-1}) g) N=0.8% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Ardisia colorata* Roxb, *Maesa indica* Roxb.

USES: Juice is extracted by grinding the fruits. The juice is to be taken at ½ cup twice daily.

CONSERVATION STATUS: Found in the wild, Near Threatened under IUCN Red List.

140. Botanical Name: *Nepenthes khasiana* Hook.f (69804)

Local Name: Me'mang koksi

Family: Nepenthaceae

Locality: Selsella

Diseases: Skin diseases, Leprosy, Ear diseases

Parts Used: Leaves

Botanical Description: Under shrubs, erect, prostate or scandent, dioecious. Leaves lanceolate, acute or acuminate, base narrow and attenuate, amplexicaul, sessile, pitchers on long tendrillar stocks, sub cylindric, contracted towards mouth, with 2 longitudinal ribs or wings infront, lid membranous closely glandular dotted. Racemes peduncled. Flowers actinomorphic, elliptic or elliptic-oblong, pubescent outside, glabrous within nectariferous. Seeds numerous, minute, testa membranous, produced into a filiform wing at either end; embryo straight.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 23°C

b) Location: N-25˚40.933′ and E-090˚04.584′

c) Humidity: 34%

d) Light Intensity: 210 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: June-October

b) Place of Flower: Terminal

c) Silvicultural character: Moderately light demander, grows mostly in moist, acidic and nutrient deficient soils.

SOIL CHARACTERISTICS:

a) pH=3.8 b)M.C%=23.67 c)SOC=4.0% d) SOM=6.90% e) P=4.2%

f) K=2341.7(μg g^{-1}) g) N=0.32% h) NH_4-N=5.84(μg g^{-1}) i) NO_3-N=1.52(μg g^{-1})

ASSOCIATES: *Swertia chirata* Ham, *Canna indica* L

USES: For skin diseases, dried leaves are powdered and applied directly to the skin. The dried powdered leaf is also used as an antidote for leprosy patients. For ear diseases, the liquid collected inside the pitcher can be used as ear drop at 2-3 times a day.

CONSERVATION STATUS: Cultivated, Endangered under IUCN Red List.

141. Botanical Name: *Nelumbo nucifera* Gaertn (6731)

Local Name: A'pilak

Family: Nelumbonaceae

Locality: Selsella

Diseases: Menorrhagia

Parts Used: Roots

Botanical Description: It is a large aquatic herb, with elongated creeping stems sending out roots at nodes. Leaves thin, orbicular, concave above, peltate, radiately nerve. Flowers solitary, peduncles and petioles rise high above the surface of water. Fruit etaerio of achenes. Seeds round

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25˚40.246′ and E-90˚00.748′

c) Humidity: 43%

d) Light Intensity: 1260 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Whole year round

b) Place of Flower: Terminal

c) Silvicultural character: An aquatic plant.

SOIL CHARACTERISTICS:

a) pH=3.8 b)M.C%=23.67 c)SOC=4.0% d) SOM=6.90% e) P=4.2%

f) K=2341.7(μg g^{-1}) g) N=0.32% h) NH_4-N=5.84(μg g^{-1}) i) NO_3-N=1.52(μg g^{-1})

ASSOCIATES: Grows in ponds and lakes

USES: Infusion or roots can be taken orally at the rate of 2 teaspoonfuls daily after food.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

142. Botanical Name: *Neocinnamomum caudatum* Nees (24361)

Local Name: Samijang bol

Family: Lauraceae

Locality: Kongsi

Diseases: Urinary tract infection

Parts Used: Bark

Botanical Description: A middle sized evergreen tree with ovoid crown; bark dark grey, scaly in flakes. Leaves elliptic or orbicular caudate-acuminate, oblique, cuneate at base. Cymes upto 3 cm long, flowers yellowish with silky perianth. Fruits long, ellipsoid, scarlet when ripe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.727190 and E- 90.257140

c) Humidity: 44%

d) Light Intensity: 23100 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: January-June

b) Place of Flower: Terminal

c) Silvicultural character: Light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67%

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Alangium chinensis* Lour, *Chromolaena odorata* King.

USES: Bark is grinded properly by adding some amounts of sugar. The mixture can be taken orally twice daily after food at the rate of 1 tablespoonful.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

143. Botanical Name: *Nicotiana tabacum* L (77447)

Local Name: Sada wa'chong

Family: Solanaceae

Locality: A'jrigre

Diseases: Burns

Parts Used: Leaves

Botanical Description: It is an erect, viscidly pubescent herb with lower leaves decurrent and funnel-shaped corolla. Inflorescence is terminal panicles, flowers pinkish, pedicelled and bracteates. Fruit a capsule.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-20˚16′45.6348″ and E-83˚34.217898′

c) Humidity: 45%

d) Light Intensity: 146800 lux (100X)

PHENOLOGY:

a) Flowering: October-December

b) Place of Flower: Terminal

c) Fruiting: November-December

d) Silvicultural character: Moderately light demander, propagated through seeds and cultivated in the home gardens.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Eryngium foetidum* Linn. *Chromolaena odorata* King

USES: Fresh leaves are smashed and applied directly on the affected parts of the body or bandage on it.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

144. Botanical Name: *Ocimum basilicum* Linn. (16956)

Local Name: Tulsi

Family: Lamiaceae

Locality: Turam

Parts Used: Leaves

Diseases: Diarrhoea, Dysentery

Botanical Description: An annual herb, slender, much scented and much branched herb, generally purple coloured, stem glabrous or more or less pubescent, hairy at the nodes. Leaves ovate, acute, entire or less lobed or toothed, glandular. Flowers pale purple in nearly single racemes.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 48%

d) Light Intensity: 3560 lux (10X)

PHENOLOGY:

a) Flowering: July-December

b) Place of Flower: Axillary

c) Fruiting: July-December

d) Silvicultural character: It can be propagated by seeds, light demander and non-resistant to fire.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Impatients balsamina* L

USES: Leaves are crushed and a juice is extracted from it. It should be taken at 3 teaspoonfuls daily.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

145. Botanical Name: *Oldlandia diffusa* Roxb (42889)

Local Name: Atchingpekpeke saani sam (N)

Family: Rubiaceae

Locality: Turam

Parts Used: Whole plant

Diseases: Common Cold, Breast Cancer

Botanical Description: It is an annual, terrestrial, dichotomous, slender herb. Leaves linear, acute, glabrous, usually with recurved margins. Inflorescence on solitary axillary, peduncles longer than the calyx. Fruits are loculicidal capsules, globose and the seeds are minute, pale brown, angular, testateticulate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 48%

d) Light Intensity: 3550 lux (10X)

PHENOLOGY:

a) Flowering and Fruiting: Throughout the year

b) Place of Flower: Axillary

c) Silvicultural character: The species occurs in open, seasonally damp, often sandy habitats, including waste ground, wet low-lying areas, and court-yard and rice fields.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Euphorbia hirta* Linn, *Mimosa pudica* Linn

USES: Decoction of leaves is recommended against continously sneezing with fever at the rate of 1 once in a day. Infusion of whole plant parts are used against breast cancer.

CONSERVATION STATUS: Not cultivated, least concern in IUCN Red List Category

146. Botanical Name: *Oroxylum indicum* (Linn.) Vent (16318)

Local Name: Kering

Family: Bignoniaceae

Locality: Gambegre

Parts Used: Leaves, Root-barks

Diseases: UTI, Diarrhoea

Botanical Description: It is a medium-sized deciduous tree having numerous corky lenticels. Leaves are acute, accumbent, rachis very stout, cylindrical, ovate or elliptic, glabrous. Inflorescence in terminal lax racemes, numerous, fleshy or coriaceous. Corolla campanulate, crisped margins, fruit flat capsule, tapering to both ends. Seeds many which is sorrounded by a broad hyaline winged.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 36°C

b) Location: N-25.4680699 and E-90.0826311

c) Humidity: 59%

d) Light Intensity: 34300 lux (100X)

PHENOLOGY:

a) Leaf shedding: September-October

b) New Leaf: December

c) Flowering: March

d) Place of Flower: Terminal

e) Fruiting: May-June

f) Silvicultural character: Shade bearer, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.1 b)M.C%=16.7 c)SOC=3.4% d) SOM=5.86% e) P=5.15%

f) K=98.3(μg g^{-1}) g) N=0.33% h) NH_4-N=4.1(μg g^{-1}) i) NO_3-N=1.59(μg g^{-1})

ASSOCIATES: *Dillenia indica* L, *Ageratum conyzoides* Linn

USES: For diarrhoea, Root-barks are grinded properly and a juice is extracted from it. The extracted juice can be taken orally at the rate of one cup twice daily till the patient recovers. For UTI, leaves are taken as vegetables.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

147. Botanical Name: *Oxalis corniculata* Linn. (10392)

Local Name: Me'kampret chongipa (N)

Family: Oxalidaceae

Locality: A'simgre

Parts Used: Fruits

Diseases: Diarrhoea, Dysentery

Botanical Description: A small perennial herb which forms roots at nodes. Leaves are digitately trifoliate, long petioled and stipulate, leaflets are obcordate. Inflorescence in umbelliform. The fruits are oblong capsules, narrowed at the apex and pubescent. Seeds are many, transversely ribbed and dark brown.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.709926 and E-90.134499

c) Humidity: 47%

d) Light Intensity: 3890 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year (Chiefly during July-October)

b) Place of Flower: Axillary

c) Silvicultural character: Shade bearer, propagated through seeds, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Very common in moist and cultivated places, open lands and also sometimes surrounding rice fields.

USES: About 2-3 numbers of fruits can be eaten as raw.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

148. Botanical Name: *Oxyspora paniculata* D.C (61321)

Local Name: Dagal

Family: Melastomataceae

Locality: Ampanggre

Parts Used: Leaves

Diseases: Pulmonary tuberculosis

Botanical Description: Struggling shrub, quadrangular with hairs. Leaves broadly lanceolate or elliptic-lanceolate, acuminate or acute, base rounded or sub cordate, margins ciliate, tomentose

above, slightly trigose beneath, tertiaries scalariform, stipules foliocious. Inflorescence in pyramidal terminal or axillary spikes. Panicles long. Fruits ovoid-oblong or cylindric with a narrowed neck, covered with scattered stellate hairs, truncate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25.6531188 and E-90.2471783

c) Humidity: 43%

d) Light Intensity: 34100 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-February

b) New Leaf: March-April

c) Flowering: August-September

d) Place of Flower: Terminal

e) Fruiting: October-December

f) Silvicultural character: Moderate light demander, mostly grows on moist areas, non resistant to jhum fire, can be easily regenerate by natural and artificial methods.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5%

f) K=88.3(μg g^{-1}) g) N=0.31% h) NH_4-N=7.08(μg g^{-1}) i) NO_3-N=1.9(μg g^{-1})

ASSOCIATES: *Rhynchotecum ellipticum* Rietr (A.D.C)

USES: Infusion of leaves at the rate of 1 glass can be taken orally or can be used for massage service.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

149. Botanical Name: *Paederia foetida* Linn. (46388)

Local Name: Pasim

Family: Rubiaceae

Locality: Mongalgre

Parts Used: Leaves, Whole plant

Diseases: Stomachache, Dysentery, Rheumatism

Botanical Description: A slender, foetid climber, accumbent leaves, elliptic-ovate, oblong-ovate or lanceolate, shortly acuminate, membranous, glabrous, foetid when bruished, corolla-lobes valvate with inflexed and crispid margins. Flowers in axillary or terminal cymose panicles; cyme branches opposite. Calyx teeth small, usually triangular. Fruit ellipsoid, compressed, pyremes with abroad wing.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 31°C

b) Location: N-25.6343908 and E-90.2293253

c) Humidity: 53%

d) Light Intensity: 42100 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-January

b) New Leaf: February-April

c) Flowering: September-October

d) Place of Flower: Axillary/Terminal

e) Fruiting: November-January

f) Silvicultural character: Light demander, propagated through seeds, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5%)

f) K=88.3(μg g^{-1}) g) N=0.31% h) NH_4-N=7.08(μg g^{-1}) i) NO_3-N=1.9(μg g^{-1})

ASSOCIATES: *Chromolaena odorata* L, *Spilanthes acmella* Linn

USES: For stomachache, leaves can be eaten as vegetables. For dysentery, leaves are taken as vegetables or juice extracted by pounding it. The juice is to be taken at 2 teaspoonfuls daily. For

rheumatism, roots and leaves are boiled for few minutes in a litre of water and then mixed with mustard oil. The mixture can be applied to the affected parts.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

150. Botanical Name: *Pandanus odoratissima* L.f. (68794)

Local Name: Burungni anaros

Family: Pandanaceae

Locality: Galwanggre

Parts Used: Roots

Diseases: Rheumatism, Headache

Botanical Description: A perennial plant with long, sword like leaves with hooked spines on the margin. Leaves are ensiform, glossy green. Male inflorescence spicate, pedunculate, fragrant. Stamens many, racemose on stamenophores; anthers cuspidate. Female inflorescence solitary terminal, pedunculate, globose or ellipsoid. Carpels confluent in group or phalanges; stigma U or V-shaped. Fruit a syncarp.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.5953108 and E-90.2071773

c) Humidity: 43%

d) Light Intensity: 3610 lux (10X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Terminal

c) Fruiting: October-November

d) Silvicultural character: Moderate light demander, resistant to jhum fire and heavy rainfall and it regenerate naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0%

f) K=67.8(μg g^{-1}) g) N=0.30% h) NH_4-N=7.21(μg g^{-1}) i)NO_3-N=1.78(μg g^{-1})

ASSOCIATES: *Tetrastigma obovatum* Laws Gagnep, *Mikania micrantha* H.B.K

USES: Roots are pounded on the stone and boiled with water until it makes a good paste. The paste can be taken orally with 1 cup of water against headache and rheumatism.

CONSERVATION STATUS: Very rare (As per the field survey), not yet been assessed for the IUCN Red List

151. Botanical Name: *Passiflora quadrangularis* L (24361)

Local Name: Skot dalˈgipa

Family: Passifloraceae

Locality: Aˈjrigre

Parts Used: Stem-bark

Diseases: Piles

Botanical Description: It is a large evergreen climbing shrub with thick 4-angled stems, prominently winged on the angles. Leaves alternate, broad-ovate or oblong-ovate, rounded or cordate at the base, abruptly pointed at the apex. Flowers solitary, fruit oblong ovoid, melon like, flesh firm. Seeds flattened-oval.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-20˚16′45.6348′ and E-83˚34.217898′

c) Humidity: 56%

d) Light Intensity: 60300 lux (100X)

PHENOLOGY:

a) Flowering and Fruiting: Throughout the year

b) Place of Flower: Axillary

c) Silvicultural character: Shade demander, propagated through seeds, it climbs to any support or on the trees and it is cultivated in their home gardens

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e)P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Alangium chinensis* L, *Citrus maxima* L

USES: Decoction of stem-bark is taken orally at the rate of 2-3 cups daily after food or it can be used as massage service against piles.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

152. Botanical Name: *Pegia nitida* Colebr. (89107)

Local Name: Du'chengkrip

Family: Anacardiaceae

Locality: Danekgre

Parts Used: Leaves, Bark

Diseases: Internal bleeding/Contusion

Botanical Description: An evergreen lianas having blackish or brownish bark, hairy and peeling off in strips. Leaves oblong, oblong-lanceolate, or oblong-elliptic, acuminate, sub-cordate or

rounded at base, crenate, villous, and hairy on both surfaces. Inflorescence on terminal, flowers minute, yellow or white, drupe blackish when ripe, obliquely ovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.657911 and E-90.214900

c) Humidity: 48%

d) Light Intensity: 38100 lux (100X)

PHENOLOGY:

a) Flowering: January-April

b) Place of Flower: Terminal

c) Fruiting: May-July

d) Silvicultural character: Moderately light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Mikania micrantha* H.B.K, *Chromolaena odorata* King.

USES: Decoction of leaves and barks can be drink at the rate of 1 cup daily after food.

CONSERVATION STATUS: Very rare in the wild (As per the field survey), not yet been assessed for the IUCN Red List

153. Botanical Name: *Peperomia pellucida* HKF. (34565)

Local Name: Samjim

Family: Piperaceae

Locality: A'guragre

Parts Used: Leaves

Diseases: Burns

Botanical Description: It is an annual, succulent herb. Stems pellucid, erect or ascending and glabrous. Leaves accumbent, triangular ovate, chordate at base, obtuse or shortly acuminate at apex, clasping decurrent along the stem. Spikes solitary, terminal but leaf-opposed by overtopping. Flowers scarsely immersed, ovary oblique, subapical stigma, fruit sessile, globose-ellipsoid, with an apical stigma, longitudinally ridged and apex beaked.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 35°C

b) Location: N-25.6057922 and E-90.3303634

c) Humidity: 62%

d) Light Intensity: 67100 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Axillary/Terminal

c) Silvicultural character: Shade demander, mostly grows in the moist shady areas or sometimes on the decaying woods.

SOIL CHARACTERISTICS:

a) pH=4.7 b)M.C%=18.7 c)SOC=3.67% d) SOM=6.32% e) P=4.30%

f) K=99.3(μg g^{-1}) g) N=0.5% h) NH_4-N=1.35(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Mimosa pudica* Linn

USES: Leave are smashed on palms and directly applied on burns.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

154. Botanical Name: *Phlogacanthus thyrsiflorus* Roxb. (43023)

Local Name: Alot

Family: Acanthaceae

Locality: Nengja bolchugre

Parts Used: Leaves

Diseases: Fever, Piles

Botanical Description: This is an evergreen shrub, having dense spikelets, drooping leaves with oblanceolate, elliptic-oblong, lateral nerves, corolla broad-tubulary. Inflorescence in long, pubescent. Calyx pubescent and stamens exserted.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25.4609645 and E-90.1855671

c) Humidity: 59%

d) Light Intensity: 53100 lux (100X)

PHENOLOGY:

a) Flowering: February-April

b) Place of Flower: Terminal

c) Fruiting: April-May

d) Silvicultural character: Shade bearer, resistant to heavy rainfall and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.1 b)M.C%=16.7 c)SOC=3.4% d) SOM=5.86 % e) P=5.15%

f) K=98.3(μg g^{-1}) g) N=0.33% h) NH_4-N=7.0(μg g^{-1}) i) NO_3-N=1.59(μg g^{-1})

ASSOCIATES: Cultivated along the fences.

USES: For fever, leaves are usually burnt and can be taken along with water. 2 teaspoonfuls have to be taken daily. For piles, infusion on leaves can be taken orally at the rate of I glass daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

155. Botanical Name: *Phyllanthus emblica* Linn (55634)

Local Name: Ambri/Ambare segun

Family: Euphorbiaceae

Locality: Damal A'sim

Parts Used: Fruits, Roots, Bark

Diseases: Cough, Jaundice, Asthma, Menstrual problems, Piles, Blood clothing

Botanical Description: It is a medium-sized deciduous tree having compound leaves, subsessile, oblong acute, stipules minute. Inflorescence on axillary fascicled, unisexual, males numerous on short slender pedicels. Females few, subsessile, fruits depressed globose, fleshy with six obscure vertical furrows enclosing 6 trigonal seeds.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 33°C

b) Location: N-25.743842 and E-90.357838

c) Humidity: 61%

d) Light Intensity: 731000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: November-January

b) New Leaf: March-April

c) Flowering: March-April

d) Place of Flower: Axillary

e) Fruiting: August-November.However, fruiting during October-January is reported by Verghese, 1996)

f) Silvicultural character: Moderate light demander, resistant to jhum fire, natural and artificial has no problems.

SOIL CHARACTERISTICS:

a) pH=5.6 b)M.C%=15.1 b)SOC=3.6% c) SOM=6.20% d) P=6.5%

e) K=77.1(μg g^{-1}) f) N=0.29% g) NH_4-N=2.06(μg g^{-1}) h) NO_3-N=1.68(μg g^{-1})

ASSOCIATES: *Dalbergia sissoo* L, *Chromolaena odorata* King.

USES: For blood clothing/internal bleeding, decoction of bark can be taken orally. 1 teaspoonful of fruit juice is added with ½ teaspoonful of honey and the mixture can be taken daily as remedy for cough. In case of jaundice, fruits are fermented inside the earthen pot for about 2-3 months adding with sugar and the juice can be used daily after food. However for asthma, infusion of

roots can be taken twice daily after food. For menstrual problem and piles, infusion of bark can be taken daily after food.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

156. Botanical Name: *Phyllanthus urinaria* Linn (23423)

Local Name: Me'mang ambri

Family: Euphorbiaceae

Locality: Teˈbronggre

Parts Used: Whole plant

Diseases: Jaundice, UTI, Gallstone

Botanical Description: A small plant, slender, branched, glabrous herb. Leaves are alternate, even pinnate. Higher leave axils bear solitary or paired male flowers with female flowers in the lower axila. Inflorescence in axillary. Fruit round and smooth, are found along the underside of the stems. Seeds are transversely ribbed on the back and sides.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.649396 and E-90.259514

c) Humidity: 43%

d) Light Intensity: 25100 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: Whole year round

b) Place of Flower: Axillary

c) Silvicultural character: Moderate light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5%

f) K=88.3(μg g^{-1}) g) N=0.31% h) NH_4-N=1.08(μg g^{-1}) i) NO_3-N=1.9(μg g^{-1})

ASSOCIATES: *Costus speciosus* Koenig, *Mucuna bracteata* L

USES: Decoction of whole plant can be drink at the rate of I glass daily against gallstone, UTI, and jaundice.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

157. Botanical Name: *Piper longum* Linn (17687)

Local Name: Gulmoris

Family: Piperaceae

Locality: Saka Mronggre

Parts used: Fruits, Seeds

Diseases: Cough, Weakness

Botanical Description: A slender sub-scandent herb, branchlets erect, straggling or sometimes climbing, with swollen nodes and those of creeping branches with roots at lower nodes. Leaves alternate, acuminate, membranous, base heart-shaped. Fruits ovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.852849 and E-90.129825

c) Humidity: 61%

d) Light Intensity: 65200 lux (100X)

PHENOLOGY:

a) Flowering and Fruiting: November-January

b) Place of Flower: Terminal/Axillary

c) Silvicultural character: Light demander, grows well in high humid areas with heavy rainfall.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=15.5 c)SOC=4.0% d) SOM=6.89% e) P=4.50%

f) K=236.7(μg g^{-1}) g) N=0.3% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=1.67(μg g^{-1})

ASSOCIATES: It creeps on *Areca catechu* L

USES: For cough and weakness, dried fruits are boiled with water and the water has to be drink at the rate of 1 cup daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

158. Botanical Name: *Piper thomsonii* Linn (44826)

Local Name: Asira/Achetra/Asirengga

Family: Piperaceae

Locality: Rongbakgre

Parts Used: Leaves, Whole plant parts

Diseases: Hypertension, Polyarthritis of joints

Botanical Description: It is an evergreen herbaceous climber. Leaves ovate, ovate-lanceolate, acuminate, base rounded, cordate or oblique. Fruiting spikes long, drooping, fruits globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 61%

d) Light Intensity: 14520 lux (10X)

PHENOLOGY:

a) Flowering and Fruiting: April-October

b) Place of Flower: Axillary/Terminal

c) Silvicultural character: Shade demander, grows naturally mostly in moist and shaded areas.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.50% d) SOM=7.75% e)P=4.48%

f) K=2120.7(μg g^{-1}) g) N=0.4% h) NH4-N=3.2(μgg^{-1}) i) NO3-N=1.47(μgg^{-1})

ASSOCIATES: *Drymaria cordata* Willd, *Spilanthes acmella* Linn

USES: Leave pastes are tied with clad on the forehead against hypertension. Whole plant parts are crushed together along with *Alocasia fornicate* Roxb, Ferns spp. and *Vitis planicaulis* H.FK. The mixture has to be tied on the affected portion of the joints (After using the mixture, if the patient started running here and there, the physicians believes that the patient is recovering)

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

159. Botanical Name: *Plumeria acuminata* AIT (43849)

Local Name: Gohai pul

Family: Apocynaceae

Locality: Rajabala balachanda

Parts Used: Bark, Leaves

Diseases: Allergic asthma

Botanical Description: This is a small tree, shining succulent with latex easily breaks. The leaves are oblong, simple, lanceolate, crowned at the terminal end of the branch. Inflorescence cymose, axillary or terminal. Flowers are bisexual, fruits are linear oblong oe ellipsoid follicles. Seeds are oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25°46'19.6" and E- 89°59'28.7"

c) Humidity: 56%

d) Light Intensity: 63100 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-January

b) New Leaf: February-March

c) Flowering: April-September

d) Place of Flower: Axillary/Terminal

e) Fruiting: June-October

f) Silvicultural character: Moderately light demander, mostly planted along the roads and in their home gardens as ornamentals.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%= 12.6 c)SOC=3.02% d) SOM=5.20% e) P=4.80%

f) K=68.8(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=2.3(μg g^{-1})

ASSOCIATES: *Sida acuta* L, *Ageratum conyzoides* King.

USES: Decoction of leaves and bark can be taken orally at the rate of 1-2 teaspoonfuls daily after food used against allergic asthma.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

160. Botanical Name: *Portulaca oleracea* L (8343)

Local Name: Samdikkongsi

Family: Portulacaceae

Locality: Bolong gitok

Parts Used: Leaves

Diseases: Antiseptic, Heart diseases

Botanical Description: It is an annual succulent, prostrate herb, stem reddish, swollen at nodes. Leaves fleshy, subsessile, triangular, rounded and truncate at apex, stipules absent. Inflorescence in terminal head. Fruit a pyxis or pyxidium. Seeds many and black.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25.852849 and E-90.129825

c) Humidity: 63%

d) Light Intensity: 394100 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: Whole year round

b) Place of Flower: Terminal

c) Silvicultural character: Moderately light demander, propagated through roots and stem layering.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%= 12.6 c)SOC=3.02% d) SOM=5.20% e) P=5.80%

f) K=66.8(μg g^{-1}) g) N=0.6% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=2.2(μg g^{-1})

ASSOCIATES: Planted on pots.

USES: Fresh leaves are smashed on palm and applied directly on cuts. For heart diseases, infusion of leaves can be drink at the rate of 1-2 teaspoonfuls twice daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

161. Botanical Name: *Pothos cathcartii* Schott (81415)

Local Name: Samja'gitok

Family: Araceae

Locality: Mangdugre

Parts Used: Leaves

Diseases: Patellofemoral pain

Botanical Description: It is epiphytic woody root climber. Leaves obovate-oblong, broadly winged, base decurrent, apex truncate to rounded or slightly auriculate, petioles with secondary veins and numerous veinlets per side, all veins prominent. Inflorescence pedunculate. Seeds ellipsoid to compressed-globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.6750998 and E-90.2291653

c) Humidity: 48%

d) Light Intensity: 34200 lux (100X)

PHENOLOGY:

a) Flowering: July-August

b) Place of Flower: Axillary

c) Fruiting: August-September

d) Silvicultural character: It is an epiphytic plant.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e) P=5.9%

f) K=89.4(μg g^{-1}) g) N=0.45% h) NH_4-N=6.02(μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: It grows on *Areca catechu* L. *Artocarpus heterophyllus* L

USES: Leaves are smeared with mustard oil and warmed in a low flame and massaged the affected portion of the body.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

162. Botanical Name: *Premna latifolia* Roxb. (16784)

Local Name: Doˈkime bol

Family: Verbenaceae

Locality: Balsri gittim

Parts Used: Leaves

Disease: Burns, Insects (to kill poultry lice)

Botanical Description: It is a medium-sized evergreen tree, leaves and wood are scented, bark grey, nearly rough, often warty. Leaves are ovate or obovate-elliptic, acuminate, base narrowed, cuneate, often softly beneath. Inflorescence on terminal, flowers white or greenish-white, drupes black when ripe, globose, ovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 59%

d) Light Intensity: 389100 lux (100X)

PHENOLOGY:

a) Flowering: March-April

b) Place of Flower: Terminal

c) Fruiting: April-June

d) Silvicultural character: Moderately light demander, susceptible to insects, it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Terminalia chebula* Retz, *Chromolaena odorata* King.

USES: For burns, leaf pastes are applied directly externally on the affected portion of the body. Traditionally fresh leaves are kept in or around the house to chase away the poultry lice.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List

163. Botanical Name: *Psidium guajava* L. (42296)

Local Name: Komperam

Family: Myrtaceae

Locality: Machangpani

Parts Used: Leaves and fruits

Diseases: Diarrhoea, Dysentery

Botanical Description: This is a small evergreen tree or shrub having smooth patchy, peeling bark. Leaves are opposite, short-petiolate. Inflorescence in axillary cymes, flowers white and fragrant. Fruits globose to ovoid berry.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.3015148 and E-90.2538313

c) Humidity: 63%

d) Light Intensity: 45300 lux (100X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Axillary/Terminal

c) Fruiting: September-November

d) Silvicultural character: Light demander, propagated through seeds and cultivated in their home gardens.

SOIL CHARACTERISTICS:

a) pH= 4.6 b) M.C%= 12.47 c) SOC=4.05% d) SOM=6.99% e) P=5.1%

f) K= 234.1(μg g^{-1}) g) N=0.22% h) NH_4-N= 4.03(μg g^{-1}) i) NO_3-N=1.26(μg g^{-1})

ASSOCIATES: *Citrus maxima* Linn, *Saraca asoca* Linn

USES: Tender leaves can be taken orally or fruits also taken against diarrhoea and dysentery.

CONSERVATION STATUS: Cultivated, Least concern under IUCN Red List.

164. Botanical Name: *Punica granatum* L (11772)

Local Name: Dallim

Family: Puniacaceae

Locality: Roni Aʹsim

Parts Used: Bark, Leaves, Flowers and Roots

Diseases: Malaria, Dysentery, Diarrhoea, Piles

Botanical Description: A deciduous tree or large shrub. Leaves are glossy, accumbent, oblong-lanceolate, glabrous, pellucid-punctate, cluster. Flowers at the top of the branchlets, calyx tube funnel-shaped, coriaceous, erecto-patent or patent with rounded apex. Beries sub globose, crowned by calyx segments. Seeds are numerous.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25.901006 and E-90.274584

c) Humidity: 62%

d) Light Intensity: 39100 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-January

b) New Leaf: February-March

c) Flowering: February-May

d) Place of Flower: Terminal

e) Fruiting: May-June

f) Silvicultural character: Light demander, acceptable to jhum fire, artificial and natural regeneration has no difficulty.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%= 12.6 c)SOC=3.02% d) SOM=5.20% e) P=5.80%

f) K=66.8(μg g^{-1}) g) N=0.6% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=2.2(μg g^{-1})

ASSOCIATES: *Syzygium grande* (Wight), *Spondias pinnata* Linn.

USES: Barks are to be boiled with 1 litre of water along with barks of *Delonix regia* HBK, *Alstonia scholaris* Linn. The mixtured can be taken at 3 cups per day against malaria. For diarrhoea and dysentery, tender leaves can be eaten as raw. Sometimes fruits also recommended against diarrhoea. For piles, decoction of bark can be taken orally at the rate of 1 glass daily and also can be used as wearing service making amulets.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

165. Botanical Name: *Raphidophora lancifolia* Schott (20231)

Local Name: Dotmi ja'pa chongipa (N)

Family: Araceae

Locality: Danekgre

Parts Used: Leaves

Disease: Bone fractures

Botanical Description: This is an evergreen lianas, raphids numerous on stem and leaf. Leaves dictichous, petiolate, falcate-lanceolate to ovate-oblong, rarely ovate, thickly papery, base obliquely rounded and arched. Inflorescence on terminal branches on leafy shoots, solitary or as synflorescence develops on axis. Fruit with stylar plate sloughing away in groups or singularly to reveal ovary cavity with seeds embedded in pulp. Seeds oblong to reniform.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25.658012 and E- 90.215092

c) Humidity: 42%

d) Light Intensity: 4100 lux (100X)

PHENOLOGY:

a) Flowering: October-November

b) Place of Flower: Axillary/Terminal

c) Fruiting: November-December

d) Silvicultural character: They are hemi epiphytes, climb a tree and then send roots back to the soil.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Derris robusta* Roxb, *Chromolaena odoarata* King.

USES: Paste made from leaves is used in setting of fractured bones.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

166. Botanical Name: *Rauvolfia serpentina* (L.) Benth ex.Kurz. (31670)

Local Name: Do'grikme

Family: Apocynaceae

Locality: Dakopgre

Parts Used: Roots

Diseases: Dysentery, Malaria

Botanical Description: An erect and glabrous perennial suffruticose herb or undershrub. Leaves are in whorls, sometimes opposite, lanceolate or oblanceolate, acute or acuminate and narrowed into a short petioled. The flowers are borne in corymbose cymes. Seeds ovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.518556 and E-90.178129

c) Humidity: 46%

d) Light Intensity: 46100 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year (Chiefly April-May)

b) Place of Flower: Terminal/Axillary

c) Silvicultural character: Grows in waste places and is a shade demander. It regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35%

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Euphorbia hirta* Linn, *Toona ciliata* M Roem.

USES: For dysentery and malaria, roots are crushed properly and a juice is extracted from it. The juice can be taken at 3 teaspoonfuls daily depending on the severity of the diseases.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

167. Botanical Name: *Rhododendron arboreum* SM (38282)

Local Name: Bibal gitchak (N)

Family: Ericaceae

Locality: Tura Range

Parts Used: Flowers

Diseases: Dysentery

Botanical Description: A medium sized evergreen tree, trunk often much branched, crooked or gnarled. Leaves are oblong-lanceolate, acute, margins recurved, coriaceous and hard, glabrous with deeply impressed veins from above white fawn. Flowers usually deep scarlet, crowded at the ends of branches in corymbose fascicles. Seeds ellipsoid and minute.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25°30'16.4" and E-90°14'34.3"

c) Humidity: 46%

d) Light Intensity: 6200 lux (100X)

PHENOLOGY:

a) Flowering: March-May

b) Place of Flower: Terminal

c) Fruiting: April-June

d) Silvicultural character: It grows in moist, acid soil, shade demander. It coppices well but is a slow growing.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=29.5 c)SOC=4.09% d) SOM= 7.05% e) P=4.50%

f) K=254.6(μg g^{-1}) g) N=0.8% h) NH_4-N=2.02(μg g^{-1}) i) NO_3-N=1.32(μg g^{-1})

ASSOCIATES: *Crypteronia paniculata* Blume, *Terminalia myriocarpa* Van Heurck & Mul

USES: The flowers are used in the form of vegetables.

CONSERVATION STATUS: Rarely found in the wild (As per the field visit), not yet been assessed for the IUCN Red List

168. Botanical Name: *Rhus semialata* Miller (71759)

Local Name: Kitma

Family: Anacardiaceae

Locality: Josipara

Parts Used: Seeds, Root-stock

Diseases: Skin diseases, Colic

Botanical Description: A medium sized deciduous tree having bark grey, young twig pubescent. Leaves imparipinnate, rachis usually narrow winged, sessile, dentate, acuminate, and

membranous. Inflorescence in large terminal, panicle numerous. Petals oblong, ciliate. Fruits drupe, sub-globose and compressed.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25.2874408 and E-90.2864163

c) Humidity: 59%

d) Light Intensity: 341000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: November-February

b) New Leaf: March-April

c) Flowering: August-September

d) Place of Flower: Terminal

e) Fruiting: November-March

f) Silvicultural character: Moderate light demander, non-resistant to jhum fire to heavy rainfall, regenerate naturally.

SOIL CHARACTERISTICS:

a) pH=5.9 b)M.C%=9.6 c)SOC=2.67% d) SOM=4.60% e) P=4.42%

f) K=1911.2(μg g^{-1}) g) N=0.3% h) NH_4-N=2.6(μg g^{-1}) i) NO_3-N=3.1(μg g^{-1})

ASSOCIATES: *Toona ciliata* Blume, *Chromolaena odorata* King.

USES: For skin diseases, infusion of seeds can be taken orally at 1 glass daily. For colic, infusion of roots can be taken twice daily after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

169. Botanical Name: *Rhus succedanea* Linn (615637)

Local Name: Bolmitcheng

Family: Anacardiaceae

Locality: Rong'sak

Parts Used: Bark

Diseases: UTI

Botanical Description: It is medium-sized deciduous tree. Leaves are imparipinnate with pairs of leaflets, sessile, dentate, acuminate membranous, obliquely wedge-shaped at base, acuminate at apex and entire. Inflorescence is axillary paniculate, sparsely puberulous and glabrescent. Flowers are bisexual with triangular sepal lobes, ovate or slightly oblong petals. Drupe is nearly globular.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 36°C

b) Location: N-25.726189 and E-90.125058

c) Humidity: 69%

d) Light Intensity: 38100 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-February

b) New Leaf: March-April

c) Flowering: August-September

d) Place of Flower: Axillary

e) Fruiting: November-March

f) Silvicultural character: Moderate light demander, propagated through seeds, non resistant to jhum fire and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N=4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Callicarpa arborea* Roxb, *Thundbergia grandiflora* Roxb.

USES: Bark is pounded along with barks of *Neocinnamomum caudatum* Nees, *Aloe barbadensis* Mill and roots of *Mimosa pudica* Linn. Decoction of the above mixture can be taken orally at the rate of 1 glass daily after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

170. Botanical Name: *Rhynchotecum ellipticum* (Wall.ex D.Dietr) (71170)

Local Name: Me'bitchi

Family: Gesneriaceae

Locality: Kalchengpara

Parts Used: Leaves

Diseases: Cancer, Dog bite, boils

Botanical Description: An erect undershrub with thickened stem. Leaves accumbent, dentate at margins, sub-glabrous, base cuneate, whitish beneath, tawny above, silkily, wooly, calyx lobes linear. Flowers rose-purple in umbellate cymes in the lower axils. Berry 5mm diameter.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.683983 and E-90.163692

c) Humidity: 49%

d) Light Intensity: 3610 lux (10X)

PHENOLOGY:

a) Flowering: September-October

b) Place of Flower: Axillary

c) Fruiting: October-November

d) Silvicultural character: Moderately light demander, artificial and natural regeneration have no problems.

SOIL CHARACTERISTICS:

a) pH=3.8 b)M.C%=23.67 c)SOC=4.0% d) SOM=6.90% e) P=4.2%

f) K=2341.7(μg g^{-1}) g) N=0.32% h) NH_4-N=5.84(μg g^{-1}) i) NO_3-N=1.52(μg g^{-1})

ASSOCIATES: *Ficus hispida* Linn, *Diospyros embryopteris* Pers.

USES: Decoction of the leaves is used in the treatment of cancer at the rate of 1-2 cups daily after food. For dog bite and boils, paste made from fresh leaves is applied on the infected portion of the body.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

171. Botanical Name: *Rosa indica* Linn (42279)

Local Name: Golap gipok

Family: Rosaceae

Locality: Chibonggre

Parts Used: Seeds

Diseases: Dysentery

Botanical Description: A perennial flowering shrub, usually prickly. Leaves imparipinnate, leaflets serrate, alternately borne on the stem, stipules adnate nearly to the apex. Inflorescence on terminal, double to single, flowers on long pedicels.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.709312 and E-90.232458

c) Humidity: 43%

d) Light Intensity: 3910 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Terminal

c) Silvicultural character: Light demander, it can be propagated by cutting or division methods.

SOIL CHARACTERISTICS:

a) pH=5.3 b) M.C%=18.78 c)SOC=4.09% d) SOM=7.05% e) P=4.5%

f) K=88.3(μg g^{-1}) g) N=0.31% h) NH_4-N=7.08(μg g^{-1}) i) NO_3-N=1.9(μg g^{-1})

ASSOCIATES: Planted as an ornamental.

USES: Infusion of powdered seeds is to be taken at 1 teaspoonful morning and evening till the patient recovers.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

172. Botanical Name: *Schefflera venulosa* Harms (81296)

Local Name: Doˈreng jaˈsi/ Doˈreng mi

Family: Araliaceae

Locality: A'jrigre

Parts Used: Twigs

Diseases: Incessant crying in babies

Botanical Description: Large scandent or climbing evergreen shrubs bark grey, greyish brown. Leaves 5-7 foliate, leaflets oblanceolate, oblanceolate elliptic, obtuse or acuminate, base obtuse or rounded, coriaceous, glabrous. Petioles swollen at both ends. Inflorescence on axillary or terminal, flowers yellowish-green to white, fruits fleshy, globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-20˚1676058′ and E-83˚34.217898′

c) Humidity: 43%

d) Light Intensity: 3810 lux (10X)

PHENOLOGY:

a) Flowering and Fruiting: March-November

b) Place of Flower: Axillary/Terminal

c) Silvicultural character: Moderately light demander, propagated by stem cuttings or seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36 % h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Ficus microcarpa* Roth, *Caryota urens* L

USES: Twigs are made to wear on neck to stop incessant crying in babies.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

173. Botanical Name: *Schima wallichi* Kurtz (62011)

Local Name: Boldak

Family: Theaceae

Locality: Aˈguragre

Parts Used: Leaves

Diseases: Osteoarthritis

Botanical Description: It is an evergreen medium-sized tree with a dense crown, bark surface ruggedly cracked into small, thick, angular pieces. Leaves spiral, simple, oblong to broadly elliptic, base wedge shaped, apex acute to acuminate and margin toothed. Inflorescence on axillary at the apices of twigs. Petals connate at base, white with a rosy flush and stamens many, adnate to the corolla base, anthers versatile, ovary superior style simple. Fruit a woody sub globose capsule, silky, opening by 5 valves. Seeds winged all around.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25.6057922 and E-90.3303634

c) Humidity: 64%

d) Light Intensity: 180000 lux (10000X)

PHENOLOGY:

a) Flowering: April-May

b) Place of Flower: Axillary

c) Fruiting: May-June

d) Silvicultural character: Moderately light demander, wood is moderately durable, mostly grown in disturbed or secondary forests and it can be propagated through seeds.

SOIL CHARACTERISTICS:

a) pH=4.7 b)M.C%=18.7 c)SOC=3.67% d) SOM=6.32% e) P=4.30%

f) K=99.3(μg g^{-1}) g) N=0.5% h) NH_4-N=1.35(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Chromolaena odorata* King, *Ageratum conyzoides* Linn

USES: Leaves are pounded along with leaves of *Euphorbia neriifolia* L, *Solanum anguivi* L and *Solanum melongena* Linn. The paste mixture has to be applied externally on the affected portion of the bones.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

174. Botanical Name: *Schumannianthus dichotomus* (Roxb) Gagnep (83450)

Local Name: Dikge Hi'ru

Family: Zingiberaceae

Locality: Balsri gittim

Parts Used: Rhizome

Diseases: Gonnorhoea with UTI

Botanical Description: It is a rhizomatous perennial herb with an erect and glossy green stem. Stems are leafy and dichotomously branched. Leaves are alternate, stalked, blades are oval. Petioles are short and hairy. Inflorescence on terminal borne on a simple or sometimes branched. Fruits are 3-lobed.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.722038 and E-90.196286

c) Humidity: 43%

d) Light Intensity: 13310 lux (10X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: March-April

c) Flowering: April-May

d) Place of Flower: Axillary

e) Fruiting: May-June

f) Silvicultural character: Shade bearer and propagated through rhizomes.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C %= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Curcuma amada* Roxb, *Stephania japonica* Thunb.

USES: Infusion of rhizomes can be taken orally at the rate of 1-2 teaspoonfuls against gonorrhoea with urinary tract infection.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

175. Botanical Name: *Scoparia dulcis* Linn. (61168)

Local Name: Samkireng/Me'mang te'brong

Family: Scrophulariaceae

Locality: Turam

Parts Used: Leaves

Diseases: Antiulcer, Antipyretic, Anticancer

Botanical Description: An erect perennial herb, glandular, stem angled; divaricately branched, glabrous. Leaves are opposite, serrate, rhomboid, tapering at the base into short petiole. Inflorescence in axils, whorl and slender white. Fruit capsule, subglobose, glabrous, seeds many and obovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 45%

d) Light Intensity: 5970 lux (10X)

PHENOLOGY:

a) Leaf shedding: Partial leaf shedding in the month of february-march

b) New Leaf: March-April

c) Flowering: March-May

d) Place of Flower: Axillary

e) Fruiting: May-December

f) Silvicultural character: Moderate light demander, susceptible to jhum fire, heavy rainfall and drought.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29(µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Mimosa pudica* Linn

USES: Decoction of leaves can be taken at 2 teaspoonfuls twice daily after food against cancer, ulcer and pyretic.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

176. Botanical Name: *Sesamum indicum* D.C (84100)

Local Name: Spin

Family: Pedaliaceae

Locality: Kemragre

Parts Used: Seeds/Grains

Diseases: Dysentery

Botanical Description: It is an annual herb having large leaves, thin, glabrous, lower ones lobed, intermediate usually ovate and toothed. Flowers white. Fruits quadrangular, oblong, compressed capsules. Seeds many, black, brown or white.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N25˚34.853′ and E-090˚0907.534′

c) Humidity: 69%

d) Light Intensity: 700 lux (10X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Terminal

c) Fruiting: October-November

d) Silvicultural character: Light demander, propagated through seeds and it is cultivated in the jhum field.

SOIL CHARACTERISTICS:

a) pH= 4.6 b)M.C%=13.5 c)SOC=3.9% d) SOM=6.72% e) P=5.81%

f) K=79.4(μg g^{-1}) g) N=0.7% h) NH_4-N=2.6(μg g^{-1}) i) NO_3-N=2.4(μg g^{-1})

ASSOCIATES: Cultivated in the jhum field.

USES: Grains are to be fried for few minutes and pounded properly. A little amount of salt is added and the powdered mixture can be eaten orally at 2-3 teaspoonfuls.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

177. Botanical Name: *Sida cordifolia* Linn (26735)

Local Name: Hatgopali

Family: Malvaceae

Locality: Chigitchakgre

Parts Used: Leaves

Diseases: High fever

Botanical Description: It is an erect perennial undershrub with ascending terete or sulcate, softly villous and densely stellate pubescent all over. Leaves ovate or oblong-ovate, cordate, obtuse or subacute at apex, very downy on both surfaces. Inflorescence on axillary, flowers tawny-yellow or white, fruits subdiscoid. Seeds trigonous, glabrous and tufted-pubescent near the hilum.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 34°C

b) Location: N-25°43'43.2" E-90°13'47.8"

c) Humidity: 65%

d) Light Intensity: 56000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: An annual shrub

b) Flowering: September-October

c) Place of Flower: Axillary

d) Fruiting: October-December

e) Silvicultural character: Moderate light demander, a common weed in waste places and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67%

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Bidens pilosa* L

USES: 6-7 leaves are pounded well and pastes are tied with clad on forehead when a person is suffering from high fever.

CONSERVATION STATUS: Not cultivated, not yet been assessed for the IUCN Red List

178. Botanical Name: *Solanum anguivi* L (89150)

Local Name: Kimka

Family: Solanaceae

Locality: Babadam

Parts Used: Roots

Diseases: Tooth-rash

Botanical Description: It is a cultivated much-branched shrub with a long taproot extends deeply into the ground. Leaves and stems are glabrous and sometimes prickles. The leaves are accumbent and hairy margins. Inflorescence on terminal or axillary. Flowers are hermaphrodite. Fruit a globose, shiny smooth and has many seeds.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25°35.053 and E-90°07.516

c) Humidity: 62%

d) Light Intensity: 740 lux (10X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Axillary/Terminal

c) Fruiting: September-October

d) Silvicultural character: Light demander, propagated through seeds and is cultivated in their jhum field or home gardens.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.9% e) P=5.9%

f) K=59.2 (μg g^{-1}) g) N=0.3% h) NH_4-N=6.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: Cultivated in their jhum field.

USES: Roots are pounded well with the roots of *Solanum melongena* Linn, *Zanthoxylum budrunga* Roxb and paste can be inserted into affected portion of the tooth-rash. After 10-15 minutes, wash the mouth with hot water.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

179. Botanical Name: *Solanum melongena* Linn (43911)

Local Name: Baring

Family: Solanaceae

Locality: Kemragre

Parts Used: Roots

Diaseases: Tooth-rash

Botanical Description: It is a cultivated much-branched shrub. Leaves and stems are glabrous and sometimes prickly. Inflorescence on terminal or axillary. Flowers are hermaphrodite. Fruit a globose to oblong, shiny, smooth and has many seeds. Seeds are kidney-shaped or lentil-shaped and pale brown in colour.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25˚34.625′ and E-090˚0907.471′

c) Humidity: 71%

d) Light Intensity: 870 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Axillary/Terminal

c) Silvicultural character: Light demander, propagated through seeds and it regenerates artificially.

SOIL CHARACTERISTICS:

a) pH= 4.6 b)M.C%=13.5 c)SOC=3.9% d) SOM=6.72% e) P=5.81%

f) K=79.4(μg g^{-1}) g) N=0.7% h) NH_4-N=2.6(μg g^{-1}) i) NO_3-N=2.4(μg g^{-1})

ASSOCIATES: It is cultivated in their home gardens or jhum field.

USES: For tooth-rash, roots are grinded properly along with roots of *Zanthoxylum budrunga* Roxb and *Solanum anguivi* Linn. The paste can be inserted into the affected portion of the tooth. After 10-15 minutes, wash the mouth with hot water.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

180. Botanical Name: *Solena heterophylla* Lour (89231)

Local Name: Me'mang te'kongsi

Family: Cucurbitaceae

Locality: Kurung

Parts Used: Whole plant parts

Diseases: Gonorrhoea with UTI

Botanical Description: It is a scandent dioceous annual herb with simple tendrils. Leaves polymorphous, ovate, oblong, lanceolate, and cordate. Flowers small, dioceous, males in umbellate racemes, females solitary. Fruits oblong-ovoid, cylindrical, ribbed bright red when ripe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25.9909395 and E-90.4140451

c) Humidity: 73%

d) Light Intensity: 910 lux (10X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Axillary

c) Fruiting: September-November

d) Silvicultural character: Moderately light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=4.5 b)M.C%= 12.6 c)SOC=3.02% d) SOM=5.2% e) P=5.80%

f) K=66.8(μg g^{-1}) g) N=0.6% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=2.2(μg g^{-1})

ASSOCIATES: *Mikania micrantha* H.B.K, *Merennia umbellate* Lour

USES: Whole plant is pounded along with roots of *Imperata cylindrica* L, *Centella asiatica* L, *Ziziphus mauritiana* Lam, seeds of *Zanthoxylum budrunga* DC and a pinch of sugar is added. The infusion has to be taken orally at the rate of 1-2 teaspoonfuls daily after food.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

181. Botanical Name: *Sonchus arvensis* L (35801)

Local Name: Samkueng

Family: Asteraceae

Locality: Rongbakgre

Parts Used: Leaves

Diseases: One side of mouth crooked

Botanical Description: This is a perennial herb having erect and hollow stems. The leaves are clasping and without stalks. Leaves are alternate, glabrous with dentate margins and triangular lobes. Inflorescence is terminal and distinctly pedunculated. The glomerules are with yellow ligules which are about as long as the corolla-tube. Fruits are dark brown achenes, oblong, flattened, narrowed towards the base, and crossed by wrinkles. The upper end is truncate with a pappus of white hairs.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 35°C

b) Location: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 65%

d) Light Intensity: 27600 lux (100X)

PHENOLOGY:

a) Flowering: July-October

b) Place of Flower: Terminal

c) Fruiting: October-November

d) Silvicultural character: Sensitive to frost, can be propagated through seeds and it is cultivated in their gardens.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.5% d) SOM=7.7% e)P=4.48%

f) K=2120.7(μg g^{-1}) g) N=0.4% h) NH_4-N=3.2(μgg^{-1}) i) NO_3-N=1.47(μg g^{-1})

ASSOCIATES: *Vitex negundo* Linn, *Calotropis gigantean* R.Br.

USES: Leaf pastes are used to massage on the mouth opposite towards it is getting crooked (While massaging care should be taken that has to be massaged gently)

CONSERVATION STATUS: Cultivated in their garden, Near Threatened under IUCN Red List.

182. Botanical Name: *Spilanthes acmella* Murr (85362)

Local Name: Mok jakdap/Sonapul/Wagam sam

Family: Asteraceae

Locality: Mronggre

Parts Used: Whole plant

Diseases: Toothache

Botanical Description: An annual herb having erect stems and sometimes decumbent. Leaves accumbent, simple, blade broadly ovate to deltate, acuminate, margin dentate. Inflorscence a discoid head involucre bracts, receptacular bracts straw coloured. Fruit an achene 2-2.5 mm×1mm; pappus consisting of 2 bristles.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.772106, and E-89.991294

c) Humidity: 48%

d) Light Intensity: 38310 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Axillary

c) Silvicultural character: Moderate light demander, resistant to drought and heavy rainfall, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=15.5 c)SOC=4.0% d) SOM=6.89% e) P=4.50%

f) K=236.7(μg g^{-1}) g) N=0.3% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=1.67(μg g^{-1})

ASSOCIATES: *Bidens pilosa* Linn, *Tridax procumbens* Linn

USES: Paste made from whole plant can be applied over the toothache.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

183. Botanical Name: *Spondias pinnata* (Linn.) Kurz (82161)

Local Name: Ambletong

Family: Anacardiaceae

Locality: Ganol Songma

Parts Used: Bark, Fruits

Diseases: UTI, Diarrhoea

Botanical Description: It is a medium-sized deciduous tree. Leaves are spirally arranged, imparipinnate; rarely bipinnate. Flowers are polygamous. The fruit is a drupe, ovoid, quite similar to a Mangifera indica Linn. Inflorescence panicles axillary, subsessile. It has a single seed.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.5792378 and E-90.2698983

c) Humidity: 45%

d) Light Intensity: 38200 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: January-March

c) Flowering: March-May

d) Place of Flower: Axillary

e) Fruiting: May-June

d) Silvicultural character: Moderate light demander, prefers a well drained soil, it can propagate through direct seeding and cuttings.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9%

f) K=59.2(μg g^{-1}) g) N=0.3% h) NH_4-N=6.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: *Hibiscus rosa-sinensis* L, *Vinca rosea* Linn

USES: For diarrhoea, decoction of bark can be taken at 1 teaspoonful daily after food. For UTI, juice extracted from the fresh fruit can be taken orally at 1 cup daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

184. Botanical Name: *Stephania japonica* (Thunb.) Miers. (85324)

Local Name: Samta/Samkusim/Samkuchak

Family: Menispermaceae

Locality: Rong'sak

Parts Used: Rhizome

Diseases: Navel diseases

Botanical Description: A woody wiry climber without prickles. Leaves peltate, thinly papyraceous, broadly triangular, ovate-acuminate, glabrous on both surface, base rounded, apex acute or acuminate. Inflorescence on axillary, compound umbelifer cymes. The fruit is an oval shaped or drupe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25.726189 and E-90.125058

c) Humidity: 43%

d) Light Intensity: 12850 lux (10X)

PHENOLOGY:

a) Flowering: January

b) Place of Flower: Axillary

c) Fruiting: February

d) Silvicultural character: Shade bearer and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.9% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Kaempferia galangal* Wall

USES: Paste made from the rhizome can be used to massage on the navel.

CONSERVATION STATUS: Very rare (As per the field visit) and cultivated, not yet been assessed for the IUCN Red List

185. Botanical Name: *Stereospernum tetragonum* D.C (21047)

Local Name: Bolsil

Family: Bignoniaceae

Locality: Rongbakgre

Parts Used: Bark, Leaves

Diseases: Dizziness, Headache

Botanical Description: It is a large deciduous tree, branches and leaves pubescent, bark fissured, rough. Branchlets terete, glabrous, lenticellate, leaf imparipinnate, decussate, entire and

shortly serrated. Inflorescence on lax terminal panicles, petals wooly, fruits spirally twisted, seed winged.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25˚30.236′ and E-90˚09.019′

c) Humidity: 66%

d) Light Intensity: 27700 lux (100X)

PHENOLOGY:

a) Leaf shedding: October-January

b) New Leaf: March-April

c) Flowering: April-May

d) Place of Flower: Terminal

e) Fruiting: November-February

f) Silvicultural character: Moderate light demander, resistant to jhum fire, natural and artificial regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.50% d) SOM=7.75% e)P=4.48%

f) K=2120.7(μg g^{-1}) g) N=0.4% h) NH_4-N=3.2(μgg^{-1}) i) NO_3-N=1.47(μg g^{-1})

ASSOCIATES: *Chromolaena odorata* King, *Ageratum conyzoides* Linn

USES: Pounded barks and leaves are tied with clad on the forehead.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

186. Botanical Name: *Swertia chirata* Ham (24716)

Local Name: Chi'rotta/Gamika

Family: Gentianaceae

Locality: Chigitchakgre

Parts Used: Leaves, Roots

Diseases: Malaria, Scabies

Botanical Description: An annual herb having accumbent leaves, stems robust. Flowers lurid/white with nectaries, in terminal corymbose or in large panicled cymes; the capsules are egg-shaped, sharp pointed. Seeds are minute, often winged, many-angled, and reticulate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25°43'43.2" E-90°13'47.8"

c) Humidity: 59%

d) Light Intensity: 12750 lux (10X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: July-September

c) Place of Flower: Terminal

d) Fruiting: October-November

e) Silvicultural character: Grows well in sandy, loamy as well as clay soil conditions. The plant thrives well in acidic, neutral or alkaline soils.

SOIL CHARACTERISTICS:

a) pH=5.45 b) M.C%=22.7 c)SOC=4.5% d) SOM=7.75% e) P=5.67%

f) K=324.5(μg g^{-1}) g) N=0.41% h) NH_4-N=5.6(μg g^{-1}) i) NO_3-N=3.46(μg g^{-1})

ASSOCIATES: Planted in pot.

USES: Decoction of leaves and roots are used against malaria at 2 teaspoonfuls daily after food. The root juice can be used externally for scabies at 2 times daily to the affected parts.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

187. Botanical Name: *Syzygium cumini* Linn (53812)

Local Name: Chambu dal'gipa

Family: Myrtaceae

Locality: Turam

Parts Used: Bark

Diseases: Tuberculosis

Botanical Description: This is a large evergreen tree. Bark rough with cracks and branchlets pale. Leaves elliptic-oblong or ovate, acuminate, acute or sub-obtuse, narrowed often abruptly to the base, smooth, glossy when young, lateral nerves close. Flowers sessile, fragrant and usually in three brachiate panicles of compound cymes. Calyx broad-turbinate with a truncate or very obscurely lobed limb and a pedicel-like solid basal portion. Berries oblong or ellipsoid, black, usually crowned with the cup-like limb of the calyx-tube, purple inside. One-seeded.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29˚C

b) Location: N-25˚43.038′ and E-090˚11.521′

c) Humidity: 45%

d) Light Intensity: 3980 lux (10X)

PHENOLOGY:

a) Flowering and Fruiting: December-June

b) Place of Flower: Terminal/axillary

c) Silvicultural character: Light demander, coppices well, propagated through seeds and it can also be propagated vegetatively through grafting and air layering, resistant to heavy rainfall, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(µg g^{-1}) g) N=0.36% h) NH_4-N=3.29 (µg g^{-1}) i) NO_3-N=1.2(µg g^{-1})

ASSOCIATES: *Grewia microcos* Linn, *Ageratum conyzoides* Linn

USES: Decoction of bark can be taken orally at the rate of 1 cup daily after food against tuberculosis.

CONSERVATION STATUS: Both cultivated and found in the wild, not yet been assessed for the IUCN Red List

188. Botanical Name: Syzygium grande (Wight) (10860)

Local Name: Long bol

Family: Myrtaceae

Locality: Chigisilgre

Parts Used: Bark, Leaves, Roots

Diseases: Cancer, Tuberculosis

Botanical Description: Middle sized to large trees often buttressed at base; branchlets lenticellate, bark greyish-brown or grey. Leaves broadly elliptic, elliptic lanceolate, ovate elliptic to orbicular, abruptly short acuminate or apiculate, base acute, cuneate or rounded-cuneate. Inflorescence in terminal or upper axillary. Berris sub-globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-20°16.76058` and E-83˚34.217898`

c) Humidity: 56%

d) Light Intensity: 60300 lux (100X)

PHENOLOGY:

a) Leaf shedding: An evergreen tree

b) Flowering and fruiting: December-June

c) Place of Flower: Axillary/terminal

d) Silvicultural character: Light demander, coppices well, propagated through seeds and it can also be propagated vegetatively through grafting and air layering.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Toona ciliata* M. Roem

USES: For cancer, barks, leaves and roots are pounded along with seeds of *Piper longum* L, *Euphorbia hirta* Linn. The mixture can be taken orally and also applied on the wounded portion of the body. Under this medication, a patient has to avoid crab, fish and salt. For tuberculosis, decoction of bark along with *Piper longum* L and *Ziziphus mauritiana* Lamk can be drink daily.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

189. Botanical Name: *Tagetes erecta* (Linn.) (32000)

Local Name: Genda Pul

Family: Asterceae

Locality: Selsella A'palgre

Parts Used: Leaves

Diseases: Ear infection

Botanical Description: It is an aromatic annual herb, growing as ornamental plant having simple and pinnate green leaves. The flower head has tubular disk flowers in the center and ray flowers, often strap-shaped, around the periphery. Flowers are hermaphrodite. Heads large, involucre of bracts fused.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25˚40.246′ and E-90˚04.296′

c) Humidity: 46%

d) Light Intensity: 39100 lux (100X)

PHENOLOGY:

a) Flowering: October-November

b) Place of Flower: Terminal

c) Fruiting: November-December

d) Silvicultural character: Light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=3.3 b)M.C%=19.54 c)SOC=4.02% d) SOM=6.93% e) P=4.3%

f) K=1921.2(μg g^{-1}) g) N=0.34% h) NH_4-N=5.18(μg g^{-1}) i) NO_3-N=1.56(μg g^{-1})

ASSOCIATES: Planted in pot.

USES: Leaves are crushed and it is then filtered using a clean cloth. The filtrate is used as ear drops.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

190. Botanical Name: *Tamarindus indicus* L. (83051)

Local Name: Che'eng/Kenchiri

Family: Fabaceae

Locality: Rongchugre

Parts Used: Leaves

Diseases: Smallpox, Skin rashes, Ulcer

Botanical Description: It is a large evergreen tree with spreading branches. Leaves are compound, pinnated, linear lanceolate. Inflorescence in terminal or lateral racemes. Legume oblong, pendulous, nearly linear, curved. Pod indehiscent, compressed, pericarp, crustaceous, brittle, and scurfy. Seeds with hard testa embedded in acid pulp, traversed by fibres.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Loaction: N-25.6301108 and E-90.1715775

c) Humidity: 43%

d) Light Intensity: 43810 lux (10X)

PHENOLOGY:

a) Flowering: April-June

b) Place of Flower: Terminal

c) Fruiting: February-March

d) Silvicultural character: Strong light demander, frost susceptible, wind firm, drought hardy, coppices well, produce root suckers, susceptible to weeds and frost at young stage.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%=12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: *Grewia microcos* Linn, *Vitis repens* W & A.

USES: Decoction of leaves is used for washing ulcers and skin rashes. For smallpox, paste made from seeds can be used.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

191. Botanical Name: *Terminalia arjuna* Roxb (69559)

Local Name: Arjun

Family: Combretaceae

Locality: Marakapara

Parts Used: Bark

Diseases: Liver weakness, Contusions

Botanical Description: It is a large-sized deciduous tree, having massive and fluted trunk and spreading crown. Leaves are spirally arranged, simple, coriaceous and glabrous on both sides.

The shape of the blade is ovate, acute, and crenate, venation of the leaf is reticulate with a prominent mid-rib. Inflorescence in axillary spike. Fruit drupe, fibrous and woody. The fruit is one-seeded.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N- 25.640912 and E-90.198976

c) Humidity: 61%

d) Light Intensity: 4810 lux (10X)

PHENOLOGY:

a) Leaf shedding: June-August

b) New Leaf: September-October

c) Flowering: April-May

d) Place of Flower: Axillary

e) Fruiting: September-November

f) Silvicultural character: Moderate light demander, it regenerates naturally or artificially.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e) P=5.9%

f) K=89.4(μg g^{-1}) g) N=0.45% h) NH_4-N=3.02(μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Chromolaena odorata* King.

USES: For liver weakness and contusion, decoction of bark can be drink at 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

192. Botanical Name: *Terminalia bellirica* Roxb. (18249)

Local Name: Chirore

Family: Combretaceae

Locality: A'jrigre

Parts Used: Fruits

Diseases: Asthma, Carbuncle

Botanical Description: A large deciduous tree with a rounded crown, frequently buttressed at the base. The bark has numerous fine longitudinally cracks, the inner bark yellowish. The leaves are alternate, obovate to broadly elliptic, obtuse, subacute or apiculate at the apex. Inflorescence on axillary spikes, flowers appear along with new leaves. Fruits are ovoid, drupes, narrowed into a very short stalk, obscurely ribbed when dry.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: 20˚1676058′ and E-83˚34.217898′

c) Humidity: 56%

d) Light Intensity: 60300 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-February

b) New Leaf: March-April

c) Flowering: March-April

d) Place of Flower: Axillary

e) Fruiting: July-October

f) Silvicultural character: Light demander, resistant to jhum fire and it regenerate naturally.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Premna latifolia* Roxb, *Chromolaena odorata* King.

USES: For asthma, green fruits can be eaten as raw. For carbuncle, fruits are pounded along with fruits of *Piper thomsonii* L and the mixture can be used as ointment.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List

193. Botanical Name: *Terminalia chebula* Retz. (35593)

Local Name: Aritak

Family: Combretaceae

Locality: A'jrigre

Parts Used: Fruits

Diseases: Asthma, Conjunctivitis, Diarrhoea, Spleen disorder

Botanical Description: A medium-sized deciduous tree, short cylindric bole, crown rounded, with spreading branches; branchlets rusty-villous or glabrescent. Leaves acumbent, thin coriaceous, ovate or elliptic-obovate, obtuse to subacute at apex, pubescent beneath. Flowers are in axillary. Fruit an obovoid or oblong-ellipsoid, drupe.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: 20˚1676058′ and E-83˚34.217898′

c) Humidity: 56%

d) Light Intensity: 60310 lux (10X)

PHENOLOGY:

a) Leaf shedding: November-January

b) New Leaf: February-March

c) Flowering: April-May

d) Place of Flower: Axillary

e) Fruiting: May-June

f) Silvicultural character: Light demander, susceptible to heavy rainfall. It is fairly tolerant to frost and drought and withstands fire. Regeneration is usually poor.

SOIL CHARACTERISTICS:

a) pH= 21.87 b) M.C%=21.87 c)SOC=4.50% d) SOM=7.78% e) P=6.2%

f) K=226.7(μg g^{-1}) g) N=0.36% h) NH_4-N=3.29(μg g^{-1}) i) NO_3-N=1.2(μg g^{-1})

ASSOCIATES: *Citrus maxima* Linn, *Ageratum conyzoides* Linn.

USES: Fresh fruits are taken against asthma. However for conjunctivitis fruits are soaked in a glass of water for overnight and with that water eyes can be washed off in the morning. Decoction of fruits is also taken orally for diarrhoea and spleen disorders.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

194. Botanical Name: *Tetrastigma lanceolarium* Roxb. (54666)

Local Name: Samgrop/Me'mang olmak

Family: Vitaceae

Locality: Danekgre

Parts Used: Whole plant parts

Diseases: Bone Fractured, an evil spirit affecting a new born baby (bima rim'a)

Botanical Description: It is an evergreen climbing shrub. Branches flat, woody, tendrils stout and simple. Leaves 4-6 foliolate, terminal leaflets oblong-lanceolate, acuminate at apex, acute to rounded base, irregularly serrate-dentate at margins. Inflorescence on subcorymbose cymes, flowers pubescent and pedicels long. Calyx cupular, inconspicuous, petal hooded, anthers oblong. Berries globose, seeds obovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.658012 and E- 90.215092

c) Humidity: 46%

d) Light Intensity: 3820 lux (10X)

PHENOLOGY:

a) Flowering: December- September

b) Place of Flower: Axillary/Terminal

c) Fruiting: December-September

d) Silvicultural character: Moderately light demander, creeps mostly on banyan trees, and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Tetrastigma obovatum* Lam

USES: Paste made from whole plant parts are used to bandage on the fractured bones. Infusion of leaves is used to massage on the infant baby.

CONSERVATION STATUS: Rarely found in the wild, not yet been assessed for the IUCN Red List

195. Botanical Name: *Tetrastigma obovatum* (Laws.) Gagnep (90386)

Local Name: Du'kemkem

Family: Vitaceae

Locality: Danekgre

Parts Used: Whole plant parts

Diseases: Fractured bones, Ringworms

Botanical Description: It is a large climbing shrub with flattened branches and simple tendril. Leaves 4-5 foliolate, fulvous-pubescent, terminal leaflets obovate to broad-elliptic, acuminate at apex, acute to cuneate at base, serrated at margins. Inflorescence on corymbose cymes, flowers

greenish yellow. Berries ellipsoid, 1-3 seeded, mucronate at base, tranversely striate on sides, adaxial surface with a linear raphe, abaxial surface with clavate chalaza.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25.658012 and E- 90.215092

c) Humidity: 46%

d) Light Intensity: 3930 lux

PHENOLOGY:

a) Flowering and Fruiting: January-November

b) Place of Flower: Terminal

c) Silvicultural character: Moderate light demander, it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Tetrastigma lanceolarium* Laws Gagnep

USES: Paste made from whole plant parts are used to bandage on the fractured bones. For ringworms, leave paste are applied on the affected portion for one night and washed off with hot water in the morning.

CONSERVATION STATUS: Rarely found in the wild (As per the field survey), Endemic to Meghalaya (Haridhasan 1999), not yet been assessed for the IUCN Red List

196. Botanical Name: *Tetrastigma planicaulis* HKF (6027)

Local Name: Biholi budu

Family: Vitaceae

Locality: Bolchugre

Parts Used: Leaves, Stem-Bark

Diseases: Rheumatism

Botanical Description: Lianas having flat stem, branchlets terete with longitudinal ridges, tendrils unbranched. Leaves palmately 5-folioate, leaflets elliptic-lanceolate or ovate-lanceolate, veinlets raised, base cuneate, and apex acuminate or acute. Inflorescence axillary in umbelliform, with node and bracts. Calyx shallow and saucer-shaped, papillose, teeth inconspicuous. Ovary broadly coniform. Seeds oblong, apex rounded.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N- 25.725899 and E-90.17778257

c) Humidity: 46%

d) Light Intensity: 2400 Lux (100X)

PHENOLOGY:

a) Flowering: April-June

b) Place of Flower: Axillary

c) Fruiting: August-December

d) Silvicultural character: Shade demander, grows well in shady areas, climbs on trees or any other supports, it can be propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K=224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36 (μg g^{-1})

ASSOCIATES: *Mangifera indica* Linn

USES: Paste made from leaves and stem-bark is used to massage on the rheumatic patients every morning.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

197. Botanical Name: *Thunbergia grandiflora* Roxb. (52259)

Local Name: Kakku budu/Kakku chidang

Family: Acanthaceae

Locality: Dallangre

Parts Used: Leaves

Diseases: Edema

Botanical Description: An evergreen woody vine having cylindrical stems, striate and puberulous. Leaves accumbent, acute or acuminate, the leaf base cordiform or sub cordiform, the margins lobate-dentate, ciliate. Inflorescence in axillary cymes, pedicels robust, bracts membranaceous, ovate, covering the calyx and corolla tube.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 24°C

b) Altitude: N-25.728667 and E-90.229943

c) Humidity: 48%

d) Light Intensity: 12650 lux (10X)

PHENOLOGY:

a) Flowering: March-October

b) Place of Flower: Axillary

c) Fruiting: October-November

d) Silvicultural character: Moderate light demander, very easy to propagate from cuttings in warm weather.

SOIL CHARACTERISTICS:

a) pH=4.0 b) M.C%=17.64 c)SOC=3.66 % d) SOM=6.33% e) P=5.7%

f) K=334.5(μg g^{-1}) g) N=0.28% h) NH_4-N=4.95(μg g^{-1}) i) NO_3-N=1.32(μg g^{-1})

ASSOCIATES: *Chromolaena odorata* King, *Ageratum conyzoides* Linn.

USES: Leaves are warmed in a low flame by smearing some mustard oil on the leaves and massage on the swellings of legs and hands.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

198. Botanical Name: *Thysanolaena maxima* Roxb (85686)

Local Name: Smu/Salʿwa

Family: Poaceae

Locality: Galwanggre

Parts Used: Tender leaves

Diseases: Qualm/Sudden stock of dehydration (sudden fit of illness)

Botanical Description: It is a common, strong tufted annual grass, spreading solid bamboo like culms. Leaves are broad, lanceolate-acuminate, flat, base broad or sub-cordate. Inflorescence a terminal huge and drooping panicle. Spikelets 2-flowered, upper bisexual, lower male or neuter. Caryopsis subglobose to ovoid.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25˚40.281′ and E-090˚00.558′

c) Humidity: 44%

d) Light Intensity: 64000 lux (1000X)

PHENOLOGY:

a) Leaf shedding: Annual herb

b) Flowering: September-October

c) Place of Flower: Axillary

d) Fruiting: November-January

e) Silvicultural character: Light demander, it can be propagated by rhizomes, rooted culms or seeds.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0%

f) K=67.8(μg g^{-1}) g) N=0.30% h) NH_4-N=1.21(μg g^{-1}) i) NO_3-N=1.78 (μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn, *Hedyotis scandens* D.Don

USES: Tender leaves are crushed along with roots of *Ziziphus mauritiana* Lamk. *Elephantopus scaber* Linn, *Pandanus odoratissimus* Roxb. Infusion of those mixtures can be taken orally at the rate of 2-3 teaspoonfuls once in a day.

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

199. Botanical Name: *Tinospora cordifolia* (Willd.) H.K.F (822)

Local Name: Du'mandal/Do'repu budu

Family: Menispermaceae

Locality: Sampalgre

Parts Used: Leaves, Whole plant

Diseases: Smallpox, Measles, Liver Problems, Jaundice

Botanical Description: It is a large, glabrous, succulent, deciduous climbing shrub with corky bark. The leaves are membranous, cordate, acute or shortly cuspidate, acuminate. Male flowers fascicled, female usually solitary or longer pedicels. Bracts boat-shaped, the lower ones often leaflike. Seeds are curved. Fruits single seeded.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 25°C

b) Location: N-25.6910088 and E-90.1473933

c) Humidity: 49%

d) Light Intensity: 4750 lux (10X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: January-February

c) Flowering: March-April

d) Place of Flower: Axillary/Terminal

e) Fruiting: April-May

f) Silvicultural character: Light demander, artificial and natural regeneration has no problems.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.6% e) P=5.9%

f) K=89.4(μg g^{-1}) g) N=0.45% h) NH_4-N=6.02(μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: Climbs on *Ficus microcarpa* Roth.

USES: Decoction of leaves, root bark is a good remedy for liver problems and jaundice. Depending on the severity of diseases the extract can be taken at 2 teaspoonfuls to ½ cup twice daily after food. For measles and smallpox, infusion of leaves can be applied to the infected portion the body.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

200. Botanical Name: *Tradescantia spathacea* SW (83210)

Local Name: Rengkot/Reng ka’tong

Family: Commelinaceae

Locality: Rong'sak

Parts Used: Leaves

Diseases: Cataract, Heart diseases

Botanical Description: It is a succulent perennial herb mostly grown as ornamentals. It has dark green colour on the upper surface of leavesa and purple on the undersurface. Leaves are simple, fleshy, forms a rosette are sword-like. Stem is thick and unbranched. Inflorescence tiny, at the axils and lodged inside the boat shaped bracts.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 26°C

b) Location: N-25.726189 and E-90.125058

c) Humidity: 51%

d) Light Intensity: 5760 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Whole year round

b) Place of Flower: Axillary

c) Silvicultural character: Moderately light demander, non-resistant to heavy rainfall and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Planted on pot.

USES: Paste made from leaves can be applied on eyes for cataract diseases. For heart diseases, infusion of leaves can be drink at the rate of 1-2 teaspoonfuls daily after food.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

201. Botanical Name: *Trichosanthes multiloba* C.B Clarke (89227)

Local Name: Me'mang Lau

Family: Cucurbitaceae

Locality: Bolchugre

Parts Used: Whole plant parts

Diseases: High fever

Botanical Description: It is a perennial dioceous climber. Stems robust, branched, grooved, pubescent. Leaves glabrous, broadly ovate or suborbicular, oblong or lanceolate, deeply palmate,

abaxially pubescent, adaxially hispidulous or glandular punctate, apex acuminate. Male flowers usually paired, peduncle grooved, puberulent, broadly ovate or obovate-rhombic. Female flowers solitary, ovary ovoid. Fruiting peduncle robust, apex acute. Seeds oblong, base truncate, apex attenuate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N- 25.725899 and E-90.17778257

c) Humidity: 45%

d) Light Intensity: 12100 lux (100X)

PHENOLOGY:

a) Flowering: May-November

b) Place of Flower: Axillary

c) Fruiting: August-December

d) Silvicultural character: Moderately light demander, climbs on trees, mostly grows near the rivers.

SOIL CHARACTERISTICS:

a) pH= 4.5 b)M.C%= 12.57 c) SOC=4.05% d) SOM=6.99% e) P=5.2%

f) K= 224.1(μg g^{-1}) g) N=0.32% h) NH_4-N= 4.04(μg g^{-1}) i) NO_3-N=1.36(μg g^{-1})

ASSOCIATES: Climbs on *Trema orientalis* Linn

USES: Whole is pounded along with *Gomphostemma ovatum* Wall. *Phyllantus urinaria* Linn. *Elephantophus scaber* Linn. The juice mixture can be drink and also used to tie with clad on the forehead.

CONSERVATION STATUS: Very rarely found in the wild (As per the field survey), not yet been assessed for the IUCN Red List

202. Botanical Name: *Tridax procumbens* L (85368)

Local Name: Wagam sam

Family: Asteraceae

Locality: Sampalgre Tura

Parts Used: Leaves

Diseases: Toothache

Botanical Description: It is a small, straggling, procumbent, perennial herb. Leaves are accumbent, ovate-elliptic, acute, deeply incisco-dentate, hairy glandular. Flowers pale-yellow, solitary heads, hairy. Intracapitular cypsele oblong densely covered with silky hairs, black.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 43%

d) Light Intensity: 38910 lux (10X)

PHENOLOGY:

a) Flowering and Fruiting: Throughout the year

b) Place of Flower: Terminal

c) Silvicultural character: Shade bearer, grows mostly on moist and damp areas near the drains.

SOIL CHARACTERISTICS:

a) pH= 5.5 b) M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35%

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Psidium guajava* Linn, *Litchi chinensis* Linn, *Eryngium foetidum* Linn

USES: Leaves are pounded by adding charcoal and the paste has to be kept in the affected portion of the gum for about 5-10 minutes and then rinsed off with warm water.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

203. Botanical Name: *Tylophora tenuissima* Roxb (19167)

Local Name: Ku'sik parini sam (N)

Family: Asclepiadaceae

Locality: Sampalgre Tura

Parts Used: Leaves

Diseases: Mouth ulcer, Cancer

Botanical Description: A climber twinning shrub, usually pubescent and roots are fleshy. Leaves are elliptic-oblong or ovate, oblong-lanceolate, rounded at base, apiculate, thickly coriaceous. Flowers in branched racemes, brownish, in lateral cluster, sepals subulate, lobes 4, ovate, acute, corona process globose. Follice ovoid, glabrous, narrowed into a short beak. Seeds ovate.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 28°C

b) Location: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 46%

d) Light Intensity: 27400 lux (100X)

PHENOLOGY:

a) Leaf shedding: December-Jnauary

b) New Leaf: February-March

c) Flowering: September-October

d) Place of Flower: Axillary

e) Fruiting: October-December

f) Silvicultural character: Moderate light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35%

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: Climbs on *Gmelina arborea* Roxb.

USES: For mouth ulcer fresh leaves are chewed raw. For Cancer, infusion of leaves can be taken orally at the rate of 2-3 teaspoonfuls daily after food.

CONSERVATION STATUS: Very rare and cultivated (As per the field survey), not yet been assessed for the IUCN Red List

204. Botanical Name: *Urena lobata* L (82611)

Local Name: Samte

Family: Malvaceae

Locality: Sampalgre Tura

Diseases: Abdominal pain, Fever

Parts Used: Roots, Leaves

Botanical Description: It is an erect and stellate-pubescent to stellate-tomentose herb or undershrub. Leavesa are variable, angled or shallowly lobed, rounded or ovate. The flowers are pinkish and are borne solitary or in axillary cluster. The seeds are smooth, rounded on the back and wedge-shaped on the innerside.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: N-25˚31.444′ and E-090˚12.702′

c) Humidity: 45%

d) Light Intensity: 12300 lux (100X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Axillary

c) Silvicultural character: Light demander, propagated through seeds, and is grown as weeds in waste places and along the road-sides.

SOIL CHARACTERISTICS:

a) pH= 5.5 b)M.C%= 10.5 c)SOC=2.91% d) SOM=5.01% e) P=3.35%

f) K=84.3(μg g^{-1}) g) N=0.4% h) NH_4-N=2.4(μg g^{-1}) i) NO_3-N=2.5(μg g^{-1})

ASSOCIATES: *Ageratum conyzoides* Linn

USES: For abdominal pain and fever, infusion of roots and leaves can be taken orally at the rate of 1 cup daily after food.

CONSERVATION STATUS: Abundant in the wild, not yet been assessed for the IUCN Red List

205. Botanical Name: *Vitex negundo* Linn (39383)

Local Name: Nisinda

Family: Verbenaceae

Locality: Rongbakgre

Parts Used: Leaves

Diseases: Skin Diseases

Botanical Description: A sub-deciduous shrub/ an evergreen having thin grey bark. The branchlets and undersides of leaves or inflorescence are hoary with short grey pubescence. Leaves trifoliate, leaflets lanceolate, the lowest pair is smallest sessile or sub sessile. The flowers are borne in lateral cymes forming an elongated terminal thyrsus and often compound at the base. Seeds are obovate or oblong.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 33°C

b) Location: N-25˚30.236′ and E-090˚09.019′

c) Humidity: 63%

d) Light Intensity: 27600 lux (100X)

PHENOLOGY:

a) Leaf shedding: (An evergreen/sub-deciduous) November-January

b) New Leaf: February-March

c) Flowering: June-August

d) Place of Flower: Terminal

e) Fruiting: October-December

f) Silvicultural character: It grows well in full sunlight and even in shade areas. It is generally propagated by stem cuttings.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%= 21.6 c)SOC=4.5% d) SOM=7.75% e)P=4.48%

f) K=2120.7(µg g^{-1}) g) N=0.4% h) NH_4-N=3.2(µgg^{-1}) i) NO_3-N=1.47(µg g^{-1})

ASSOCIATES: *Calotropis gigantean* R.Br.

USES: Infusion of leaves can be applied externally for various skin irritation and skin rashes.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

206. Botanical Name: *Vitis repens* W & A (39451)

Local Name: Me'kemkem

Family: Vitaceae

Locality: Danekgre

Diseases: Puerperal fever

Parts Used: Barks, Leaves

Botanical Description: An herbaceous vine, usually glaucous, glabrous, tendrils bifurcate. Leaves simple, oblong, membranous, leaf blade cordate-oval, apex acute or acuminate. Inflorescence in umbelliform, terminal or leaf-opposed. Buds oval. Seed surface smooth, with sparse ribs, red to black coloured.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 30°C

b) Location: N-25.657911 and E-90.214900

c) Humidity: 62%

d) Light Intensity: 3720 lux (10X)

PHENOLOGY:

a) Leaf shedding: A perennial vine

b) Flowering: September-October

c) Place of Flower: Terminal/Axillary

d) Fruiting: November

e) Silvicultural character: Moderately light demander and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=10.2 c)SOC=4.0% d) SOM=6.89% e) P=3.37%

f) K=79.1(μg g^{-1}) g) N=0.4% h) NH_4-N=2.3(μg g^{-1}) i) NO_3-N=3.2(μg g^{-1})

ASSOCIATES: *Mikania micrantha* H.B.K

USES: Infusion of barks and leaves can be taken orally at the rate of 2-3 cups daily after food. (Extracted juice has to be mixed with *Costus specious* Koenig, *Zingiber officinale* Rosc and *Citrus limonum* L. The mixture has to be tied with clad on the forehead before drinking it in order to delay directly reaching to head)

CONSERVATION STATUS: Found in the wild, not yet been assessed for the IUCN Red List

207. Botanical Name: *Zanthoxylum budrunga* Roxb (22638)

Local Name: Me'cheng

Family: Rutaceae

Locality: Galwanggre

Parts Used: Leaves, Seeds, Roots

Diseases: Mumps, Diarrhoea, Dysentery, UTI, Weakness, Tooth-rash

Botanical Description: A medium-sized evergreen tree which is characterized by sharp thorns on either the stem or foliage. Leaves imparipinnate, accumbent, clustered at the tips of branchlets, estipulate, usually prickly, punctate, coriaceous, intercostae reticulate. Flowers polygamous, in terminal cymose panicles, peduncle and axis prickly. Fruit a capsule, tubercled, aromatic; seeds globose.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 32°C

b) Location: N-25.728667 and E-90.229943

c) Humidity: 63%

d) Light Intensity: 12510 lux (10X)

PHENOLOGY:

a) Flowering: August-September

b) Place of Flower: Terminal

c) Fruiting: September-October

f) Silvicultural character: Light demander, propagated through seeds, mostly ornithophilous in nature, susceptible to jhum fire and drought.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=16.80 c)SOC=4.07% d) SOM=7.02% e) P=4.0%

f) K=67.8(μg g^{-1}) g) N=0.30% h) NH_4-N=7.21(μg g^{-1}) i) NO_3-N=1.78 (μg g^{-1})

ASSOCIATES: *Toona ciliata* M Roem

USES: For diarrhoea and dysentery, seeds are to be crushed and mixed with water. The mixture can be taken orally or it can also be used as a massage service in toe and a finger nail. Pastes made from leaves are used to massage on the mumps (in that paste *Zingiber officinalis* L.and mustard oil is also added). For tooth-rash, root paste along with roots of Solanum melongena Linn and Solanum anguivi L. is used to insert in the affected portion of the tooth for 10-15 minutes. After that washed the mouth with warm water. For UTI, seeds are pounded along with roots of *Imperata cylindrica* L, *Solena heterophylla* Lour. and *Ziziphus mauritiana* Lamk. To that some amount of sugar is added. For weakness, decoction of seeds can be taken orally.

CONSERVATION STATUS: Not cultivated but preserved in their garden, not yet been assessed for the IUCN Red List

208. Botanical Name: *Zea mays* L (69885)

Local Name: Me'rakku

Family: Poaceae

Locality: Marakapara

Parts Used: Roots

Diseases: UTI

Botanical Description: It is a tall monoecious grass with erect, solid stem. The roots fibrous and stilt. Leaves distichous, long strap shaped with wavy margins and base with two auricles,

sheathing staminate tassel at the apex consisting of spikelets, which are two-flowered. Inflorescence in axillary, spikelets in many vertical rows.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 31°C

b) Location: N- 25.640912 and E-90.198976

c) Humidity: 56%

d) Light Intensity: 76100 lux (100X)

PHENOLOGY:

a) Leaf shedding: An annual herb

b) Flowering: June-July

c) Place of Flower: Axillary

d) Fruiting: August-September

f) Silvicultural character: Light demander, propagated through seeds and it regenerates naturally.

SOIL CHARACTERISTICS:

a) pH=5.4 b) M.C%=19.56 c)SOC=5.0% d) SOM=8.62% e) P=5.9 %

f) K=89.4(μg g^{-1}) g) N=0.45% h) NH_4-N=4.02(μg g^{-1}) i) NO_3-N=1.8(μg g^{-1})

ASSOCIATES: Cultivated in the jhum fields or home gardens.

USES: Roots are crushed along with *Phyllantus urinaria* Linn, *Aloe barbadensis* Mill, *Asparagus officinalis* Linn. The mixture has to be boiled with water and can be taken orally at the rate of 2-3 cups per day.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

209. Botanical Name: *Zebrine pendula* Schindl. (37397)

Local Name: Samgitchak/Matana jakalgipa sam

Family: Commelinaceae

Locality: Balachanda

Parts Used: Leaves

Diseases: Cuts

Botanical Description: This is an annual herb that has zebra-patterned leaves. Leaves are long, with an iridescent upper surface and a rich purple underside, two broad silver-coloured stripes on the outer edges, with the lower leaf surface presenting a deep uniform magenta.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 27°C

b) Location: 25°46'19.6"N 89°59'28.7"E

c) Humidity: 49%

d) Light Intensity: 3870 lux (10X)

PHENOLOGY:

a) Flowering and fruiting: Throughout the year

b) Place of Flower: Terminal

c) Silvicultural character: It can be propagated by cuttings; light demander and can tolerate dry air.

SOIL CHARACTERISTICS:

a) pH=3.8 b)M.C%=23.67 c)SOC=4.0% d) SOM=6.9% e) P=4.2%

f) K=2341.7($\mu g\ g^{-1}$) g) N=0.32% h) NH_4-N=5.84($\mu g\ g^{-1}$) i) NO_3-N=1.52($\mu g\ g^{-1}$)

ASSOCIATES: Planted on pot.

USES: Crushed fresh leaves can be applied on cuts.

CONSERVATION STATUS: Cultivated, not yet been assessed for the IUCN Red List

210. Botanical Name: *Ziziphus mauritiana* Lamk. (10790)

Local Name: Angkil

Family: Rhamnaceae

Locality: Chidekgre

Parts Used: Bark, Leaves

Diseases: Cough, Scorpion sting, Insect sting, Dysentery, Tuberculosis, UTI

Botanical Description: A small tree densely branched with zigzag branches, having a leaf and thorn at each angle. Leave are variable, ovoid, obliquely elliptic-ovate or sub orbicular, closely serulate. Leaves veins are nearly parallel. Flowers are inconspicuous. Seeds are enclosed within a woody endocarp.

MICRO-CLIMATIC CONDITION

a) Ambient temperature: 29°C

b) Location: N-25.6301108 and E-90.1868983

c) Humidity: 46%

d) Light Intensity: 32100 lux (100X)

PHENOLOGY:

a) Leaf shedding: November-December

b) New Leaf: January-February

c) Flowering: February

d) Place of Flower: Terminal/Axillary

e) Fruiting: February-March

f) Silvicultural character: Light demander, propagated through seeds and does not survive well under canopy of other trees.

SOIL CHARACTERISTICS:

a) pH=5.0 b)M.C%=16.8 c)SOC=4.05% d) SOM=6.98% e) P=5.9%

f) K=59.2(μg g^{-1}) g) N=0.3% h) NH_4-N=3.1(μg g^{-1}) i) NO_3-N=3.8(μg g^{-1})

ASSOCIATES: *Sida acuta* Linn, *Ageratum conyzoides* Linn

USES: For dysentery, tender leaves are crushed by adding little amount of salt and a juice is extracted from it through a clean and fine cloth. The mixture is to be taken at 2-3 teaspoonfuls daily after food. Decoction of bark is recommended against cough. For scorpion and insect sting, young leaves along with leaves of *Ficus hispida* L are pounded well. The mixture can be applied to the affected parts twice a day. For tuberculosis, decoction of bark along with *Piper longum* L and *Syzygium grande* (Wight) can be drink daily. For UTI, decoction of bark can be drink by adding some amounts of sugar.

CONSERVATION STATUS: Both cultivated and wild, not yet been assessed for the IUCN Red List.

5.2. TABLES AND FIGURES

Characteristics		Count	Percentage (%)	Characteristics		Count	Percentage (%)
Gender	Male	115	72	Occupation	Farmer	45	27
	Female	45	28		Herbal Healer	60	38
Age Groups	41-50	35	22		Birth attendant	25	16
	51-60	48	30		Government Servant	30	19
	61-70	29	17	Mode of Acquisition of Knowledge	Inheritance	125	78
	71-80	28	18		Proper training	35	22
	81-90	20	13				

Table 1: Demographic profile of the informants

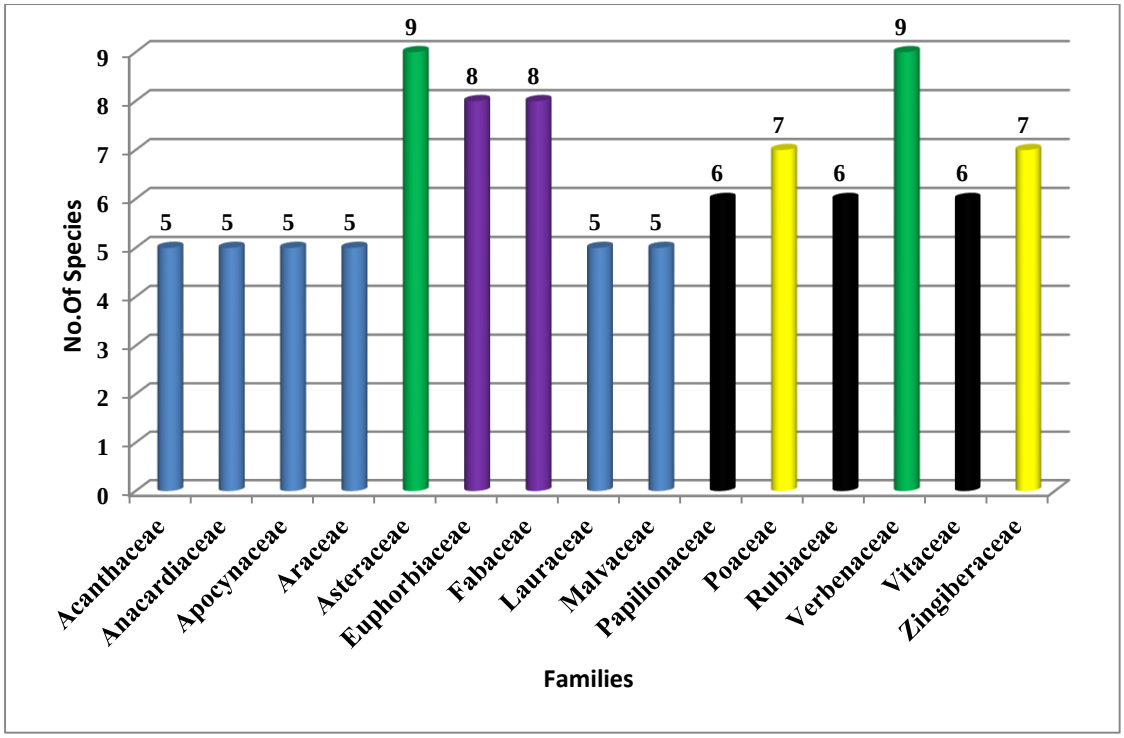

Fig. 1: Distribution of families for medicinal plants documented (Species having more than 4 families)

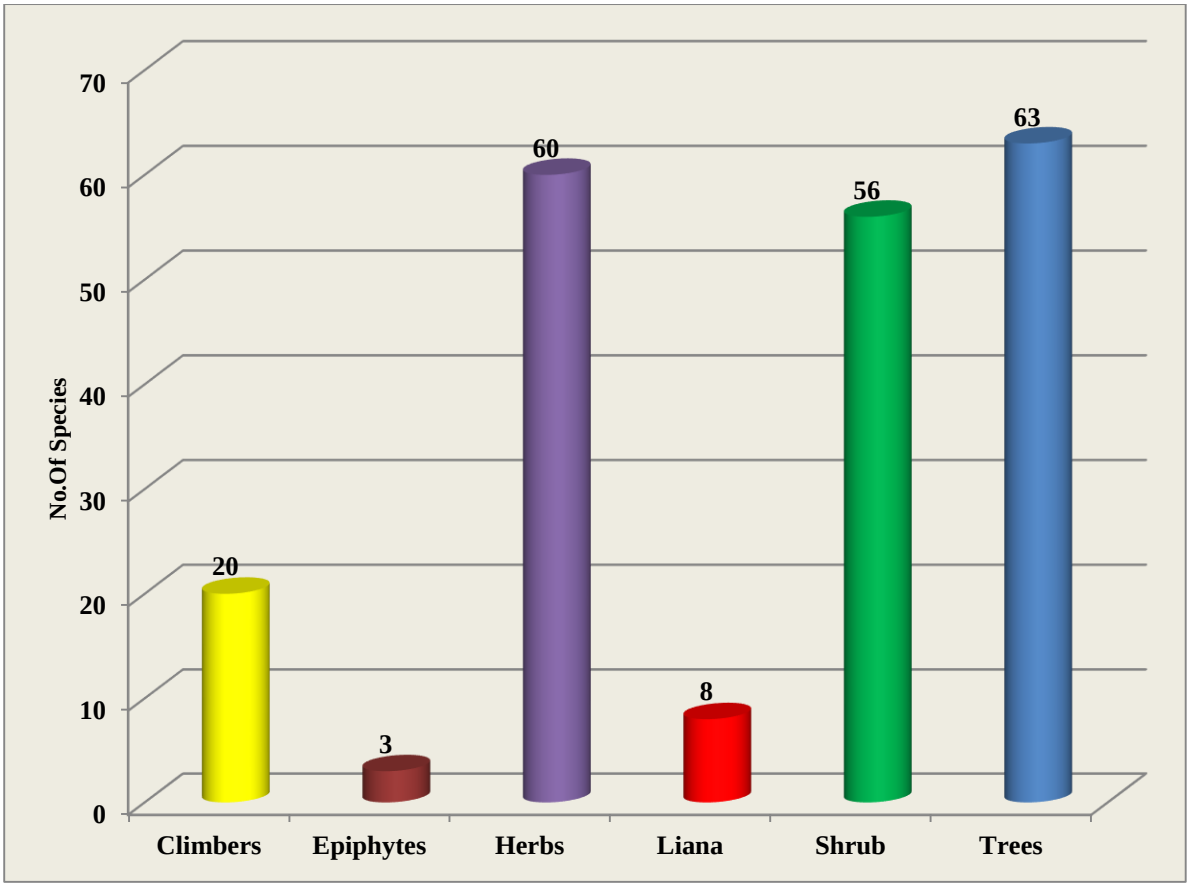

Fig 2. : Diversity of growth forms

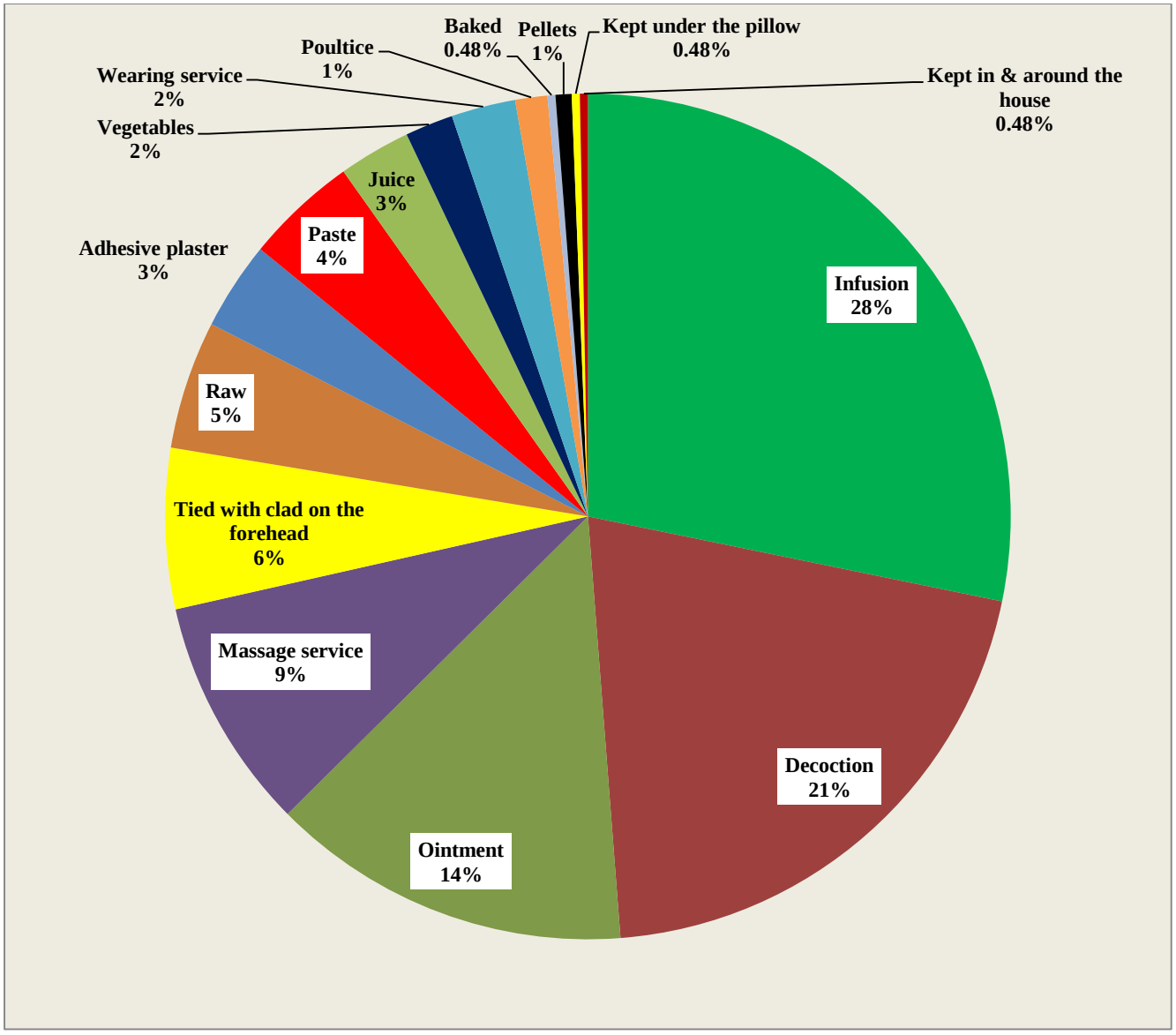

Fig. 3: Mode of utilization of plants

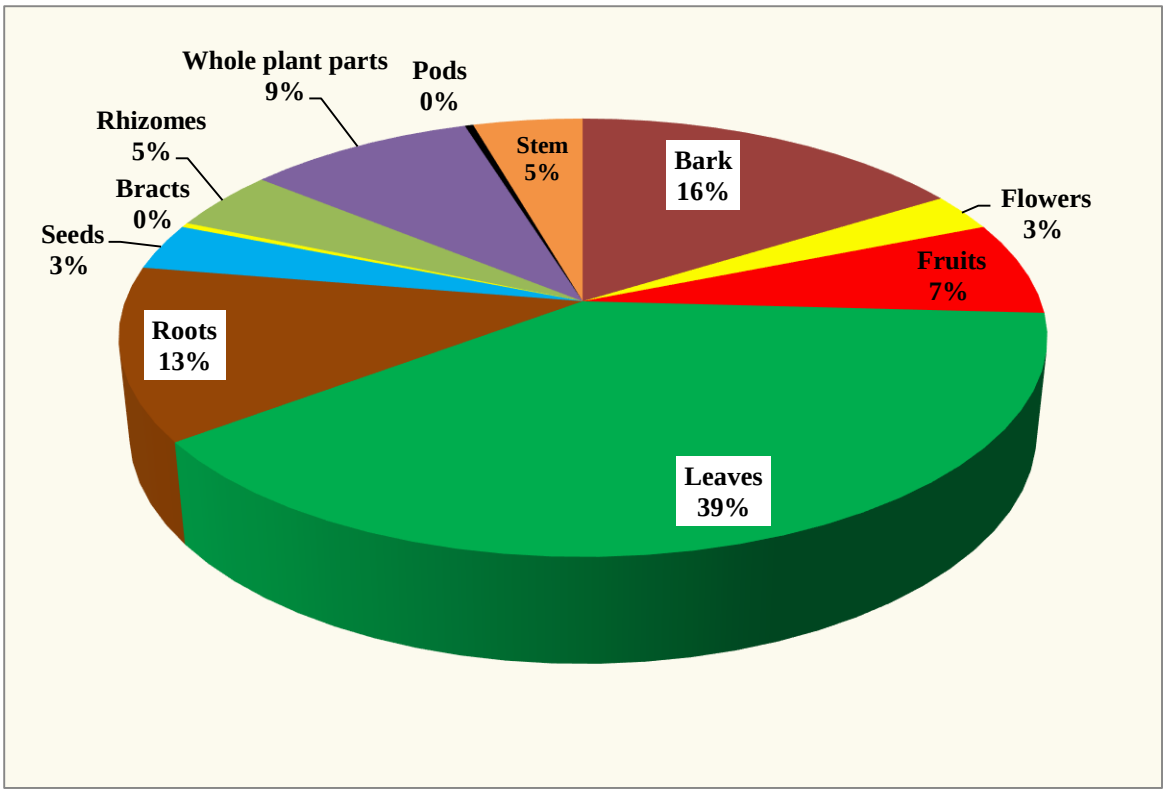

Fig. 4: Plant parts used

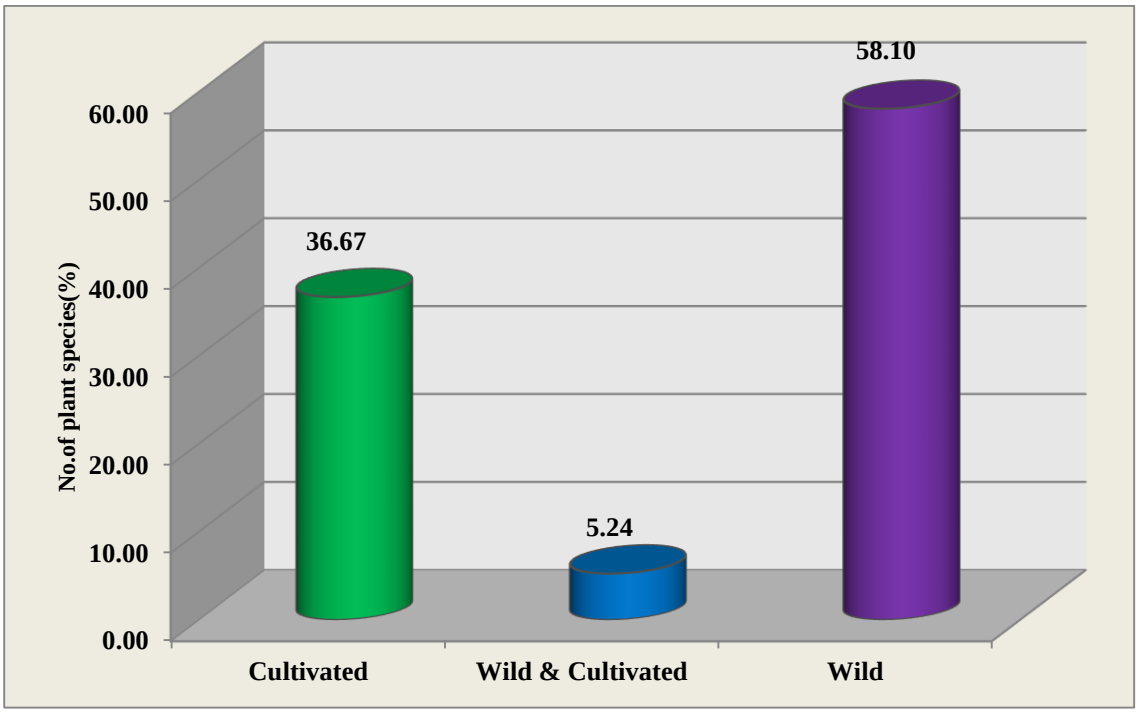

Fig. 5: Conservation status of medicinal plants documented

Table 2. Conservation Status under IUCN Red List

IUCN Category	No. of plant species	No. of Plant species (%)
Least Concern	6	2.86
Data Deficient	1	0.48
Endangered	1	0.48
Near Threatened	2	0.95
Not yet been assessed for the IUCN Red List	**198**	**94.29**
Vulnerable	2	0.95
Total	**210**	**100**

Source: IUCN 2017. The IUCN Red List of Threatened Species. Version 2017-1. <http://www.iucnredlist.org>. Downloaded on 12 May 2017

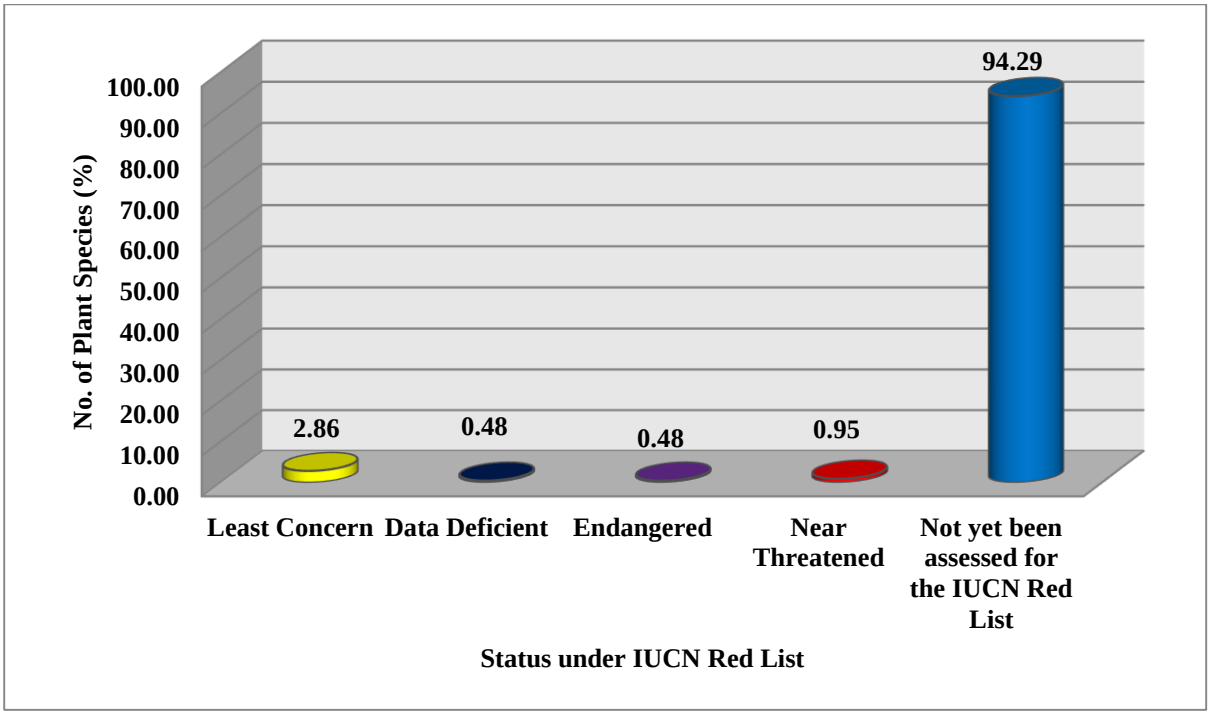

Fig.7: Conservation status under IUCN Red List

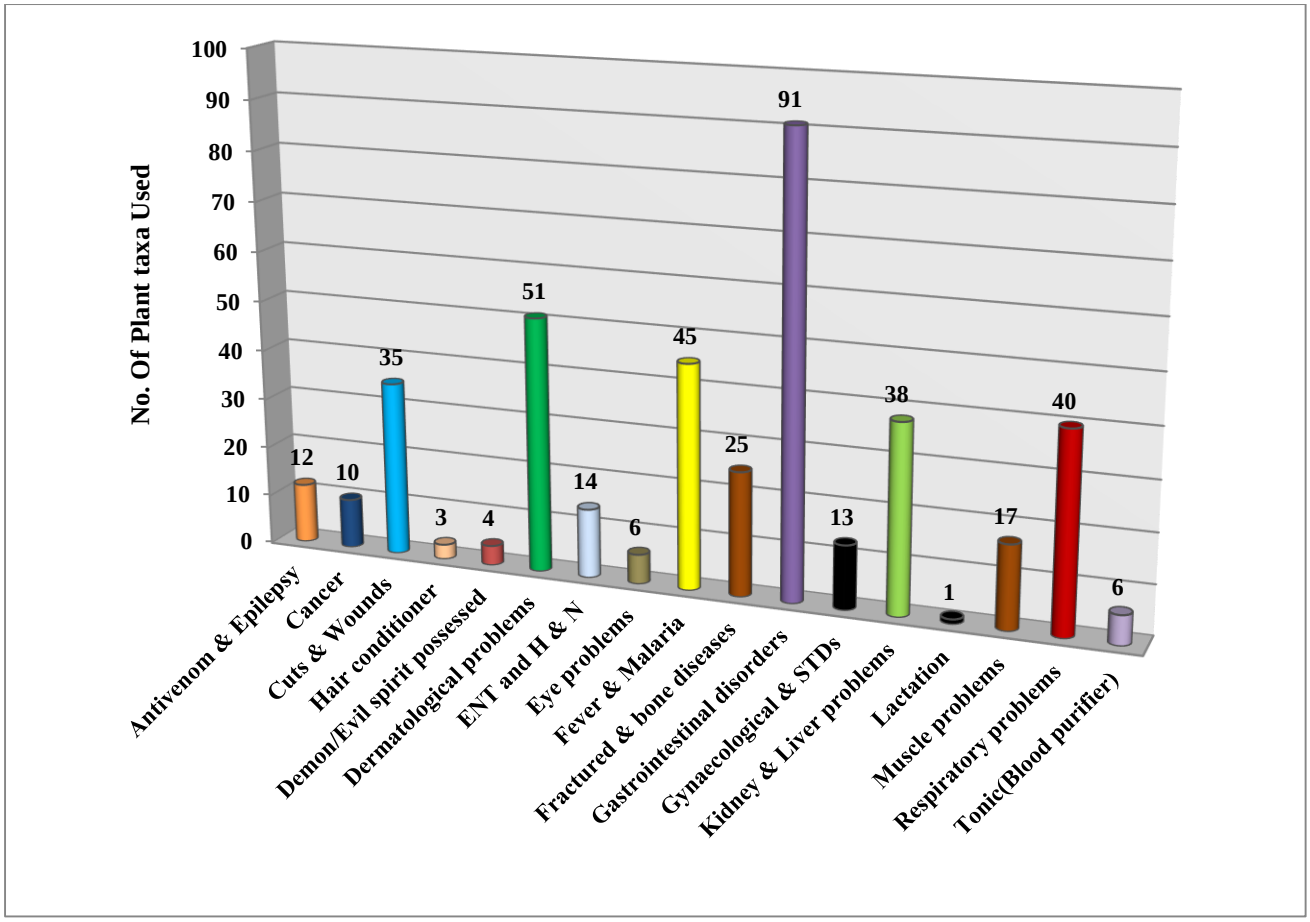

Fig. 7: No. of plants used to cure different ailments.

5.3. DISCUSSION:

A total of 210 medicinal plant species have been documented belonging to 177 genera and 84 families. Out of the total 210 plant species 174 belongs to dicotyledons and 36 were monocotyledons. In terms of demographic profiles (**Table.1**) a total of 160 individuals from 150 villages were interviewed who are identified with the help of local administrators and community leaders. Most of the respondents were male (72%) and mostly aged between 51-60 (30%). These informants were mostly herbal healers (38%) followed by farmers (27%), governments servants (19%) and birth attendants (19%). So, in many countries, 80% or more of the population living in rural areas are cared for by traditional practitioners and birth attendants (Bannerman RH, 1983).

The family (**Figure 1**) with highest number of medicinal plants collected belonging to Verbenaceae and Asteraceae (9), followed by Euphorbiaceae and Fabaceae (8), Zingiberaceae and Poaceae (7), Vitaceae, Rubiaceae and Papilionaceae (6). In terms of diversity of growth forms (**Figure 2**), trees (63) were recorded to have highly used potential followed by herbs (60), shrubs (56), climbers (20), lianas (8) and epiphytes with only 3 plant species which can cure extensive range of diseases. This may be due to the fact that these growth forms are available in almost all seasons as they are relatively drought resistant and are not affected by seasonal variations (Albuquerque, 2006). In terms of medicinal preparations (**Figure 3**), people mostly used as infusion (28%), followed by decoction (21%), as an ointment (14%), massage (9%), tied with clad on the forehead (6%), raw form (5%), paste form (4%), juice (3%), vegetables (2%), wearing service (2%), poultice and pellets (1%).

The study based on the plant parts used (**Figure 4**) reveals that leaves (39%) were most commonly used in the treatsment followed by bark (16%), roots (13%), whole plant

parts (9%), fruits (7%), stem and rhizomes (5%), flowers and seeds with 3%. From the study based on the plant parts used (**Figure 4**) shows that leaves (39%) were most commonly used in the treatment thereby it will directly affect the photosynthesis, interchange of gases, floral induction, transpiration and storage of water because leaves are the most important life giving part of the plant body. The parts used also reveals that bark (16%) were the second most commonly used which is important for survival and growth as they conserve water and protect living systems from extreme temperatures, storms and also protect from attacks by diseases, animals and insects. Bark also transports food and water throughout the tree. The plants which are extensively harvested for their bark often to be the most threatened by over-exploitation (Flatie *et al.*, 2009). And also it is found that roots (13%) were third most commonly used in the treatment which will directly affect diversity of those particular plant species. Large-scale harvest of roots can have a negative effect on the existence and survival of medicinal plants and multiplies effect on sustainable use.

Studies based on the conservation status of documented medicinal plants (**Figure 5**), shows that 58.10% were extracted from the wild, 36.67% were obtained from the cultivated and 5.24% were obtained from both wild and cultivated.

Study also screened for rare, endangered and threatened status (**Given in Table 2 and figure 6**) and verified by comparing with IUCN Red List Categories (Kerry and Gillet, 1997), IUCN Red List of Threatened species (2017) and Red Data Book of Indian Plants Volume I, II & III (Nayer and Sastry, 1987, 1988, 1990). The traditional knowledge of medicines is ruthlessly exploited in an unsystematic manner leading to most of the species making an entry into the Red Data Book list (IUCN 1997, 2004). Botanical Survey of India has also taken up an extensive survey of flowering plants in many states and many species have been listed in the Red Data Book indicating their threatened categories (threatened or endangered), due to severe biotic pressure on forest and vegetation, distraction of natural habitat due to

developmental activities inside the forest villages, unawareness of local people and extended land for agricultural practices every year.

In the present study, five (5) species are under IUCN Red List Category, one species (*Nepenthes khasiana* Hook f) is under endangered, two species (*Diospyros malabarica* (Desr.) Kostel and *Cycas pectinata* Buch.-Ham) are under vulnerable and two species (*Sonchus arvensis* L and *Myrica nagi* Thunb) are under Near-Threatened Category. Therefore, proper conservation and sustainable utilization of plants and scientific collection of plant parts are essential. In this regard, local people can play a very important role. Proper management of genetic resources and careful adoption of conservation strategies can only pave away towards the sustainability of local communities. Infrequent harvests of small amount of biomass may not have much effect on the individuals or populations but bulk removal of biomass from the wild is disastrous; even if the amount is small, frequent removal of biomass results into local extinctions (Bennet, 1992).

Conservation is the key factor for the researcher in terms of development of local environment whereas farmers give importance only to cultivation due to lack of awareness and their dependency on forests products for their livelihood. Thus, conservation of biodiversity along with ethnobioculture of indigenous people is imperative (Lalramnghinglova, 2003). The *in-situ* and ex-situ conservation in both community and Government reserve areas under West Garo Hills District especially like Nokrek Biosphere Reserve, Arbella Range and Tura Range are essential to save the genetic resources. These areas need proper conservation to pave ecological sustainability of local people.

Out of all the species the highest numbers of species were used in the treatment of gastrointestinal disorders i.e, 91 species (**Figure 7**), followed by dermatological problems with 51 species. The common sickness in the study areas include gastrointestinal disorders,

dermatological problems, fever and malaria, respiratory problems, kidney and liver problems, cuts and wounds, fractured and bone diseases, muscle problems, ENT and H and N, gynaecological and STDs, antivenom and epilepsy, cancer, eye problems and tonic.

Documented medicinal plants are essential for pharmacological investigations so that it may have the potential to discovery of new drug and better use of resources as well. The potential success of the ethnomedicine approach to drug discovery can no longer be questioned due to historical and current discoveries to test its power (Cox, 1994). This traditional system of treatment will become extinct if it is not preserved and developed with right unrest.

The soil sample (*in situ* condition) were analysed in order to get the general idea about the nutrient status and pH level of the site. Soil is a storehouse of plant food. It constantly undergoes chemical changes which makes this stored food available to plants. Micro nutrients like phosphorus are utilized by autotrophs for the process of photosynthesis. It will help in propagation and cultivation of ethnomedicinal plants.

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CHAPTER 6

SUMMARY AND CONCLUSION

A study on ethno-medicinal plants was conducted in predominantly Garo dominated area in West Garo Hills District of Meghalaya. Ethnomedicine of the Garos is a practice of medicine which is more ancient, widely practiced and equally efficacious at least in the eyes of its adherents. Medicinal plants plays a significant role in the livelihood of the people as the healers serve the population in the primary health care sector and reach them with life saving treatment in areas where communication is difficult. Garos believe that physical ailments are sometimes due to the wrath of one or the other malevolent spirits because they believed in the existence of a supreme being. In the olden days when a person suffers from skin diseases like leprosy family and relatives of that patient built separate houses in the jungle and have been abandoned by their families.

The study was based on the primary survey data and data collected through conducting personal interviews at different places, occasions and according to convenience by approaching the real practitioners or oja, people who use their knowledge of medicinal plants on their immediate families and who had some knowledge on the subjects handed down by their parents and who were being treated with local medicinal plants.

There were visible changes in the cultural and traditional practices of medicines may be due to direct impact on modernization. It is also observed that some of the healers can explain innumerable words to define many western diseases names which have entered in the traditional system of nomenclature of the Garos. This may be due to the incorporation and adoption of western medical ideas into the traditional system. Many of the traditionally recognized diseases have no exact modern equivalent names.

Garos have hardly any written records regarding the diseases and medicines as the informations were passed on to the next generations through mouth, though some preserve it in the form of writings at present. But there were evidences about the practice of Garo medicines by oja or local herbal practitioners even since before the European contact (Eliot J.1972).

Till today some of the Garo oja or practitioners dichotomize the world of illness into natural and supernatural. They have certain process of diagnosis of diseases and specific rituals in the identification of diseases and illness. It has been observed that some herbal practitioners of the rural area resort to various forms of divination both for diagnosis and treatment of various diseases more particularly those diseases believed to be caused by supernatural factors. They have been still practicing various indigenous methods for identification of health and the illness on the lines of the traditional way of thinking, dreams and beliefs. They also used non-biological materials such as kerosene, mustard oil and palm candy because their principle belief with the fact that it strives to treat the whole person rather than his isolated parts and thinks of him in relation to his emotional sphere and environment.

Due to the introduction of modern medical system it has given rise to medical pluralism. Therefore, they are exposed to multiple treatment options and have no qualms about submitting themselves to more than one form of therapy at the same time. They believe that certain diseases can be cured by traditional medicine and the others by modern medicine.

The healers claimed that their herbal remedies have a high potential to cure various diseases. It was also explored that some traditional healers have developed their own herbal garden for use of the fresh plants for the treatment and emergency. During the survey it was also observed that some of the traditional healers or oja do not want to disclose their knowledge fully because according to them sometimes their prescribed medicines will be

inappropriate for the treatment. Some healers do not considered themselves as practitioners and refuse to share their knowledge. This may be due to their lack of education or unaware of preservation and protection of traditional knowledge system.

The study also revealed that some of the illness provided by the villagers or practitioners is suggestive and descriptive. They identify the diseases and illness by interrogating the patients and his close kin. Local health practitioners or Oja were able to detect those patients having a high chance of cure with their treatment, and those with low chance.

In rural areas, traditional medicines are trusted and affordable because sometimes modern medicines or facilities are available when they needed the most. Traditional healers help in the local business because the money paid by the patients circulates in the village itself. Some people neither afford nor access to the modern health system. So, they have to rely upon the use of traditional medicines that are mainly of plant origin. Since there is a strong believes in the traditional system of medicine people still prefer to use herbal medicines prescribe by local healers because only a minority have regular access to reliable modern medical facilities (Bodekar G. 2001)

It is observed that during the rainy season most of the healers or practitioners collected leave for medicinal purposes instead of roots. They believed that leaves are stronger than roots during the rainy season. Some people said if they consume food cooked with alkali (traditionally processed water extracted from the ash) can neutralize acid formation in the stomach and thereby it checks any ulcer formation. The practitioners choose at least one family member to assist in practice.

Based on the data analysis and results it has been observed that based on the plant parts used (**Figure.4**) leaves (39%) were most commonly used in the treatment thereby it will

directly affect the photosynthesis, interchange of gases, floral induction, transpiration and storage of water because leaves are the most important life giving part of the plant body. Bark (23%) contributes second most commonly used which is important for survival and growth as they conserve water and protect living systems from extreme temperatures, storms and also protect from attacks by diseases, animals and insects. Bark also transports food and water throughout the tree. And also it is found that roots (13%) were third most commonly used in the treatment which will directly affect diversity of those particular plant species. Large-scale harvest of roots can have a negative effect on the existence and survival of medicinal plants and multiplies effect on sustainable use. So to conserve those medicinal plants it is important to be well informed of sustainable harvest of medicinal plant parts to the indigenous people of those areas. And also need to develop large-scale cultivation of medicinal plants so that it may provide income to the communities and preserve traditional knowledge and biodiversity as well.

In **Figure 7** which represents number of plants used to cure different ailments. In that figure 4% of plant taxa are used against demon/evil spirit possessed. Demon possession and infertility are typical health problems for which people preferentially seek herbal healers. Most of the time treatments were performed in the residence of individual practitioners. Regarding this information it is impossible to get their actual concepts because their answer is not sure but their beliefs and mythology are still prevalent and recommended some of the plants for use against the causation of disease.

It has been observed that there were still many witchcraft charges mostly in the rural areas. It seems vulnerable women, men and children, the elderly and mentally ill has been branded witches and condemn to death. Particular targets have been single women who inherit property or gain political influence.

Healers estimated the dosages by using teaspoons, tablespoons, cups and glasses. One cup is equivalent to 100 ml (Approximately) and one glass is equivalent to 200 ml (Approximately). The frequency of treatment depends on the diseases, healer to healer, the patient's age and the level of its severity.

Through this study, it will help to generate knowledge and create awareness to the people about the importance of medicinal plants. Likewise most of the population of most developing countries used traditional medicine (WHO, 2003).

According to traditional healers ignorance on the part of the people can also lead to the extinction of priceless herbs used for making medicines to cure various illnesses.

Systematic documentation of traditional medicine for protection purposes, regional and inter-regional information exchange and compilation of the requisite databases are essential. This will eliminate the problem of the grant of wrong patents since the Indian rights to that knowledge will be known to the examiner. It will also bring a better understanding to the local people regarding the utilization, conservation and practices of medicinal plants and also suggest a coordinated effort for strengthening the medicinal plant sector in the West Garo Hills District of Meghalaya. It could only be achieved by pooling conservation, biodiversity, healthcare system together by involving the concern Government, NGO's and research institutions through collaboration and integrated efforts. Thus by combing the ecological wisdom of the villagers with scientific knowledge may be achieved without causing environmental degradation. Launching awareness programmes on usefulness of plants will be a basic tool for conservation and sustainable utilization of medicinal plants which may help in the upliftment of the state economy and long-term security in the traditional healthcare system of Meghalaya particularly in West Garo Hills district.

RECOMMENDATIONS

- In terms of prevention, recommendations for personal and household hygiene may be useful targets for health promotion through intensive education programmes and/or broad environmental measures that can lead for the betterment of human society in future.
- Proper strategies should be made by the concern administration for providing technical and financial support for conservation and productivity improvement of these traditional practices for ensuring livelihood to the people.
- Promotion of Garo herbal hospital, medicinal plant cultivation, conservation and proper management need to be included in the projects aiming by the allied line departmental for providing necessary technical and financial support.
- State Government should take proper initiative for projects/schemes for the cultivation of important medicinal plants. So that it will ensure conservation of endemic and threatened species through the sustainable use.
- Due to excessive jhum cultivation, construction and exploitation in an unscientific manner many medicinal plant species are being depleted and this has result not only in an irreplaceable loss of the green heritage but will also jeopardize ecological stability. So, there is an urgent need to conserve and preserve before they are completely lost.
- Since there are no proper documentations, literatures, books, people are not much aware of important medicinal plants that prevails in the local area. So, more awareness programmes like seminars and symposium may be necessary to organise by the concern department. It will help to protect the biodiversity, bio-information and creativity of indigenous communities.

- The villagers may be well informed of sustainable harvest, scientific collection and mode of preparation for further conservation issues.
- Most of the time villagers/practitioners waited for the Government subsidies/schemes instead Government should give training/skills for the cultivars first and then implement the projects so that they will learned to cultivate and generate by themselves.
- To ensure sustainable utilization, there must be an obvious need of proper conservation strategy.

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DEPARTMENT: FORESTRY

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LIST OF PAPER PUBLICATIONS

1. Naldarine M. Marak and Lalnundanga. 2018 Ethno-medicinal plants used for the treatment of various skin disorders by the Garo Community in West Garo Hills District of Meghalaya. *Indian Forester,* 144 (9):869-874.
2. Naldarine M. Marak and Lalnundanga. 2018. "Enumeration of ethno-medicinal plants in Rongram block of West Garo Hills District, Meghalaya". *Science Vision,* 18 (1), 16-21. ISSN: 2229-6026.
3. Naldarine M. Marak and Lalnundanga.2017. "Indigenous knowledge on medicinal plants used for treating diarrhoea and dysentery among the Garo Community, Meghalaya (North east India)". *Journal of Natural Products and Plant Resources.* 7(4):29-36. ISSN:2231-3184
4. Naldarine M. Marak and Lalnundanga. 2017. "Documentation of ethno-medicinal plants used in the treatment of malaria, fever and headache by the Garo community of West Garo Hills District, Meghalaya". *American Journal of Pharmacy and Health Research.* Volume 5(10):33-47. ISSN: 2321-3647.

LIST OF PAPER PRESENTATIONS

1. Naldarine M. Marak and Lalnundanga. 2018. "Ethno-medicinal plants used for the kidney diseases and lung problems in West Garo Hills district, Meghalaya (Northeast India)". Paper presented at the National seminar on Himalayan Plant Diversity: Taxonomy, Conservation and Sustainable Utilization, 8^{th}-9^{th} March, 2018 at Botanical Survey of India, Shillong, Meghalaya.
2. Naldarine M. Marak and Lalnundanga. 2017. "Documentation of ethno-medicinal plants used in the treatment of malaria, fever and headache by the Garo community of West Garo Hills District, Meghalaya". Paper presented at International Conference on Natural Resources Management for Sustainable Development and Rural Livelihoods, 26^{th}-28 October, 2017 at Mizoram University.
3. Naldarine M. Marak and Lalnundanga. 2017. "Ethno-medicinal plants used for the treatment of various skin disorders by the Garo Community in West Garo

Hills District of Meghalaya, (North east India)". Paper presented at the "National Seminar on Biodiversity, Conservation and Utilization of Natural Resources with reference to Northeast India, 30th-31st March, 2017 at Mizoram University.

4. Naldarine M. Marak and Lalnundanga. 2016. "Indigenous knowledge on medicinal plants used for treating diarrhoea and dysentery among the Garo Community, Meghalaya (North east India)". Paper presented at International conference on Global Biodiversity, Climate Change and Sustainable Development, 15th-18th October, 2016 at Rajiv Gandhi University, Arunachal Pradesh, India.
5. Naldarine M. Marak and Lalnundanga. 2015. "Enumeration of ethno-medicinal plants in Rongram block of West Garo Hills District, Meghalaya". Paper presented at the National Symposium on ethno botanical importance in Northeast India, 13th-15th October, 2015 at Mizoram University, Aizawl.
6. Naldarine M. Marak and Kalidas Upadhyaya. 2013. "Home garden characteristics of Garo Community in West Garo Hills District of Meghalaya". Paper presented at UGC-sponsored national level "Interaction Program for Ph.D. Scholars" 23rd September-12th October, 2013 at Mizoram University

SEMINARS, CONFERENCES/WORKSHOPS ATTENDED

1. "The Sustainable Mountain Development Summit IV" held on 20th-22nd September, 2017 at Mizoram University, Mizoram.
2. "The Training and Awareness Programme on Protection of Plant Varieties and Farmers' rights on 28th -29th March, 2017 at Mizoram University, Mizoram.
3. "The International Symposium on Sustainable Horticulture" held on 24th-16th March, 2016 at Aizal Club, Mizoram.
4. "One day workshop on Environmental Impact Assessment at Aizal Club on 11th November, 2016, Mizoram.
5. The additional course on "Interaction program for Ph.D. scholars" UGC-sponsored additional course, held from 5th -25th November, 2014 at Mizoram University.

6. “One week workshop on applied statistics” UGC-sponsored short term course, held from 23rd -28th September, 2013 at Mizoram University
7. “Interaction programme for Ph.D. Scholars” UGC-sponsored 3 week’s programme held from 23rd September-12th October, 2013 at Mizoram University.

(MISS NALDARINE M. MARAK)

Date: / 04/2018

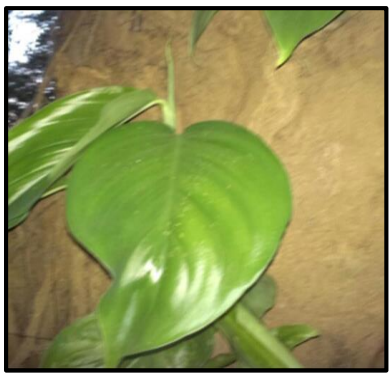
PHOTOPLATES

Acorus calamus L

Aeschynanthes parasitica Wall

Aesculus punduana Wall

Ageratum conyzoides Linn



Aglaonema hookerianum Schott

Albizzia lebbeck Benth

Alocasia fornicate Roxb.

Aloe barbadensis Mill

Ananus cosmosus L

Antidesma diandrum Roth

Ardisia solanacea Roxb.

Aristolochia cathcartii Hook.F

Artimisia vulgaris Linn

Asparagus officinalis Willd.

Averrhoa carambolea Linn

Bauhinia variegate L

Buetnerria pilosa Roxb.

Butea monosperma Taub.

Bryophyllum pinnatum (Lam)

Cajanus cajan Linn

Callicarpa arborea Roxb.

Calotropis gigantean R.Br.

Canna indica L

Carica papaya Linn

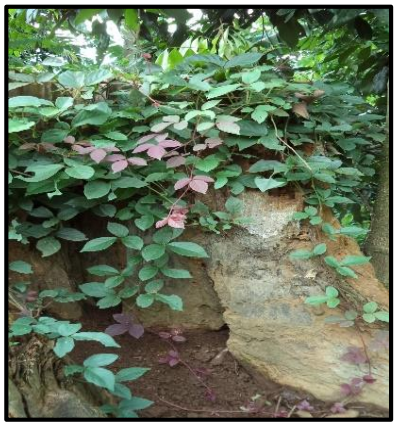
Carum khasianum C.B.Clarke

Carex cracimeta L

Cassia alata Linn

Cassia occidentalis Linn

Cassia tora L



Cayratia japonica (Thunb)

Centella asiatica Linn

Cissampelos pareira Linn

Chromolaena odorata King

Cissus quadrangularis L

Citrus maxima L

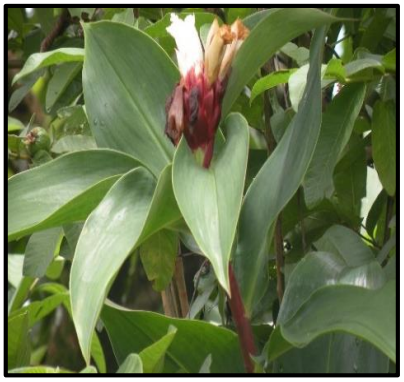
Clerodendrum coolebrookianum Walp.

Clerodendrum hastatum Linn

Clerodendrum squamatum Wall

Clerodendrum wallichii Wall

Clitoria ternatea Linn



Costus specious Koenig Smith

Crateava nurvala Buch-Ham

Crinum defixum L

Crotalaria tetragona Roxb.

Croton caudatus Geisel

Curcuma amada Roxb

Cycas pectinata Buch-Ham

Cyperus rotundus L

Cympogon citratus Stapt

Cynodon dactylon (L.) Pers

Datura stramonium Linn

Derris robusta (Rox.ex.D.C)

Desmodium gyroides D.C

Dillenia indica Linn

Duabanga grandiflora Roxb.

Euphorbia cotinifolia L

Euphorbia hirta Linn

Elephantophus scaber Linn

Eryngium foetidum Linn

Erythrina stricta Roxb.

Euphorbia neriifolia L

Ficus elastic Roxb.

Ficus hispida Linn

Garcinia kydia Roxb.

Gossypium herbaceum Linn

Grewia microcos Linn

Gymnopetalum cochinensis Kurz

Hedyotis scandens D.Don

Hemidesmus indicus Br.

Hymenodictyon excelsum Wall

Hypoestes triflora Roem & She

Hyptis suaveolens Poit

Imperata cylindrical (L)

Jatropa curcas Linn

Jatropa gossypifolia L

Justicia gendarussa Linn

Kaempferia parviflora Wall.ex.Baker

Kaempferia galangal L

Kaempferia rotunda L

Leucus indica (L)

Ludwigia hyssopifolia G.Don

Melastoma malabathricum Linn

Molinerica recurvate Colla

Momordica charantia L

Monochoria hastaefolia Prest

Morinda angustifolia Roxb.

Mucuna bracteata Linn

Murdania elata Brucken

Mussaendra roxburghii H.K.F

Myrica nagi Thunb

Nephenthes khasiana Hook.f

Neocinnamomum caudatum Nees

Nicotiana tabacum L

Oldlandia diffusa Roxb.

Oroxylum indicum Vent

Oxalis corniculata Linn

Oxyspora paniculata D.C

Pandanus odoratissimus Roxb.

Passiflora qudrangularis L

Peperomia pellucida H.K.F

Phlogacanthus thyrsiflorus Nees

Phyllanthus urinaria Linn

Piper longum Linn

Plumeria acuminate AIT

Portulaca oleraceae L

Pothos cathcartii Schott

Psidium guajava Linn

Punica granatum Linn

Rauvolfia serpentine (L.)

Rhododendron arboretum SM

Rhus semialata Miller

Rhus succedanea Linn

Rhynchotecum ellipticum (Dietr.)

Schefflera venulosa Harms

Schima wallichii Kurtz

Schumannianthus dichotomus Gagnep

Scoparia dulcis L

Sesamum indicum D.C

Sida cordifolia Linn

Solanum anguivi L

Solanum melongena Linn

Solena heterophylla Lour

Sonchus arvensis L

Spilanthes acmella Non (L.) Murr

Stephania japonica (Thunb.) Miers

Stereospernum tetragonum D.C

Swertia chirata Ham

Tagetus erecta (Linn)

Terminalia chebula Retz

Tetrastigma lanceolarium (Roxb.)

Tetrastigma obovatum Laws Gagnep

Tetrastigma planicaulis H.K.F

Thunbergia grandiflora Roxb.

Thysanolaena maxima Roxb.

Tinospora cordifolia (Willd.)

Tricosanthes multiloba CB Clarke

Tradescantia apathaceae SW

Tridax procumbens L

Tylophora tenuissima Roxb

Urena lobata L

Vitex negundo Linn

Vitis repens W & A

Zanthoxylum budrunga Roxb.

Zebrine pendula Schindl.

Demonstration on uses, cultivation and conservation

Demonstration on how to harvest medicinal plants from their cultivation and preservation of dried medicines for future use.

Garo Herbal Hospital at Rongbakgre West Garo Hills Meghalaya


Local medicine store


Preparation of herbal medicine by the practitioner

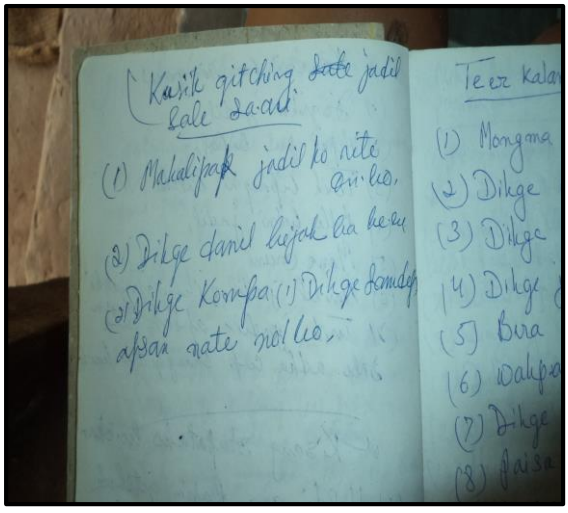

Treatment of jaundice patient at Samachik Sikman (Rongbakgre)

Collection of specimen

Traditional *chulha* for decoction

Decoction made at bamboo tube

Palm candy



Available records from practitioners

Potted Zingiberaceae plants for identification in hostel

ABSTRACT

Since times immemorial, our ancestors have made use of plants in the treatment of various ailments and diseases and are still utilized in the modern world because their toxicity factors appears to have lower side effects. Ethnomedicine of the Garos is a type of medicine which is more widely practiced and equally efficacious at least in the eyes of its adherents. Most of the herbal healers have no written record but memory to trust for the preservation of their traditional practices. It has been handed down by word of mouth from one generation to the next, though some preserve it in the form of writings at present. Traditional beliefs concerning supernatural/witchcraft/evil spirit possessed causation of diseases are still prevalent in the present day. Ethno-medicines and medicinal plant of Meghalaya have received some attention of researcher (Rao, 1981, Dolui *et al*., 2004).

The use of traditional medicines and medicinal plants in most developing countries as therapeutic agents for the maintenance of good health has been widely observed (UNESCO, 1996). Native categories and explanatory models of illness, including aetiologies, symptoms, courses of sickness, and treatments are investigated (Kleinman, 1978; Kleinman, 1980). People those who live in the rural areas still rely on herbal medicines for their basic health care needs. Since primitive man does have some knowledge as yet unknown to us, there is no response to suppose that man in primitive society possesses nothing more than a very limited intuition about the

properties of plants. It therefore, behoves us to push forward, along with ethnobotanical investigation, studies on the flora in general (Schultz 1962, Lalnundanga *et al*., 1997, Lalnundanga 2000, Lalramnginglova & Jha, 1999).

Meghalaya is well known for the existence of large varieties of plant species. Many of which have medicinal properties (Haridasan and Rao, 1985, 1987). More than 200 forest plants have been used by the people of Meghalaya for food, medicines, dye and for ornamental and constructive purpose (Tiwari & Tynsong, 2004).

Following are the methodologies adopted for the present study:

Collection of information through local literature: The information was collected in different ways i.e., through ancient literatures, traditional notes of local practitioners, plant collectors and record in the state department. The literature pertains to any kind of literature, published and unpublished research papers, journals, newspapers, relevant official reports and other publication from government and non-government sources which can be found to give information on the traditional use of medicinal plants. The local literatures which have collected and consulted for this particular work are as follows: *Handbook on Local Health Traditions in Meghalaya* (Rynjah P.S.1995); *Journal of Garo Medicines* (Samachik) ,Dr.Vidyanist Marak .2008; *Samachik ni Ki'tap* (Therapheutical Notes on Sam A'chik or Traditional Herbal Garo Medicines) , Dr.Vidhyanist Marak. 2006.

Conducting personal or group interviews: The study was based on the primary survey and data collected through conducting personal interviews at different places, occasions and according to convenience. The chief informants in these interviews were real practitioners or oja, people who use their knowledge of medicinal plants on their immediate families and knowledgeable persons of men, women, young folks who had some knowledge on the subjects handed down by their parents and who were being treated with medicinal plants.

A total of 160 individuals from 150 villages were interviewed who were identified with the help of local administrators and community leaders. Some homoeopathists and faith-healers were also interviewed.

Ethnobotanical field work: During the fieldwork, primary information were collected from real practitioners or oja or local medicine men, authentication of voucher specimens and preservation of plant samples for proper identification were also done.

Collection and Processing of Plant Samples: The principle guidelines followed in plant collections and herbarium techniques were given by Jain and Rao (1977); Womersley (1981); Mehrotra (1989); Martin (1995) and Cotton (1996).

The specimens were arranged in their cases according to the well known system of classification (Bentham and Hooker, 1883).

Plant species collected from the area has been identified with the help of available floras such as: (i) Flora of British India (Hooker 1872-1897), (ii) Indian

Trees (Brandis, 1906), (iii) Flora of Assam (Kanjilal *et al.*, 1934-1940), (iv) Flora of Tripura State (Deb 1981 & 1983), (v) Forest Flora of Meghalaya (Haridasan & Rao, 1985 & 1987).

In addition to these, for confirmation and to identify the unidentified species, plant specimens were taken to Botanical Survey of India (Eastern Circle) Shillong, Central National Herbaria (CNH) Howrah, Kolkata. The collected plant specimens were preserved in the form of a voucher specimen in the Herbarium of Mizoram University, Aizawl in life forms or in the Botanical Garden of Mizoram University, Aizawl.

The collected samples were air dried. Here care has been taken to prevent any contamination. The air dried soil is passed through 2mm mesh screen for analysis. Before sieving, the clods were crushed in wooden pestle and mortar so as to pass it through sieves of finer mesh size (0.2-0.5mm) (Ghost *et al.*, 1983).

The pH of the soil sample has been measured by the methods of soil to water ratio of 1:2 (Ghost *et al.*, 1983). For the estimation of Soil Organic Carbon the method given by Walkley and Black (1934) is adopted. For the estimation of available phosphorus Olsen's method (Olsen *et al.*, 1954) is followed. The estimation of K (Potassium) of water soluble forms are determined with the help of Flame Photometer (Ghosh *et al.*, 1983). The total nitrogen was determined by Kjeldahl method which involves three steps as digestion, distillation and titration. Ammoniacal-Nitrogen (NH_4-N) was estimated by Indophenol Blue Method. Nitrate-Nitrogen (NO_3-N) was estimated by Phenol disulphonic acid Method.

In the course of study the measured latitudes and longitudes were used to delineate on the map using the ARCVIEW software.

The study is an attempt to accomplish the following objectives:

1) **To survey and document important medicinal plants in West Garo Hills District of Meghalaya.**
2) **To determine the soil characteristics and micro-environmental factors in association with distribution of medicinal plants.**
3) **To study conservation status of selected medicinal plants.**

The thesis contains five chapters, discussion, conclusions and references

Chapter 1. It deals with Introduction, definition and concept, importance, impact on Garo Hills, research on indigenous related to ethno medicine, profile of the Garos in relation to ethno medicine, scope of the study, objectives and references.

Chapter 2: It deals with the Review of Literature

Chapter 3: It deals with the study area, geographical location, rainfall and climate, soils, vegetation, socio economic condition and references.

Chapter 4: It deals with the materials and methods, collection of information through local literature, conducting personal or group interviews, ethno botanical fieldwork, conservation and processing of plant samples, collection and preparation of herbarium, identification and preservation of plant samples, soil analysis, preparation of map, micro-climatic condition and references.

Chapter 5: It deals with the results and discussions, description of plants, presentation of data, tables and figures, which is the most important part of the present study.

Chapter 5: It deals with summary and conclusion, recommendations and references.

A research on ethno-medicinal plants was carried out in predominantly Garo dominated area in West Garo Hills District of Meghalaya during the year 2014-2018. The findings of the present study are summarizes below:

1) **A total of 210 medicinal plant species have been documented belonging to 177 genera and 84 families.**
2) **Out of the total 210 plant species 174 belongs to dicotyledons and 36 were monocotyledons.**
3) **In terms of demographic profiles most of the respondents were male (72%) and mostly aged between 51-60 (30%).**
4) **The informants were mostly herbal healers (38%) followed by farmers (27%), governments servants (19%) and birth attendants (19%).**
5) **The family with highest number of medicinal plants collected belonging to Verbenaceae and Asteraceae (9), followed by Euphorbiaceae and Fabaceae (8), Zingiberaceae and Poaceae (7), Vitaceae, Rubiaceae and Papilionaceae (6).**
6) **In terms of diversity of growth forms, trees (63) were recorded to have highly used potential followed by herbs (60), shrubs (56),**

climbers (20), lianas (8) and epiphytes with only 3 plant species which can cure extensive range of diseases.

7) **In terms of medicinal preparations, people mostly used as infusion (28%), followed by decoction (21%), as an ointment (14%), massage (9%), tied with clad on the forehead (6%), raw form (5%), paste form (4%), juice (3%), vegetables (2%), wearing service (2%), poultice and pellets (1%).**

8) **Healers estimated the dosages by using teaspoons, tablespoons, cups and glasses.**

9) **One cup is equivalent to 100 ml (Approximately) and one glass is equivalent to 200 ml (Approximately).**

10) **The frequency of treatment depends on the diseases, healer to healer, the patient's age and the level of its severity.**

11) **The study based on the plant parts used reveals that leaves (39%) were most commonly used in the treatment followed by bark (16%), roots (13%), whole plant parts (9%), fruits (7%), stem and rhizomes (5%), flowers and seeds with 3%.**

12) **From the study based on the plant parts used shows that leaves (39%) were most commonly used in the treatment thereby it will directly affect the photosynthesis, interchange of gases, floral induction, transpiration and storage of water because leaves are the most important life giving part of the plant body.**

13) The parts used also reveals that bark (16%) were the second most commonly used which is important for survival and growth as they conserve water and protect living systems from extreme temperatures, storms and also protect from attacks by diseases, animals and insects. Bark also transports food and water throughout the tree.

14) And also it is found that roots (13%) were third most commonly used in the treatment which will directly affect diversity of those particular plant species. Large-scale harvest of roots can have a negative effect on the existence and survival of medicinal plants and multiplies effect on sustainable use.

15) Studies based on the conservation status of documented medicinal plants shows that 58.10% were extracted from the wild, 36.67% were obtained from the cultivated and 5.24% were obtained from both wild and cultivated.

16) In the present study, five (5) species are under IUCN Red List Category, one species (*Nepenthes khasiana* Hook f) is under endangered, two species (*Diospyros embryopteris* Pers and *Cycas pectinata* Buch-Ham) are under vulnerable and two species (*Sonchus arvensis* L and *Myrica nagi* Thunb) are under Near-Threatened Category.

17) **Out of all the species the highest numbers of species were used in the treatment of gastrointestinal disorders i.e, 91 species followed by dermatological problems with 51 species.**

18) **The common sickness in the study areas include gastrointestinal disorders, dermatological problems, fever and malaria, respiratory problems, kidney and liver problems, cuts and wounds, fractured and bone diseases, muscle problems, ENT and H and N, gynaecological and STDs, antivenom and epilepsy, cancer, eye problems and tonic.**

19) **The soil sample (*in situ* condition) were analysed in order to get the general idea about the nutrient status and pH level of the site. Micro nutrients like phosphorus are utilized by autotrophs for the process of photosynthesis. It will help in propagation and cultivation of ethno medicinal plants.**

20) **Demon possession and infertility are typical health problems for which people preferentially seek herbal healers. Most of the time treatments were performed in the residence of individual practitioners.**

Through this study, it will help to generate knowledge and create awareness to the people about the importance of medicinal plants. Likewise most of the population of most developing countries used traditional medicine (WHO, 2003).

Infrequent harvests of small amount of biomass may not have much effect on the individuals or populations but bulk removal of biomass from the wild is disastrous; even if the amount is small, frequent removal of biomass results into local extinctions (Bennet, 1992).

The plants which are extensively harvested for their bark often to be the most threatened by over-exploitation (Flatie *et al.*, 2009).

Conservation is the key factor for the researcher in terms of development of local environment whereas farmers give importance only to cultivation due to lack of awareness and their dependency on forests products for their livelihood. Thus, conservation of biodiversity along with ethnobioculture of indigenous people is imperative (Lalramnghinglova, 2003).

The *in-situ* and ex-situ conservation in both community and Government reserve areas under West Garo Hills District especially like Nokrek Biosphere Reserve, Arbella Range and Tura Range are essential to save the genetic resources. These areas need proper conservation to pave ecological sustainability of local people.

Documented medicinal plants are essential for pharmacological investigations so that it may have the potential to discovery of new drug and better use of resources as well. The potential success of the ethno medicine approach to drug discovery can no longer be questioned due to historical and current discoveries to test its power (Cox, 1994).

Medicinal plants play an important role in the livelihood of the people of West Garo Hills as they provide a source of cash income and are generally used at the household level in a self-help mode. Traditional health-care system is an age-old performed since ancient time by the people in the West Garo hills district of Meghalaya. Different plant species were ethno-biologically used by the local people to overcome the complication of various ailments which are dreadful disease of the state.

The state possesses a variety of plant wealth that is yet to be tapped on commercial scale, which in turn could accrue benefits to the farmers too. In fact, Meghalaya has a great potential for the plantation of medicinal plants because of ideal agro-climatic condition and suitable soil.

The impact of the outside world on the Garo medicine started before 1789 when Eliot, the first European who set his foot on the Garo habitat to fall upon even much before the extension of the British administration to the Garo Hills in 1867, though presumably after the commencement of the British regime in the Indian sub-continent in 1757 (Playfair 1909).

Visible changes in the cultural and traditional practices of medicines are observed due to the direct impact on urbanization. It is also observed here that some of the herbal healers can produce innumerable words to define many western diseases names and labelled by distinctive linguistic terms which have entered in the

traditional system of nomenclature of the Garos. This may be due to the incorporation and adoption of western medical ideas into the traditional system.

Garos have hardly any written records regarding the diseases and medicines as the informations were passed on to the next generations through mouth, though some preserve it in the form of writings at present. But there were evidences about the practice of Garo medicines by oja or local herbal practitioners even since before the European contact (Eliot J.1972).

Some of the changes in the material part of the Garo medicine have not only been mere straight forward borrowing but rather adaptations of the knowledge of the neighbouring civilized communities who have entered the land in large numbers in all kinds of economic pursuits during the colonial and post-colonial periods (Pratibha M.2013).

Early studies on indigenous medical systems were mostly limited in focus on witchcraft and illness caused by super-natural forces, and on specialists such as folk healers, and shamans (Fortune, 1932; Evans-Pritchard, 1937; Turner, 1967; Fabrega and Silver, 1973).

It has been observed that some herbal practitioners of the rural area resort to various forms of divination both for diagnosis and treatment of various diseases more particularly those diseases believed to be caused by supernatural factors. They have been still practicing various indigenous methods for identification of health and the illness on the lines of the traditional way of thinking, dreams and beliefs.

They also used non-biological materials such as kerosene, mustard oil and palm candy because their principle belief with the fact that it strives to treat the whole person rather than his isolated parts and thinks of him in relation to his emotional sphere and environment.

Systematic documentation of traditional medicine for protection purposes, regional and inter-regional information exchange and compilation of the requisite databases are essential. This will eliminate the problem of the grant of wrong patents since the Indian rights to that knowledge will be known to the examiner. It will also bring a better understanding to the local people regarding the utilization, conservation and practices of medicinal plants and also suggest a coordinated effort for strengthening the medicinal plant sector in the West Garo Hills District of Meghalaya. It could only be achieved by pooling conservation, biodiversity, healthcare system together by involving the concern Government, NGO's and research institutions through collaboration and integrated efforts. Thus, by combing the ecological wisdom of the villagers with scientific knowledge may be achieved without causing environmental degradation. Launching awareness programmes on usefulness of plants will be a basic tool for conservation and sustainable utilization of medicinal plants which may help in the upliftment of the state economy and long-term security in the traditional healthcare system of Meghalaya particularly in West Garo Hills district.

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