

4. RESULTS

The results have been presented below in the order (4.1) Different traditional medicinal plants to cure diseases or health problems, (4.2) Plants used in the formation of food and beverages, (4.3) Plants used as material culture useful in various purpose of human life, (4.4) Socio-religious aspects of plants, (4.5) Utilities/potentials of plants useful in various aspects as used in folk-proverbs and folk-songs (4.6) Cultivated plants, (4.7) Wild plants and (4.8) Taxonomical treatment of Plants.

4.1. Different traditional medicinal plants to cure diseases or health problems

***Acacia farnesiana* (L.) Willd. (Fabaceae); Chigonglei**

The plant is believed to be medicinal; a spine of *Acacia farnesiana* (L.) Willd. is used to pierce the ear lobe and the right nasal edge. Crushed bark is applied as poultice over abcess (Khatun *et al.*, 2013).

***Allium ramosum* L. Syn: *Allium odorum* L. (Liliaceae); Maroi nakuppi**

The leaves are boiled with one litre of water by putting little sugar candy. The boiled decoction is given to drink 100 ml approx. to a patient till the kidney stone is broken into pieces. It is advised to eat the plant as salad or raw.

Leaf decoction is taken for urinary disorder. Leaf paste is applied on head for improving hair growth (Guha *et al.*, 2018).

***Alocasia microrhizos* (L.) G.Don. Syn: *Alocasia indica* (Lour.) Schott. (Araceae); Pan**

The fresh juice of petiole is applied on the affected body part of bee or insect bite. Leaves and petiole are cooked as vegetable (Pagag and Borthakur, 2012). Petiole is used against ring worm, leprosy and insect bite (Sanglakpam *et al.*, 2012). Decoction of petiole is given in anaemia, also used after child birth (Das and Tongbram, 2014).

***Areca catechu* L (Arecaceae); Kwa**

The fermented nut is kept inside the mouth. It is chewed slowly to derive liquid out of the seed. The liquid is slowly gulped to cure tonsillitis.

The nut is used as nerve tonic (Sidhu and Kaur, 2007). The nut is used for the treatment of diabetes (Khan and Yadava, 2010). Nut is used for the treatment of diabetes (Devi, 2011). The plant parts root, leaf sheath and fruit are used for the treatment of Marasmus, whooping cough and asthma, chronic dysentery, epistaxis, impotency, constipation and intestinal worms (Borborah *et al.*, 2014).

***Averrhoa carambola* L (Averrhoaceae); Heinoujom**

The extracted juice of the fruit is mixed with silver element (used in fusing gold chain). A patient of kidney stone drinks it 50 ml approx. daily for five days or till the stone is broken into pieces.

The bark is used for the treatment of diabetes (Khan and Yadava, 2010). Ripe fruits are used to cure kidney stones (Ahmed and Singh, 2011). Ripe fruit is boiled for the treatment of kidney stone case and the unripe fruit is given in bleeding piles (Das and Tongbram, 2014).

***Azadirachta indica* A. Juss. (Meliaceae); Neem**

The boiled decoction of leaves is used to wash domesticated cattles. It is believed to be germicidal.

Leaves are used for the treatment of diabetes (Khan and Yadava, 2010). Leaves and seeds are used for the treatment of diabetes (Devi, 2011). Leaves and barks are used as medicine to treat the diseases boils, ulcers and skin infection (Salam *et al.*, 2009; Sanglakpam *et al.*, 2012). The plant is used for the treatment of stomach disorder and appetite problem (Biswakarma *et al.*, 2017).

***Bambusa nutans* Wall.ex Munro (Poaceae); Ootang**

The slices of bamboo shoot are boiled in one litre of water. The patient of kidney stone drinks it 50 ml approx. daily for around seven days.

***Belamcanda chinensis* (L) DC.Syn: *Iris domestica* (L) Goldblatt and Mabb. (Iridaceae); Kabo Leitreng**

Eating a small piece of rhizome once a day is useful for easy defecation. It is believed to cure constipation.

Blumea balsamifera* (L) DC (Asteraceae); *Kangphal Langthrei

The leaves in small quantity are boiled with water by putting a little honey as sweetener. The patient drinks it 50 ml approx. twice daily for seven days to cure kidney stone.

Brassica rapa* L. Syn: *Brassica campestris* L (Brassicaceae); *Hangam* and *Capsicum frutescens* L (Solanaceae); *Morok

The chilli powder and fresh mustard oil extract are mixed to rub on the affected body part of burns. It is used as antipyretic and antibiotic.

Celtis timorensis* Span. (Cannabaceae); *Heikreng* and *Cinnamomum tamala* L (Lauraceae); *Tezpatta

The leaves of these plants are taken in equal quantity to boil together in water by putting one teaspoonful of sugar. The patient is given 100 ml approx. to drink twice daily for around ten days for the treatment of kidney stones.

Leaf of *C. timorensis* Span. is used to cure dysentery and jaundice (Khumbongmayum *et al.*, 2005). Leaf decoction of *C. tamala* L. is taken against cough, headache and dizziness. Bark and leaf are given in rheumatism, colic diarrhoea and dysentery (Guha *et al.*, 2018).

Citrus limon* (L) Burm.f.(Rutaceae); *Champra

The exudates 50 ml approx. of lemon fruit is mixed with the powder of *Kapur* (crystal) along with *sida misir* (sugar candy) as sweetener. The patient is advised to drink this preparation twice daily to cure persistent cough (*lok apumba*).

Stem and fruit are used for the treatment of diabetes (Devi, 2011). Fruits are nerve tonic, blood cleanser and fight against cancer (Hazarika *et al.*, 2012).

Clerodendrum serratum* (L) Spreng. (Lamiaceae); *Moirang Khanam

The leaves of 250 gm. are boiled in one litre of water. The boiled liquid is rubbed two to three times daily on the body joins till the join-ache is cured.

Leaves, root and stem are used against cough, fever, dysentery, asthma, bronchitis, rheumatism and bronchitis (Khumbongmayum *et al.*, 2005). Leaf and root

are used against cold, cough and dyspepsia (Sanglakpam *et al.*, 2012). Young shoots and inflorescence are used as medicines to control diabetes (Rajkumari *et al.*, 2013).

***Cucurbita maxima* Duch. (Cucurbitaceae); Mairel/Mairen**

The steamed fleshy fruit is given to children to cure night blindness (*yenkhumit thungba*).

The flowers of this plant are used to control fever in children (Rajkumari *et al.*, 2013).

***Curcuma longa* L.Syn: *Curcuma domestica* Valetton (Zingiberaceae); Yaingang**

The grounded powder of rhizome is used as sunscreen of human face and arms.

It is used for the treatment of skin inflammation (Guha *et al.*, 2018).

***Datura stramonium* L (Solanaceae); Sagol hidak**

The seed is believed to be hallucinogenic. It is secretly given with some other food items to a person to cause madness (*ngaoba or ngaohanba*).

Fresh leaves are used against painful knee and shoulder (Salave *et al.*, 2010).

***Desmodium triflorum* (L) DC (Fabaceae); Yensil Laba**

The whole plant of 100 gm. is boiled in one litre of water from which a patient of kidney stone drinks the decoction approx.100 ml till the removal of stones.

***Eclipta prostrata* (L) L (Asteraceae); Uchi shumbal**

One spoon of the crushed exudates of the whole plant is mixed with 100 ml. milk with honey as sweetener. The patient of impotency or lack of stamina or weak health drinks it every morning till this health problem is cured.

Leaves are used against cough, fever and tooth-ache (Khumbongmayum *et al.*, 2005). Leaf is used against cough, fever and liver enlargement (Sanglakpam *et al.*, 2012). Leaf or root juices are given in fever and cough and also applied in scorpion sting (Das and Tongbram, 2014).

Enhydra fluctuans* Lour.(Asteraceae); *Komprek tujombi

The whole plant without root is crushed to extract approx. 30 ml of liquid. It is mixed with honey as sweetener and the patient drinks it every morning till the cure of stomach ulcer.

The whole plant is boiled in one litre of water by putting little sugar candy as sweetener. The patient drinks it approx.100 ml for seven days for the treatment of kidney stone.

The leaves are used for the treatment of gonorrhoea (Rout *et al.*, 2009). The stem is used for the treatment of diabetes (Khan and Yadava, 2010). The young shoots are used to treat urinary tract infection (Rajkumari *et al.*, 2013). Fresh extract of shoot is prescribed as antidote to food poisoning, diarrhoea and dysentery (Das and Tongbram, 2014).

Fragaria nilgerrensis* Schltld. ex. J. Gay (Rosaceae); *Samu khongpak laba* & *Lindernia ruellioides* (Colsm.) Pennel (Linderniaceae); *Kihomman

From the whole plant approx. 5 gm. is equally taken to boil in one litre of water by putting a little sugar candy. A patient drinks it approx.100 ml for seven days to cure kidney stone. Only a plant bearing leaves of five (5) pinnate is selected.

Fragaria nilgerrensis* Schltld. ex J. Gay. (Rosaceae); *Samu khongpak laba

From the whole plant 100 gm is boiled in one litre of water which a patient drinks one tea-glass approx.100 ml daily for seven days to remove kidney stone.

Hedychium coccineum* Buch.-Ham. Ex Sm. (Zingiberaceae); *Takhellei angangba

The rhizome of 10 gm. is boiled in one litre of water and a patient of kidney stone drinks this preparation approx.100 ml till the kidney stone comes out.

Hedyotis auricularia* Roxb. (Rubiaceae); *Langban Koukha

The leaves of approx.10 gm. are boiled in one litre of water and a patient of jaundice drinks it 100 ml two times daily till it is cured.

Hibiscus cannabinus* L (Malvaceae); *Sougree

Soup made of leaves is used as an appetiser.

Hydrocotyle* sp.(Apiaceae); *Nungjreng peruk*; *Lindernia ruellioides* (Colsm.) Pennel (Linderniaceae); *Kihomman* and *Celtis timorensis* Span. (Cannabaceae); *Heikreng

From the whole plant 20 gm each of *Hydrocotyle* sp., *Lindernia ruellioides* (Colsm) Pennell. and the leaves of *Celtis timorensis* Span. are boiled in one litre of water. A patient of kidney stone drinks this preparation approx.100 ml for seven days till the removal of stone.

Imperata cylindrica* (L) Raeusch. (Poaceae); *Ee

The root of this plant approx. 50 gm. is boiled in one litre of water. The children below ten years drink this decoction 50 ml approx. and a higher dose of 100 ml (approx.) is given to person of above ten years till worm expulsion. The plant is believed to be wormicide or anthelmintic.

Roots are used against diarrhoea, dysentery, gonorrhoea and bleeding (Khumbongmayum *et al.*, 2005). Root is used for the treatment of diabetes (Khan and Yadava, 2010; Devi, 2011). Rhizome is used for the treatment of diabetes (Devi, 2011). Roots are used to treat worm expulsion (Pfoze *et al.*, 2012).

Kyllinga brevifolia* Rottb. Syn: *Cyperus brevifolius* (Rottb.) Hassk. (Cyperaceae); *Sembang kouthum

The rhizome of the plant is pounded with cooked rice to make tablets. It is given to a patient twice a day for twenty days. The leaf paste is bound by a clean cloth on the affected part. A handful of leaves of 50 gm. approx. are boiled in one litre of water. The victim of dog bite and snake bite has to drink this preparation 100 ml approx. once a day.

Fresh tubers are used against blood dysentery (Kar and Borthakur, 2008a).

Magnolia macrophylla* L (Magnoliaceae); *U-thambal

The leaves are believed to cure madness (*ngaoba*).

Malvaviscus penduliflorus* DC. (Malvaceae); *Jubakusum

Enough quantity of leaves are taken to crush with 300 ml of water. This is made afresh every day. It is given to a patient to drink approx. 100 ml twice daily to cure white discharge in women.

Mangifera indica* L (Anacardiaceae); *Heinou

The pulpy fruit is boiled with sugar to make ‘ambol’ (syrup). It is eaten with rice. This is an appetiser.

Fruit is used for the treatment of diabetes (Devi, 2011). Green fruits used in making pickle. Ripe fruits are eaten. Unripe fruits are used in curry to get a sour taste. Ripe fruits’ bark is eaten (Pandey and Pande, 2016).

Melothria perpusilla* (Blume) Cogn. (Cucurbitaceae); *Lam thabi

The leaves of around 250 gm. are boiled in one litre of water. The patients of diabetes drink a dose of 100 ml decoction two times daily.

The boiled decoction of the plant is taken as remedy in Jaundice and fever (Das and Tongbram, 2014). The whole plant or shoot is used for the treatment of jaundice (Usharani *et al.* 2018).

Mentha arvensis* L (Lamiaceae); *Podina

The leaves of 250 gm. are crushed with 50 ml of water which a patient of persistent vomiting drinks 100 ml till it is cured. Enough leaves are crushed with water by using mortar (*kegam*) and pestle (wooden or bamboo *suk*) to extract liquid. The patients of kidney stone drink this liquid by 50 ml approx. for three to seven days.

Young shoots and leaves are used for the treatment of constipation and stomach upset (Lokho, 2012). The plant is used for the treatment of diabetes (Khan and Yadava, 2010). Crushed juice of the plant is used as stomachic and antispasmodic (Das and Tongbram, 2014).

Musa balbisiana* Colla. (Musaceae); *Laphu Changbi

The allergy caused on the skin due to caterpillar or insects is cured by rubbing stem epidermis of this plant on the skin.

Myriogyne minuta* (G. Forst.) Less. Syn: *Centipeda minima* (L) A. Braun and Asch.(Asteraceae); *Hakthikhanbi*; *Momordica cochinchinensis* (Lour.) Spreng (Cucurbitaceae); *Karot* and *Syzygium aromaticum* (L) Merr. and Perr. (Myrtaceae); *Long*; *Piper nigrum* L (Piperaceae); *Gul

The extracted juice of *Hakthikhanbi* [*Myriogyne minuta* (G.Forst.) Less)] 50 ml is mixed with powder one teaspoonful each of Long [(*Syzygium aromaticum* (L) Merr. and Perr.)] (Inflorescence), *Gul* (*Piper nigrum* L.) (seeds) and *Karot* [(*Momordica cochinchinensis* (Lour) Spreng.)] (seeds). The ingredients are boiled in one litre of water which a patient drinks 100 ml approx. for seven days for the treatment of kidney stone.

Fruits and seeds are used in kidney stone treatment (Hazarika *et al.*, 2012).

Nicotiana tabacum* L (Solanaceae); *Hidak mana

It is believed that the powder made by dried tobacco plantis used to kill germs in the poultry house.

Leaf is used for the treatment of caterpillar sting, toothache, leech bite, scabies, Pyorrhoea, headache, eczema and ringworm (Borborah *et al.* 2014). The crushed leaf is applied to kill ectoparasites and also to cure cuts and wounds due to injury (Bharali *et al.*, 2015).

Oryza sativa* L (Poaceae); *Phou

Enough grain is grounded with teeth and it is attached on the affected body area of dog bite. The boiled syrup or liquid of cooking rice is given to children to cure night blindness (*yenkhumit thungba*).

The cooked rice (seeds) is applied on fractured bone for quick healing (Rajkumari *et al.*, 2013).

Osbeckia nepalensis* Hook. f. (Melastomataceae); *Yachubi Laba

The leaves of 100 gm. are boiled witha litre of water. The drinking of the boiled decoction approx.50 ml twice daily for around seven days before meal is advised to alleviate irregularity of menstrual cycle. The standing leaves of this plant are strictly selected for this purpose.

Table 7: Summary of the plants used for their medicinal values in the treatment of human and animal diseases/health problems

Botanical name and Families	Vernacular Name	Plant parts used	Diseases/ailments treated with
<i>Acacia farnesiana</i> (L) Willd. (Fabaceae)	<i>Chigonglei</i>	Prickly spine	Perforation of ear lobe
<i>Allium ramosum</i> L; Syn.: <i>Allium odorum</i> L.(Liliaceae)	<i>Yenam nakuppi</i>	Leaves	Kidney stone
<i>Alocasia macrorrhizos</i> (L) G.Don.Syn.: <i>Alocasia indica</i> (Lour) Schott. (Araceae)	<i>Pan</i>	Stem	Bee bite or sting
<i>Areca catechu</i> L (Arecaceae)	<i>Kwa maru</i>	Seed	Tonsilitis
<i>Averrhoa carambola</i> L (Averrhoaceae)	<i>Heinoujom</i>	Fruit	Kidney stone
<i>Azadirachta indica</i> A. Juss.(Meliaceae)	<i>Neem</i>	Leaves	Germicidal (anti-parasites)
<i>Bambusa nutans</i> Wall ex. Munro.(Poaceae)	<i>Utang</i>	Bamboo shoot	Kidney stone
<i>Belamcanda chinensis</i> (L) DC. Syn: <i>Iris domestica</i> (L) Goldblatt and Mabb.(Iridaceae)	<i>Kabo leitreng</i>	Rhizome	Constipation
<i>Blumea balsamifera</i> (L) DC. (Asteraceae)	<i>Kangphal Langthrei</i>	Leaves	Kidney stone
<i>Brassica rapa</i> L Syn: <i>Brassica campestris</i> L (Brassicaceae)	<i>Hangam</i>	Seed oil	Burns
<i>Capsicum frutescens</i> L (Solanaceae)	<i>Morok</i>	Fruit	Burns
<i>Celtis timorensis</i> Span. (Cannabaceae)	<i>Heikreng</i>	Leaves	Kidney stone
<i>Cinnamomum tamala</i> L (Lauraceae)	<i>Tezpatta</i>	Leaves	Kidney stone
<i>Citrus limon</i> (L) Burm.f.(Rutaceae)	<i>Champra</i>	Fruit	Persistent cough
<i>Clerodendrum serratum</i> (L) Moon (Lamiaceae)	<i>Moirang Khanam</i>	Leaves	Constipation
<i>Cucurbita maxima</i> Duch.(Cucurbitaceae)	<i>Mairen</i>	Fruit	Night blindness
<i>Curcuma longa</i> L.(Zingiberaceae)	<i>Yaingang</i>	Rhizome	Sunburn
<i>Datura stramonium</i> L (Solanaceae)	<i>Sagol hidak</i>	Seed	Hallucinogenic
<i>Desmodium triflorum</i> (L) DC (Fabaceae)	<i>Yensil Laba</i>	Whole plant	Kidney stone
<i>Eclipta prostrata</i> (L) L (Asteraceae)	<i>Uchishumbal</i>	Whole plant	Lack of stamina
<i>Enhydra fluctuans</i> Lour. (Asteraceae)	<i>Komprek tujombi</i>	Whole plant	Kidney stone
<i>Fragaria nilgerrensis</i> Schltld. ex J.Gay (Rosaceae)	<i>Samu khongpak laba</i>	Whole plant	Kidney stone
<i>Hedychium coccineum</i> Buch.-Ham ex Sm. (Zingiberaceae)	<i>Takhellei Angangba</i>	Stem	Kidney stone
<i>Hedyotis auricularia</i> Roxb. (Rubiaceae)	<i>Langban Koukha</i>	Leaves, Stem	Jaundice
<i>Hibiscus cannabinus</i> L (Malvaceae)	<i>Sougree</i>	Leaves	Appetiser
<i>Hydrocotyle</i> sp.(Apiaceae)	<i>Nungjreng peruk</i>	Whole plant	Kidney stone
<i>Imperata cylindrica</i> (L) Raeusch(Poaceae)	<i>Ee</i>	Root	Wormicidor Anthelmintic
<i>Kyllinga brevifolia</i> Rottb. Syn: <i>Cyperus brevifolius</i> (Rottb.) Hassk. (Cyperaceae)	<i>Sembang kouthum</i>	Tuber	Dog bite and Snake bite
<i>Lindernia ruellioides</i> (Colsm) Pennel (Linderniaceae)	<i>Kihomman</i>	Whole plant	Kidney stone
<i>Magnolia macrophylla</i> L (Magnoliaceae)	<i>U-thambal</i>	Leaves	Possessiveness/Madness
<i>Malvaviscus penduliflorus</i> DC (Malvaceae)	<i>Jubakusum</i>	Leaves	White Discharge of women

<i>Mangifera indica</i> L (Anacardiaceae)	<i>Heinou</i>	Fruit	Appetiser
<i>Melothria perpusilla</i> (Blume)Cogn. (Cucurbitaceae)	<i>Lamthabi</i>	Whole plant	Jaundice
<i>Mentha arvensis</i> L (Lamiaceae)	<i>Podina</i>	Leaves	Kidney stone
<i>Momordica cochinchinensis</i> (Lour.) Spreng (Cucurbitaceae)	<i>Karot</i>	Seed	Kidney stone
<i>Musa balbisiana</i> Colla(Musaceae)	<i>Laphu changbi</i>	Stem epidermis	Skin Allergy
<i>Myriogyne minuta</i> (G.Forst.) Less.; Syn.: <i>Centipeda minima</i> (L.) A.Braun & Asch. (Asteraceae)	<i>Hakthikhanbi</i>	Whole plant	Kidney stone
<i>Nicotiana tabacum</i> L (Solanaceae)	<i>Hidak mana</i>	Whole plant	Germicidal (anti-parasites)
<i>Oryza sativa</i> L (Poaceae);	<i>Phou</i>	Seed	Dog bite, Night blindness
<i>Osbeckia nepalensis</i> Hook.f.(Melastomataceae)	<i>Yachubi laba</i>	Leaves	Irregular Menstrual cycle
<i>Oxalis corniculata</i> L (Oxalidaceae)	<i>Yensil</i>	Whole plant	Kidney stone
<i>Phlogacanthus thyrsoiflorus</i> Nees.; Syn.: <i>Justicia thyrsoides</i> Roxb. Ex. Nees (Acanthaceae)	<i>Nongmangkha</i>	Leaves	Abortion
<i>Phyllanthus emblica</i> L.(Euphorbiaceae)	<i>Heigru</i>	Fruit	Kidney stone
<i>Piper betle</i> L (Piperaceae)	<i>Kwa mana</i>	Leaves	Wormicid or Anthelmintic
<i>Piper nigrum</i> L (Piperaceae)	<i>Gul</i>	Seed	Kidney stone
<i>Plantago major</i> L (Plantaginaceae)	<i>Yempat</i>	Leaves	Boils
<i>Pogostemon cablin</i> (Blanco.) Benth. Syn.: <i>Pogostemon purpurascens</i> Dalz.(Lamiaceae)	<i>Shangbrei</i>	Leaves	Bathing of corpse
<i>Sapindus trifoliatus</i> L (Sapindaceae)	<i>Kekru</i>	Fruit	Fever
<i>Stellaria media</i> (L) Villars; (Caryophyllaceae)	<i>Yerum keirum</i>	Leaves	Stomach Ulcer
<i>Syzygium aromaticum</i> (L) Merr. and Perry (Myrtaceae)	<i>Long</i>	Inflorescence	Kidney stone
<i>Tagetes erecta</i> L (Asteraceae)	<i>Sanarei</i>	Leaves	Skin Allergy
<i>Tamarindus indica</i> L (Fabaceae)	<i>Mangehei</i>	Leaves	Kidney stone
<i>Vitex negundo</i> L (Lamiaceae)	<i>Yerikshibi</i>	Leaves	Germicidal (anti-parasites)
<i>Xylosma longifolia</i> Clos.(Salicaceae)	<i>Nongleishang</i>	Leaves	Abortion
<i>Ziziphus mauritiana</i> Lam. (Rhamnaceae)	<i>Boroi</i>	Curly spine	Circumcision

Source: Primary data

Whole plant of *Osbeckia nepalensis* Hook.f. is used in the treatment of dysentery, diabetes and stomach complaints (Salam *et al.*, 2009). Tender shoot is used for the treatment of diabetes (Khan and Yadava, 2010).

***Oxalis corniculata* L (Oxalidaceae); Yensil**

From the whole plant 100 gm. is boiled in one litre of water which a patient of kidney stone drinks approx. 100 ml till the removal of stones.

The leaves of *Oxalis corniculata* L are used to cure diarrhoea and dysentery (Qureshi, 2007) and the whole plant is used in the treatment of indigestion and dysentery (Salam *et al.*, 2009). The whole plant is used against stomach complaints, piles, colic, and dysentery and as hair lotion (Khumbongmayum *et al.*, 2005).

***Phyllanthus emblica* L. (Euphorbiaceae); Heigru**

The extracted juice of fruits of this plant is mixed with lime water. This preparation of 50 ml approx. is orally taken twice daily for seven days for the treatment of kidney stone.

The leaves are used for the treatment of diabetes (Khan and Yadava, 2010). The decoction of the fruit is used in cough and cold (Lokho, 2012; Kumar, *et al.*, 2016). Bark, fruit, leaf and root are used for the treatment of cuts and wounds, stomach ache, gastric problem, high blood pressure, eye trouble, bronchial asthma and blood dysentery (Borborah *et al.*, 2014).

***Piper betle* L (Piperaceae); Kwa mana**

The leaves are chewed and swallowed by children below 10 years of age to remove worms. It's believed to be wormicide or anthelmintic.

Leaf is used for the treatment of burns and scalds, constipation, menorrhagia (Borborah *et al.*, 2014).

***Plantago major* L (Plantaginaceae); Yempat**

The leaves are attached on the boils for early extraction of pus.

Pogostemon cablin* (Blanco) Benth.Syn: *Pogostemon purpurascens* Dalz. (Lamiaceae); *Shangbrei

The leaves of this plant are boiled with enough water. This decoction is used in the cleaning of a dead body.

Sapindus trifoliatus* L (Sapindaceae); *Kekru

The fruits are used as soap to rub on the forehead of minor children to cure fever.

Fruit is used against piles and worm diseases (Sanglakpam *et al.*, 2012).

Stellaria media* (L) Vill. (Caryophyllaceae); *Yerum keirum

Leaves of this plant are cooked without oil with prawn (*Fenneropenaeus indicus*). The curry is consumed till the cure of stomach ulcer.

The whole plant is cooked against bronchitis and skin inflammation (Rajkumari *et al.*, 2013). The green tops and fresh seeds of this plant are used as healing acts, sores and inflammation (Qureshi *et al.*, 2007).

Tagetes erecta* L (Asteraceae); *Sanarei

The fresh leaves are rubbed on the swelling skin due to allergy of caterpillars or insects.

Leaf juice is applied to scabies on skin allergy caused by moths (Devi and Das, 2015).

Juice mixed with leaf juice of *Bryophyllum pinnatum* (Lam.) Oken is given in urinary troubles (Bharali *et al.*, 2015) of cattles.

Tamarindus indica* L (Anacardiaceae); *Mange hei

Enough leaves are boiled in one litre of water. The plant decoction of 100 ml approx. is allowed to drink by the patient of kidney stone for seven days.

Extracts from one year old seeds is given against dog bite (Rajkumari *et al.*, 2013). Roasted pulp of unripe fruit is applied to swelling caused by sprains (Devi and Das, 2015).

Vitex negundo* L (Lamiaceae); *Yerikshibi

The leaves are kept inside the poultry house or dwellings to kill insects or parasites.

Xylosma longifolia* Clos. (Salicaceae); *Nongleishang* and *Phlogacanthus thyrsoiflorus* Nees. Syn: *Justicia thyrsooides* Roxb. Ex. Nees. (Acanthaceae); *Nongmangkha

The leaves 50 gm. each of the two plants are boiled separately in one litre of water. The two liquid decoctions are mixed and a dose of approx. 500 ml is given to a woman to drink to induce abortion.

Inflorescence is used against skin diseases (Khumbongmayum *et al.*, 2005). Leaves are used for the treatment of piles, cough and chest congestion (Salam *et al.*, 2009). Fresh/decoction of leaves and flowers of *Phlogacanthus thyrsoiflorus* are used against cough and cold (Rajkumari *et al.*, 2013) and for the treatment of cough and fever (Salam *et al.*, 2009). Leaf is used against leucoderma and gastric problem (Sanglakpam *et al.*, 2012).

Leaves of *Xylosma longifolia* Clos are used against piles, killing lice, dizziness, hoarseness and regulation of blood circulation (Khumbongmayum *et al.*, 2005).

Ziziphus mauritiana* Lam. (Rhamnaceae); *Boroi

The spine is believed to be medicinal and safe that a short spine of this plant is used to puncture the swollen skin to take out the watery pus.

4.2. Plants used in the formation of food and beverages

The various forms of Food and Beverages of Muslim (*Pangal/Meitei-Pangal*) community is enumerated below as (4.2.1) Staple food, (4.2.2) Vegetables and spices, (4.2.3) Stimulatory, (4.2.4) Fruits, (4.2.5) Beverages and (4.2.6) Animal foods.

4.2.1. Staple food

Oryza sativa* L (Poaceae); *Phou

The grain of rice is main food of this community.

Paddy is staple food of Chothe tribe (Sanglakpam *et al.*, 2012).

4.2.2. Vegetables and Spices

***Alocasia microrhizos* (L) G.Don.Syn: *Alocasia indica* (Lour.) Spach. (Araceae); Pan**

Leaves, stem and corm are cooked. The leaves are eaten with salad. Leaves are cooked with *Ngari* (fermented fish), chilli, garlic and onion. It is cooked with fermented *Glycine max* (L) Merr. in a traditional way.

***Alpinia allughas* (Retzius) Roscoe. (Zingiberaceae); Loklei**

Rhizome and young leaves are cooked with potato and fermented fish. The rhizome is eaten with ‘*Singju*’ (Chatani) (local preparation by grounding garlic, ginger, chilli, salt, onion and fermented fish) and ‘*Eromba*’ (local preparation by grounding boiled plant parts, garlic, ginger, chilli, salt, onion, fermented fish and water). This rhizome costs Rs 180/kg.

***Allium sativum* L (Liliaceae); Chanam**

The ‘*Pangal Chanam Eromba*’ (*Mathak* and *Makha Eromba*), a local curry prepared by this plant cloves is a popular culinary item. The tender stem and leaves are eaten raw or put in the curry. The bulbs of this plant are always kept in the storage for the future growth.

***Anethum graveolens* L (Apiaceae); Pakhon**

The leaves, stem and inflorescence are used as condiment. The putting of this plant into ‘*Uti thongba*’, an indigenous curry is believed to be very delicious. The seeds are kept for the future growth.

***Brassica rapa* L. Syn: *Brassica campestris* L (Brassicaceae); Hangam**

The leaves and young shoot are eaten in various forms like raw and cooked. The seeds of this plant are always kept in storage for the future growth.

Leaf and stem is eaten (Sanglakpam *et al.*, 2012).

***Bambusa kingiana* Gamble (Poaceae); Watangkhoi; *Bambusa tulda* Roxb. (Poaceae); Saneibi and *Bambusa nana* Roxb. (Poaceae); Khokwa**

The bamboo shoots are cooked as curry. The fresh bamboo shoot is boiled to prepare *Kangshu* (macerated chilli, garlic, ginger, salt and fermented fish mix with slices of boiled bamboo shoot). The local curry called 'Eromba' involves boiled water with the ingredients of *Kangshu*. Bamboo shoots are sold by Rs 80- 120/Kg. The cost varies bamboo to bamboo.

Shoot of *Bambusa tulda* Roxb. is edible (Singh *et al.*, 2003). Its shoot (fresh/fermented) is eaten (Sanglakpam *et al.* 2012). Fermented shoot of this bamboo is edible (Premlata *et al.*, 2015). Young shoots are used as vegetable (Baro *et al.*, 2015). It is food item (Cajee, 2018).

***Capsicum frutescens* L (Solanaceae); Morok**

The fresh fruits are eaten with rice. The chilli 'chatani' (*Singju*) is prepared with macerated 'Ngari' (fermented fish).

***Cucurbita maxima* Duch. (Cucurbitaceae); Mairal**

Leaves and young shoots are cooked. The fruits are cooked with fermented bamboo shoot. The roasted seeds are eaten. The seeds are kept for the future growth.

Seed is used to expel worms (Lokho, 2012). Fruit and tender leaf are eaten (Sanglakpam *et al.*, 2012).

***Curcuma angustifolia* Roxb. (Zingiberaceae); Yaipal**

Rhizome is cooked with fermented fish to make 'Eromba' (local curry). The rhizome of this plant costs Rs. 80/kg.

Inflorescence and rhizome are vegetable and food flavouring agent (Devi *et al.*, 2014). The boiled inflorescence is eaten (Sanglakpam *et al.*, 2012; Thongam *et al.*, 2016). Flowers of this plant are eaten (Singh and Binu, 2016).

***Coriandrum sativum* L (Apiaceae); Phadigom**

Leaves, seeds and stem are used as condiment. The seeds of this plant are always kept in storage for the future growth.

***Curcuma longa* L.Syn: *Curcuma domestica* Valetton (Zingiberaceae); Yaingang**

The tender leaves are cooked with small fish.

***Dendrocalamus giganteus* Munro. (Poaceae); Mareebob/Marubob**

The fresh and fermented shoots are cooked as curry.

Shoot is edible (Singh *et al.*, 2003). Shoot (fresh/fermented) is eaten (Sanglakpam *et al.*, 2012). Fermented shoot of this bamboo is edible (Premlata *et al.*, 2015).

***Hibiscus cannabinus* L (Malvaceae); Sougree**

Lobed leaves without pedicels are cooked with fermented fish. The soup is a favourite to eat with rice. The seeds are kept for next year's growth.

Fruits are used as vegetable (Pandey and Pande, 2016).

***Ipomoea batatas* L (Convolvulaceae); Mangra**

This root is used as breakfast food. This is grown to earn income.

***Luffa cylindrica* (L) M.Roem (Cucurbitaceae); Shebot**

The leaves and fruits are cooked. The seeds are kept for the future growth.

***Macrotyloma uniflorum* (Lam.) Verdc. (Fabaceae); Sagol-hawai**

This gram seed is cooked as curry to eat with rice.

This should be grown during September-October for better growth and production (Mohanty *et al.*, 2008).

***Mentha arvensis* L (Lamiaceae); Podina**

The leaves are eaten with salad or 'Singju' (Chatani). The tender leaves and rhizome are part of 'Salad' or 'Singju' (Chatani).

Leaves are used for the treatment of flatulence and remove gas (Pfoze, 2012). Shoot is eaten by Meitei community in Manipur (Singh and Binu, 2016). Leaves used in the making of Chutney (Pandey and Pande, 2016).

***Momordica cochinchinensis* (Lour.) Spreng (Cucurbitaceae); Karot**

Fruits are cooked with dry fish. The spikes (spines) are taken out before cooking the fruit. The young spines are not peeled.

Young fruit is vegetable (Medhi and Borthakur, 2013).

Musa balbisiana* Colla. (Musaceae); *Laphu Changbi

The young shoot, inflorescence and sheaths are cooked to make 'Eromba' (a traditional curry).

Pisum sativum* L (Fabaceae); *Hawai mangal

Leaves, young pods and seeds are cooked. The seeds are eaten raw with *Singju* (Chatani) and salad. The ripe seeds are cooked.

Solanum melongena* L (Solanaceae); *Pangal Khamen

The fruits are cooked with potato, dry fish and other vegetables. The seeds of this plant are always kept for future growth.

4.2.3. Stimulatory

Areca catechu* L (Arecaceae); *Kwa

The fibrous layer is removed to eat the hard seed as masticatory. This plant is grown to earn income. Five numbers of nuts are sold by Rs. 10.

Nut is masticatory (Borborah *et al.*, 2014).

Piper betle* L (Piperaceae); *Kwa mana

The leaves are eaten. Leaf is eaten (Borborah *et al.*, 2014).

4.2.4. Fruits

Averrhoa carambola* L (Averrhoaceae); *Heinoujom

The fleshy fruits are eaten with salt and chilli. The juice is extracted out of the fruits.

Citrus reticulata* Blanco. (Rutaceae); *Komla

The ripe fruits are eaten.

***Citrus limon* (L) Burm.f. (Rutaceae); Champra**

The fruits are eaten with salt and sugar. The juice is eaten with rice. The lime juice is prepared to drink.

***Cocos nucifera* L (Arecaceae); Yubi**

The coconut meat (endosperm) is boiled with rice and milk and it is eaten. The coconut liquid is believed to be nutritious.

***Garcinia xanthochymus* Hook.f.ex T. Anderson. (Clusiaceae); Heirangkhoi**

The ripe fruits are eaten. It's sweet in taste.

Ripe fruit roasted and made into chutney (Kar *et al.*, 2008). Fruit is used to dye garments (Teron and Borthakur, 2012a).

***Grewia microcos* L (Tiliaceae); Heitup**

The sub-globose fruits are eaten with salt and chilli powder.

***Mangifera indica* L (Anacardiaceae); Heinou**

The fruits are eaten with salt, chilli and sugar alone. The juice is extracted out of the fruits.

***Nymphae pubescens* Willd (Nymphaeaceae); Tharo**

The raw seeds are eaten.

***Phoenix dactylifera* L (Arecaceae); Khajoor/Khurma**

The ripe date fruit is eaten.

Fruit is eaten by Meeteis in Manipur (Singh and Binu, 2016).

***Rhus chinensis* Mill. Syn: *Rhus semialata* Murray (Anacardiaceae); Heimang**

The fruit is eaten with salt and chilli powder. The juice extraction is done by dipping into hot water.

The fruits are used for the treatment of dry cough, vomiting, diarrhoea and dysentery (Pfoze *et al.*, 2012). Seeds eaten raw as chutney (Medhi and Borthakur,

2013).The young leaves are eaten directly or boiled in water to stop dysentery (Kumar *et al.*, 2016).

Tamarindus indica* L (Fabaceae); *Mange hei

The fruits are eaten with salt and chilli.The juice is extracted out of the fruits.

Fruit mixed with the crushed leaves of *Zea mays* L is applied on tongue with boils of cattles (Bharali *et al.*, 2015).

Trapa natans* L (Trapaceae); *Heikak

The fruits are eaten after removing the hard seed coat.

Meyna spinosa* Roxb. Ex. Link. Syn.: *Vangueria spinosa* (Roxb. ex Link) Roxb. (Rubiaceae); *Heibi

The ripe fruit is eaten with salt and chilli powder. Leaves and ripe fruits are eaten (Singh and Binu, 2016).

Zea mays* L (Poaceae); *Chujak

The boiled and roasted seeds are eaten.

Ziziphus mauritiana* Lam. (Rhamnaceae); *Boroi

Raw or ripe fruits are eaten.

4.2.5. Beverages

Camellia sinensis* (L) Kuntze (Theaceae); *Cha mana

Everyday tea consumption 2 to 3 times is a tradition.

Coffea arabica* L (Rubiaceae); *Coffee

Coffee powder made by fruit is occasionally consumed.

4.2.6. Animal foods

Alternanthera philoxeroides* (Mart.) Griseb. (Amaranthaceae); *Kabo napi

The leaves and stem are given to cattles as food. Also, it is a food of poultry.

Cynodon dactylon* Pers. (Poaceae); *Tingthou

The whole plants are given to cattles.

***Echinochloa stagnina* (Retz.) P.Beuv. (Poaceae); Hup**

This leaves and runner/stem is served to cattles (horse, buffalo and cow).

***Imperata cylindrica* (L) Raeusch (Poaceae); Ee**

The leaves are given to cattles.

***Oryza sativa* L (Poaceae); Phou**

The leaves and straw are fed to cattles (horse, buffalo and cow).

The seed is given to hasten placental discharge following delivery of cow (Bharali *et al.*, 2015)

***Riccia natans* Corda.Syn: *Ricciocarpus natans* L. (Ricciaceae); Kang**

This whole plant is given to duck as food.

***Saccharum officinarum* L (Poaceae); Chu**

The leaves are given to cattles as food. The persons of the community make a kind of 'Chuhi' (sweet syrup) by boiling liquid extracts. It (Chuhi) is believed to be an appetiser of humans.

Leaves are given to hasten placental discharge following delivery of cow (Bharali *et al.*, 2015).

4.3. Plants used as material culture useful in various purpose of human life

The plants are used to make tools and are categorised as (4.3.1) Agriculture and Horticulture, (4.3.2) Fishery, (4.3.4) Weaving, (4.3.4) Housebuilding and (4.3.5) Other tools.

4.3.1. Agriculture and Horticulture

***Dendrocalamus sericeus* Munro. (Poaceae); Ui and *Dendrocalamus membranaceus* Gamble Syn: *Dendrocalamus longifimbriatus* Gamble (Poaceae); Unan**

The stem of two types of bamboos is used to make various 'thommok'. The 'Thommok' are measuring baskets [(*Laitangluk* (height 7" x diam.15" x c.49"), '*Likhailuk*' (height 10" x c. 63" x diam. 19.7")] use to measure paddy grains. Likewise,

the stem of the two bamboos are used to make 'Yangkok', it is used to remove chaffs, husks and winnows of paddy grains.

Baskets are made from *Dendrocalamus sericeus* Munro (Singh *et al.*, 2003).

Bambusa tulda* Roxb. (Poaceae); *Saneibi

The teeth of weeding out tool (*Ukai Shamjet maya*: 3"-6" long) is made by stem of *Bambusa tulda* Roxb. The tool (*Ukai Shamjet*) is a common tool pulled by cow or buffalo to take weed out of paddy fields. This bamboo is used to make separator (*Cheirong*), it thrashes on the tail ender of paddy to make grains separated.

The preparation of agriculture implement by *Bambusa tulda* Roxb. has been reported (Sharma and Borthakur, 2008).

Bambusa nana* Roxb. (Poaceae); *Khokwa

The stem of this bamboo is used for formal handles of the tools namely Sickle and Spade. This bamboo is very useful to make fencing of agro-horticulture fields to guard against animals.

Dendrocalamus membranaceus* Gamble Syn: *Dendrocalamus longifimbriatus* Gamble (Poaceae); *Unan*; *Dendrocalamus sericeus* Munro. (Poaceae); *Ui* and *Bambusa kingiana* Gamble (Poaceae); *Watangkhoy

From stem of the bamboo are used to make as Spread-sheet (*Phoura*; c. 196 " x diam. 60 " x height 2.3 "). The paddy grains are dried in sun shine over this Spread-sheet.

Dendrocalamus membranaceus* Gamble Syn. *Dendrocalamus longifimbriatus* Gamble (Poaceae) ; *Unan* and *Bambusa tulda* Roxb. (Poaceae); *Saneibi

The bull neck clamp (*Popu*: long 69 " x c.11 ") is made by these bamboos and is used at the time of ploughing.

Bambusa tulda* Roxb. (Poaceae); *Saneibi*; *Dendrocalamus sericeus* Munro. (Poaceae); *Ui* and *Dendrocalamus giganteus* Munro. (Poaceae); *Marubob/Mareebob

The leveller (*Ukai*; 96"long x 10" wide) is made by these bamboos and is used to level the soil in wet agro-field. The leveller is commonly pulled by Bulls and Buffalo. The levelling process of soil in agro-fields is called '*Ukai Takpa*'.

4.3.2. Fishery

Bambusa tulda* Roxb. (Poaceae); *Saneibi

The pointed parts of spear are made by this plant. The throwing of Spear (*Long*) is used to catch fish by a process called '*Long langba*' (flinging the Spear).

The X-like structure (*Hangel*: 72-144" long) is made from this bamboo species. It is attached with '*Pou*' (post) (120-180" long) and *net* (Eel), a part of traditional net to catch fish. The '*Pou*' or Post (*Makhong*) is part of '*Eel chingba*' (to pull net in water to catch fish).

Bambusa nana* Roxb. (Poaceae); *Khokwa

The handle of a spear (*Long Makhok*) is made from bamboo species. The hands of fisherman are carefully held on the handle of Spear (*Long Makhok*) before throwing the spear (*Long*) to catch fish.

Bambusa nutans* Wall.ex. Munro; *Ootang*; *Dendrocalamus membranaceus* Gamble Syn: *Dendrocalamus longifimbriatus* Gamble (Poaceae); *Unan

The fish trap (*Longup*) is made by using the culms of this bamboo species. The fish trap basket (*Longup*: 23" height x handle c.18"x bottom c. 75") is used to trap fish by a method called '*Longup tanba*' (chasing to trap fish). The upper handle is small and the lower bottom is bigger. These bamboo are used to make various fish traps i.e. '*Taothum*' (fish trap: 20" long x c.24"), '*Kaboru*' (fish trap: 28" long x c.24"; 22" long x c.20"; 28" long x c.27") and '*Taijep*' (fish trap: 16" height x diam.8"x 6" wide). The fish traps are most often used to trap fish during rainy season.

Bambusa nutans* Wall.ex Munro. (Poaceae); *Ootang

The tool called fish trap (*Taijep*; height 18" x width 6" x long 8"; fish entry holder 1" wide x 18" long) is made by using the culm of this bamboo. This is also used

to trap fish by positioning it at a convenient place called 'Louri' (partition) of fields having water, grasses, straw etc.

Dendrocalamus sericeus* Munro. (Poaceae); *Ui

The fish caught are kept inside a small bamboo container fish sac (*Nga Tongol*) made with bamboo strips. Freshly caught fish are kept inside this sac which is convenient to take fish from one place to other. Further the dried and fermented fish is stored into this sac. Another type of fish sac (*Ngarubak*: length 25" x width 25" x height 6") is a big container of fish.

4.3.3. Weaving

Bambusa tulda* Roxb. (Poaceae); *Saneibi* and *Bambusa nutans* Wall. ex Munro. (Poaceae); *Ootang

A cylindrical bamboo slice (*Phi shanaba nachei*: 44 " long x c.7") holds the threads in weaving process. It is made from the culm.

Dendrocalamus membranaceus* Gamble Syn. *Dendrocalamus longifimbriatus* Gamble (Poaceae); *Unan* and *Melocanna bambusoides* Trin. Syn: *Melocanna baccifera* (Roxb.) Kurz. (Poaceae); *Moubi

The long culm of these bamboo species are used as a part of waist loom. This hollow, smooth and light stem (*Phi sanaba utong*: 41" long x c.7") is convenient for making the fine threads smooth while weaving.

Sharma and Borthakur (2008) have reported using *Bambusa tulda* fibres.

4.3.4. Housebuilding

Bambusa tulda* Roxb. (Poaceae); *Saneibi

The slices of long stem (*Ura thaba wachet*) of this bamboo are used for roofing of houses, poultry house, cow shade etc. The size of the slices (*wachet*) however, vary from house to house.

Construction of houses is done by using this bamboo (Sharma and Borthakur, 2008). Walling is done by this bamboo (Cajee, 2018).

Bambusa nutans* Wall ex Munro (Poaceae); *Ootang* and *Melocanna bambusoides* Trin. Syn. *Melocanna baccifera* (Roxb.) Kurz. (Poaceae); *Moubi

The culm of these bamboos are used to make '*Phaklang wachet*' (slices of bamboo of 0.6" thick) of house walls.

Dendrocalamus giganteus* Munro. (Poaceae); *Marubob/Mareebob

The post of residential houses are made from this bamboo species.

Table 8: Material culture of plants in relation to Muslim Community in Manipur

Sl. No.	Human affairs, Botanical names, vernacular names and families of Plants	Name of tools	Implements/Mode of use(s)
	I. Agriculture & Horticulture		
1	<i>Bambusa kingiana</i> Gamble (<i>Watangkhoi</i>); (Poaceae)	<i>Phoura</i> (Spread-sheet)	Paddy grains are spread out over this <i>Phoura</i> in the sun shine.
2	<i>Bambusa nana</i> Roxb. (<i>Khokwa</i>); (Poaceae)	<i>Yotpak</i> (Spade) and <i>Thangol</i> (Sickle) <i>Makhok</i> (Handle); <i>Shambal</i> (Fencing)	This bamboo is used as handles of <i>Yotpak</i> and <i>Thangol</i> . The bamboo is useful for fencing at the surrounding of agro- horticulture fields to guard animals.
3	<i>Bambusa tulda</i> Roxb. (<i>Saneibi</i>); (Poaceae)	<i>Ukai</i> (Leveler); <i>Cheirong</i> (Separator) and <i>Ukai Shamjet maya</i> (teeth of weeding out tool)	It is a leveler of wet soil in the agro-field. It is commonly pulled by bulls and buffalo. The leveling process is called <i>Ukai Takpa</i> . The <i>Cheirong</i> is used to thrash on the tail ender of paddy to separate grains. <i>Ukai Shamjet maya</i> takes weed out of paddy fields.
4	<i>Dendrocalamus giganteus</i> Munro. (<i>Marubob/Meeribob</i>); (Poaceae)	<i>Ukai</i> (Leveler)	It is also a leveler of wet soil in the agro-field. It is commonly pulled by bulls and buffalo. The leveling process is called <i>Ukai Takpa</i> .
5	<i>Dendrocalamus membranaceus</i> Gamble Syn.: <i>Dendrocalamus longifimbriatus</i> Gamble (<i>Unan</i>); (Poaceae)	<i>Phoura</i> (Spread-sheet)	Paddy grains are spread out over this <i>Phoura</i> in the sun shine.
6	<i>Dendrocalamus sericeus</i> Munro, (<i>Ui</i>); (Poaceae)	<i>Ukai</i> (Leveler)	It is a leveler of wet soil in the agro-field. It is commonly pulled by cows and buffalo.
	II. Fishery		
1	<i>Bambusa nana</i> Roxb. (<i>Khokwa</i>); (Poaceae)	<i>Long Makhok</i> (Spear handle)	The handle (<i>Long Makhok</i>) of a spear is made by this bamboo.
2	<i>Bambusa nutans</i> Wall ex Munro. (<i>Ootang</i>) (Poaceae)	<i>Longup</i> and <i>Taothum</i> , <i>Kaboru</i> , (elongated Fish traps)	This fish trap (<i>longup</i>) is used to trap fish by a process called <i>Longup tanba</i> (hunting to trap fish) in ponds and lakes. The other fish traps called <i>Kaboru</i> and <i>Taothum</i> are used to trap fish by keeping it in tilted position in running water. The process is called <i>Loo thumba</i> (positioning fish trap). It is mainly carried out during rainy season in the fields.

3	<i>Bambusa tulda</i> Roxb. (<i>Saneibi</i>); (Poaceae)	<i>Longsha</i> (Parts of spear); <i>Hangel, Pou</i>	The parts (<i>Longsha</i>) of Spear (<i>Long</i>) are used to catch fish. The X-like structure (<i>hangel</i>) is attached with <i>Pou</i> (post) and the Eel (<i>net</i>) is a part of traditional net to catch fish.
4	<i>Dendrocalamus membranaceus</i> Gamble Syn.: <i>Dendrocalamus longifimbriatus</i> Gamble (<i>Unan</i>)	<i>Longup</i> and <i>Taothum, Kaboru,</i> (elongated Fish traps)	<i>Longup, Kaboru</i> and <i>Taothum</i> are used to trap fish.
5	<i>Dendrocalamus sericeus</i> Munro, (<i>Ui</i>)	<i>Longup</i> and <i>Taothum, Kaboru,</i> (elongated Fish traps)	<i>Longup, Kaboru</i> and <i>Taothum</i> are used to trap fish.
	III. Weaving		
1	<i>Bambusa nutans</i> Wall ex Munro. (<i>Ootang</i>) (Poaceae)	<i>Phi Shanaba Nachei</i> (Cylindrical bamboo rod for making cloth)	These are part of waist-loom and holder of thread.
2	<i>Bambusa tulda</i> Roxb. (<i>Saneibi</i>); (Poaceae)	<i>Phi Shanaba Nachei</i> (Cylindrical bamboo rod for making cloth)	This is also used in the making of threads.
3	<i>Dendrocalamus membranaceus</i> Gamble Syn.: <i>Dendrocalamus longifimbriatus</i> Gamble (<i>Unan</i>); (Poaceae)	<i>Phi Shanaba Utong</i> (bamboo pipe for making cloth)	3 to 5ft. long culm of this bamboo is used as part of waist loom. This hollow, smooth and light culm is used to keep threads straight.
4	<i>Melocanna bambusoides</i> Trin. Syn.: <i>Melocanna baccifera</i> (Roxb.) Kurz. (<i>Moubi</i>); (Poaceae)	<i>Phi Shanaba Utong</i> (bamboo pipe for making cloth)	This tool makes threads smooth at the time of weaving.
	IV. Housebuilding		
1	<i>Bambusa nutans</i> Wall ex Munro. (<i>Ootang</i>) ; (Poaceae)	<i>Phaklang Wachet</i> (house wall); <i>Paya</i> (Thin slices)	House walls are made by this bamboo species. Thin slices of bamboo stem is used to bind fencing, house wall etc.
2	<i>Bambusa tulda</i> Roxb. (<i>Saneibi</i>); (Poaceae)	<i>Ura thaba wachet</i> (Slice of bamboo stem)	3 to 6" thick and around 10 to 25 ft. long slices of stems are used for roofing of houses, poultry house, cow shade etc.
3	<i>Dendrocalamus giganteus</i> Munro. (<i>Marubob/Mareebob</i>); (Poaceae)	Yumbi Makhong (House post)	It is used to make house post.
4	<i>Dendrocalamus sericeus</i> Munro,	<i>Paya</i> (Thin slices)	It is used to bind fencing, house wall etc.

	(Ui)		
5	<i>Melocanna bambusoides</i> Trin. Syn.: <i>Melocanna baccifera</i> (Roxb.) Kurz. (Moubi); (Poaceae)	<i>Phaklang Wachet</i> (house wall)	The house walls are made by this bamboo species.
	V. Other tools		
1	<i>Bambusa kingiana</i> Gamble (Watangkhoi); (Poaceae)	<i>Shajik Polang</i> (Fodder basket); <i>Thouri</i> (Ropes); <i>Leipak Polang</i> (soil carrier basket)	Fodder is kept inside this basket. Thin slices (<i>Paya</i>) of this bamboo are used to make ropes. Soil dug out is carried from one place to other place by using <i>Leipak Polang</i> .
2	<i>Bambusa nana</i> Roxb. (Khokwa); (Poaceae)	<i>Kangjei</i> (Stick); <i>Paya</i> (Thin slice)	<i>Kangjei</i> is made to throw <i>kangdrum</i> (ball). Long slice of this bamboo is used for loose /temporary bindings.
3	<i>Bambusa nutans</i> Wall ex Munro. (Ootang) (Poaceae)	<i>Leihun</i> (Book Stand); <i>Kharai</i> (Spread-sheet)	Religious books are kept on book stand made with this bamboo species. Chilli and vegetables are kept on the spread sheet to make them sundried.
4	<i>Bambusa tulda</i> Roxb. (<i>Saneibi</i>); (Poaceae)	<i>Urom Shumjit</i> (Broom); <i>Khabei</i> (Stirrer); <i>Thong Makhong</i> (Bridge post); <i>Electric ki Mei punaba</i> <i>Makhong</i> (Electric post); <i>Kangjei</i> (Stick)	The branches are bundled to make broom. It is useful to collect straw, leaf falls, grass etc. The stirrer is used to stir rice while cooking. Electric post and Bridge post are made by this bamboo. <i>Kangjei</i> is made to throw ball (<i>kangdrum</i>).
5	<i>Dendrocalamus giganteus</i> Munro. (Marubob/Meeribob); (Poaceae)	Latrine, poultry, fencing	This bamboo is used to make wall of toilet, poultry house and fencing.
6	<i>Dendrocalamus membranaceus</i> Gamble Syn.: <i>Dendrocalamus</i> <i>longifimbriatus</i> Gamble (<i>Unan</i>)	<i>Kapon</i> (Cloth basket)	Cloth is kept inside this basket.
7	<i>Dendrocalamus sericeus</i> Munro, (Ui)	<i>Kapon</i> (Cloth basket); <i>Yathinchei</i> <i>Utong</i> (Teeth brush stand); <i>Shot</i> (Pot cover); <i>Thouri</i> (Ropes); <i>Leipak Polang</i> (soil	Clothes are kept inside <i>Kapon</i> . The stem is used to make tooth- brush (<i>Yathinchei/Miswak</i>) stand. The thin slices of stem are used to make pot cover (<i>Shot</i>). Thin slices (<i>Paya</i>) of this bamboo are used to make ropes. This bamboo culm is used to make soil carrier basket.

		carrier basket)	
9	<i>Ageratum conyzoides</i> L (<i>Khongjainapi</i>); (Asteraceae)	Shampoo	Rice water along with this plant leaf is boiled to make shampoo.
10	<i>Bombax ceiba</i> L. (Malvaceae)	<i>Mompak and Mon</i> (Mattress and Pillows)	Fibre is used to make mattress and pillow.
11	<i>Cymbopogon nardus</i> (L) Rendle (<i>Charot</i>); (Poaceae)	<i>Phaklang</i> (House wall)	Stem slices are used to make house wall.
12	<i>Gossypium arboreum</i> L (<i>Lashing</i>); (Malvaceae)	<i>Phi shaba</i> (Making Cloth)	The fibre is used to make cloth, pillow and mattress.
13	<i>Imperata cylindrica</i> (L) Raeusch. (<i>Ee</i>); (Poaceae)	<i>Yumthak-kuppa</i> (Roofing)	Roofing of house and hut is done.
14	<i>Meyna spinosa</i> Roxb.ex Link. Syn: <i>Vangueria spinosa</i> (Roxb. ex Link) Roxb. (<i>Heibi</i>); (Rubiaceae)	Shampoo	Rice water along with this plant leaf is boiled to make shampoo.
15	<i>Morus macroura</i> Miq. Syn. <i>Morus laevigata</i> Wall ex Brandis (<i>Kabrang</i>); (Moraceae)	<i>Mugagi lang</i> (Threads)	Silk thread is unfolded off the cocoon.
16	<i>Oryza sativa</i> L (<i>Phou</i>); (Poaceae)	<i>Mompak</i> (Mattress) and <i>Chenghi</i> (Shampoo)	Straw are used to make mattress. The rice water is used to make shampoo.
17	<i>Pinus griffithii</i> McClell (<i>Uchan</i>); (Pinaceae)	<i>Meicham</i> (Fire stimulant)	It is used to light up charcoal.
18	<i>Pogostemon cablin</i> (Blanco) Benth.Syn. <i>Pogostemon purpurascens</i> Dalz. (<i>Shangbrei</i>); (Lamiaceae)	Shampoo	Rice water plus this plant leaf is boiled to make shampoo.
19	<i>Ricinus communis</i> L (<i>Kege</i>); (Euphorbiaceae)	<i>Lang</i> (Thread)	Thread is reeled off the cocoon.
20	<i>Strobilanthes flaccidifolia</i> Nees.Syn: <i>Strobilanthes cussia</i> (Nees) Kuntze.(<i>Kum</i>); (Acanthaceae)	<i>Machu shangba</i> (Dye)	Threads are dyed by the plant leaves.
21	<i>Tamarindus indica</i> L (<i>Mange</i>); (Fabaceae)	<i>Thengu</i> (Hammer)	Stem is used to make hammer.

Source: Primary data

Dendrocalamus sericeus Munro.(Poaceae); *Ui* and *Bambusa nutans* Wall.ex Munro. (Poaceae); *Ootang*

The fencing and house wall are banded together with 'Paya' (thin slice) made of the culm of this type of bamboo.

4.3.5. Other tools

Dendrocalamus membranaceus Gamble Syn: *Dendrocalamus longifimbriatus* Gamble (Poaceae), *Unan*; *Dendrocalamus sericeus* Munro.(Poaceae), *Ui*; *Bambusa nutans* Wall.Ex Munro.(Poaceae), *Ootang*; *Bambusa kingiana* Gamble(Poaceae), *Watangkhoi*; *Bambusa tulda* Roxb.(Poaceae), *Saneibi*; *Dendrocalamus giganteus* Munro.(Poaceae), *Marubob/Mareebob* and *Bambusa nana* Roxb. (Poaceae), *Khokwa*

The Cloth basket (*Kapon*: height 30"x diam. 50") for keeping clothes are made by *Dendrocalamus sericeus* Munro and *Dendrocalamus membranaceus* Gamble. Vegetables are washed inside the basket (*Yenshang Polang*: height 7"x c. 47" x diam.16") made by *Bambusa nutans* Wall.Ex Munro and *Dendrocalamus sericeus* Munro. The thin slices made by culm of *D.sericeus* Munro is used to make pot-cover (*Shot*). Fodders is kept in the fodder basket (*Shajik Polang*: 11" height x diam. 25" x c.86") made by *Bambusa kingiana* Gamble. The brush stand (*Yathin utong*) is made by using the stem of *Dendrocalamus sericeus* Munro. The branches of *Bambusa tulda* Roxb. are bundled to make brooms. This broom is used to clean frontyard, side-yard and surrounding of houses. It is useful to collect straw, fallen leaves, grass etc. The stem of *Bambusa tulda* Roxb. is used to make stirrer (*Khabei*: 12" long rice-stirrer, 72" long curry-stirrer). The culm of *Bambusa nutans* Wall.Ex Munro and *Bambusa tulda* Roxb. are used to make book stand (*Leihun*). The stand is used to keep religious books. The culm of *Dendrocalamus giganteus* Munro is used to make latrine, poultry house, fencing, wall of toilet and fencing of agro-fields. The culm of *Bambusa tulda* Roxb. is used to make bridge post and electric post.

The long stem of *Bambusa nana* Roxb. is suitable to make handle of bridge. The small stem having elliptically curved root ending of *Bambusa nana* Roxb. and

Bambusa tulda Roxb. are used to make sticks. The bamboos such as *Bambusa kingiana* Gamble and *Dendrocalamus sericeus* Munro are used to make ropes.

The chillies and other vegetables are dried by spreading on Spread-sheet (*Kharai*: diam. 39" x c. 128" x height 1.7") made by *Bambusa nutans* Wall.ex Munro. The culm of *Bambusa kingiana* Gamble and *Dendrocalamus sericeus* Munro is used to make soil carrier basket (*Leipak Polang*: diam.16" x height 13"x c.57") to transport soil. The long slices of stem of the bamboo *Bambusa nana* Roxb. is used to make slices (*Paya*) for loose binding. The culm of *Bambusa kingiana* Gamble is used to make Poultry basket (*Yen Polang*: 57" long x height 20" x wide 29").

Toothbrush is made by *Dendrocalamus sericeus* Munro (Singh *et al.*, 2003). The *Paya* (slice of bamboo) taken from *Bambusa tulda* Roxb. is used to make brooms (*Urong-Sumjit*) (Singh *et al.*, 2010).

Ageratum conyzoides* L (Asteraceae); *Khongjainapi

The leaves and shoots are boiled to make shampoo.

The leaves are used as hair care lotion (Thangjam *et al.*, 2018). The plant is used as *Cheng hei* i.e. shampoo (Khumbongmayum *et al.*, 2005).

Bombax ceiba* L (Malvaceae); *Tera

The fibres of the fruit are helpful to make mattress and pillows.

Cymbopogon nardus* (L) Rendle (Poaceae); *Charot

The straw is used to make house wall.

Gossypium arboreum* L (Malvaceae); *Lashing

The leaves are fed to insects to make cocoons and the threads are reeled off out of it.

Imperata cylindrica* (L) Raeusch (Poaceae); *Ee

The roofing of house, hut and cattle shade is done with the culms with leaves of this plant.

Meyna spinosa* Roxb. Ex. Link. Syn.: *Vangueria spinosa* (Roxb. ex Link) Roxb. (Rubiaceae); *Heibi

The leaves of *Meyna spinosa* Roxb. Ex. Link. are boiled with rice water to make shampoo. The leaves of *Ageratum conyzoides* L can be added to this composition to make shampoo.

Morus macroura* Miq.Syn: *Morus laevigata* Wall ex Brandis (Moraceae); *Kabrang* or *Muka

The leaves are fed to insects to produce cocoons. The threads are derived from the cocoons.

Oryza sativa* L (Poaceae); *Phou

The rice water (Chenghi) is used to make shampoo. The leaves of *Ageratum conyzoides* L, *Pogostemon cablin* (Blanco) Benth and *Meyna spinosa* Roxb. Ex. Link. are together or individually boiled with water (Chenghi) to make shampoo. The straw of *Oryza sativa* L is used to make mattress.

Pinus griffithii* (Hook. f.) Parl. (Pinaceae); *Uchan

The strip taken from culm of this plant is used to light up wood logs and charcoal.

Pogostemon cablin* (Blanco) Benth. Syn. *Pogostemon purpurascens* Dalz. Lamiaceae); *Shangbrei

The leaves boiled with rice water are used to make shampoo.

Ricinus communis* L.(Euphorbiaceae); *Kege

The leaves are fed to insects to make cocoons. The threads are reeled off the cocoons.

Strobilanthes flaccidifolia* Nees.(Acanthaceae); *Kumna

Leaves of this plant are used to dye the thread.

Tamarindus indica* L (Fabaceae); *Mange hei

The stem of this plant is used to make hammer.

4.4. Socio-religious aspects of plants

The plants useful in various socio-religious functions are enumerated below.

Acacia farnesiana* (L) Willd.(Fabaceae); *Chigonglei

The social function called *Na hutpa and Nashika hutpa* (perforation of ear lobe and also nasal edge) of girls employs a spine of this plant to pierce the ear lobe and the right nasal edge. The pierced spine is left at the specific hole for three days. Later, the spine is replaced by black thread.

Areca catechu* L (Arecaceae); *Kwa

It is a tradition of offering *apan* (one piece of areca nut, betel leaf and a piece of coconut meat) in the form of a *Kwa potla* (areca packed) to the guest in *Luhongba*(marriage) and *Mangam touba*(lunch programme held in the name of a departed soul).

Bambusa kingiana* Gamble (Poaceae), *Watangkhoi*; *Bambusa nutans* Wall ex Munro (Poaceae), *Ootang*; *Bambusa tulda* Roxb.(Poaceae), *Saneibi*; *Dendrocalamus membranaceus* Gamble Syn. *Dendrocalamus longifimbriatus* Gamble (Poaceae), *Unan*; *Dendrocalamus giganteus* Munro.(Poaceae), *Marubob/Mareebob*; *Dendrocalamus sericeus* Munro. (Poaceae), *Ui

The properly cut bamboo culm are used to cover the recess of a grave. The bamboos are useful in burial function (*Asiba phumba*).

Bamboo sticks and leaves are used in the main entrance of the *Dobur Uie* and in the four corners of the altar. The head and the feather of sacrificed chicken are hung on the bamboo sticks near the altar (Sharma and Pegu, 2011).

Culm of this bamboo species is used in many traditional functions (Teron and Borthakur, 2012c).

Cocos nucifera* L (Arecaceae); *Yubi

The fruits are eaten during marriage/nikah (solemnisation of bride and groom) and festivals (Eid).

Fruits are used in many religious and social ceremonies by indigenous and ethnic societies of District Banswara, Rajasthan (Rana *et al.*, 2016).

Coix lacryma jobi* L (Poaceae); *Chaning/Tasbih Pambi*; *Melia azedarach* L (Meliaceae); *Sheizrak*; *Pisum sativum* L (Fabaceae); *Hawai mangal

The beads of *Coix lacryma jobi* L. on the string are used to count the number of prayers. The daily meritorious chanting of prayers is done by righteous persons. The seeds of the plants are used to count number of prayers in function called '*Lik chatpa or Wajifah*', the process intends to benefit a dead person.

Musa balbisiana* Colla. (Musaceae); *Laphu Changbi

The rice is kept on the leaves of this plant on the occasion of offering function for a departed soul (*Mangam touba*) and marriage function (*Luhongba*).

Oryza sativa* L (Poaceae); *Phou

The rice is fed to the guest of '*Mangam touba*' (offering function for a departed soul) and '*Luhongba*' (marriage function).

The rice is indispensable item in Apong preparation (Sharma and Pegu, 2011).

Phoenix dactylifera* L (Arecaceae); *Khajoor/Khurma

The date fruits are eaten to break one's fasting. The dried fruits are distributed on the occasion of '*Nikah*' (ritual wedding function or solemnisation of wedding) performance.

Piper betle* L (Piperaceae); *Kwa mana

The leaves are used in the making of '*Kwa potla*' (with a piece of areca nut). It is given to the visitors of a house or in marriage functions or lunch or dinners.

Pogostemon cablin* (Blanco) Benth. Syn: *Pogostemon purpurascens* Dalz. (Lamiaceae); *Shangbrei

Enough leaves of this plant are boiled with clean water to wash the dead body.

Salvadora persica* L (Salvadoraceae); *Yathinchei

The pre-prayer ablution of a righteous person requires a short stem or twig or branch of this plant for cleaning teethe.

The commonest source of chewing sticks is *Salvadora persica* L. (Almas and Al-Lafi, 1995).

***Scirpus mucronatus* Roxb. (Cyperaceae); Kouna**

In social functions the guest are seated on the mat (*Phak*: 67" long x 28" wide) made by the straw of this plant. The mats longer than 240" are also made. It is used to make various sizes of fancy carry bags.

***Ziziphus mauritiana* Lam. (Rhamnaceae); Boroi**

It is used to puncture the swollen skin of the circumcised body part by using a curved spine of *Ziziphus mauritiana* L to take out the watery pus. The process is known as '*Boroi tingkhang kappa*' and done by '*Napit*' {One who carry out circumcision (*Sunnat touba or Khatnah or Un kakpa*)}.

Leaves are used in festivals and ceremonies by indigenous communities in Rajasthan (Rana *et al.*, 2016).

4.5. Utilities/potentials of plants useful in various aspects used in muslim folk-proverbs and folk-songs

The plants used in folk-proverbs (Table 10) useful in various aspects are summarised as the following-

(1) **Food and Beverages:** *Alocasia macrorrhizos*(L) G.Don., *Areca catechu* L, *Averrhoa carambola* L, *Bambusa kingiana* Gamble, *Capsicum frutescens* L, *Curcuma longa* L., *Grewia microcos* L., *Ipomoea batatas* L., *Musa balbisiana* Colla, *Nelumbo nucifera* Gaertn., *Nymphae pubescens* Willd., *Oryza sativa* L, *Piper betle* L, *Rhus chinensis* Mill., *Riccia natans* L, *Saccharum officinarum* L, *Tamarindus indica* L, and *Meyna spinosa* Roxb. ex Link.

(2) **Medicinal plants:** *Alocasia macrorrhizos* (L) G.Don., *Areca catechu* L, *Averrhoa carambola* L, *Capsicum frutescens* L, *Curcuma longa* L, *Imperata cylindrica* (L)

Table 9: Plants used in Socio-religious functions of Muslim community in Manipur state.

Botanical names and families	Vernacular names	Plant parts used	Place of Availability
<i>Acacia farnesiana</i> (L) Willd.(Fabaceae)	<i>Chigonglei</i>	Thorn/spine	Wild, river banks, fences
<i>Areca catechu</i> L (Arecaceae)	<i>Kwa</i>	Seed/hardnut	Homestead, fields, frontyard
<i>Bambusa kingiana</i> Gamble (Poaceae)	<i>Watangkhohi</i>	Culm	Graveyard, river banks, fields, homestead etc
<i>Bambusa nutans</i> Wall.Ex Munro. (Poaceae)	<i>Ootang</i>	Culm	River bank, graveyard, fields, homestead
<i>Bambusa tulda</i> Roxb.(Poaceae)	<i>Saneibi</i>	Culm	River bank, graveyard, fields, homestead
<i>Cocos nucifera</i> L (Arecaceae)	<i>Yubi</i>	Fruit	Homestead, fields, frontyard
<i>Coix lacryma jobi</i> L (Poaceae)	<i>Tasbih pambi/Chaning</i>	Seeds	Wild, canals, fields, homestead
<i>Dendrocalamus giganteus</i> Munro. (Poaceae)	<i>Meeribob/ Marubob</i>	Culm	River bank, graveyard, fields, homestead
<i>Dendrocalamus membranaceus</i> Gamble Syn.: <i>Dendrocalamus longifimbriatus</i> Gamble. (Poaceae)	<i>Unan</i>	Culm	River bank, graveyard, fields, homestead
<i>Dendrocalamus sericeus</i> Munro(Poaceae)	<i>Ui</i>	Culm	River bank, graveyard, fields, homestead
<i>Melia azedarach</i> L (Meliaceae)	<i>Sheizrak</i>	Seeds/stone	Wild, river banks, homestead
<i>Musa balbisiana</i> Colla.(Musaceae)	<i>Laphu Changbi</i>	Leaves	Homestead, fields
<i>Oryza sativa</i> L (Poaceae)	<i>Phou</i>	Seed Grain	Paddy fields
<i>Phoenix dactylifera</i> L (Arecaceae)	<i>Khajoor</i>	Fruit	Mosque campus, homestead

<i>Piper betle</i> L (Piperaceae)	<i>Kwa mana</i>	Leaves	Frontyard
<i>Pisum sativum</i> L (Fabaceae)	<i>Hawai Mangal</i>	Seeds	Kitchen gardens, agriculture fields
<i>Pogostemon cablin</i> (Blanco) Benth.; <i>Pogostemon purpurascens</i> Dalz.Syn.: (Lamiaceae)	<i>Shangbrei</i>	Leaves	Graveyard, sideyard
<i>Salvadora persica</i> L (Salvadoraceae)	<i>Yathinchei/ Miswak</i>	Branches/ twigs	Market
<i>Scirpus mucronatus</i> Roxb.(Cyperaceae)	<i>Kouna</i>	Culm	Shallow ponds, lakes, paddy fields
<i>Ziziphus mauritiana</i> Lam.(Rhamnaceae)	<i>Boroi</i>	Thorn/spine, Seed/stone	Wild, Mosque campus, Madrassa campus and homestead

Source: Primary data

Table 10: Folk-Proverbs and transliteration, botanical names, families and vernacular names of plants.

(1) Proverbs and transliteration	Botanical names, Families and Vern. Names
Ahing amma tumdaraga <i>Heitup</i> masung amatasu phang-ee (Ahing ama- one night, tumdaraga-not sleeping, <i>Heitup</i> - edible fruit, masung-piece, amatasu- even if one, phang-ee- obtained/achieved)	<i>Grewia microcos</i> L (Tiliaceae); <i>Heitup</i>
Angao <i>Phou</i> -shu chara nongkannei(Angao-seemingly mad, <i>Phou</i> shu-grinding paddy grain, chara-one meal, nongkhannei-fills stomach)	<i>Oryza sativa</i> L (Poaceae); <i>Phou</i>
<i>Ee</i> nana yatpa khayat-tasu shangom mapanga chiniga chai laina yatpa khayatpu chara henba hounabra(<i>Ee</i> nana-with reed leaf, yatpa-carved or marked, khayattashu-to such a mouth, shangom mapanga-with cream milk, chiniga –also with sugar, chai-eat, laina-by God, yatpa-marked, khayatpu-also such mouth, chara-one meal, henba-starving, hounade-impossible)	<i>Imperata cylindrica</i> (L.)Raeusch. (Poaceae); <i>Ee</i> .
Ekai khangdagi <i>Kang</i> kotli (Ekai-blushing face, khangdagi-to bear with, <i>Kang</i> -free floating plant, kotli-to pick up)	<i>Riccia natans</i> L.; Syn.: <i>Riccia natans</i> Corda (Ricciaceae); <i>Kang</i>
Erujadana <i>Heibi</i> teiba(Erujadana - without bathing, <i>Heibi</i> - edible fruit plant, teiba- smearing or rubbing)	<i>Meyna spinosa</i> Roxb. Ex. Link. Syn.: <i>Vangueria spinosa</i> (Roxb. Ex.link) Roxb. (Rubiaceae); <i>Heibi</i>
Eshing lui lude <i>Tharo</i> marida khang-ee(Eshing-water, lui-deep, lude- shallow, <i>Tharo</i> - water lily, marida-to petiole, khang-ee- understand)	<i>Nymphae pubescens</i> Willd. (Nymphaeaceae); <i>Tharo</i>
<i>Heinoujom</i> yumbal telanga yahip(<i>Heinoujom</i> -carambola fruit, yumbal- way of living, telanga- kite, yahip- way of sleeping)	<i>Averrhoa carambola</i> L (Averrhoaceae); <i>Heinoujom</i>
<i>Kwa</i> matap amana chin pie(<i>Kwa</i> matap-areca nut and betel leaf with lime over the leaf, amana- with only one, chin-mouth, pie-curly or bent/satisfied)	<i>Areca catechu</i> L (Arecaceae); <i>Kwa</i> and <i>Piper betle</i> L (Piperaceae); <i>Kwa</i> mana
<i>Laphoi</i> charingeida khangdraga <i>Thambou</i> charakpada khang-ee (<i>Laphoi</i> - banana, charingeida- while eating, khangdraga- no sign, <i>Thambou</i> -rhizome of water lily, charakpada-on eating, khang-ee- come to public)	<i>Musa balbisiana</i> Colla.(Musaceae); <i>Laphu</i> and <i>Nelumbo nucifera</i> Gaertn.; (Nelumbonaceae); <i>Thambal</i>
Lawai <i>Langthrei</i> khongnemi thoudok khuding	<i>Eupatorium birmanicum</i> DC.

yaoganbi(lawai- village, <i>Langthrei</i> - a plant of cultural importance, thoudok-occasions, khuding-each, yaoganbi-much wanted)	(Asteraceae); <i>Langthrei</i>
Manana <i>Heimang</i> shaba (Manana-with leaf, <i>Heimang</i> - edible fruits of varnish tree, shaba-substitutes).	<i>Rhus chinensis</i> Mill.; Syn.: <i>Rhus semialata</i> Murray(Anacardiaceae); <i>Heimang</i>
<i>Morok</i> metpada jat taba(<i>Morok</i> -chilli, metpada- to prepare a local ‘chatani’, jat taba- lowering standard).	<i>Capsicum frutescens</i> L (Solanaceae); <i>Morok</i> .
Mangda <i>Mangra</i> tanba(Mangda-in dreams, <i>Mangra</i> -sweet potato, tanba- to dig)	<i>Ipomoea batatas</i> L (Convolvulaceae); <i>Mangra</i>
Okchinda <i>Pan</i> thaba(Okchinda-to a mouth of pig, <i>Pan</i> –giant taro, thaba- cultivation)	<i>Alocasia macrorhizos</i> (Mart.) Griseb; Syn.: <i>Alocasia indica</i> (Lour) Schott. (Araceae); <i>Pan</i>
Ū - leitaba lamda <i>Kege</i> na yumbi ōi. (Ū - tree, leitaba - not available, lamda - to a country, <i>Kege</i> na - with castor plant, yumbi - house post, ōi - substitute)	<i>Ricinus communis</i> L (Euphorbiaceae); <i>Kege</i>
Sagol mamang punjao pubi nungshit mairam <i>Lashing</i> kappi(Sagol - horse, mamang - in front, punjao - big earthen pot, pubi - she carries, nungshit – wind, maram - way, <i>Lashing</i> - cotton, kappi - processing of cotton fibers)	<i>Gossypium arboreum</i> L (Malvaceae); <i>Lashing</i>
Sanagi mahut <i>Yaingang</i> na shili(Sanagi-of gold, mahut-in place of, <i>Yaingang</i> na- with turmeric, shilli-replaces)	<i>Curcuma longa</i> L. (Zingiberaceae); <i>Yaingang</i>
Yongna <i>Chu</i> konbagum konba(Yong-na-by a Monkey, <i>Chu</i> -Sugar cane, konbagum- if very fondly holding, konba-embrace)	<i>Saccharum officinarum</i> L (Poaceae); <i>Chu</i>
Samu maya thindorakpa <i>Mange</i> thenguna yeishinba yade(Shamu - elephant, maya - trunk, thindorakpa - stretching, <i>Mange</i> - tamarind tree, thenguna - with hammer, yeishinba - recoil, yade - not allowed)	<i>Tamarindus indica</i> L (Fabaceae); <i>Mange</i>
<i>Waton</i> na wanglaga Kwakna phamdek-ee (<i>Waton</i> na-top of bamboo, wanglaga- being tall, Kwakna- by a crow, phamdek-ee- lowers by sitting).	<i>Bambusakingiana</i> Gamble; (Poaceae); <i>Watangkhoi</i>

Sources of folk-proverbs: *Secondary data*

Sources of plants: *Primary data*

Raeusch, *Musa balbisiana* Colla., *Oryza sativa* L, *Piper betle* L and *Tamarindus indica* L.

(3) **Material culture:** *Bambusa kingiana* L, *Gossypium arboreum* L, *Imperata cylindrica* (L) Raeusch., *Oryza sativa* L., *Ricinus communis* L, *Tamarindus indica* L. and *Meyna spinosa* Roxb. ex Link.

(4) **Socio-religious aspects:** *Areca catechu* L, *Bambusa kingiana* Gamble, *Musa balbisiana* L., *Oryza sativa* L and *Piper betle* L.

(5) **Cultivated Plants:** The plants are enumerated at (4.6; p.89).

The plants used in folk-songs (Table 11) found useful in various aspects are enumerated as the following-

Food and Beverages: *Alpinia allughas* (Retz.) Roscoe, *Citrus limon* (L) Burm. f., *Citrus reticulata* Blanco, *Cucurbita maxima* Duch., *Curcuma angustifolia* Roxb., *Echinochloa stagnina* (Retz.) P.Beuv., *Garcinia xanthochymus* Hook ex T.Anderson, *Hibiscus cannabinus* L., *Luffa cylindrica* (L) M. Roem, *Mangifera indica* L, *Musa balbisiana* Colla, *Oryza sativa* L, *Solanum melongena* L and *Trapa natans* L.

Medicinal plants: *Acacia farnesiana* (L.) Willd, *Citrus limon* (L.) Burm f., *Cucurbita maxima* Duch., *Datura stramonium* L., *Hedyotis auricularia* L., *Hibiscus cannabinus* L, *Magnolia macrophylla* L., *Mangifera indica* L., *Musa balbisiana* Colla, *Oryza sativa* L., *Pogostemon cablin* (Blanco) Benth. and *Sapindus trifoliatus* L.

Material Culture: *Bombax ceiba* L, *Cymbopogon nardus* L, *Gossypium arboreum* L, *Morus macroura* Miq., *Oryza sativa* L., *Pinus griffithii* McClell, *Pogostemon cablin*(Blanco) Benth and *Strobilanthes flaccidifolia* Nees

Socio-religious aspects: *Acacia farnesiana* (L) Willd, *Musa balbisiana* Colla, *Oryza sativa* L and *Pogostemon cablin* (Blanco) Benth.

Cultivated Plants: The plants of this category are enumerated in (4.6; p.89).

Table 11: Muslim (Pangal/Meitei-pangal) Folk-song, transliteration and associated plants (Botanical names, families and vernacular names).

Muslim Folk-songs	Transliteration	Botanical name, family and vernacular name
Kumsi <i>Kumna</i> tangle/Kumphu lingba angangdu kanano? /Kumphu lingba angangdu/ <i>Sagol hidak</i> mapan chinbani/ <i>Kekru</i> Dolai tongbani....	This year the produce of <i>Kumna</i> leaf is scanty/Who is that child? /Taking care of <i>Kumphu</i> (earthen pot)/It is the child who looks after the pot/Who embellishes flower of <i>Sagol hidak</i> /Riding palanquin made of <i>Kekru</i>	<i>Strobilanthes flaccidifolia</i> Nees; Syn.: <i>Strobilanthes cussia</i> (Nees) Kuntze (Acanthaceae); <i>Kum</i> ; <i>Datura stramonium</i> L (Solanaceae); <i>Sagol hidak</i> ; <i>Sapindus trifoliatus</i> L (Sapindaceae); <i>Kekru</i>
Tamgi Khunu maingouba/Ipalgi louchi louyada/Chekla Chaktabiranu/“ <i>Tera</i> khadabu loungakpi/.....	Valley pigeon who has fair complexion/Don’t visit nearby Uncle or Father’s agro-field to eat paddy grains/ “O girl who looks after the crop under <i>Tera</i> plant/.....	<i>Bombax ceiba</i> L (Malvaceae); <i>Tera</i>
Nabnei shumai mathoubom/The long mata phabada/ <i>Laphu</i> haroi yungledo/ <i>Laphu</i> haroi khudingda/Taojing heinou manana/ <i>Changbikuyomn</i> akhare/....	In your Uncle or Father’s courtyard/That is well levelled/Made the <i>Laphu Changbi</i> plant standing/Over each <i>Laphu</i> /With the <i>Heinou</i> plant leaves/Main pillar is decorated/	<i>Mangifera indica</i> L (Anacardiaceae); <i>Heinou</i> ; <i>Musa balbisiana</i> Colla (Musaceae); <i>Laphu Changbi</i>
Thanga ningol kada/Numidang Tandan pairiba, karino? /“ <i>Chakpi Uchan</i> meirani/Numidang kangbi khonnoubi phabani”.....	What’s that firefly? /Flying in the room of my beloved/ “It’s the flame of (Chakpi, Chandel district) pine tree lighted/To catch sweet-singing night mosquitoes”.....	<i>Pinus griffithii</i> McClell (Pinaceae); <i>Uchan</i>
Loktak epom mathakta/Mapan ngouna shariba, karino? /“ <i>Heikak</i> kumnang tabini/Kalengi thammei oinasu kumshatli”...	What is that white flower? /With the waves of Loktak lake/“ <i>Heikak</i> , that’s black/It gives flower near the end of summer”....	<i>Trapa natans</i> L (Trapaceae); <i>Heikak</i>
Loibi mangai leibana/Panthou Hao	At a far place in the hill/My father paid visit to his tribal	<i>Gossypium arboretum</i> L (Malvaceae); <i>Lashing</i>

karubana/Poirei chingmai ngallibi/Huining <i>Lashing</i> popchaobi/Haosham thanna lourakle/Tabu thanna purakle.....	friend/He brought <i>Haosham</i> (basket of tribals)/ and <i>Tabu</i> (valley basket) full of <i>Lashing</i> plant/ <i>Lashing</i> of big kind /That is the light of a far hill slope....	
Chingda shatpa <i>U-Thambal</i> /Thambalgi mapao lougeda lakpadi/Mapu-o panba Thambal-dum oiramle.....	I came to ask about the tree lotus /That blooms in the land of hill/But tree lotus turned out to be pollinated.....	<i>Magnolia macrophylla</i> L. (Magnoliaceae); <i>U-Thambal</i>
<i>Chigonglei</i> pambi Yaimabi (female human being)/Nabangi Kharai thonganda/ <i>Chigonglei</i> nachom paiduna leplammu/...	Yaimabi, the second daughter of a family who adores <i>Chigonglei</i> / Stay standing with a garland of <i>Chigonglei</i> /At your fathers' house gate.....	<i>Acacia farnesiana</i> (L) Willd.; (Fabaceae); <i>Chigonglei</i>
Sana <i>Shangbrei</i> makhongda/Lindu charang leibani, shokkani/..	In the place where <i>Shangbrei</i> plant (shine like gold) /There is rattlesnake, it will hurt you/ ...	<i>Pogostemon cablin</i> (Blanco) Benth.Syn: <i>Pogostemon purpurascens</i> Dalz. (Lamiaceae); <i>Shangbrei</i>
Hada <i>Kusum</i> shak-henbi/Leirang Leikhal sudana/Sanouna khoidana lengliba/Karigi Leirang parengno? /“Leirang-na leikhal yamlaga/Leiyetnani keeduna/Naitom leidi <i>Kusum-lei</i> /.....	O handsome <i>Kusum</i> /What kind of garland are you making?/Absenting other kinds of flowers/In that lovely garland/Many a kind of flowers may create trouble/ In winning the heart of my darling/As such, I am making this lovely garland/Only with <i>Kusum</i> flower/....	<i>Carthamus tinctorius</i> L (Asteraceae); <i>Kusum-lei</i>
Khoi-nou eta tabara/ <i>Heirangkhoi</i> heimei tabido/Taojing mapan sahoure/....	My friend, are you listening? <i>Heirangkhoi</i> plant of end season/ It bears a fruit(comparing a foetus)/ ..	<i>Garcinia xanthochymus</i> Hook.ex. T. Anderson (Clusiaceae); <i>Heirangkhoi</i>
Thongjaorokki pakhang-o/Nangna ngarang haigewa/Hairam-mone pakhang-o! /“Eina ngarang haigewa/Eigina nongbrou khudopto	O lad from Thongjaorok (one village) Yesterday you wanted to say something/O Lad speak your mind/“Yesterday what I wanted to say was/Please	<i>Citrus reticulata</i> Blanco (Rutaceae); <i>Komla</i> ; <i>Citrus limon</i> (L) Burm.f. (Rutaceae); <i>Champra</i>

pibiro/“Nang-gi nongbrou Khudopti/ <i>Komla</i> houbi changjouda/ <i>Champra</i> houbi hidenda/Ho, Laija eroi tambada tahoure”.....	return my finger ring that is glitter”/Your finger ring that is glitter/To the surface of water where <i>Komla (citrus)</i> grows/To the (boat) dock where <i>Champra (citrus)</i> grows/ Ho! It had fallen when I learn swimming.....	
Langban <i>Koukha</i> nungshibi/ <i>Phou</i> -khong kada yetchabi/ Phukpirone heipal oina/Thabirone leiranglakta/Leiranglakta tharabadi/Khoimu toina engani / Khoimu toina ellabadi/Leirang leika phangani....	O lovely <i>Koukha</i> of (around September)/Always grow in the foot of the Paddy/ Pluck me as fruit/ Grow me among the flowers/If growing among the flowers/ Lest the bee visit very often/ If bee very often visits/ I will be pleased....	<i>Hedyotis auricularia</i> Roxb. (Rubiaceae); <i>Langban Koukha</i> ; <i>Oryza sativa</i> L (Poaceae); <i>Phou</i>
Leichilna pomai tuba lam/ <i>Charotna</i> mondum saba lam/Pamubi.....	O my dear/It is the land of cushion made of <i>Charot</i> /And fold of clouds in the sky.....	<i>Cymbopogon nardus</i> L (Poaceae); <i>Charot</i>
Waida kouba haiganu/Ngamdeda kouba shonganu/Ngasina koirou numitta/Ha Hei Hei Hai/He Hei Hei Hai/ <i>Shebot</i> -ta <i>Mairen</i> tok-kummi/ <i>Sougree</i> -da Ngakichou thakkummi....	In this very day/Don’t say one is tired/That you are not able to do/expression of encouragement (twice)/It is like putting <i>Mairen</i> in the curry of <i>Shebot</i> /Adding <i>Ngakichou</i> (a fish) in the curry of <i>Sougree</i>	<i>Luffa cylindrica</i> (L) M. Roem. (Cucurbitaceae); <i>Shebot</i> ; <i>Cucurbita maxima</i> Duch. (Cucurbitaceae); <i>Mairen</i> ; <i>Hibiscus cannabinus</i> L (Malvaceae); <i>Sougree</i>
Awangnabu lamdi lamnungshi/ <i>Khamen</i> - lokki lokmai/ <i>Pullei</i> houbina lokchap/ <i>Yaipal</i> houbibu lokhang.../Haorougi khallei pheidomdi ashitpa.../ <i>Hup</i> -chitki maranbu lanbada.../ <i>Kabrang</i> -gi langdi <i>Kabrang</i> Lang/Muki langdi <i>muka</i> Lang/Langja langlam taranithoina.../Pakhang-	O lovely land in the north/In front of gorge where <i>Khamen</i> (eggplant) growing /In the rift valley where <i>Pullei</i> or <i>loklei</i> grows/In front of hill gorge where <i>Yaipal (Curcuma)</i> grows/Next to the place where <i>Hup</i> grows/.... O dear you build a trap/Made from threads spin from <i>Muka</i> or <i>Kabrang</i> plant /The trap that is made from twelve kinds of threads/O dear I am trapped in the net	<i>Solanum melongena</i> L (Solanaceae); <i>Pangal Khamen</i> ; <i>Alpinia allughas</i> (Retzius) Roscoe. (Zingiberaceae); <i>Pullei</i> or <i>Loklei</i> ; <i>Curcuma angustifolia</i> Roxb.(Zingiberaceae), <i>Yaipal</i> ; <i>Echinochloa stagnina</i> (Retz.) P.Beuv. (Poaceae); <i>Hup</i> ; <i>Morus macroura</i> Miq. Syn. <i>Morus laevigata</i> Wall ex Brandis (Moraceae);

gi tengna lang-maktabu thakpadi nungshiba.... /Pakhang-gi tengna langnadi kanba hen/Ningolgi samma pangalnadi sonbana../Pakhang-gi tengna lang yeithatpabu/Ngamdrene nungshiba.....	that is strong/But I am weak/And I can't get rid off.....	<i>Kabrang or Muka</i>
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Source of folk-songs: *Secondary data*

Source of plants: *Primary data*

Table 12: List of plants used in folk-proverbs and their potentials/utilities in different categories (FB, M, MC, SR and CP) of human affairs.

Plants used in Folk-proverbs	FB	M	MC	SR	CP
<i>Alocasia macrorrhizos</i> (L.)G.Don .(Araceae)	+	+	-	-	+
<i>Areca catechu</i> L (Arecaceae)	+	+	-	+	+
<i>Averrhoa carambola</i> L(Averrhoaceae)	+	+	-	-	+
<i>Bambusakingiana</i> Gamble (Poaceae)	+	-	+	+	+
<i>Capsicum frutescens</i> L (Solanaceae)	+	+	-	-	+
<i>Curcuma longa</i> L. (Zingiberaceae)	+	+	-	-	+
<i>Eupatorium birmanicum</i> DC(Asteraceae)	-	-	-	-	+
<i>Gossypium arboreum</i> L (Malvaceae)	-	-	+	-	+
<i>Grewia microcos</i> L (Tiliaceae)	+	-	-	-	+
<i>Imperata cylindrica</i> (L) Rausch(Poaceae)	-	+	+	-	+
<i>Ipomoea batatas</i> L (Convolvulaceae)	+	-	-	-	+
<i>Musa balbisiana</i> Colla.(Musaceae)	+	+	-	+	+
<i>Nelumbo nucifera</i> Gaertn.(Nelumbonaceae)	+	-	-	-	+
<i>Nymphae pubescens</i> Willd. (Nymphaeaceae)	+	-	-	-	+
<i>Oryza sativa</i> L (Poaceae)	+	+	+	+	+
<i>Piper betle</i> L (Piperaceae)	+	+	-	+	+
<i>Rhus chinensis</i> Mill. Syn.: <i>Rhussemialata</i> Murray (Anacardiaceae)	+	-	-	-	-
<i>Riccia natans</i> Corda , Syn.: <i>Ricciocarpus natans</i> L (Ricciaceae)	+	-	-	-	+
<i>Ricinus communis</i> L (Euphorbiaceae)	+	-	+	-	+
<i>Saccharum officinarum</i> L (Poaceae)	+	-	-	-	+
<i>Tamarindus indica</i> L (Fabaceae)	+	+	+	-	+
<i>Meyna spinosa</i> Roxb. Ex. Link. (Rubiaceae)	+	-	+	-	-

(+) means used and (-) means not used

(FB=Food and Beverages; M= Medicine; MC= Material Culture; SR= Socio-religious; CP= Cultivated Plants).

Source: *Primary data*

Table 13: List of plants used in folk-songs and their potentials/utilities in different categories (FB, M, MC, SR and CP) of human affairs

Diversity of Plants used in Folk-song	FB	M	MC	SR	CP
<i>Acacia farnesiana</i> (L) Willd. (Fabaceae)	-	+	-	+	-
<i>Alpinia allughas</i> (Retzius) Roscoe.(Zingiberaceae)	+	-	-	-	-
<i>Bombax ceiba</i> L (Malvaceae)	-	-	+	-	-
<i>Carthamus tinctorius</i> L (Asteraceae)	-	-	-	-	+
<i>Citrus limon</i> (L) Burm.f. (Rutaceae)	+	+	-	-	+
<i>Citrus reticulata</i> Blanco. (Rutaceae)	+	-	-	-	+
<i>Cucurbita maxima</i> Duch. (Cucurbitaceae)	+	+	-	-	+
<i>Curcuma angustifolia</i> Roxb.(Zingiberaceae)	+	-	-	-	-
<i>Cymbopogon nardus</i> L (Poaceae)	-	-	+	-	-
<i>Datura stramonium</i> L (Solanaceae)	-	+	-	-	-
<i>Echinochloa stagnina</i> (Retz.) P.Beuv. (Poaceae)	+	-	-	-	-
<i>Garcinia xanthochymus</i> Hook.ex. T.Anderson (Clusiaceae)	+	-	-	-	+
<i>Gossypium arboretum</i> L (Malvaceae)	-	-	+	-	+
<i>Hedyotis auricularia</i> Roxb. (Rubiaceae)	-	+	-	-	-
<i>Hibiscus cannabinus</i> L (Malvaceae)	+	+	-	-	+
<i>Luffa cylindrica</i> (L) M.Roem.(Cucurbitaceae)	+	-	-	-	+
<i>Magnolia macrophylla</i> L (Magnoliaceae)	-	+	-	-	+
<i>Mangifera indica</i> L (Anacardiaceae)	+	+	-	-	+
<i>Morus macroura</i> Miq.Syn.: <i>Morus laevigata</i> Wall ex Brandis (Moraceae)	-	-	+	-	+
<i>Musa balbisiana</i> Colla (Musaceae)	+	+	-	+	+
<i>Oryza sativa</i> L (Poaceae)	+	+	+	+	+
<i>Pinus griffithii</i> McClell (Pinaceae)	-	-	+	-	-
<i>Pogostemon cablin</i> (Blanco) Benth. Syn.: <i>Pogostemon purpurascens</i> Dalz.(Lamiaceae)	-	+	+	+	+
<i>Sapindus trifoliatus</i> L.(Sapindaceae)	-	+	-	-	-
<i>Solanum melongena</i> L (Solanaceae)	+	-	-	-	+
<i>Strobilanthes flaccidifolia</i> Nees (Acanthaceae)	-	-	+	-	-
<i>Trapa natans</i> L (Trapaceae)	+	-	-	-	+

(+) means used and (-) means not used

(FB=Food and Beverages; M= Medicine; MC= Material Culture; SR= Socio-religious; CP= Cultivated Plants); Source: Primary data

Table 14: Observed (O) values of plants in Folk-proverbs and Folk-songs.

Sl. No.	Categories of utilities of plants	Folk-proverbs (No. of plants) (O)	Folk-songs (No. of plants) (O)	Total ΣN
1	FB	19	14	33
2	M	10	12	22
3	MC	7	8	15
4	SR	5	4	9
5	CP	20	16	36
	Total	61	54	115

(FB=Food and Beverages; M= Medicine; MC= Material Culture; SR= Socio-religious; CP= Cultivated Plants)

Source: Primary data

Table 15: Chi-Square test for the test of the hypothesis.

Sl. No.	Expected Values (E_i)	$(O_i - E_i)$	$(O_i - E_i)^2$
1	$E_1 = 61 \times 33 / 115 = (17.50)$	$19 - 17.50 = (1.5)$	2.25
2	$E_2 = 61 \times 22 / 115 = (11.66)$	$10 - 11.66 = (-1.66)$	2.7556
3	$E_3 = 61 \times 15 / 115 = (7.95)$	$7 - 7.95 = (-0.95)$	-0.9025
4	$E_4 = 61 \times 9 / 115 = (4.77)$	$5 - 4.77 = (0.23)$	0.0529
5	$E_5 = 61 \times 36 / 115 = (19.09)$	$20 - 19.09 = (0.91)$	0.8281
6	$E_6 = 54 \times 33 / 115 = (15.49)$	$14 - 15.49 = (-1.49)$	2.2201
7	$E_7 = 54 \times 22 / 115 = (10.33)$	$12 - 10.33 = (1.67)$	2.7889
8	$E_8 = 54 \times 15 / 115 = (7.04)$	$8 - 7.04 = (-0.96)$	0.9216
9	$E_9 = 54 \times 9 / 115 = (4.22)$	$4 - 4.22 = (-0.22)$	0.0484
10	$E_{10} = 54 \times 36 / 115 = (16.90)$	$16 - 16.90 = (-0.90)$	0.81
	$\Sigma E = 114.95$		$\Sigma (O_i - E_i)^2 = 13.5781$

Result of Chi-square, $\chi^2 = \Sigma (O_i - E_i)^2 / E_i = 13.5781 / 114.95 = 0.118$

Calculated Value = 0.118

Degree of freedom = $(c-1)(r-1)$

= $(5-1)(2-1)$

= $4 \times 1 = 4$

(c for column and r for row)

The table Value of Chi square for 4 degrees of freedom at 5% level of significance is 9.488.

Table Value (9.488) > Calculated value (0.118).

4.6. Cultivated plants

4.6.1. Test of folk-proverbs and folk-songs revealed cultivated plants (CP)

***Alocasia macrorrhizos* (L) G.Don.Syn: *Alocasia indica* (Lour.) Schott. (Araceae);
*Pan***

This is cultivated in house gardens and fields.

Areca catechu* L (Arecaceae); *Kwa

The plant is grown in frontyard and homestead forest.

Averrhoa carambola* L (Averrhoaceae); *Heinoujom

This is a plant of homestead forest.

Bambusa kingiana* Gamble (Poaceae); *Watangkhoi

This is grown in backyard of houses or homestead forest or near roads or river-side or graveyards.

Bombax ceiba* L (Malvaceae); *Tera

It is a plant of homestead forest.

Carthamus tinctorius* L (Asteraceae); *Kushumlei

It is a plant of house gardens.

Capsicum frutescens* L (Solanaceae); *Morok

The plant is grown in house gardens and agricultural fields.

Citrus limon* (L) Burm.f. (Rutaceae); *Champra

This is a plant of homestead forest.

Citrus reticulata* Blanco (Rutaceae); *Komla

It is a plant of homestead forest.

Cucurbita maxima* Duch. (Cucurbitaceae); *Mairen

This plant is grown in home gardens or fields.

Curcuma longa* L.Syn: *Curcuma domestica* Valetton (Zingiberaceae); *Yaingang

It is grown at dry places in home gardens.

Eupatorium birmanicum* DC. (Asteraceae); *Langthrei

This is a frontyard plant.

Garcinia xanthochymus* Hook.Ex.T.Anderson (Clusiaceae); *Heirangkhoi

It is grown in homestead forest.

Gossypium arboreum* L (Malvaceae); *Lashing

This is grown in house gardens and a homestead forest plant.

Grewia microcos* L (Tiliaceae); *Heitup

It is a rare homestead forest plant.

Hibiscus cannabinus* L (Malvaceae); *Sougree

This is grown in home gardens. It's a popular plant.

Fruits made into chutney and jelly (Kar *et al.*, 2008).

Imperata cylindrica* (L.) Raeusch (Poaceae); *Ee

This is grown in dry fields.

The leaves are tied with fronds of *Thelypteris multilinea* (Wall. ex Hook.) C.V. Morton.at the south corner of the altar made for Dobur Uie (Sharma and Pegu, 2011).

Ipomoea batatas* L (Convolvulaceae); *Mangra

This is planted at dry and mounted places.

Luffa cylindrica* (L) M. Roem (Cucurbitaceae); *Shebot

It is grown in home gardens.

Magnolia macrophylla* L (Magnoliaceae); *U-Thambal

It's a plant of homesteadforest.Three flowers are sold for Rupees ten.

Mangifera indica* L (Anacardiaceae); *Heinou

This is a homestead forest plant.

***Morus macroura* Miq. Syn: *Morus laevigata* Wall ex. Brandis (Moraceae);
*Kabrang/Muka***

The plant is grown in homestead forests.

Musa balbisiana* Colla (Musaceae); *Laphu Changbi

This is grown as decoration material at surrounding of the houses or mounted places.

Nelumbo nucifera* Gaertn. (Nelumbonaceae); *Tharo

The plant is grown in ponds and lakes. Each lotus costs Rs. 5 in the market.

Seeds are eaten raw or cooked (Pagag and Borthakur, 2012).

Nymphae pubescens* Willd (Nymphaeaceae); *Thambal

This is either lake or pond plant.

Oryza sativa* L (Poaceae); *Phou

It is cultivated in the paddy fields.

Piper betle* L (Piperaceae); *Kwa mana

This is grown in frontyard or homestead forests.

***Pogostemon cablin* (Blanco) Benth. Syn.: *Pogostemon purpurascens* Dalz.;
*Shangbrei***

It is grown in the house gardens, mosque campus and graveyards.

Riccia natans* Corda Syn: *Ricciocarpus natans* L. (Ricciaceae); *Kang

This is a pond plant.

Ricinus communis* L (Euphorbiaceae); *Kege

It is grown in agricultural fields or house gardens.

Saccharum officinarum* L; (Poaceae); *Chu

It is a plant of homestead forest. This is grown in the fields too.

***Solanum melongena* L (Solanaceae); Pangal Khamen**

This is grown in the home garden.

***Tamarindus indica* L (Fabaceae); Mange hei**

It is grown in homestead forest.

***Trapa natans* L (Trapaceae); Heikak**

This is a pond plant.

Seeds eaten roasted and cooked (Pagag and Borthakur, 2012).

4.6.2. Ornamental plants

***Hydrocotyle sibthorpioides* Lam. (Apiaceae); Lai peruk**

***Eupatorium birmanicum* DC. (Asteraceae); Langthrei**

***Mimusops elengi* L (Sapotaceae); Bokul**

***Mirabilis jalapa* L (Nyctaginaceae); Makak lei**

***Nelumbo nucifera* Gaertn (Nelumbonaceae); Tharo**

***Nymphae pubescens* Willd (Nymphaeaceae); Thambal**

***Tagetes erecta* L (Asteraceae); Sanarei**

***Vanda coerulea* Griff. (Orchidaceae); Kwak lei**

***Michelia champaca* L (Magnoliaceae); Leihao**

The above plants are considered to be ornamental plants. The plant *Hydrocotyle sibthorpioides* L is found in the wild at surrounding while others are found in front of the houses or garden plants. The flowers of *Mirabilis jalapa* L., *Tagetes erecta* L., *Vanda coerulea* Griff., and *Michelia champaca* L are showy and colourful. The flower of *Tagetes erecta* L and *Michelia champaca* L are bearing fragrances and these are embellished by girls and women. The plants such as *Nelumbo nucifera* Gaertn and *Nymphae pubescens* Willd are cultivated in the shallow ponds.

Leave and shoot of *Hydrocotyle sibthorpioides* Lam. are eaten in fresh curry and chutney (Pagag and Borthakur, 2012). Young leaves and shoots are used as vegetable and considered as medicinal value of stomach pain (Baro *et al.*, 2015).

Ripe fruits of *Mimusops elengi* L. are taken as such (Kar *et al.*, 2008)

4.7. Wild plants

The wild plants (Table 16) used in folk-proverbs and folk-songs are categorised as the following.

Human foods: *Alpinia allughas* (Retzius) Roscoe, *Trapa natans* L, *Rhus chinensis* Mill and *Grewia microcos* L., *Curcuma angustifolia* Roxb., *Meyna spinosa* Roxb., *Nymphae pubescens* Willd, *Nelumbo nucifera* Gaertn., *Phyllanthus emblica* Gaertn., *Rhus semialata* Murray, *Ziziphus mauritiana* Lam and *Averrhoa carambola* L.

Animal foods: *Alternanthera philoxeroides* (Mart) Griseb, *Cymbopogon nardus* (L.) Rendle, *Cynodon dactylon* (L) Pers., *Echinochloa stagnina* Retz., *Enhydra fluctuans* Lour., *Imperata cylindrica* (L) P.Beuv. and *Riccia natans* Corda.

Medicinal plants: *Averrhoa carambola* L., *Azadirachta indica* A.Juss, *Celtis timorensis* Span, *Clerodendrum serratum* (L) Spreng, *Datura stramonium* L., and *Desmodium triflorum* (L)DC etc.

Socio-religious functions: *Acacia farnesiana* Willd, *Coix lacryma jobi* L., *Melia azedarach* L. and *Ziziphus mauritiana* Lam.

Material Culture: *Ageratum conyzoides* Roxb., *Bombax ceiba* L., *Cymbopogon nardus*(L) Rendle, *Imperata cylindrica* (L.) P. Beuv., *Pinus griffithii* (Hook.f.) Parl. and *Ricinus communis* L.

Table 16: Wild Plants used in the categories of Potentials/Utilities i.e.Medicinal, Human Food/Animal Food, Socio-religious and Material Culture

Sl. No.	Name of Plants	Potentials/Utilities (M, HF/AF, SR, MC)					Wild but Cultivated
		M	HF	AF	SR	MC	
1	<i>Acacia farnesiana</i> Willd. (Fabaceae)	M			SR		
2	<i>Ageratum conyzoides</i> Roxb. (Asteraceae)					MC	
3	<i>Alpinia allughas</i> (Retz.)Roscoe (Zingiberaceae)		HF				
4	<i>Alternanthera philoxeroides</i> (Mart.) Griseb.(Amaranthaceae)		AF				
5	<i>Averrhoa carambola</i> L.(Averrhoaceae)	M	HF				+
6	<i>Azadirachta indica</i> A.Juss. (Meliaceae)	M					
7	<i>Bombax ceiba</i> L.(Bombacaceae)					MC	+
8	<i>Celtis timorensis</i> Span.(Cannabaceae)	M					
9	<i>Clerodendrum serratum</i> (L.) Spreng (Lamiaceae)	M					
10	<i>Coix lacryma jobi</i> L. (Poaceae)				SR		+
11	<i>Curcuma angustifolia</i> Roxb. (Zingiberaceae)		HF				
12	<i>Cymbopogon nardus</i> (L.) Rendle (Poaceae)		AF			MC	
13	<i>Cynodon dactylon</i> (L.) Pers. (Poaceae)		AF				
14	<i>Datura stramonium</i> L.(Solanaceae)	M					
15	<i>Desmodium triflorum</i> (L) DC (Fabaceae)	M					
16	<i>Echinochloa stagnina</i> (Retz.)P. Beauv.(Poaceae)		AF				
17	<i>Enhydra fluctuans</i> Lour.(Asteraceae)	M					
18	<i>Fragaria nilgerrensis</i> Schtdl. Ex. J.Gay.(Rosaceae)	M					
19	<i>Grewia microcos</i> L.(Tiliaceae)		HF				+
20	<i>Hedychium coccineum.</i> (Zingiberaceae)		HF				
21	<i>Hedyotis auricularia</i> Roxb.(Rubiaceae)	M					

22	<i>Hydrocotyle sibthorpioides</i> Lamk. (Apiaceae)	M					
23	<i>Hydrocotyle</i> sp. (Apiaceae)	M					
24	<i>Imperata cylindrica</i> (L.) P.Beuv. (Poaceae)	M	AF		MC		+
25	<i>Kyllinga brevifolia</i> Rottb. (Cyperaceae)	M					
26	<i>Lindernia ruelloides</i> (Colsm.) Pennell. (Linderniaceae)	M					
27	<i>Melia azedarach</i> L.(Meliaceae)			SR			
28	<i>Melothria perpusilla</i> (Blume) Cogn.(Cucurbitaceae)	M					
29	<i>Meyna spinosa</i> Roxb.(Rubiaceae)		HF				
30	<i>Myriogyne minuta</i> (G.Forst.) Less. (Asteraceae)	M					
31	<i>Nelumbo nucifera</i> Gaertn. (Nelumbonaceae)		HF			OP	+
32	<i>Nymphae pubescens</i> Willd. (Nymphaeaceae)					OP	+
33	<i>Osbeckia nepalensis</i> Hook. (Melastomataceae)	M					
34	<i>Oxalis corniculata</i> L.(Oxalidaceae)	M					
35	<i>Phyllanthus emblica</i> Gaertn.(Euphorbiaceae)	M					+
36	<i>Pinus griffithii</i> (Hook.f.) Parl (Pinaceae)				MC		+
37	<i>Riccia natans</i> Corda (Ricciaceae)		AF				+
38	<i>Rhus chinensis</i> Mill. (Anacardiaceae)		HF				+
39	<i>Ricinus communis</i> L. (Euphorbiaceae)				MC		+
40	<i>Sapindus trifoliatus</i> L. (Sapindaceae)	M					
41	<i>Vanda coerulea</i> Griff.(Orchidaceae)					OP	+
42	<i>Vitex negundo</i> L.(Lamiaceae)	M					
43	<i>Xylosma longifolia</i> Clos.(Salicaceae)	M					
44	<i>Ziziphus mauritiana</i> Lam.(Rhamnaceae)		HF	SR			+

M= Medicinal; AF= Animal food; HF= Human Food; Socio-religious; MC= Material Culture; OP=Ornamental plant

Source: Primary data

4.8. Taxonomical treatment of plants

The plants have been classified, identified and named under the Bentham and Hooker's Classification System.

Artificial keys

- 1a. Lower plants, Non flowering Plants
 - 2a. Non seeded plants.....Cryptogams
 - 3a. Plant body thallus.....Ricciaceae
- 1b. Higher plants, Flowering plants
 - 4a. Seeded plants.....Phanerogams
 - 5a. Naked seeded plants.....Gymnosperms
 - 6a. Male and female cones present.....Pinaceae
 - 7a. Seed coat bearing plants.....Angiosperms
 - 8a. Cotyledons-2.....Dicotyledonous
 - 9a. Aquatic, hard petiole
 - 10a. Calyx turn to hard spinesTrapaceae
 - 9b. Aquatic, soft petiole
 - 11a. Sepals numerous.....Nymphaceae
 - 11b. Tepals numerous.....Nelumbonaceae
 - 12a. Carpels many.....Magnoliaceae
 - 12b. Restricted number of carpels
 - 13a. Stamen numerous.....Brassicaceae
 - 13b. Stamen 6.....Theaceae
 - 14a. Herbs.....Caryophyllaceae
 - 14b. Trees, shrubs.....Clusiaceae
 - 15a. Leaves entire or serrate, sometimes lobed.....Tiliaceae
 - 15b. Leaves un-lobed to deeply and often palmately divided.....Malvaceae
 - 16a. Trees, fruit berriesAverrhoaceae
 - 16b. Herbs, dry capsules.....Oxalidaceae

- 17a. Leaves always compound.....Rutaceae
- 18a. Flower axillary thyrus.....Meliaceae
- 18b. Cymes.....Rhamnaceae
 - 19a. Flowers cymes/fascicles.....Sapindaceae
- 17b. Leaves not always compound.....Anacardiaceae
- 20a. Stamens numerous
- 21a. Carpel 1 to many.....Rosaceae
- 21b. Carpel one.....Myrtaceae
- 20b. Stamens not many
- 22a. Stipules lacking.....Melastomataceae
- 22b. Stipules develop into spine.....Fabaceae
- 23a. Stem hollow or solid.....Apiaceae
- 23b. Stem angular.....Cucurbitaceae
 - 24a. Pappus present.....Asteraceae
 - 24b. Pappus absent.....Rubiaceae
- 25a. Plant bears Glabrous/white tomentose/spinesSapotaceae
- 25b. Plant not glabrous.....Salvadoraceae
 - 26a. Capsule FruitConvolvulaceae
 - 26b. Achene FruitSolanaceae
- 27a. Carpel Staminodes 1.....Lamiaceae
- 27b. Carpel Staminodes 0-1-3.....Acanthaceae
 - 28a. Leaves opposite.....Linderniaceae
 - 28b. Mostly leaves spirally arranged.....Plantaginaceae
- 29a. Pistil 1..... Lauraceae
- 29b. Bicarpellary.....Amaranthaceae
 - 30a. Flower without perianth.....Piperaceae
 - 30b. Flower with perianth.....Nyctaginaceae
- 31a. Plant Unisexual
- 32a. Petals present.....Euphorbiaceae
- 32b. Petals absent.....Moraceae

- 31b. Plant Bisexual
- 33a. Perianth 4-9, lobed.....Cannabaceae
- 33b. Perianth cupulate.....Salicaceae
- 8b. Parallel venation, trimerous flowers, one
cotyledon.....Monocotyledonous
- 34a. Epiphytic
 - 35a. Flower bears pollinia.....Orchidaceae
- 34b. Herbs, Shrubs, Grasses and Trees
 - 36a. Perianth absent.....Araceae
 - 36b. Perianth present.....Arecaceae
- 37a. Sympodial corm.....Musaceae
- 37b. Underground stem.....Zingiberaceae
 - 38a. Stamen 3.....Iridaceae
 - 38b. Stamen 6.....Liliaceae
- 39a. Fruits nutlets.....Cyperaceae
- 39b. Fruits caryopsis.....Poaceae

Bryophytes

1. Ricciaceae

Rchb., Bot. Damen. 255. (1828)

Riccia, L

Sp. Pl. 2: 1138–1139. (1753)

Terrestrial and aquatic habitats; plant body prostrate, flat, green, dichotomously branched thallus; branching circular, rosette, cruciform, reticulate or overlapping, rhizoids and scales present on the ventral median ridge, scales arranged in a transverse row and may be membranous, multicellular, single celled, and with colours ranging from pink, red, violet and black.⁷ (out of 268) species has been accepted worldwide.

Riccia natans L., Syst. Nat., (ed. 10) 2: 1339(1759); Gray, Nat. Arr. Brit. Pl. 1: 620 (1821) = ***Ricciocarpus natans*** (L.) Corda, Opiz, Naturalientausch 12: 651(1829);

Lindenb. Ex Nees) Debat, Fl.Musc. 246(1874); Sim, Trans.Roy.Soc.South Africa 15(1):16(1926).

Annual, floating in ponds, lakes and freshwater plant; thallus pale green to brown green colour, 5 cm wide, dorsal-ventral, ventral side bears minute rhizoids; plant occurs over moist terrestrial surface and water.

Fl. and Fr.: Young thallus appears in the first week of July.

Distribution: This occurs worldwide.

Specimen Examined: MMA709; 9-8-2013; Lilong

Gymnosperms

2. Pinaceae

Spreng. Ex Rudolphi, Syst. Orb. Veg. 35. (1830)

Pinus, L.

Sp. Pl. 2:1000. (1753)

Trees or rarely shrubs, evergreen, with regularly whorled branches, spreading leaf bundles; leaves needle like in bundles, slender or stout, straight or twisted, triangular, flabellate-triangular; seed cones pedunculate or sub-sessile, erect or pendulous, cylindrical or ovoid, seed scales spirally arranged, woody, exposed apex thickened and ridged; seeds variable in color, shape, and size, winged or not; wing adnate or articulated to seed. 122 (out of 755) species has been accepted world wide.

Pinus griffithii McClell. Not. Pl. Asiat. 4:17. (1854).

Perennial, tree; growing wild in the hills; 360-480" tall pine tree; 3 Pinus needles in a bunch, needle shaped; prominent stem bark; seeds in woody cones.

Fl. and Fr.: Shower of Sulphur August-September.

Distribution: It is recorded from Afghanistan to northeast India and Tibet to North Myanmar.

Specimen examined: MMA162; 2-5-2012; Chandel

Dicotyledonous

3. Trapaceae

Dumortier, Anal. Fam. Pl. 36, 1829

Trapa, L.

Sp. Pl. 1: 120. (1753)

Herbs, annual, aquatic, rooted or floating; stem submerged, slender, internodes elongate; adventitious roots developing from leaf scars, highly dissected, leaflike; leaves dimorphic; leaf blade rhombic to deltoid; flowers solitary in upper leaf axils, flowering at water surface, bisexual, 4-merous; sepals 4; petals 4, white or lilac; stamens 4; fruit turbinate, cup-shaped or elongate rhombic, seed 1.

6 (out of 89) species has been accepted worldwide.

Trapa natans L., Sp. Pl. 1:120. (1753); (Osbek.) Makino, Bot. Mag. (Tokyo) 11: (283) (1897); Nakaro, Bot.Mag.(Tokyo) 77: 166(1964); Nakaro ex Verde, Kew. Bull.41: 448(1986)

Annual, freshwater plant, floating, aquatic; roots and leaves arising out of nodes, leaf with petioles, leaves incised on the tip side, acute leaf tips, diam.3 mm, upper part of leaves green and below purple; white flower, 4 petals, 5 anthers, 1 stigma, 5 sepals, stem diam. 1 mm, fruit purple-black with 2 sharp spines.

Fl.and Fr.: Flowering and fruiting in the month of March-September.

Distribution: It occurs in southern Europe, Africa and temperate, subtropical and tropical Asia.

Specimen Examined: MMA410; 12-5-2013; Loktak Lake

4. Nymphaeaceae

Salisbex Bercht. &J.Presl.,Ann. Bot. (König & Sims) 2: 70. (1805).

Nymphae, L.

Sp. Pl. 1: 510-511 (1753)

Perennial, herbs, with creeping rhizomes; leaves radical with lamina floating on the surface of water, borne on a long stalk, ovate to orbicular, entire, toothed or

sinuate-toothed with a cordate or sagittate base; flowers large, showy, floating or held above the water surface, borne on long pedicels, sepals 4, petals many, different colours, gradually transforming into stamens; stamens petaloid, carpels many, in one whorl, stigmas many, concave, radiate; fruit a spongy berry 1, usually ripening under water; seeds many. 36 (out of 263) species has been accepted worldwide.

Nymphaea pubescens Willd., Sp.Pl.2:1154.(1798); Hook. f. & Thomson in Fl. Brit. India 1: 114(1875)

Perennial, freshwater plant, growing in ponds and lakes; flower diam. 4.5 cm x 5 cm long, cylindrical pedicel coming out of root stalk below water, green calyx, white corolla.

Fl. and Fr.: Flower June-November

Distribution: It occurs in warmer parts of Indian subcontinent extending up to Malaysia, South East Asia to the Philippines and New Guinea.

Specimen Examined: MMA 412; 13-6-2013; Lilong Usoipokpi Lake.

5. Nelumbonaceae

A. Rich., Dict. Class Hist. Nat. 11:492. (1827)

Nelumbo, Adanson

Fam. Pl. 2: 76, 582. (1763)

Herbs, perennial, aquatic; leaves arising from rhizome, alternate, emersed or floating, long petiolate; bisexual, hypogynous; tepals numerous, inner ones larger and petaloid; stamens numerous; pistils numerous, simple, ovule 1, pendulous; fruit nutlike, indehiscent; seeds without endosperm and perisperm. 2 (out of 45) species has been accepted worldwide.

Nelumbo nucifera Gaertn., Fruct.sem.pl.1:73, t.19.fig.2.(1788); (Willd) Kuntze, Revis.Gen.Pl. 1:12(1891); (Willd.) Borsch & Barthlott, Beitr. Biol.Pflanzen 68(3): 443(1994).

Perennial, herb, freshwater plant; ponds, lakes; leaves green, 30-51 cm wide, floating on the ground bears long reddish petioles; bears 7 cm long x diam.4.5 cm; white flower lotus, pedicel, pedicel bears small spines.

Fl.and Fr.: Flower June-November

Distribution: The plant is found in India, Europe, Japan, Australia and Caspian Sea.

Specimen Examined: MMA713; 22-8-2014; Lilong Usoipokpi Lake

6. Magnoliaceae

Juss., Fl. Bor. Amer, 1:327(1803)

Keys to Genus

Stipules thick.....Magnolia
Stipules membranous.....Michelia

Magnolia, L.

Sp. Pl. 1: 535. (1753)

Trees/shrubs, evergreen; leaves spirally arranged, leaf blade thickly papery/leathery, margin entire; flowers terminal on terminal brachyblasts, solitary, bisexual, large, usually fragrant; tepals 9-12; stamens caducous; gynoecium linked to androecium, without a gynophore; carpels few to many; fruit usually ovoid.240(out of 472) species has been accepted worldwide.

Magnolia macrophylla Michx., Fl.Bor.-Amer.1:327(1803); (Weath.) Spongberg, J.Arnold Arbor 57(3): 268(1976); (Weath.) D.L.Johnson, Bailey 23(1): 55(1989); (Zucc.) D.L. Johnson, Bailey, 23(1): 55(1989); Figlar & Noot., Blumea 49: 92(2004).

Evergreen, tree, growing in homestead forest; 240-360" tall; trunk 48 " above the ground; 7-10" green long elliptical leaves, petioles, pulvinus, alternate; branches bears very often prominent marks; egg shaped flower, purple colour young flower but white when opened.

Fl.and Fr.: Flower May-June

Distribution: It was first introduced to Britain. It is a plant of United States of America, Mexico and Spain.

Specimen Examined: MMA883; 3-5-2014; Lilong Chingjao

Michelia, L

Sp. pl.: 536 (1753)

Trees or shrubs, evergreen; leaves spirally arranged; leaf blade leathery, margin entire; flowers pseudo-axillary on a brachyblast, bisexual, usually fragrant; bud surrounded by 2-4 deciduous spathaceous bracts; tepals 6-21, 3 or 6 per whorl, subequal or rarely much smaller than outer whorl; stamens numerous; gynoecium with or without a gynophore; fruit usually terete seeds 2 to several per carpel, red or brown. 1(out of 24) species has been accepted worldwide.

Michelia champaca L., Sp.Pl.1:536 (1753); Moritzi, Syst. Verz. 36 (1846); (Blume) Miq, Ann .Mus. Bot.Lugduno-Batavi 4:72

Evergreen, woody small tree of 120 to 180"; wild/semi domesticated; leaves alternate, broad flashy leaves of 7 to 17 cm long, simple, acute apex; flower pedicellate, flower exists at the axils of leaves, 12 yellow corolla bearing fragrance, numerous stigma.

Fl.and Fr.: Flower April-May

Distribution: Cultivated in Fujian, Guangdong, Guangxi, and Hainan, Taiwan, India, Indonesia, Malaysia, Myanmar, Nepal, Thailand and Vietnam.

Specimen Examined: MMA416; 16-5-2013; Thoubal Moijing

7. Brassicaceae

Burnett, Outlines Bot. 854 (1835)

Brassica, L.

Sp.Pl. 2:666 (1753)

Annual, biennial or perennial herbs; glabrous or hairy with simple, often setaceous hairs; leaves alternate; racemes usually short and corymbose; flowers mediocre, usually yellow, pedicellate, regular; pedicels increasing in length in fruit, often slightly thickened and spreading; stamens 6; filaments linear; ovary cylindrical;

siliquae linear or oblong, seeds uniseriate, globose/rarely ovoid, brown. 38(out of 380) species has been accepted worldwide.

Brassica rapa L., Sp. Pl.2. 666-667. (1753)= *Brassica campestris* L., Sp.Pl.666 (1753); DC., Syst. Nat.2:591(1821); W.D.J.Koch., Syn.Fl.Germ.Helv. 55(1935); (L.)Schubl.& G.Martens, Fl.Wurtemberg Ed. 1:438(1834); Kilam, Acta, Phytotax.Geobot. 36:93(1985); Hanelt, Feddes Repert.98: 553, 554(1987).

Annual, herbs, cultivated in fields and kitchen gardens; leaves margin incised, simple alternate leaves of various sizes; tetramerous raceme yellow flowers; green siliquae fruit 1.5-2.3", pods long.

Fl.and Fr.: Fruiting in December

Distribution: Worldwide distribution recorded. It was thought to have originated in Europe. Found many varieties in Asia.

Specimen Examined: MMA311; 12-12-2012; Lilong

8. Theaceae

Mirb., Bot. Reg.2:Sub.t.112. (1816)

Camellia, L

Sp. Pl. 2: 698. (1753)

Shrubs or small trees, rarely large trees, evergreen; leaves petiolate or rarely sessile and amplexicaul; leaf blade leathery to thinly leathery, margin serrate, serrulate or rarely entire; flowers axillary or subterminal, solitary or rarely to 3 in a cluster; sepals persistent, distinct or basally connate; petals white, red or yellow, seeds globose, semi-globose or polygonal; 248(out of 464) species has been accepted worldwide.

Camellia sinensis (L.) Kuntze; Trudy Imp.S. - Peterburgsk.Bot. Sada 10: 195 (1887); (J.W.Mast.) Kitam, Acta Phytotax Geobot. 14: 59(1950); (Miq.) Sealy, Rev. Gen.Camellia 116(1958); H.T. Chang, Acta Sci. Nat. Univ. Sanyatseni 20(1): 98(1981); H.T. Chang & H.S. Wang, Acta Sci. Nat. Univ. Sunyatseni 23(1): 10(1984).

Shrub; leathery leaves opposite, 10-13 cm long x 5 cm broad, acute apex., fruit semi-spherical/globose, persistent calyx.

Habit: Perennial, Shrub

Habitat: Cultivated on hill slopes.

Fl. and Fr.: April- June

Distribution: The natural habitat of this plant spreads in the lower montane forest on mainland Asia from south-western China (Sichuan) to north eastern Assam (India).

Specimen Examined: MMA392; 17-4-2013; Chandel.

9. Caryophyllaceae

Juss., Gen. Pl. 299 (1789)

Stellaria, L.

Sp.Pl. 1:421 (1753)

Annual or perennial, prostrate to erect herbs; inflorescence of solitary or few to many flowered lax dichasial cymes; sepals 4-5, free, Petals 4-5, sometimes absent, stamens (3-7)10; styles 2, capsule ovoid; seeds rather large, few. 109 (out of 478) species has been accepted worldwide.

Stellaria media (L.)Cirillo, Essent.Pl.Char.Comment. 361 (1784); (L.)Villars, Hist. Pl. Dauphine 3(2): 615. (1789); Holmboe, Bergens Mus. Skr.11, 1(2):70(1914); (Hayata) T.S.Liu & S.S.Ying, Fil. Taiwan 2: 340, Pl.329 (1976)

Annual, herb, creeper, growing wild in the gardens and roadsides; trailing on the ground, weak plant; leaves with petioles, green, opposite, 3.5 - 6 cm long; flower terminal, pedicels, white colour in opening, flower 1 cm long.

Fl. and Fr.: Flowering January to April

Distribution: China, Afghanistan, Bhutan, India (Sikkim), Japan, Korea, Pakistan, Russia and some other Europe countries.

Specimen Examined: MMA790; 7-1-2013; Irong Village

10. Clusiaceae

Lindl.,Intr. Nat. Syst. Bot. (ed. 2) 74. (1836)

Garcinia, L.

Sp. Pl. 1: 443. (1753)

Trees or shrubs; leaves opposite petiolate, entire, leathery to papery, usually glabrous; plant dioecious (sometimes apparently flowers bisexual or plant monoecious); flowers in terminal and or axillary cymes, triads or fascicles or paired or solitary; sepals up to 5, free; female flowers- staminode fascicles as for staminate flowers but smaller or staminodes apparently free; stigmas free or united, peltate, 2-5-lobed or entire; berry smooth or sulcate, with leathery to thin exocarp and 1-5 or sometimes more seeds embedded in endocarpic pulp; seeds large; hypocotyl massive. 418 (out of 610) species has been accepted world wide.

Garcinia xanthochymus Hook.Ex.T.Anderson, Hook.f., Fl. Brit. India 1: 269 (1874)

Perennial, growing in the homestead forest i.e. plant domesticated; tree of 300 to 360" tall; creamy white flowers of 1.3 mm, 5 petals, 5 sepals, 4 anther, 5 stigma, outer half of corolla reddish; 2 mm long petioles, leaf pedicel purple colour on the upper side, deep green, 9" long elliptical leaves, smooth and shining leaves; stem bears clear marks of nodes.

Fl. and Fr.: Flower April-May

Distribution: It's believed to be a native of northern India. This probably originated from Myanmar and India.

Specimen Examined: MMA399; 28-4-2013; Lilong.

11. Tiliaceae

Juss., Gen. Pl. 289. (1789)

Grewia, L.

Sp. Pl. 2: 964. (1753)

Trees or shrubs; leaves alternate; flowers bisexual, polygamous or unisexual (plants monoecious), 3- to many-flowered cymes, solitary or fascicled; sepals yellow, white lilac; petals mostly yellow/white, shorter than sepals; androgynophore short, usually glabrous; stamens many, stigma swollen; fruit a drupe usually with 2 or 4 drupelets. 321 (out of 615) species has been accepted world wide.

Grewia microcos L., Syst.ed.12, 12:602. (1767); Hook.f., Fl.Brit. India 1: 392(1874); Kanjilal & al., Fl. Assam 1(1): 162. (1934); Harid.& R.R. Rao, Forest Fl. Meghalaya 1: 156. (1985)

Deciduous, small tree, growing wild; 180-300" tall plants; 5.5 -12 cm long serrated leaves, under leaves bears white hairs, petiole; 3.5 cm x 12 cm semi-circular/elliptical drupe fruit.

Fl.and Fr.: Flower in March

Distribution: India and Myanmar.

Specimen Examined: MMA773; 17-11-2013; Lilong.

12. Malvaceae

Juss., Gen. Pl. 271. (1789)

Keys to Genus

3-segmented epicalyx.....Hibiscus
More than 5 segments of epicalyx.....Malvaviscus
3-segmented epicalyx.....Gossypium
Epicalyx absent.....Bombax

Hibiscus, L.

Sp. Pl. 2: 693. (1753).

Annual to perennial herbs/undershrubs to trees, usually with stellate pubescence; leaves various, with/without lobes; flowers axillary, usually solitary, occasionally fasciculate/in racemes/ panicles by reduction of leaves; epicalyx segments 3-many, rarely absent, calyx 5-lobed to partite, campanulate, persistent; corolla of various colours; petals 3; carpels 5, syncarpous; style 5-branched above, fruit loculicidally dehiscent capsule; angular, globose/reniform. 154 (out of 1102) species has been accepted worldwide.

Hibiscus cannabinus L., Syst.nat.ed.10:1149(1759); (Lindl.) Hochr., Annuaire. Conserv.Jard. Bot. Geneve 4: 115(1900); Hochr., Annuaire. Conserv.Jard. Bot. Geneve 5:125(1901); (A.Rich.) Hochr., Annuaire. Conserv.Jard. Bot. Geneve (1916).

Annual, shrub, growing in kitchen gardens; 72-96" tall shrub; young leaves simple and alternate, older ones are compound leaves, serrated leaves deeply lobed at two places, green leaves, 5-9" long petioles; hard stem cylindrical; 2" to 3" broad creamy white flower, 7-epicalyx, 5-calyx, 5-corolla, purple throated corolla.

Fl.and Fr.: Flower March - November

Distribution: A common wild plant and cultivated vegetable in Africa. It's cultivated in India too.

Specimen Examined: MMA229; 7-8-2012; Lilong

Malvaviscus, Fabr.

Enum. 155. (1759)

Shrubs or small trees, usually erect, sometimes scrambling or trailing; leaves with or without lobes; stipules caducous; flowers axillary, solitary or in terminal cluster; epicalyx segmented; calyx 5-lobed; corolla tube-like never completely expanded, usually scarlet; petals 5-lobed, carpels 5; fruit a schizocarp, fleshy, berry like, ultimately dry; mericarps 5, separating at maturity, indehiscent. 11(out of 69) species has been accepted worldwide.

Malvaviscus penduliflorus DC., Prodr.1:445.(1824).

Perennial, shrub, growing in the fencing of houses; 60-84" tall; glabrous, serrated, broad, alternate leaves, 3-7 cm long leaves; woody; 4 mm long pentamerous red flower, monadelphous, 10 stigma, 5 red corolla.

Fl.and Fr.: Flower always

Distribution: The exact origin of the plant is unknown. It is cultivated in Bhutan, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka and Thailand.

Specimen Examined: MMA609; 11-3-2014; Lilong

Gossypium, L.

Sp. Pl. 2: 693. (1753)

Annual, herbs to shrubs or rarely small trees; branches usually black punctate with oil glands; leaves petiolate, usually 3-9 palmately lobed, sometimes entire; flowers axillary, solitary; flowers large, showy, pedicellate; epicalyx segments 3,

large; calyx smaller than epicalyx, campanulate, truncate or 5-toothed, persistent; corolla usually yellow with a crimson centre; staminal tube included, antheriferous throughout; carpels 5; stigmas 5; capsule ovoid-subglobose; seeds numerous. 55(out of 222) species has been accepted worldwide.

Gossypium arboretum L., Sp. Pl. 693 (1753); (Tod.)Hutch.& Ghosh, Indian J.Agric. Sci. 7: 248(1937) (Roxb.) Roberty, Candollea 13: 38-39(1950); (Tod.) M.R. Almeida, Fl.Maharashtra 1: 106 (1996).

Annual, shrub, cultivated near the houses and fields; profusely branched, branches bear white cotton consisting black seeds; 9 mm long leaves, alternate, deeply incised at 2 places.

Fl.and Fr.: Flower November-January

Distribution: The plant has been cultivated in Asia for many centuries. Its exact place of origin is unknown.

Specimen Examined: MMA364; 15-3-2013; Lilong

Bombax, L.

Sp. Pl. 1: 511. (1753)

Deciduous big trees; young trunk usually spiny; leaf blade palmately compound; leaf margin entire; flowers bisexual, solitary or fascicled, axillary or terminal; flowers large, produced before leaf flush; pedicellate; petals 5, usually red, yellow, orange or white; obovate or obovate-lanceolate; sometimes reflexed; alternating with petals; anthers reniform; ovary syncarpous, 5-locular; ovules many per locule; longer than stamens; stigma stellately lobed; capsule loculicidally dehiscent into 5 valves, valves woody or leathery, with silky wool inside; seeds small, black, enclosed by wool. 7(out of 171) species has been accepted worldwide.

Bombax ceiba L., Sp. Pl. 1: 511. (1753); Mast.in Hook.f., Fl. Brit. India 1: 349. (1875); Kanjilal & al., Fl. Assam 1(1): 147–148. (1934); Robyns, Bull. Jard. Bot. Bruxelles 33: 97(1963); Deb, Fl. Tripura 1: 293. (1981).

Deciduous, tall tree of around 360-600", growing wild in roadsides, hill slopes and homestead forest; stem bears prominent spines/spikes (1" long x 2" broad), stem c. 81"; red flower, multi-lobed leaves with 6-florets.

Fl. and Fr.: Flowering June-July

Distribution: China, Bangladesh, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines and Sri Lanka.

Specimen Examined: MMA293; 10-11-2012; Thoubal Moijing

13. *Averrhoaceae*

Hutch. Fam. Pl. ed 2, 1:356, 1959

Averrhoa, L.

Sp. Pl. 1: 428 (1743)

Trees or shrubs; leaves alternate/sub-opposite, odd-pinnate; leaflets nearly opposite; inflorescences axillary or ramal, cymes or panicles; flowers small or medium-sized, fragrant; sepals red, semi-fleshy, basally connate; petals white, pink or purple, contorted; stamens all fertile or 5 without anthers; ovary several ovules per locule; fruit a berry, oblong, usually 5-lobed; seeds few or numerous; naked or arillate. 5 (out of 12) species has been accepted worldwide.

Averrhoa carambola L., Sp. Pl. 1: 428 (1753)

Deciduous; small tree, growing wild and in the home forest; branched tree; approx. 240" tall tree; diam. 180" crown, bears green elliptical alternate leaves at the time of leaf flush, odd pinnate; flower minute and purple colour, brick red calyx, purple corolla, fruit bears ridges and furrows (star shape).

Fl. and Fr.: Flower in April

Distribution: Grown in Tropical Asia and New Guinea. It's cultivated throughout tropics and the possible origin is Java.

Specimen Examined: MMA622; 2-4-2014; Meitei Lamkhai

14. *Oxalidaceae*

R. Br., Narr. Exped. Zaire .433 (1818)

Oxalis, L.

Sp.Pl. 1:433 (1753)

Herbs, annual/perennial, usually with tubers, bulbs/rhizomes; leaves radical; alternate, inflorescences solitary, cymose/umbellate; peduncle long, sepals distinct, imbricate; petals yellow, red, pink or white, convolute, sometimes basally slightly connate; stamens all fertile; filaments basally connate/distinct; capsule loculicidally dehiscent.

504 (out of 1761) species has been accepted worldwide.

***Oxalis corniculata* L.**, Sp. Pl. 435. (1753); DC, Prodr. 1: 691(1824); (L.)Sav. Ex Trel, Mem Boston Soc. Nat. Hist. 4(4): 88(1888); (Nutt.)Lourteig, Phytologia 42(2): 134(1979); (A.Gray) B.L.Turner, Phytologia 77(1):3(1994)

Annual, herbaceous, growing wild at shady and moist places; creeping purple weak stem, roots strike on each node; green leaves alternate with 3-leaflets, leaves petioles, yellow flower of 0.5 cm wide x 2 mm long, green fruit of 0.8-1mm long, 5 yellow corolla, 5 calyx.

Fl.and Fr.: Flower March-May

Distribution: The occurrence of this plant is found in China, Bhutan, India, Japan, Korea, Malaysia, Myanmar, Nepal, Pakistan, Russia and Thailand. It's almost cosmopolitan.

Specimen Examined: MMA391; 10-4-2013; United College campus, Chandel

15.Rutaceae

Juss., Gen. Pl. 296. (1789)

Citrus, L.

Sp. Pl. 2: 782. (1753)

Shrubs or small trees, evergreen, rarely deciduous; young branches often flat and angled, usually with solitary (rarely paired) spines at axils; leaves 1-foliolate, rarely 3-foliolate or simple; flowers axillary, hermaphrodite or male, solitary or in small fascicles, fragrant; fruit a berry (hesperidium) with sarcocarp segments of pulp

vesicles and adaxially attached seeds. 31(out of 318) species has been accepted worldwide.

Keys to species:

Fruits smaller.....*Citrus limon*

Fruits larger.....*Citrus reticulata*

Citrus limon (L.) Osbeck, Reise Ostindien 250 (1765); (L.) Burm.f., Fl. Indica 173.(1768); Risso, Hist.Nat.Orang.(1813); Lush, Indian Forester, 36: 348(1910); hort. Ex Yu. Tanaka, Iconogr.Jap.Citrus Iconogr.Jap. Citrus Fruits 1: 89 (1948).

Evergreen, small tree, 96 to 144" tall, Grown in front and side of houses; stem and branches bears 2 to 3.5 cm sharp and long spines, tip of the spine is orange colour; leaves alternate; 1-foliolate; white flower, persistent 5-calyx; fruits diam. 3 to 5 cm.

Fl. and Fr.: Flowers in March.

Distribution: The exact origin of lemon is not confirmed. However, it was first grown in China, northern Burma and India (Assam).

Specimen Examined: MMA607; 5-3-2014; Porompat

Citrus reticulata Blanco, Fl.Filip.610.(1837); (Lush) Tanaka, J. Soc. Trop. Agric. 10: 353(1938); Swingle, J.Wash.Acad. Sci. 32: 25(1942); (Ten.) D. Rivera, Obon, S. Rios, Selma, F. Mendiz, Verde & F. Cano, Varied. Trad Frut. Cuena Rio Segura Cat. Ethnobot. 187 (1988).

Evergreen, 60-166" small tree; grown in homestead forest;5-6 cm long leaves; white flowers; deep green fruit diam. 1.5- 2.5 cm size by middle of June

Fl.and Fr.: Flower March-April

Distribution: It is originated either from south-east Asia (mainly Malesian Archipelago) or Indo-china region.

Specimen Examined: MMA625; 4-4-2014; Lilong Darul Uloom Makha

16. Meliaceae

Juss.,Gen.Pl. 263 (1789)

Keys to Genus

Tall Evergreen tree.....Azadirachta
Short Deciduous tree.....Melia

Azadirachta, A.Juss.

Mém.Mus.Hist.Nat.19:220 (1830)

Tall evergreen tree; leaves pinnate; leaflets serrate, oblique; flowers bisexual, in axillary panicles, calyx 5-partite, petals 5, free; stamens 10, monadelphous, anthers included, sessile on the staminal tube, disc absent; ovary trilocular, with 2 ovules in each locule, stigma trifid; fruit a drupe. 2(out of 5) species has been accepted worldwide.

Azadirachta indica A.Juss., Mém. Mus. Hist. Nat. 19: 220 (1830); Valeton, Pl.Bogor.Exsic 66(1904); Valeton, Pl. Bogor.Exsic. 66(1904); Kothari, Londhe & N.P.Singh, Bull. Bot. Surv. India 39: 181(1997).

Evergreen, large tree, wild and growing on roadsides of villages; small fissures on stem, faded purple colour; 540-720" tall tree; fruits diam.2.3 cm to 2.6 cm x 1-1.8 cm long size; leaves serrated; racemose blue flower; drupe 1 seeded fruit.

Fl.and Fr.: The blue flowers appear in March. The fruits persistent till flower appear.

Distribution: Indo-Malesia.

Specimen Examined: MMA620; 3-3-2014; Lilong

Melia, L.

Sp.Pl. 2:384 (1753)

Deciduous trees; leaves 2-(3)-pinnate; leaflets serrate; flowers small in axillary panicles; calyx 5-6-lobed; petals 5-6, free; stamens 10-12, monadelphous, disc annular; ovary 3-6-locular; stigma capitate; fruit a drupe. 3(out of 51) species has been accepted worldwide.

Melia azedarach L., Sp. Pl. 384-385 (1753); C.D.C., DC. Monogr. Phan. 1: 452(1878); L., Sp Pl. 385(1753); Miq., Ann. Mus Bot. Lugduno-Batavi 3: 24(1867); Kanjilal & al., Fl. Assam 1(2): 228. (1934).

Deciduous, 600-720" tall tree, growing wild in road sides; c. 43" stem; fruit 1.5 cm long x 1 cm diam., young fruit deep green; old yellow fruit; drupe 2-6 seeded fruit.

Fl. and Fr.: Flower March-April

Distribution: It's probably south Asian originated plant.

Specimen Examined: MMA363; 3-3-2013; Lilong

17. Rhamnaceae

Juss., Gen. Pl. 376–377. (1789)

Ziziphus, Mill.

Gard.Dict. p. (1754)

Shrubs/small to medium-sized trees, erect/ straggling, often climbing, evergreen /deciduous, often spinose; leaves alternate, petiolate, distinctly tripli-nerved or rarely pinnately veined; flowers yellow-green, small, bisexual, in axillary corymb-like cymes or axillary or terminal thyrses. 33(out of 241) species has been accepted worldwide.

Ziziphus mauritiana Lamk., Encycl. Method. Bot. 3: 319 (1789); Bhandari & Bhansali, Fasc. Fl. India 20: 101(1990); (Edgew.) R.R.Stewart ex Qaiser & Nazim, Fl. Pakistan 140: 11(1981).

Evergreen, small tree, growing wild but semi-domesticated; 120-240" medium sized tree; stem c.52"; branches bears straight spines up and curved spine below, nearly spherical leaves; creamy white corolla 5, stigma 1, anther 5 bearing curved filament; broken barks present.

Fl. and Fr.: Flower June-July

Distribution: It originated from Indian sub- continent and Middle East.

Specimen Examined: MMA203; 3-7-2012; Mayang Imphal

18. Sapindaceae

Juss., Gen. Pl. 246. (1789)

Sapindus, L

Sp.Pl.1: 367. 1753.

Trees or shrubs; leaves exstipulate, alternate, compound, pari-pinnate; leaflets usually entire; flowers small, regular, in terminal or axillary panicles or racemes; sepals 4-5, petals 4-5, stamens 8-10; fruit fleshy or coriaceous; seeds globose, black.

6 (out of 128) species has been accepted worldwide.

Sapindus trifoliatus L. Sp. pl. 1:367. (1753); Radlk., Pflanzenr. IV. 165(Heft. 98B): 660 (1956).

Deciduous, growing wild in the hills, very few in valley area; tree of 600-720" tall, stem c.43", trunk very high; 8-10 cm long x 3 cm broad, acute apex, alternate, petioles; blackish-red fruit.

Fl.and Fr.: Fruit set September-December

Distribution: America, the Pacific Islands and Asia (Indian peninsular, Sri Lanka, Myanmar).

Specimen Examined: MMA385; 4-6-2013; Chandel

19. Anacardiaceae

R.Br.,Narr. Exped. Zaire. 431. (1818)

Keys to Genus

- Evergreen tree.....Mangifera
- Deciduous tree.....Rhus

Mangifera, L.

Sp.Pl. 1:200. (1753)

Evergreen trees, andro-monoecious with functionally staminate and bisexual flowers in same inflorescence; leaves petiolate, simple; leaf blade margin entire; inflorescence a terminal pleiothyrsoid; flowers small, 4 or 5-merous, petals with 1-5 prominent veins adaxially; stamens 5, free/united with disk basally, usually 1(or 2)

noticeably larger; fruit drupaceous; mesocarp fleshy or fibrous; endocarp thick and bony, compressed. About 8(out of 130) species has been accepted worldwide.

Mangifera indica L.,Sp.Pl.1:200(1753); Annales Soc.Esp. Hist.Nat.10:253(1881)

Perennial, evergreen tree, domesticated at homestead forest; woody, bark thick; oblong and simple leaves bear pulvinus; brick red/yellow green flowers.

Fl. and Fr.: March-July

Distribution: Its natural distribution is in Indo-Malesian region i.e. India, Malaysia.

Specimen Examined: MMA362; 22/3/2013; Lilong

Rhus, L.

Sp. Pl. 1: 265. (1753)

Deciduous shrubs or trees, polygamous or dioecious; leaves imparipinnately compound; leaf rachis sometimes winged; leaflets petiolate or sessile, with serrate or entire margin; inflorescence terminal, paniculate or thyrsoid, floral subtending bracts persistent or deciduous; flowers functionally unisexual or bisexual, 5-merous; styles united basally; drupe globose, slightly compressed, mixed glandular pubescent and pilose, red at maturity; exocarp and mesocarp united; red. 91(out of 584) species has been accepted worldwide.

Rhus chinensis Mill.,Gard.Dict.(ed.8)7(1768)= *Rhus semialata* Murray, Commentat. Soc. Regiae Sci. Gott.6: 27(1784); Rehder, J.Arnold Arbor.20 (4):416 (1939); S.B.Liang, Bull.Bot.Res, Harbin 2(4):156-157(1982)

Perennial, small tree, growing wild in foot hills and road sides;12 to 180" tall tree, woody; alternate, serrated compound leaves, pulvinus, petioles of leaves present; minute greenish (later creamy white) flowers are on the branch tips; inflorescence terminal panicle, red berries.

Fl.and Fr.: Flower & Fruits November- March

Distribution: North- west and western Himalaya of Nepal, Sikkim, China and Japan.

Specimen Examined: MMA535; 25-11-2013; Chandel

20. Rosaceae

Juss., Gen. Pl. 334. (1789)

Fragaria, L.

Sp. Pl. 1: 494. (1753)

Herbs, perennial, mostly stoloniferous, polygamo-dioecious; stolons often rooting at nodes and forming plantlets; leaves alternate, petiolate; leaf blade 3-foliolate or pinnately 5-foliolate; inflorescence erect, cymose or corymbiform; sepals 5, epicalyx segments 5, petals 5, white, rarely yellow, broadly obovate or suborbicular; stamens numerous; carpels numerous; aggregate fruit formed from enlarged receptacle, berry-like, long conic to globose, fleshy. 16(out of 73) species has been accepted worldwide.

Fragaria nilgerrensis Schldl. ex J. Gay, Ann. Sci. Nat., Bot., sér. 4 8: 206. (1857); (H.Lev.) Hard.-Mazz., Symb.Sin. 7 (3): 507(1933)

Annual, herb, creeper, growing in the lawns among grasses; root stalk extended stems, cylindrical stem bears nodes, nodes bears roots, leaves; multipliate and corrugated leaves; yellow flowers and red fruits (ripe carpels).

Fl. and Fr.: Flower and fruiting in Monsoon season i.e. April – August.

Distribution: China, Bhutan, India, Japan, Korea, Myanmar, Nepal, Philippines, Russia, Vietnam and in other Southeast Asian countries.

Specimen Examined: MMA389; 10-4-2013; United College campus, Chandel.

21. Myrtaceae

Juss., Gen. Pl. 222-323. (1789)

Syzygium, P. Browne ex Gaertn.

Fruct.Sem.Pl.1:166–167, Pl.33, f.1. (1788)

Trees or shrubs; leaves opposite or sometimes whorled, petiolate to subsessile; inflorescences terminal or axillary, usually panicles of cymes, 3 to many-

flowered; flowers stipitate or not; calyx lobes 4 or 5 or rarely more, usually short, petals 4 or 5 or rarely more, distinct and then expanding separately or coherent and then caducous as a unit; stamens numerous, distinct but occasionally slightly adhering at base; anthers minute, versatile; ovary inferior; fruit drupaceous. 1123(out of 1374) species has been accepted worldwide.

Syzygium aromaticum (L.)Merrill & Perry., Mem. Am. Acad. Arts & Sc. 18: 196 (1939).

Evergreen, small tree; growing in fields; 1.5 to 2 cm long coffee colour dry inflorescences.

Fl.and Fr.: Flowering February- May

Distribution: It was first cultivated in islands of Moluccas and New Guinea.

Specimen Examined:MMA386; 6-4-2013; Lilong Bazaar

22. Melastomataceae

Juss., Gen.Pl.328. (1789)

Osbeckia, L.

Sp.Pl.1. 345 (1753)

Herbs, shrub-lets or shrubs, erect; stems 3 or 4-sided, pubescent; leaves opposite or sometimes 3-whorled, petiolate or sessile; leaf blade usually pubescent; inflorescences terminal, capitate or paniced; flowers 4 or 5-merous, purple or white, usually bracteates; calyx lobes linear, lanceolate or ovate-lanceolate, margin ciliate; petals obovate or broadly ovate, margin ciliate or not; stamens twice as many as perianth segments, equal or subequal; capsule ribbed, middle often contracted, dehiscing at truncate apex by 4 or 5 pores; seeds numerous.38 (out of 96) species has been accepted worldwide.

Osbeckia nepalensis Hook.f., Exot. Fl. 1: t. 31. (1823); Lindl., Edwards's Bot. Reg.17:, pl. 1475(1831);C.B. Clarke in Hook.f., Fl. Brit. India 2: 521. (1879); Chowdhery & al. in Hajra & al. (eds.), Mat. Fl. Arunachal Pradesh 1: 487. (1996).

Perennial, shrub, growing wild on hill slopes and in foot hills; 24 to 36" tall plant; leaves hairy, flower with 1 stigma, 10 anthers, 5 corollas, 5 calyxes, hairy on branches, twigs and stem present.

Fl. and Fr.: Flower March-October

Distribution: India, Nepal, Bhutan, southwest China, north Myanmar, Thailand, Vietnam and Laos

Specimen Examined: MMA723; 3-9-2014; Lilong

23. Fabaceae

Lindl., *Intr. Nat. Syst. Bot.* Ed. 2: 148 (1836)

Keys to Genus

Leaves peri-pinnate.....Pisum
Leaves pinnately 3-foliolate/sometimes-1 foliate.....Macrotyloma
Leaves abruptly pinnate.....Tamarindus
Leaves bi-pinnate.....Acacia
Leaves 3-foliolate.....Desmodium

Pisum, L.

Sp. Pl. 2: 727. (1753)

Herbs, annual or perennial; stem often climbing by means of tendrils, terete, glabrous; leaves pari-pinnate with rachis terminating in a tendril; stipules leaflike, cordate, larger than leaflets; paired leaflets, ovate to elliptic, margin entire/dentate; inflorescence a 1- to many flowered raceme; calyx campanulate; corolla white or colored; standard obovate; stamens diadelphous; ovary sub-sessile; legume long, elliptic, inflated, apex acute; seeds many, spheroid. 7(out of 81) species has been accepted worldwide.

Pisum sativum L., *Sp. Pl.* 2:727. (1753); (L.) Poir, *Encycl.* 5:456(1804); Asch & Graebn., *Syn. M. Heleur. Fl.* 6 (2): 1064 (1910); Meikle, *Notes Roy. Bot. Gard. Edinburgh* 29(3):320(1969); (Meikle): *Ponut, Feddes Repert.* 83 (9-10):636(1972); (L.) Poir., *Encycl.* 5:456 (1804)

Annual, herb, climber, cultivated in home gardens and fields; semi-cordate leaves, alternate, no petiole; white racemose flower, 5 corolla, flower in the axils of leaves; green seed pod (4-5 cm long), straw green and hollow, 96-108" tall plant; seed spherical, 5 mm size.

Fl. and Fr.: Flower November-February

Distribution: The Mediterranean region, western and central Asia and Ethiopia have been indicated as centers of origin.

Specimen Examined: MMA342; 2-2-2013; Lilong

Macrotyloma, (Wight & Arn.) Verdc.

Kew Bull. 24(2):322 (1970)

Climbing, prostrate or erect herbs; leaves pinnately 3-foliolate or sometimes 1-foliolate; stipules basifixed; stipules present. flowers usually in axillary clusters/pseudo-racemes; corolla yellow to light yellowish green, rarely becoming reddish, stamens diadelphous; anthers uniform; style slender, stigma terminal, capitate; seeds compressed. 25 (out of 29) species has been accepted worldwide.

Macrotyloma uniflorum (Lam.) Verdc. Kew Bulletin 24(2): 322, 401 (1970); (Chiov.) Verde., Kew Bull. 24(3): 404 (1970); (Brenan) Verde., Kew Bull. 24(3): 401 (1970); Verde, Kew, Kew Bull. 24(3): 405-406 (1970).

Annual, herb, growing in kitchen gardens and fields; cultivated plant; trifoliolate leaves, petioles; cylindrical stem; yellow flower, cylindrical seed pods.

Fl. and Fr.: June-September

Distribution: It is native to the Old world tropics.

Specimen Examined: MMA687; 7-7-2014; Lilong

Tamarindus, L.

Sp. Pl. 2:34 (1753)

Trees; leaves abruptly pinnate, alternate; stipules caducous, small; leaflets 10 to numerous paired; racemes or racemes arranged in panicles at ends of shoots; bracts and bracteoles often caducous, colored, ovate-oblong; petals: only upper 3 developed,

subequal in length, lower 2 reduced, scale-like, concealed at base of staminal tube; perfect stamens 3, ovary stalked. 1 (out of 7) species has been accepted worldwide.

Tamarindus indica L., Sp. Pl.1. 34.(1753); Hook. f., Fl. Brit. India 2: 273. (1878)

Perennial, tree, growing wild and planted in homestead forest also; bears pari-pinnate leaves, oblong leaflets, tree of 240 to 300 " tall; gray colour fruit pods, bears 3 to 4 hard seeds.

Fl.and Fr.: Collection of pods in the month of November.

Distribution: It's originated from China, India and Africa. It is widely cultivated in the tropics.

Specimen Examined: MMA289; 10-11-2012; Thoubal Moijing

Acacia, Mill.

Gard. Dict. Abr. (ed. 4.) 1. (1754)

Trees, shrubs, rarely herbs, often prickly or spinose; leaves bipinnate; leaflets small and numerous or leaves reduced to phyllodes; petiolar glands often present; stipules generally spinescent; inflorescence cylindrical spike or globose head; flowers small, 3-5-merous, bisexual or plants polygamous; calyx campanulate, dentate, lobed or polysepalous; petals usually more or less united, rarely absent; stamens indefinite; ovary sessile or stipitate; fruit ovate to linear, straight, arcuate or contorted, membranous to woody, rarely articulated or moniliform; seed large. 1380 (out of 2731) species has been accepted worldwide.

Acacia farnesiana (L.)Willd.,Sp. Pl. ed. 4(4): 1083-1084 (1806); Wall., Numer.List.n.5264 (1831); Kuntze, Revis.Gen.Pl.1:156(1891); (Benth.) Kuntze, Revis.Gen.Pl.393):47(1898); H.D.Clarke, Seigler & Ebinger, Syst. Bot.1494):562-564(1989); (F.J.Herm.) Ebinger & Seigler, S.W.Naturalist 47(1):90(2002).

Perennial, shrub, growing wild at roadsides, riverbanks, fencing and near ponds; 120" tall; leaves bipinnate; globose yellow head flower of 0.2 cm-0.4 cm, petioles; flower at axils of leaves, petioles; woody stem bears thorns 5-7 cm long.

Fl.and Fr.: Flower November-March

Distribution: It's said to be a native of America and cosmopolitan in Tropics. It's often planted in West Pakistan.

Specimen Examined: MMA529; 10-11-2013; Lilong

Desmodium, Desvaux.

J. Bot. Agric. 1: 122. (1813)

Herbs, subshrubs or shrubs; Leaves pinnately 3-foliolate or 1-foliolate by reduction of lateral leaflets, stipulate; flowers usually smaller racemes or panicles, axillary or terminal, calyx campanulate, bilabiate; upper 2 lobes connate for all or most of length, entire or 2-toothed at apex, lower lobes free, longest; corolla white, green-white, pink, purple, or violet; standard elliptic or obovate to nearly orbicular; wings \pm adherent to keel, wholly clawed; stamens diadelphous (9+1), rarely monadelphous; legume compressed, usually indehiscent, transversely segmented, upper (adaxial) suture slightly constricted or straight, lower (abaxial) one constricted. About 326 species (out of 752) worldwide has been accepted.

Desmodium triflorum (L) DC, Prodr.2: 334.(1825); Wall, Numer.List.n. 5734 F (1831); Wall. ex Wight & Arn, Prodr. Fl. Ind. Orient.229 (1834; Hoechne, Comm. Lin. Electr. Bot.45 (8):73 (1919); Stehle, Bull. Mus. Natl. Hist. Nat. Ser.21:104 (194).

Annual, herb, wild, grown in lawn; cylindrical hard stem trailing on the ground; 3-leaflets, blue flower 0.3 cm long, purple-red 2 lips corolla, 9+1 anthers, diadelphous, 1 stigma, fruit 0.7 cm -1.3 cm.

Fl. and Fr.: Flowering September-March

Distribution: The plant spreads to Cambodia, India, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam, tropics of Africa, Americas, southwest Asia, Australia and Pacific islands.

Specimen Examined: MMA981; 1-10-2015; United College campus, Chandel

24. Apiaceae

Lindl, Intr. Nat. Syst. Bot. 221. (1836)

Keys to Genus

- Umbels compound.....Coriandrum
Umbels loose compound.....Anethum
Umbels simple.....Hydrocotyle

Coriandrum, L.

Sp.Pl. 2:256. (1753)

Herbs, annual; strongly aromatic, glabrous throughout; stem erect, branched above; leaves petiolate, blade pinnately dissected, membranous; segments varies in shape; umbels compound, terminal or opposite the leaves; bracts absent (rarely 1); calyx teeth short, acute, often unequal; petals white or rose-pink, outer petals enlarged; styles slender, erect; fruit globose, not readily separating at maturity; pericarp hard; seed face concave; carpophore deeply bifid at apex. 2(out of 23) species has been accepted worldwide.

Coriandrum sativum L., Sp. Pl.: 256. (1753); DC, Prodr.4:250(1830); Stolet, Sborn.Nauchn.Trudov, Prikl. Bot. Genet.Selekts. 133:26, 32, 33, 34, 35, 37(1990).

Annual, herbs, cultivated in home gardens and fields; swollen nodes; leaflets lobed, alternate; compound umbel flower, diam.0.2 mm cremocarp seeds

Fl.and Fr.: February- April

Distribution: Naturalized worldwide and probably originated from Eastern Mediterranean region.

Specimen Examined: MMA369; 10-3-2013; Lilong

Anethum, L.

Sp. Pl. 1: 263. (1753)

Herbs, annual or biennial; stem erect, terete; basal leaves petiolate; leaf blade pinnately dissected; segments narrowly linear; inflorescence of loose compound umbels; peduncles much-branched; bracts and bracteoles absent; calyx teeth obsolete; petals yellow or brown, incurved apex; styles short, erect while young, spreading or

recurved after flowering; fruit ellipsoid or ovoid-ellipsoid; seed face plane; carpophore 2-cleft to base. 4 (out of 28) species has been accepted worldwide.

Anethum graveolens L., Sp. Pl.: 263 (1753); N.F.Koren, Kult.Fl.SSSR 12:165, 166, 167(1988); (Roxb. Ex Fleming) N.F.Koren, Kult.Fl.SSSR, 12:167(1988).

Annual, herb, cultivated in kitchen gardens; monopodial stem diam. 0.6 cm; decomposed leaves; 6 cm umbel inflorescence, pedicel 1" long, yellow flower, cremocarp fruit.

Fl.and Fr.: Flower March -May

Distribution: The origin of dill is not known; it is thought to be native to the Mediterranean and to South and South-western Asia. It is planted in the kitchen gardens in Southeast Asia.

Specimen Examined: MMA370; 10-3-2013; Lilong

Hydrocotyle, L.

Sp. Pl. 1: 234. (1753)

Perennial, prostrate; leaves simple, stipulate, reniform to peltate; margin crenate; umbels simple, calyx teeth obsolete, fruit laterally compressed, ellipsoid to orbicular; ridges thin; inner seed face plane to slightly concave. 85(out of 347) species has been accepted worldwide.

Leaves lobed.....*Hydrocotyle sibthorpioides*

Leaves reniform.....*Hydrocotyle* sp.

Hydrocotyle sibthorpioides L am., Encycl. 3(1): 153. (1789); Colenso, Trans. & Proc. New Zealand Inst.21:83(1888); Kirk, Stud.Fl.New Zealand 190(1899); (Ohwi) T. Yamaz., J.Jap.Bot. 69(2):112(1944); Chowdhery & al. in Hajra & al. (eds.), Mat. Fl. Arunachal Pradesh 1: 538. (1996).

Perennial, herb, wild, growing in open moist places in grasslands; thin stem trailing on the ground; each stem strikes roots and bears leaves upwards, leaves with pedicel, lobed at 4 places, otherwise circular, 1.5 cm wide and deep green in colour

Fl.and Fr.: Flowering in April-June

Distribution: It's originated in Southern Asia.

Specimen Examined: MMA426; 6-6-2013; Lilong

***Hydrocotyle* sp.**

Perennial, herb, wild, growing open moist places in grasslands; leaves: reniform; below leaves more prominently hairy; stem/runner: slender, cylindrical, prostrate, green-white-purple, bears node and internode, node bears whitish root, stem with lustrous hairs, leaves, bracts; flower: umbel, 2-3 mm wide, flower 1-2 coming out of nodes with 2 bracts, peduncle hairy; calyx: sepals 5, jointed, green hairy (lacerate type or bears brush hairs); corolla: petals 5, jointed, colourless/milky white; androecium: stamens 5, filament basifixed, epigynous; gynoecium: bicarpellary, style equal in length syncarpous, ovary inferior; seed: brown 1-2, spherical or ellipsoidal (spherical above, slightly tapering towards the end), hairy fruits (1 mm broad x 1.5 mm long) bears 1-2 distinct mericarps.

Fl. and Fr.: November to May

Distribution: First time recorded from Lilong, Thoubal dist., Manipur.

Specimen Examined: MMA656; 21-5-2014; Lilong

25. Cucurbitaceae

Juss., Gen. Pl. 393–394. 1789.

Keys to Genus

Fruit large, fleshy, indehiscent.....Cucurbita
Fruit oblong/cylindrical.....Luffa
Fruit ovoid/oblong.....Momordica
Fruit globose to oblong.....Melothria

Cucurbita, L.

Sp.Pl. 2:1010 (1753)

Herbs, climbing/prostrate, annual; stem and branches robust; leaf blade lobed, base cordate; plants monoecious; flowers solitary, yellow; male flowers: calyx tube campanulate, rarely elongate; segments 5, lanceolate/leaflike at apex; corolla campanulate, 5-lobed; stamens 3; pistillode absent; female peduncle short; calyx and

corolla as in male flowers; staminodes 3; ovary oblong or globose, stigmas 3-5-lobed/bifurcate; fruit large, fleshy, indehiscent; seeds numerous, compressed, smooth. 19(out of 121) species has been accepted worldwide.

Cucurbita maxima Duchesne, Ess.Hist.Nat.Courges.7 (1786); Duchesne, Encycl. 2(1):151(1786); Zhit. Prikl.Bot.23 (3):185, f.32 (1930); Greb, Kulturpflanze 6: 53, f14 (1958); Filov., Fl.Cult.Pl.USSR 21: 177(1982).

Annual, climber, growing in kitchen garden and cultivated climber herb; hairy broad leaves, leaves 3-4 lobed, acute apex; stem hairy, stem ridged and furrow; tendrils divided, leaves and flowers coming out of nodes; yellow flowers, flower at the axils of leaves; monoecious; fruit pepo.

Fl.and Fr.: Flower and Fruit April-August.

Distribution: It's native to South America and widely cultivated in India.

Specimen Examined: MMA267; 14-5-2013; Hiyangthang.

Luffa, Mill.

Gard.Dict. 3: (1754)

Herbs, scandent, annual, glabrous or puberulent; tendrils bi or multifid; leaf blade usually 5-7-lobed; plants monoecious; male flowers in a raceme; triangular or lanceolate; stamens 3 or 5, free; female flowers solitary; calyx and corolla as in male flowers; staminodes 3 or rarely 4 or 5; stigmas 3; fruit oblong or cylindrical, terete or acutely costate, smooth or echinate. 4(out of 60) species has been accepted worldwide.

***Luffa cylindrica* (L.) M.Roem**, Fam.Nat.Syn.Monogr.2:63-64 (1846); Naudin, Ann.Sci.Nat. Bot., ser.4, 12: 121(1859).

Annual, herb, growing in fields and kitchen gardens, climber; 5-7 lobed hairy palmate leaves; angular stem; fruit cylindrical, berry; leaves, flowers and tendrils coming out of nodes; yellow flower.

Fl.and Fr.: Flower and Fruit May-August

Distribution: Global distribution of this plant is pale-tropics and often cultivated and is widely cultivated in India.

Specimen Examined: MMA384; 4-4-2013; Lilong

Melothria, L.

Sp. Pl. 1: 35. (1753)

Herbs, climbing or trailing, annual; leaves petiolate, usually palmately lobed; tendrils simple; plants monoecious; male flowers shortly racemose or subcorymbose; calyx campanulate to cylindrical, 5-lobed; corolla yellow, rotate; segments 5; stamens 3; female flowers solitary, usually coaxillary with male flowers; calyx and corolla as in male flowers; ovary globose to fusiform; stigmas 3; fruit globose to oblong; seeds numerous, compressed, smooth. 12(out of 166) species has been accepted worldwide.

Melothria perpusilla (Blume) Cogn., Monogr. Phan.3: 607.(1881)

Annual, creeper/climber, herb, growing wild in the gardens, roadsides and fields; quadrangular stem, ridged stem; nodes bears tendrils; leaves lobed, flat; yellow flower, oblong small fruits.

Fl.and Fr.: Flower September-November.

Distribution: It's a plant of neo-tropics.

Specimen Examined: MMA 602; 3-3-2014; Chandel Bazar

Momordica, L.

Sp.Pl. 2:1009 (1753)

Herbs, annual or perennial, scandent or creeping; tendrils unbranched or 2-fid; petiole usually glandular; leaf blade suborbicular or ovate-cordate or palmately lobed; plants dioecious or monoecious; male flowers solitary or in a raceme; corolla yellow or white, rotate or broadly campanulate; female flowers: ovary oblong or fusiform; style elongate; stigmas 3, undivided 2-lobed; ovules numerous, horizontal; fruit ovoid, oblong, elliptic or fusiform, undivided or 3-valved, usually verrucose or spinescent; seeds few or numerous, ovate or oblong, smooth or reticulate.19(out of 187) species has been accepted worldwide.

Momordica cochinchinensis Spreng., Syst.Veg.3:14 (1826).

Annual, herb, climber plant, cultivated in kitchen gardens and growing wild; leaves bear petioles, alternate leaves and tendrils coming out of each nodes, leaves bear lobes on parallel sides, 4 ridges and 4 furrows on stem; young green fruits, bears soft spines, diam.1.6" x 2.7" long, female flower: 5 calyx, 5 white corolla, 3 stigma; old fruits yellow.

Fl.and Fr.: Leaf flushing March-April, Flower and Fruits May-September

Distribution: Found wild and cultivated in India, China, Malesian countries and Australia.

Specimen Examined: MMA729; 14-5-2013; Hiyangthang

26. Asteraceae

Bercht.& J., Prir. Rostlin. 254. (1820)

Keys to Genus

Leaf margin entire to dentate.....	Ageratum
Leaf margin spiny.....	Carthamus
Leaf margin mucronated/toothed.....	Blumea
Leaf margin toothed.....	Eclipta
Leaf margin entire.....	Enhydra
Leaf margin big toothed.....	Myriogyne
Leaf margin lanceolate/oblanceolate.....	Tagetes

Ageratum, L.

Sp.Pl. 2:839 (1753)

Sub-shrubs or annual to perennial herbs; leaves opposite/sometimes alternate; blade elliptic or lanceolate to deltate or ovate, margin entire to dentate; inflorescence cymose to sub-cymose or sub-umbellate; many florets; corollas white, blue or lavender, funnel-form or with distinct basal tube; lobes 5, as long as wide; style base not enlarged, glabrous, style branches linear, usually strongly and densely papillose. 51(out of 209) species has been accepted worldwide.

Ageratum conyzoides L., Sp. Pl. 2: 839(1753); (Sims) DC., Prodr.5:108(1836); Sieber ex Steud, Nomencl. Bot. 1:37(1840); Hieron, Bot. Jahrb.Syst.19:44(1894); (Cav.) M.F.Johnson, Ann. Missouri Bot. Gard. 58 (v):31(1971); Sahu, Feddes Repert 93(1-2):64(1982); Deb, Fl. Tripura 2: 203 (1983); Harid. & R.R. Rao, Forest Fl. Meghalaya 2: 516. (1987).

Annual, herb, growing wild in gardens and roadsides; ovate leaves, leaves bear hairs; pentamerous, violate flower; purple colour hairy stem.

Fl.and Fr.: Flower April to October.

Distribution: Its native to south and Central America and it grows throughout north-east India.

Specimen Examined: MMA677; 23-6-2014; Lilong

Carthamus, L.

Sp.Pl. 2:830 (1753)

Herbs, annual or perennial; leaves pinnatilobed, pinnatisect or undivided, margin usually spiny; capitula homogamous; involucre ovoid or narrowly ellipsoid; florets bisexual; stigmatic branches short; achene 4-angled, glabrous, usually rugose toward apex, inner achenes usually with a persistent or connate and deciduous pappus; pappus elements in many rows/absent.45(out of 127) species has been accepted worldwide.

Carthamus tinctorius L., Sp. Pl. 2: 830 (1753)

Annual, herbs, cultivated in gardens; 100 cm tall herbaceous plant; diam.3.5 mm flower heads bearing red-yellow mix flowers; serrated leaves bears soft spines and 7 mm long, leaves alternate and comes out of nodes; stem diam.3 mm.

Fl.and Fr.: Flower Middle of March to May

Distribution: Probably originated in Middle East. It's found as a cultivated plant in other centers of diversity i.e. Afghanistan, Ethiopia and India.

Specimen Examined: MMA624; 4-4-2014; Lilong

Blumea, DC.

Arch. Bot. (Paris) 2: 514. (1833).

Herbs or shrubs; stems not winged; leaves alternate, simple, sessile or shortly petiolate, mucronate-toothed to laciniate or sometimes pinnately lobed; capitula heterogamous; marginal florets female, in several rows; corolla yellow, minutely toothed; disk florets bisexual; corollas often yellow, rarely white to purplish, tubular, toothed; pollen spines with a cavity; style branches with acute sweeping hairs. 108(out of 308) species has been accepted worldwide.

Blumea balsamifera (L.) DC., Prodr.5:447(1836); Kitam, Acta Phytotax.Geobot. 23(3-4):66(1968); Hook. f., Fl. Brit. India 3: 270. (1881); Kanjilal & al., Fl. Assam 3: 113. (1939); Deb, Fl. Tripura 2: 205. (1983).

Annual, herb, cultivated in gardens and frontyard; 36-48 " tall herbaceous plant; leaves elongated, acute apex, serrated, opposite at nodes; flower white-grey colour, heads 2.5 cm diam., flower terminal.

Fl.and Fr.: Flower March to May

Distribution: The plant is cultivated widely throughout East and Southeast Asia. It exists in India to Burma (Myanmar), Indo-China, southern China, Taiwan, Malaysia, Indonesia and the Philippines.

Specimen Examined: MMA152; 23-10-2012; Lilong Leihaokhong

Eclipta,L.

Mant.Pl. 2: 157 (286). (1771)

Herbs, annual or perennial, erect, branched; leaves opposite, toothed; capitula terminal on stems and branches or axillary; ray florets bisexual, mostly fertile, lamina 2-lobed, white to yellowish; disk florets bisexual, corolla tubular, greenish white to yellowish, lobed; anthers entire or very shortly bifid at base; achenes thick, maturing and falling rapidly, those of ray florets 3-angled, those of disk florets compressed, 4-angled; pappus absent.11 (out of 101) species has been accepted worldwide.

Eclipta prostrata (L.) L., Mant. Pl. 2: 286. (1771); (Willd.) DC., Prodr.5: 490(1836); Y.T.Chang, Wuyi Journ.5:235(1985).

Annual, herb, weakly erect; growing wild in fields and gardens; green leaves, acuminate leaves, green leaves, opposite, elliptical, 2" long internode; 1 mm wide white flower head (early green).

Fl.and Fr.: Flowering May-September

Distribution: The plant is widely distributed throughout India, Nepal, China, Thailand and Brazil.

Specimen Examined: MMA432; 23-6-2013; Lilong Nganglou Loukol

Enhydra, Lour.

Fl. Cochinch. 2: 510–511. (1790)

Herbs, marshy plant, leaves opposite, entire to subcrenate, sessile; heads subsessile, heterogamous, subradiate, axillary, unilateral or alternate axils. involucre bracts few, foliaceous, in opposite pairs; outer 2 larger; receptacle convex or conical; pales enclosing the flowers; ray florets female, fertile; corolla small, 3-4 toothed; disc florets hermaphrodite, fertile/inner ones sterile; corolla tubular, campanulate, 5-lobed; style arms dorsally compressed with hispid tips; pappus absent. 6 (out of 36) species has been accepted worldwide.

Enhydra fluctuans Lour., Fl.Cochinch.2.511.(1790); Hook.f., Fl.Brit.India 3:304 (1881).

Annual, herb, growing wild in ponds, lakes and marshy land; creeper ; cylindrical stem, maroon colour stem, 7-9 cm long internodes; floating on water; leaves elliptical, opposite, no pedicel; white flower, terminal, pedicel, floral head 1-1.5 cm wide.

Fl.and Fr.: Flowering May-August.

Distribution: It's a plant of Indo-Chinese origin and a common to all Southeast Asia.

Specimen Examined: MMA442; 23-6-2013; Lilong Suktukarong

Eupatorium, L.

Sp.Pl. 2:836 (1753)

Herbs, annual to perennial; leaves opposite or vermiculate, upper leaves sub opposite to alternate; blade linear to ovate, deltate or 3-lobed, serrate to sub-entire; synflorescence a corymbose/pyramidal panicle 2-5-seriate; receptacle flat or weakly convex; florets 3-23; corollas white to purple, lavender or pink. 126 (out of 532) species has been accepted worldwide.

Eupatorium birmanicum DC., Prodr.(A.P.deCandolle) 5:179.(1836)

Annual, herb, planted in gardens; 24-36" tall under-shrub; 3" long leaves, opposite, elliptical, serrated leaves, Green shining leaves; bears purple heads or capitulum.

Fl.and Fr.: Flowering March to May

Distribution: Asia, Europe, North America, China and India

Specimen Examined: MMA405; 4-5-2013; Lilong

Myriogyne, Less.

Linnaea 6: 219 (1831)

Annual or perennial herbs; leaves alternate, entire or coarsely toothed; capitula apparently axillary, solitary monochasial cymes, sometimes grouped into raceme-like synflorescence, sessile or shortly pedunculate, heterogamous and discoid; involucre small, hemispheric receptacle flat or convex, naked; marginal florets female, in several rows, fertile; corolla minute, tubular, obscurely 3-lobed, creamy white, pale yellow, green or purplish; disk florets few, bisexual; corolla campanulate, 4-lobed, similar in color, glabrous; anthers obtuse at base; style branches of disk florets short, truncate; achenes scarcely compressed, obtusely 3 or 4-ribbed or angled; corona absent. 11(21) species has been accepted worldwide.

Myriogyne minuta (G.Forst.) Less., Linnaea.6:219(1831)=***Centipeda minima*** (L.) A.Braun & Asch., Index Sem. (Berlin) (1867): App. 6; (DC.) Domin, Bibliotheca Botanica 89(8): 1237(1929); Baker, Flora of Mauritius and the Seychelles 173 (1999) N.G. Walsh, Muellera 15: 48(2001)

Annual, herb, wild, grown in moist lawns; trailing on the ground, plant looks like centipede; flower green white head, 0.22 mm wide white head, after some days flower opens, white corolla observed; leaves bear petiole and flower bear pedicel, 0.5-1 mm long leaves incised at two places, acute leaves; stem c. 0.1 mm thick, young plant somewhat erect, old one prostrate; plant bears pungent smell.

Fl.and Fr.: Flower April to August

Distribution: Indo-Malesia origin. It's a common weed of Polynesia and Micronesia.

Specimen Examined: MMA711; 22-3-2012; Lilong.

Tagetes, L.

Sp.Pl. 2:887 (1753)

Annual or perennial herbs, subshrubs or shrubs; stems erect, branched distally or throughout; leaves cauline, mostly opposite, petiolate or sessile; blades mostly lanceolate to oblanceolate, usually pinnately 1-3-lobed or pinnatisect, total margin toothed or entire, both surfaces glabrous or hairy; synflorescence of solitary capitula or of sometimes dense, many-headed corymbs; capitula radiate or discoid; receptacle convex to conical, smooth or finely pitted, ray florets female, fertile; lamina yellow or orange, red-brown or white; disk florets bisexual, fertile; corollas greenish yellow to orange, sometimes tipped with red/red-brown; pappus persistent. 47(out of 151) species has been accepted worldwide.

Tagetes erecta L., Sp. Pl. 2: 887. (1753); Rumpler, Vilm.Ill.Blumengartn.2: 990(1879); Voss, Rumpler, Vilm.Ill.Blumengartn, 2:990(1894); Voss, Vilm.Ill.Blumengartn. 1(1): 499(1894).

Annual, herb, cultivated in the gardens, herbaceous, ornamental plant; flower capitulum, flower with petioles, 4 cm diam. Disagreeable smelly, flower maroon colour above and golden yellow below; leaves alternate, simple, serrated, petiole present.

Fl.and Fr.: Flowering in September to February

Distribution: Originated from Mexico and Guatemala. It's cultivated all over the world.

Specimen Examined: MMA549; 11-12-2013; Lilong

27. Rubiaceae

Juss, Gen.Pl.196. (1789)

Keys to Genus

Inflorescence axillary/terminal cyme.....Hedyotis
Inflorescence in cymes/several flowers.....Meyna
Inflorescence in axillary cymes.....Coffea

Hedyotis, L.

Sp. Pl. 1: 101. (1753)

Mostly herbs or undershrubs; stem herbaceous or woody; leaves opposite or temately whorled; inflorescence an axillary or terminal cyme; flowers very small, white; calyx-tube obovoid, globose or turbinate; corolla infundibuliform or campanulate, rarely rotate; 4 corolla, 4 stamens, stigma 2-fid or 2-lobed; seeds numerous, angular and plano-convex. 120(out of 826) species has been accepted worldwide.

Hedyotis auricularia L., Sp. Pl. 1: 101. (1753); Walter, Fl.Carol. 85(1788); Hook.f., Fl.Brit. Ind. 3:58(1880); Fosberg, Bull.Torrey Bot. Club 67: 419(1940); W.C.Ko, Fl.Hainan. 3:299, 578(1974); Fosberg & Sachet, Allertonia 6 (3): 208 (1991); (Blume) Deb, Fl. Tripura 2: 52(1983).

Annual, herb, growing wild on road-sides,trailing on the ground; leaves opposite, emarginated, prominent leaf veins on adaxial side; many flowers crowded on nodes, no pedicel; bluish-white tube corolla, 4 corolla, 4 anthers, 2 stigma.

Fl.and Fr.: Flower May to July

Distribution: China, India, Japan (Ryukyu Islands), Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam and Australia.

Specimen Examined: MMA417; 28-5-2013; United College Campus, Chandel

Meyna, Roxb. Ex Link.

Jahrb.Gewachsk. 1 (3): 32. (1820)

Shrubs or small trees, sometimes armed with thorns; leaves opposite, leathery/ membranous; inflorescences in cymes or several flowers tufted in axils/in panicles below leaves, without bracts; fruit a drupe, dry or fleshy.

9 (out of 22) species has been accepted worldwide.

Meyna spinosa Roxb. ex Link, Jahrb. Gewachsk. 1 (3): 32. (1820) = *Vangueria spinosa* (Roxb. ex Link) Roxb., Fl. Ind. 2: 172 (1824); Hook.f., Fl. Brit. India 3: 136(1880); Kanjilal & al., Fl. Assam 3: 66(1939); Pierre ex pit, Fl.Indo-Chine 3: 302(1924).

Perennial, tree, wild, foothills, riverbanks; 144-180" tall small tree; bearing green leaves, acute apex leaves, 5 cm broad x 10 cm long leaves, stem bearing 5.5 mm long sharp pointed thorns, flower flush April, creamy white flower, flower pedicel 0.5 mm long , calyx 5.

Fl.and Fr.: Flower November-December

Distribution: Indo-Malesia origin. It's endemic to India.

Specimen Examined: MMA292; 10-11-2012; Lilong

Coffea, L

Sp. Pl. 1: 172. (1753)

Shrubs or small trees; leaves opposite/rarely in whorls of 3, stipules persistent, shortly united around stem, generally triangular, sometimes aristate; inflorescences axillary, cymes, sessile to shortly pedunculate, bracteate; flowers sessile or shortly pedicellate, bisexual, monomorphic; calyx limb obsolete or occasionally truncate or 4-6-toothed; corolla white or pink, salver-form or funnel-form; stamens 4-8; fruit red, yellow, orange, blue or black, drupaceous, globose to ellipsoid, fleshy or infrequently dry, with calyx limb when developed persistent.104 (out of 329) species has been accepted worldwide.

Coffea arabica L., Sp.Pl.172. (1753); (Roxb.)Miq., Ex A. Froehner, Bot. Jahrb. Syst. 25: 263(1898); Cif., Agric. Colon 31: 521(1937); A.Chev, Encycl. Biol. 22: t. 27(1942); (Miq.)A. Chev., Encycl. Biol. 28: 204(1947).

Perennial; growing in homestead forest; small tree of 84 to 108" tall, woody stem; fruit 4 cm long x 3 cm wide; 11" long leaves, petioles, opposite; flower at the axils of leaves.

Fl.and Fr.: Flower March-June

Distribution: It originated from Ethiopia.

Specimen Examined: MMA652; 19-5-2014; Lilong

28. Sapotaceae

Juss.,Gen.Pl.151. (1789)

Mimusops, L.

Sp.Pl. 1:349 (1753)

Trees with milky juice; leaves coriaceous, parallel; inflorescence axillary, solitary or clustered; calyx 6-8-lobed; corolla tube short; stamens 8, opposite; fruit ovoid. 45(out of 246) species has been accepted worldwide

Mimusops elengi L., Sp.Pl.1:349.1753; Bojer, Hortus Maurit. 198 (1837); (R. Br.) H.J. Lam, Bull. Jard. Bot. Buitenzorg. Ser 3, 7: 235(1925).

Evergreen, growing in frontyard; woody tree of 360" tall, 540-600 " broad crown and stem c. 120".; leaves flashy and leathery of 11cm long x 5cm broad, leaves alternate, flowers like cloves, fruit of deep green colour.

Fl.and Fr.: Flower June- September

Distribution: It is native to India, Sri Lanka, the Andaman Islands, Myanmar and Indo-China.

Specimen Examined: MMA34; 6-7-2012; Lilong

29. Salvadoraceae

Lindl., Intr. Nat. Syst. Bot. (ed. 2) 269. (1836)

Salvadora, L.

Sp. Pl. 1: 122 (1753)

Unarmed shrubs /trees; inflorescence paniced axillary and terminal; flowers bisexual, minute, green, sessile/pedicellate; fruit a globose drupe with persistent calyx and corolla. 3(out of 19) species has been accepted worldwide.

Salvadora persica L., Sp.Pl.1:122(1753); Welw. Ex Hiern, Cat. Afr. Pl.1:659(1898); Brenan, Kew Bull. 4: 90 (1949); Cufod, Enum. Pl.Aethiopiae Spermatophyta 487(1958); Verdec, Kew Bull.19: 150(1964); T.A Rao & Chakraborti, Fusc. Fl. India 22: 9 (1996).

Shrub or small tree, wild plant; branch twigs cylindrical, epidermis 0.1 cm thick, soft branch stem; in Manipur imported stem or twig is sold in the market.

Fl.and Fr.: Flower September-October

Distribution: Egypt, South Africa , Sinai, India, Saudi Arabia, Sri Lanka, Iran, Jordan, Israel, Syria and China.

Specimen Examined: MMA250; 10-10-2012; Lilong Bazar

30. Convolvulaceae

Juss, Gen. Pl.132. (1789)

Ipomoea, L.

Sp. Pl. 1: 159. (1753)

Herbs or shrubs, often twining, sometimes prostrate, erect or floating; leaves petiolate, entire, lobed or divided; inflorescences mostly axillary, cymose, 1- to many flowered, rarely paniculate; bracts various; flowers small to large, sepals persistent, equal to unequal, corolla variously colored, rarely yellow, funnel-form, campanulate or salver-form; limb 5-lobed to entire, style 1, filiform, included or exserted; stigma capitate, 2 or 3 globulose. 306(out of 1164) species has been accepted worldwide.

Ipomoea batatas (L.) Lam., Tabl.Encycl.1:465 (1793)

Herbaceous, creepers, cultivated in the gardens; leaves alternate, petioles, pulvinus, acute apex; 2.5 cm long flower; cylindrical stem; nodes bears roots, leaves, flowers and pedicels.

Fl. and Fr.: Flower September-December

Distribution: Believed to have originated from South America i.e. Peru. Wide-spread in Africa and south Asian countries.

Specimen Examined: MMA249; 10-9-2012; Lilong

31. Solanaceae

Juss., Gen. Pl. 124. (1789)

Keys to Genus

Fruit berry.....Solanum
Fruit dry capsule.....Datura
Fruits moist berry.....Capsicum

Solanum, L.

Sp. Pl. 1:184. (1753)

Herbs or shrubs or small trees, often prickly or hairy; leaves simple or divided; flowers rarely solitary; calyx campanulate; corolla rotate; stamens attached near mouth of corolla tube; fruit a berry; seeds compressed. 747 (out of 3411) species has been accepted worldwide.

Solanum melongena L., Sp. Pl. 1:186. (1753); (Mill.) Dunal, Prodr. 13(1): 31, 350 (1852); Baill., Stand. Cycl. Hort. 3: 3182 (1929); (L.) Prain, Bengal Pl. 2:746 (1903); Dikii, Trendy Prikl. Bot. 88: 105 (1984).

Annual, undershrub, cultivated in fields and kitchen gardens; 1.5 cm long purple flower; bearing purple jointed corolla 5,5 calyx, stigma longer than stamen, 1 stigma; leaves soft, alternate, bearing short and sharp spines, stem bears spines.

Fl. and Fr.: Flower and fruiting April to August

Distribution: It is believed to have been originated from Myanmar (Yunnan) region. The plant was first domesticated in India, China and Myanmar.

Specimen Examined: MMA636; 28-4-2014; Lilong

Datura, L.

Sp. Pl. 1: 179. (1753)

Shrubs, annual or perennial, herbs; pubescence of simple and glandular hairs; leaves petiolate; leaf blade simple, entire/sinuate-dentate; inflorescences solitary flowers in leaf axils or in branch forks; peduncle, bracts, and bracteoles absent; flowers actinomorphic, large; pedicel often stout; calyx long tubular or cylindric, often circumscissile near base; corolla elongated, funnel-form; fruit a dry capsule, seeds numerous. 13(out of 103) species has been accepted worldwide.

Datura stramonium L., Sp. pl. 1: 179 (1753);Roxb., Fl.Ind. 2:239(1824); Juss.Ex Jacq.) C.E.Lunstr, Acta Horti Beng. 5(3): 84(1914); (Juss. Ex Jacq.) Hupke, Repert. Spec. Nov. Regni Veg. Beih.101: 135(1998); Danert, Wiss. Z. Martin-Luther- Univ.Halle-Wittenberg, Math.-Naturwiss. Reihe 4: 79(1954); (Danert) Geerinck & Walra Vens, Naturalistes Belges 79: 271(1998).

Annual, shrub, growing wild on roadsides and in foot hills;12-224 " tall plant; 19 cm long leaves green, acute apex, petiole; deep blue colour stem (diam.4-5cm), 5 " long x diam.5-6 cm flower, pedicel; 9 cm long x diam.4 cm fruit bears short and soft spine, bears numerous white seeds.

Fl.and Fr.:Flower October-November

Distribution:The plant is native to Americas.

Specimen Examined: MMA268; 10-10-2012; Tangjeng

Capsicum, L.

Sp. Pl. 1: 188. (1753)

Shrubs, annual or perennial herbs; pubescence of simple hairs; leaves solitary or paired, petiolate; inflorescences solitary or few-flowered clusters at branch forks or leaf axils; peduncle absent; flowers nodding or erect, pedicel erect or nodding; corolla white, blue or violet, campanulate or rotate, divided halfway or more; stamens inserted

near distal end of corolla tube; stigma small, capitate; fruit a moist berry; seeds yellowish, discoid. 40(out of 197) species has been accepted worldwide.

Capsicum frutescens L., Sp. Pl. 1: 189 (1753); (Willd.)Besser, Cat. Jard. Bot. Kerzemieniec 29 (1816); Fingerh, Monogr.Capsic 17(1832); L. H. Bailey, Man. Cult. Pl. 783(1949); M. R. Almeida, Fl.Maharashtra 3 B: 356(2001).

Annual, shrub,cultivated in the kitchen gardens and pots; simple lanceolate, alternate leaves; pentamerous white flowers 0.8 mm broad on the top, 6 white corolla, 6 anthers, 1 stigma, c.3 mm berry fruit, deep blue green fruit pointed upward.

Fl.and Fr.: Flower April-September

Distribution: It is believed to have originated from Southeast Asia.

Specimen Examined: MMA189; 10-6-2012; Lilong

Nicotiana, L.

Sp. Pl. 1: 180. (1753)

Herbs, shrubs or small trees; leaves petiolate, sessile, entire or sub-entire; inflorescences paniculate, racemose or reduced to solitary flowers; peduncle mostly erect; flowers sometimes showy, mostly fragrant; corolla tubular, tube lobed to sub-entire; stamens inserted below middle of corolla tube; anthers dehiscing longitudinally; stigma 2-lobed; fruit a dry capsule; seeds numerous, minute. 45(out of 197) species has been accepted worldwide.

Nicotiana tabacum L., Sp.Pl.1.180 (1753); Schrank, Bot. Zeitung (Berlin) 261 (1807); C.Agardh, Nagra Ord Om Tobaks 11(1819); Comes. Monogr.Nicot.16, pls.1, 7 (1899); Glaz, Bull. Soc. Bot. France 58, Mem. 3f: 504 (1911).

Annual, herb, cultivated in the fields and home garden; alternate leaves, stem hard c.5 cm,; branches bears flower at crown c.1.5cm, pedicellate, gamo-sepelous, green 5-calyx; gamo-petalous, anther filaments adnate to corolla, 4 cm long ovary; fibrous roots; plant height up to 61 cm.

Fl.and Fr.: January-May

Distribution: It is natives of America.

Specimen Examined: MMA345; 5-2-2013; Lilong

32. Lamiaceae

Martinov, Tekhno-Bot. Slovar 355 (1820)

Keys to Genus

Leaves sub-entire/serrate.....Pogostemon
Leaves serrate/dentate.....Mentha
Leaves entire to dentate.....Clerodendrum
Leaves entire to dentate.....Vitex

Pogostemon, Desf.

in Mém. Mus. Hist. Nat. 2: 154. (1815)

Annual or perennial herbs, aromatic or not aromatic; leaves in opposite pairs or whorls of 3 or more, linear to ovate, sub-entire to serrate, petiolate to sessile; verticillasters 6-many-flowered, congested or distant, in terminal spikes or racemes; bracts and bracteoles linear to ovate, persistent; flowers small or very small, white to purplish; calyx tubular campanulate to ovoid, teeth 5 subequal; corolla bilabiate or scarcely so; stamens 4, filaments with usually long purplish hairs at middle or near base. 92(out of 130) species has been accepted worldwide.

Pogostemon cablin (Blanco) Benth.,Prodromus Systematis Naturalis Regni Vegetabilis 12: 156. (1848) = *Pogostemon purpurascens* Dalz. Hooker's J. Bot. Kew Gard. Misc. 2: 337(1850).

Annual, herb; growing in graveyards, religious places and homestead forest; 48-84 " tall; leaves hairy soft and shining, 8-9 cm long x 7 cm broad, serrated; stem bears hairs, bears bluish white flower, inflorescence green when young, quadrangular stem.

Fl.and Fr.: Flower November- December

Distribution: The genus *Pogostemon* is originated in Southeast Asia, Japan and China. It's endemic to Western Ghats and northeast India.

Specimen Examined: MMA705; 7-8-2014; Mayang Imphal

Mentha, L.

SP.Pl.2.576. (1753)

Perennial, aromatic herbs of damp or wet places; stems erect or ascending from a creeping rhizome, glabrous or with simple hairs, leafy; leaves undivided, serrate or dentate, shortly petiolate or sessile; flowers borne in many-flowered verticillasters either in axils of upper leaves or in continuous or interrupted spikes of verticillasters subtended by bracts; flowers unisexual and gynodioecious, sometimes gynomonocious; calyx small, slightly bilabiate or regular with 5 subequal teeth, tubular-campanulate, corolla weakly bilabiate, small, with 4 subequal lobes, uppermost slightly larger; stamens 4, style subequally bifid. 38(out of 1086) species has been accepted worldwide.

Mentha arvensis L. Sp. Pl. 2: 577 (1753); (Sole) Sm., Trans.Linn.Soc.London 5: 213(1800); Becker, F.L.Frankfurt 1:225(1827); Lej.& Courtois, Comp.Fl.Belg. 2: 234(1831); (Benth.) S.R.Stewart, Rhodora 46(549):333(1944); (Michx) Roy L. Taylor & Mac Bryde, Canad. J.Bot. 56(2):186(1978); (Nakai) W.Lee, Lin. Fl.Koreae 955(1996).

Perennial, herb, growing in the home gardens; small punched marked green leaves, opposite, serrated leaves opposite, leaves pointed upward; cylindrical stem, weak, trailing on the ground, nodes bear roots, purplish-white flower.

Fl.and Fr.: Leaf flush March – May, flower August-September

Distribution:The centers of diversity are located in Europe and northern and central Asia.

Specimen Examined: MMA662; 2-6-2014; Lilong

Clerodendrum, L.

Sp. Pl. 2: 637. (1753)

Shrubs or trees, rarely undershrubs or herbs, occasionally scandent; leaves opposite-decussate, rarely verticillate, entire to dentate, rarely lobed, petiolate, exstipulate; inflorescence cymose, axillary or terminal, cymes di/trichotomous,

panicled, corymbose or umbellate; flowers usually large, showy, white, yellowish, blue, violet or red, zygomorphic, bracteate; calyx campanulate to somewhat tubular, truncate 5-toothed or fid; corolla-tube usually elongated, straight or curved; limb subequally lobed, anterior one being the largest; stamens 4, didynamous, epipetalous, ovary 2-carpellary; fruit a fleshy drupe, globose to obovoid. 327(out of 701) species has been accepted worldwide.

Clerodendrum serratum (L.) Moon., Cat. Pl. Ceylon. 46. (1824); Spreng., Syst. Veg. 2: 758(1825); C.B. Clarke, Fl. Brit. India 4(12): 592(1885); Moldenke, Phytologia 7:79(1959); (Roxb. Ex Schauer) C.Y. Wu, Fl. Yunnan. 1:468(1977).

Evergreen, large woody shrub; growing wild in foothills; 144" tall; 6 " long ovate serrated leaves, opposite, petioles; long furrow on the branches stem; flower terminal; bears bluish-white corolla 4+1(long), 4 anther, stigma bifid.

Fl. and Fr.: Flower September-November.

Distribution: It naturally occurs in east Africa, south and Southeast Asia.

Specimen Examined: MMA968; 9-10-2015; Lilong Chingkham.

Vitex, L.

Sp. Pl. 2:638. (1753)

Shrubs or trees, rarely climbing, often whitish pubescent or tomentose; leaves opposite or ternate, petiolate; inflorescence terminal or axillary, cymose, often in racemiform or spicate panicles, usually elongated and tapering above; flowers small, white, blue, violet or yellowish, bracteate; calyx usually campanulate, truncate; corolla- with 5 unequal lobes; stamens 4, didynamous; style filiform with slightly 2-fid stigma; fruit drupaceous, small, globose or ovoid, fleshy, invested below by somewhat enlarged calyx, seeds oblong/oblong-obovate. 215(out of 508) species has been accepted worldwide.

Vitex negundo L., Sp. Pl. 638. 1753.; (Lam.) C.B. Clarke, Fl. Brit. India 4(12):584(1885); (Willd.) H.J. Lam, Vrbenac. Malay. Archip. 191 (1919); Moldenke,

Amer. Midl. Naturalist 24(3): 754(1940); Moldenke, Phytologia 38: 308(1978); J.L.Liu, Acta Phytotax. Sin. 33 (5): 501 (1975).

Perennial, shrub, growing wild in waste land; 120-144" tall shrub; pinnately compound leaves, leaflets bears petioles; inflorescence dichasial cyme, flowers terminal, blue flowers, bracteates.

Fl. and Fr.: Flower September-December

Distribution: The plants are grown in Indo-Malesia and China.

Specimen Examined: MMA969; 15-9-2015; Lilong

33. Acanthaceae

Juss., Gen. Pl. 102–103. (1789)

Keys to Genus

Leaf blade bears prominent cystolyths (outgrowths)... ..Strobilanthes

Leaf blade do not bear cystolyths... ..Phlogacanthus

Strobilanthes, Blume

Bijdr., Fl. Ned. Ind. 781, 796. (1826)

Herbs, subshrubs, shrubs; stems and branches usually 4-angled, leaves opposite, petiolate or sessile; inflorescences axillary or terminal, bracteate heads, headlike clusters, bracteoles 2 per pedicel, usually small, sometimes absent; calyx usually 5-lobed to base, corolla nearly always bluish, rarely white, yellow or pink, tubular or funnel-shaped, stamens usually 4 and didynamous, 2 filaments longer than other 2.

35 (out of 611) species has been accepted worldwide.

Strobilanthes flaccidifolia Nees, Prodr. 11: 194 (1847) = *Strobilanthes cusia* (Nees) Kuntze. Rev, Gene. Pl. 2: 499. (1891).

Annual, shrub; cultivated in gardens; 24-36" tall shrub, leaves serrated, acute apex, 9 cm long x 3 cm broad leaves; yellow flower at axils of leaves.

Fl. and Fr.: Flowering in the month of November

Distribution: Bangladesh, Bhutan, India, Southern China, Taiwan, Laos, Myanmar, Thailand and Vietnam.

Specimen Examined: MMA290; 13-11-2012; Maibam leirak, Imphal East.

Phlogacanthus, Nees.

Pl. Asiat. Rar. 3: 76, 99. (1832)

Herbs, shrubs or small trees, with cystoliths; leaves opposite; leaf blade large, margin entire or obscurely crenate; inflorescences in terminal thyrses or axillary cymes, pedunculate; calyx deeply 5-lobed; lobes equal to unequal; corolla tubular, slightly curved; limb subequally 5-lobed or 2-lipped; lower lip 3-lobed, upper lip 2-cleft; stamens 2, anthers 2-theous; staminodes 2, small, ovary usually glabrous; stigma sub-entire; seeds lenticular, glabrous or pubescent. 1 (out of 48) species has been accepted worldwide.

Phlogacanthus thyrsiflorus Nees., Pl. Asiat. Rar. 3: 99 (1832) = *Justicia thyrsoides* Roxb. Ex. Nees., Prodr. 11: 321 (1847); Fl. Brit. India 4: 512. (1885); Kanjilal & al., Fl. Assam 3: 443. (1939); Deb, Fl. Tripura State 2: 296. (1983).

Perennial, shrub, wild, cultivated in homestead forest; woody stem, much branched, 60-120 " tall shrub; 3-5 broad and 6-12 cm long leaves, acute apex, leaves bitter in taste; 1.5 cm long many saffron flowers, flower at axils of leaves, corolla 2-lipped, quadrangular branch stems.

Fl. and Fr.: Flower November- March

Distribution: Bangladesh, Bhutan, India, Southern China, Taiwan, Laos, Myanmar, Thailand and Vietnam.

Specimen Examined: MMA373; 21-3-2013; Lilong.

34. Linderniaceae

Borsch, K. Mull. & Eb. Fisch., Pl. Biol. (Stuttgart) 7: 76 (2005)

Lindernia, All.

in Mélanges Philos. Math. Soc. Roy. Turin 3(1): 178-181, t. 5, f. 1. (1766)

Herbs, erect, prostrate or creeping; leaves opposite; petiolate or sessile; leaf blade margin often toothed or rarely entire; inflorescences terminal or axillary, racemose, sometimes pseudo-umbellate, rarely in large panicles or flowers solitary; flowers opposite or alternate, often pedicellate; bracteoles absent; calyx lobes 5, equal or subequal, parted or split on 1 side; corolla lower lip larger than upper; stamens 4, all fertile or 2 anterior reduced; anthers coherent; style mostly 2-lamellate; seeds small, numerous. 68(out of 244) species has been accepted worldwide.

Lindernia ruellioides (Colsm.) Pennell, Brittonia 2:182.(1936).

Annual, herb, trailing on the ground; growing wild in moist and shady places; stem cylindrical; leaves opposite, petiolate, minutely serrated leaves, 3 cm long x 1.5 cm wide leaves; 1 cm long blue corolla, 2 cm long non-opened inflorescence.

Fl.and Fr.: Flower August-September

Distribution: It's found in India, Nepal, Burma, Malaysia, Indo-China, South China, Japan, the Philippines and New Guinea.

Specimen Examined: MMA967; 8-9-2015; Lilong Leihaokhong.

35. Plantaginaceae

Juss., Gen. Pl. 89–90. (1789)

Plantago, L.

Sp. Pl. 1: 112-113. (1753)

Herbs or rarely small shrubs or arborescent, annual, biennial perennial, acaulescent or infrequently stemmed; leaves simple; petiole vaginate at base; inflorescences arising from rosette or leaf axil of stem, spikes, narrowly cylindrical, capitate or rarely 1-flowered; corolla salver-form or tubular, persistent; stamens (1 or 2) or 4.

158 (out of 3938) species has been accepted worldwide.

Plantago major L., Sp.pl.1: 112 (1753); (Lam.) Decne., Prodr. 13(1): 694(1852); Pilg., Notizbl.Bot. Gart. Berlin-Dahlem 8(72): 115-116(1922); Yamam, Trans. Nat. Hist. Soc. Taiwan 20: 41(1930); Domin, Monogr. Skup. Plantago 15(1933).

Annual, herbaceous, growing wild; leaves and flowers coming out of root stalk; 3.5-7 cm long x 2-5 cm broad leaves, green, petiole present; green spike inflorescence (2-3 " long), flower sessile, 13 anthers, 5 united corolla, 1 stigma.

Fl. and Fr.: March-June

Distribution: It is originated in Europe but has become cosmopolitan.

Specimen Examined: MMA371; 10-3-2013; Lilong.

36. Lauraceae

Juss, Gen. Pl. 80. (1789).

Cinnamomum, Schaeff.

Bot. Exped. 74. 1760.

Evergreen, trees or shrubs; bark, branchlets, and leaves very scented; leaves alternate, subopposite or opposite, sometimes clustered at apex of branchlet, leathery, panicle axillary, subterminal or terminal, composed of many-flowered cymes; flowers yellow or white, bisexual, rarely polygamous; perianth lobes 6; fertile stamens 9; staminodes 3, ovary always as long as style; fruit fleshy, subtended by a perianth cup. 369(out of 628) species has been accepted worldwide.

Cinnamomum tamala (Buch.-Ham.) T. Nees & Eberm., Handb. Med.-Pharm. Bot. 2:426. (1831); Hook. f., Fl. Brit. India 5: 128(1886); Kanjilal & al., Fl. Assam 4: 56. (1940); Harid. & R.R. Rao, Forest Fl. Meghalaya 2: 722–723. (1987); Baruah & S.C.Nath, Nordic J.Bot. 26: 203(2008).

Evergreen, woody tree, growing in the house forest; 420 " tall; 10 mm long simple leaves bears smell, leaves opposite, petioles; flower petioles present; 4 mm long black flowers, persistent flowers.

Fl. and Fr.: Flowering March-May

Distribution: It is found in tropical and sub-tropical Asia, Australia, Pacific region and south Asia including India.

Specimen Examined: MMA394; 25-4-2013; Hiyangthang.

37. Amaranthaceae

Juss., Gen. Pl. 87–88. (1789)

Alternanthera, Forssk.

Fl. Aegypt.-Arab. 28, 59 (1775)

Alternanthera philoxeroides (Mart.) Griseb., Abh. Königl. Ges. Wiss. Göttingen 24: 36 (1879); (Mart) Hicken, Apuntes Hist. Nat. 2: 94 (1910); (Mart) R.E.Fr., Ark. Bot. 16 (13): 10 (1920); Chodat, Bull. Soc. Bot. Geneva 18: 257 (1927); Suess, Repert. Spec. Nov. Regni Veg. 35: 303 (1934); Suess, Mitt. Bot. Staatssamml. München 2: 68 (1950) Mears, Proc. Acad. Nat. Sci. Philadelphia 129: 15 (1977); Pedersen, Adansonia III, 19: 221 (1997).

Perennial, herb, creeper, wild, growing in fields, gardens, ponds, lakes, etc; each nodes bears opposite leaves and the nodes are capable of striking roots, leaves 4 to 9 cm long; flower petioles; flower head of diam. 1 cm and hard poly-paper like 5 white corolla in a single flower; 14 flowers in one compact flower, 5 anthers; stem hollow and pinkish green colour, internodes 6 " (average) long.

Fl. and Fr.: Flower March to September

Distribution: Native of South America. The plant has established in Indo-Malesian and Australia.

Specimen Examined: MMA205; 3-7-2012; Lilong.

38. Piperaceae

Giseke, Prae. Ord. Nat. Pl. 123. (1792)

Piper, L.

Sp. Pl. 1: 28. (1753)

Shrubs/climbers, rarely herbs or small trees, aromatic; stems thickened at nodes; flowers mostly unisexual, dioecious, less often monoecious/bisexual, sessile; Inflorescences leaf-opposed/rarely terminal spikes, rarely spikes grouped in an apparently axillary umbel; bracts small, sometimes adnate to rachis, often peltate;

stamens 2-6; fruit a drupe, sessile or stalked. 1048(out of 3753) species has been accepted worldwide.

Keys to Species

Climber, dioecious.....*Piper betle*

Climber, monoecious.....*Piper nigrum*

Piper betle L., Sp. Pl.: 28 (1753). ; (Opiz) C.DC., Prodr. 16(1): 360(1869); (Blume) C.DC, Prodr.16 (1): 360(1869); C.DC, Candollea 1: 186(1923); (Blume) Fosberg, Phytologia 13(4): 235(1966).

Annual, shrub, growing in frontyard; piper or climber, dioecious, leaves (8.5 cm broad x 3.5 cm long), acute, petiolate.

Fl.and Fr.: Leaves flushing April-May

Distribution: It is cultivated in India, Indonesia, Malaysia, Philippines, Sri Lanka, Vietnam and Africa (Madagascar).

Specimen Examined: MMA264; 3-1-2014; Sangaiyumpham

Piper nigrum L, Sp. Pl.1: 28 (1753); C.DC. Prodr. 16(1): 363(1869); Asokan Nair & Ravindran, J.Econ. Taxon. Bot. 10: 167 (1988).

Perennial, shrub, climbing vines; monoecious, cultivated in hill slopes and well drained area; black colour spherical shaped seed, 0.4 cm circular seed.

Fl.and Fr.: Flower May-June

Distribution: It is native to Southeast Asia.

Specimen Examined: MMA387; 6-4-2013; Lilong Bazar.

39. Nyctaginaceae

Juss.ex.Bercht. &J.Presl., Prir.Rostlin 239. (1820)

Mirabilis, L.

Sp.Pl. null.1. 177(1753)

Herbs, annual or perennial; roots thick, obconic; leaves opposite, petiolate or upper ones sessile; inflorescence with each flower surrounded by a 5-fid, calyx-like

involucre of bracts, arranged in terminal, ± flat-topped cymes, rarely solitary ; flowers bisexual, opening in afternoon, fragrant or not; perianth constricted beyond ovary; fruit globose or obovoid, coriaceous, crustaceous or chartaceous, ribbed or tuberculate, without sticky glands. 50(out of 124) species has been accepted worldwide.

Mirabilis jalapa L., Sp. Pl. 1: 177 (1753); Choisy, Prodr. 13(2): 428(1849); (L.) Heimerl, Bot. Jahrb. Syst. 21: 616 (1896); Heimerl, Notizbl. Bot. Gart. Berlin-Dahlem 11: 450(1932); (Standl.) Cory, Rhodora 38(455): 405(1936).

Annual, herb, planted in frontyard and gardens, ornamental erect plant; 2-3 leaves alternate coming out of nodes, 11 mm long x 6 mm broad leaves, leaves acute; stem hollow, weak 288-432 cm tall plant, flower tube like 55 mm long, magenta/red/white/yellow colour.

Fl. and Fr.: Flower November- March

Distribution: The plant is found in India (Assam, Bihar, Maharashtra, and Gujarat), Tropical America and China.

Specimen Examined: MMA782; 11-12-2013; Lilong.

40. Euphorbiaceae

Juss., Gen. Pl. 384–385. (1789)

Keys to Genus

Mostly monoecious.....Phyllanthus
Bisexual.....Ricinus

Phyllanthus, L.

Sp. Pl. 2: 981. (1753)

Trees, shrubs or herbs, mostly monoecious, less often dioecious; leaves alternate, often reduced and scale-like on main stems, strongly distichous on leafy stems; inflorescences axillary, solitary or in fascicles, cymes, glomerulus, racemes or panicles; pedicels delicate; male flowers: sepals in 1 or 2 series, free, petals absent; stamens 2-6; pistillode absent; female flowers: sepals as in male/more; fruit usually a

capsule, globose or depressed globose, smooth or warty, seeds without caruncle or aril. 884(out of 1625) species has been accepted worldwide.

Phyllanthus emblica L., Sp.Pl.982 (1753);(Gaertn.) G.L. Webster, Ann.Missouri Bot.Gard. 54(2): 194(1967).

Perennial, small tree, growing wild; woody, rough stem, grey bark; distichous, obtuse, small leaves; leaf petioles bear creamy white minute flower, 5-corolla, globose fruits.

Fl.and Fr.: Flower April-May

Distribution: It is originated from India, Nepal, China and other south Asian countries.

Specimen Examined: MMA390; 10-4-2013; Lilong.

Ricinus, L.

Sp. Pl. 2: 1007. (1753)

Annual, herbs or herbaceous or shrubs; indumentum absent; stems hollow; leaves alternate; stipules united, insertion peltate; leaf blade palmately lobed; inflorescences terminal, branched or unbranched, bisexual; bracts broadly triangular, deciduous; male flowers proximal, female flowers distal; male flowers: petals absent; disk absent; stamens very many; female flowers: sepals 5, valvate, deciduous; petals absent; styles 3, 2-lobed; fruit a capsule; seeds large. 1(out of 74) species has been accepted worldwide.

Ricinus communis L., Sp. Pl. 2: 1007. (1753); Mull. Arg., Prodr. 15(2):1019(1866) Hook.f., Fl. Brit. India, 5: 457. (1887); Kanjilal & al., Fl. Assam 4: 221. (1940); Moshkin, Nauch. Trudy Vasknil, 31, 33, 38(1980); Deb, Fl. Tripura State 1: 349. (1981); Harid. & R.R. Rao, Forest Fl. Meghalaya 2: 803. (1987).

Annual, shrub, growing in the homestead forest, agricultural fields or house garden; stem is used for fencing and leaves are given to insects to make cocoons; 84-180" tall shrub, trunks present, delicate stem; leaves simple but lobed 4-5 places,

petioles; many yellow anthers and coffee colour stigma; fruits bears petioles and soft spines, fruit diam. 1.5 mm.

Fl.and Fr.: Flower and Fruit July to December.

Distribution: The plant is indigenous to northeastern tropical Africa.

Specimen Examined: MMA212; 13-7-2012; Lilong Darul Uloom Makha.

41. Moraceae

Gaudich.,Gen. Pl.13. (1835)

Morus, L.

Sp.Pl. 2:986 (1753)

Trees or shrubs, deciduous; monoecious or dioecious; leaves alternate; leaf blade simple to deeply palmately lobed, margin toothed; male inflorescences axillary, spicate, many-flowered, shortly pedunculate; female inflorescences shortly spicate to capitate; male flowers: calyx lobes 4, imbricate; stamens inflexed in bud; pistillode top-shaped; female flowers: sessile; calyx lobes 4, imbricate, fleshy in fruit; fruit with enlarged; endocarp shell-like; exocarp fleshy; seed semi-globose. 14(out of 174) species has been accepted worldwide.

Morus macroua Miq., Pl.Jungh.1:42.42 (1851)= *Morus laevigata* Wall. ex Brandis, For.Fl.409(1874); (Koidz.) C.Y. Wu & Z.Y. Cao, Acta Bot. Yunnan 17(2): 153(1995).

Deciduous; growing in homestead forest and gardens; small tree of 72-144" tall; incised leaves, acuminate leaves apex, 5 cm broad x 7 cm long leaves, leaf petioles; mix black-red colour aggregate fruit, short pedicel.

Fl.and Fr.: Flower and Fruiting- April to September

Distribution: The China–Japan center of origin was proposed for this plant by Vavilov.

Specimen Examined: MMA626; 4-4-2014; Lilong.

42. Cannabaceae

Martinov,Tekhno-Bot. Slovar. 99. (1820)

Celtis, L.

Sp.Pl. 2:1043 (1753)

Trees or shrubs with smooth grey bark; leaves simple, alternate, petiolate; stipules narrow linear, caduceous; flowers unisexual, bisexual or polygamous in axillary or lateral clusters on branches of current season; male flowers in axillary or lateral cymes, fertile flowers solitary; perianth 4 or 5, imbricate, deciduous, stamens 4-5, 2 stigma; fruit a small ovoid or globose drupe, endocarp hard and stony, smooth, rugose. 73(out of 325) species has been accepted worldwide.

Celtis timorensis Span., Linnaea15:343 (1841).

Perennial, small to large tree; growing wild; woody tree plant of 480 to 720 feet (approx.) tall tree; creamy white colour flower, flower minute (separated), flower bears 5 anthers, 1 stigma.

Fl.and Fr.: Flower April and May

Distribution: Found in Northern- India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam and Bangladesh.

Specimen Examined: MMA398; 28-4-2013; Lilong.

43. Salicaceae

Mirb., Elém. Physiol. Vég. Bot. 2: 905. (1815)

Xylosma, G. Forster

Fl. Ins. Austr. 72. (1786)

Shrubs or small trees, dioecious; trunk and branches usually spiny; leaves alternate, stipulate, usually petiolate; flowers hypogynous, small, in axillary fascicles, short racemes or panicles; sepals 4 or 5, imbricate, free or connate at base only; petals absent; berry small, ca. 1 cm or less, pericarp thinly leathery, blackish when dried; seeds few. 45 (out of 112) species has been accepted worldwide.

Xylosma longifolia Clos.,Ann. Sci. Nat., Bot., sér. 4, 8: 231. (1857).

Evergreen, tree, growing wild at roadsides and foothills; small tree of around 120 ", branches; 4-8 cm long leaves, petioles, leaves elliptical, oblong small

lobed/marks on parallel sides, acute apex, old leaves are green while young is reddish; flower branches raceme minute coming out in the axils of leaves.

Fl.and Fr.: Flower September-October.

Distribution: Found in China, India, Nepal, Pakistan and Thailand.

Specimen Examined: MMA556; 28-12-2013; Lilong.

Monocotyledonous

44. Orchidaceae

Juss., Gen. Pl. 64-65. (1789)

Vanda, Jones ex R. Br.

in Bot. Reg. 6: t. 506. (1820)

Herbs, epiphytic, monopodial; stems ascending or rarely arching, usually rather long, stout, rigid, with short internodes and many distichous leaves, with thick roots in lower part; leaves distichous, flat, narrow, often closely spaced, linear to lorate, conduplicate toward base, with amplexicaul-sheathing base, jointed; inflorescences erect or suberect, racemose, axillary; flowers large or medium-sized, usually colorful and long-lasting; 2 pollinia. 56 (out of 144) species has been accepted worldwide.

Vanda coerulea Griff. Ex Lindl., Edwards's Bot. Reg. 33: sub t. 30. 1847; R.K.Kishore, Orchid Rev. 116: 224(2008).

Perennial, herb, epiphytic orchid, protected Gardens, homestead forest; stem c. 0.5 ", monopodial stem; simple toothed leaves, flowers racemose, 2 - 3 mm long violet or red petals, 3 violet/red sepals, leaves opposite, leaves 3-6 " long.

Fl.and Fr.: Very short period flower up to 3rd week of May.

Distribution: Laos, Thailand, Cambodia, Myanmar and India.

Specimen Examined: MMA893; 4-5-2014; Lilong.

45. Araceae

Juss, Gen. Pl. 23. (1789)

Alocasia, (Schott) G. Don.

Hort.Brit. ed. 3:631 (1839)

Herbs, evergreen, rarely seasonally dormant, latex-bearing, medium sized to rarely arborescent and gigantic; leaf blade sometimes pubescent abaxially, juvenile blade peltate, at maturity usually sagittate; inflorescences 1 or 2 to many in each floral sympodium; peduncle usually shorter than petioles; spathe persistent, erect, convolute, gaping only basally, strongly constricted between tube and blade, rarely not; spadix sessile; short, separated from male by a much narrower zone of sterile flowers; male zone usually cylindrical; flowers unisexual, naked; fruit a reddish, ellipsoid or obconic-ellipsoid or subglobose odorless berry, 1-5-seeded; stigma remnants persistent. 79(out of 199) species has been accepted worldwide.

Alocasia macrorrhizos (L.) Schott, Melet. Bot.18 (1832); (L.) G.Don. Hort. Brit. ed. 3: 631. (1839)=*Alocasia indica* (Lour.) Spach., Oesterr. Bot. Wochenbl.4: 410(1854); F.M.Bailey, Queensl. Fl.5: 1697(1902); (Hassk.) Furtado, Gard. Bull.Singapore 11(3): 254-255 (1941); (K.Koch & Bouche) Furtado, Gard.Bull. Singapore 11(3): 253-254(1941).

Evergreen, herbs, cultivated in the fields and kitchen gardens; leaves 2-4 crowded at a crown; long petiole 15-25" long, leaves sagittate, inflorescences 1 in each sympodium, spathe enclosing, spadix more than 5 " long; male zone above on spadix while female zone below and a sterile zone in between.

Fl.and Fr.: Flower September

Distribution: Important crop of India and Southeast Asia. It's cultivated in South Asia.

Specimen Examined: MMA644; 4-5-2014; Lilong

46. Arecaceae

Bercht.& J. Presl.,Prir. Rostlin. 266. (1820)

Keys to Genus

Fleshy exocarp.....	Areca
Hard endocarp.....	Cocos
Fleshy pericarp.....	Phoenix

Areca, L.

Sp. Pl. 2: 1189. (1753)

Solitary or small clump-forming palms, stem annulate, slender, smooth, unarmed; leaves pinnate, pinnae mostly narrow; leaflets thin, often confluent; inflorescence much branched, borne at the base of the crown shaft; female flowers in triads at the base of the rachillae, male flowers small, sepals small; petals much large, stamens 3-6 /more; stigmas 3 fruit ovoid or oblong, exocarp fleshy; seeds with truncate base.

49 (out of 155) species has been accepted worldwide.

Areca catechu L., Sp. Pl.2:1189. (1753); Willd., Sp.Pl. 4 (1): 594-595 (1805).

Perennial, palm tree, growing in frontyard and homestead forest; 240 to 300" tall, smooth palm; c.16 "; hard long leaves, terminally crown formation; yellow flowers; diam.4 to 7 cm hard nut.

Fl. and Fr.: Flower November-December

Distribution: An important plant of south and Southeast Asia. Exact origin is not known. It probably started from Malesia and cultivated in Indian region in ancient time.

Specimen Examined: MMA521; 19-11-2013; Lilong.

Cocos, L.

Sp. Pl. 2: 1188. (1753)

Solitary palm, stem often curved; leaves very long, green, pinnatisect; leaflets narrow, apices long acuminate; inflorescence from the axil of the leaf with short prophyll and with boat-shaped woody coriaceous peduncular bract; inflorescence yellowish; flowers in triads; stamens 6; fruit one seeded nut, trigonous, endocarp hard

with three basal pores, endosperm edible. 1(out of 28) species has been accepted worldwide.

Cocos nucifera L., Sp. Pl.: 1188(1753); Schaedtler, Hamburger Gaerten-Blumenzeitung 31: 158(1875); Becc, Agric. Colon. 10: 586(1916).

Perennial, coconut palm tree, growing at homestead forest; 240-360 " tall palm; terminally hard leaves crown; fibrous sheaths; stem c.37 "; light green young fruits tapering both ends; persistent calyx.

Fl.and Fr.: Young fruit appears March-May.

Distribution: The exact origin is not known. It is considered to be a native to the coastal regions of tropical Asia and the Pacific.

Specimen Examined: MMA522; 25-5-2014; Lilong.

Phoenix, L.

Sp.Pl. 2:1188 (1753)

Solitary or dioecious, feather palms; trunk stout, uniformly thickened, covered with bases of petiole, leaves pinnate, pinnae numerous, unequal, elongate; inflorescence simply branched, axillary; flowers unisexual; male flowers: oblong or ovoid, 3-toothed, stamens usually 6; female flowers: carpels 3, free, with sessile stigmas; staminodes 6 or joined into a 6-lobed cup; fruit one seeded berry, ovoid or oblong, with a fleshy pericarp and a membranous endocarp; seeds straight. 14(out of 53) species has been accepted worldwide.

Phoenix dactylifera L., Sp.Pl.11: 88 (1753); Mart., Hist. Nat. Palm. 3:258(1838); Webb & Berthel, Hist. Nat. Iles Canaries 3 (3): 289(1847); Schaedtler, Hamburger Garten-Blumenzeitung 31:220 (1875); (Regel) G. Nicholson, Ill. Dict. Gard. 597 (1901).

Perennial, date palmtree, cultivated in gardens and Mosque campus; V shaped longitudinal leaves-florets, greenish hard spines, leaves crowded on stem; yellowish inflorescence coming out of axils of leaves; fruit is drupe; palm stem

smooth and 300-540 " tall, stem bears roots up to approx. 120 ", stem c. 83 " (72 " above ground level).

Fl. and Fr.: Fruit November-January.

Distribution: Presently cultivated in Algeria, Egypt, Gulf States, Iran, Iraq, Libya, Morocco, Saudi Arabia, Turkey, Spain, India, Bangladesh, Pakistan and others. The exact origin is not known.

Specimen Examined: MMA657; 28-5-2014; Hatta Mosque campus.

47. Musaceae

Juss., Gen. Pl. 61. (1789)

Musa, L.

Sp.Pl. 2:1043 (1753)

Herbs, perennial, tufted, rhizomatous, stoloniferous; stems remaining short until flowering; pseudo-stems composed of closely packed leaf sheaths, base slightly swollen; leaves large; petiole long, base enlarged into a sheath; inflorescence terminal, erect, pendulous or sub-pendulous, not conical, lax; bracts green, brown, dull purple or rarely yellow, flat or furrowed, convolute/imbricate in bud, usually deciduous; flowers in 1 or 2 rows per bract, deciduous; flowers in proximal bracts female (with reduced stamens)/bisexual; berries elongate, fleshy, with numerous seeds; seeds irregularly globose to lenticular.

66 (out of 203) species has been accepted worldwide.

Musa balbisiana Colla, Mem. Reale Accad. Sci. Torino 25: 384 (1820); D.B. Singh & al., Malayan Nat. J. 52: 157(1998); (Backer) Hakkinen, Adansonia III, 30: 70, 91(2008).

Perennial, herb, planted at homestead forest; 12-180 " tall plant; stem c.32 "; 72-108 " long leaves, petiole, pinnate parallel, 12-15 " broad, mid rib prominent; inflorescence terminal, pedicel, inflorescence bears purple sheaths.

Fl. and Fr.: Flower June- December.

Distribution: Cambodia, Laos, Malaysia, Thailand and Vietnam.

Specimen Examined: MMA108; 9-2-2014; Lilong.

48. Zingiberaceae

Martinov, Tekhno-Bot. Slovar. 682. (1820)

Keys to Genus

Thick rhizome, not much branched.....Alpinia
Tuberous rhizome, much branched.....Curcuma
Tuberous rhizome, less branched.....Hedychium

Alpinia, Roxburgh

Asiat. Res. 11: 350. (1810)

Rhizomes creeping, thick; pseudo-stems many, well developed, rarely absent; leaves many; leaf blade oblong or lanceolate; inflorescence a terminal panicle, raceme or spike, dense or lax, covered by 1 to 3 spatulate involucre bracts when immature; labellum often showy; stigma usually well expanded, sometimes clavate, rarely geniculate; seeds numerous, often angled, arillate. 241(out of 468) species has been accepted worldwide.

Alpinia allughas (Retzius) Roscoe; Trans. Linn. Soc. London 8: 346 (1807).

Annual, herb, growing wild at moist and shady places in hills; 36 to 60" tall plant; rhizome fleshy mass whitish-red in colour; green leaves, elongated, 13-19" long.

Fl. and Fr.: Flower November-December.

Distribution: Bhutan, India, Sri Lanka, Thailand.

Specimen Examined: MMA291; 10-11-2012, Lilong Chingkham.

Curcuma, L.

Sp. Pl. 1: 2. (1753).

Rhizomes branched, fleshy, aromatic, often with tuber-bearing roots; leaves basal; leaf blade broadly lanceolate/oblong, rarely narrowly linear; inflorescence a terminal spike on pseudo-stems/on separate shoots arising from rhizomes, sometimes appearing before leaves; 2 to 7 flowers, labellum with a thickened, central portion and

thinner, lateral lobes overlapping with lateral staminodes. 92 (out of 132) species has been accepted worldwide.

Keys to species

Corolla mix with magenta-white colour*Curcuma angustifolia*
Corolla white or creamy white colour.....*Curcuma longa*

Curcuma angustifolia Roxb., Asiat. Res. 11: 338, pl. 3 (1810); Baker in Hook.f. Fl. Brit. India 6: 210. (1890); A.S. Rao & D.M. Verma, Bull. Bot. Surv. India 14: 121. (1972); S. Kumar in Hajra & D.M. Verma (eds.), Fl. Sikkim 1: 125. (1996).

Perennial, deciduous, herbaceous, growing wild at moist and shady places in foot-hills; 24 to 36 " tall plant; 6 " long connate inflorescence emerged from rhizome; 1-2 cm long internodes, nodes bears scales, rhizome bears tuberous and fibrous roots; flower mix magenta-white colour, many flowers in one stalk; elongated leaves; yellow colour old leaves.

Fl. and Fr.: Flower May- August

Distribution: It's native to Indo-Malesian region.

Specimen Examined: MMA614; 21-3-2013; Lilong

Curcuma longa L., Sp. Pl. 1: 2. (1753) = *Curcuma domestica* Valetton; Bull. Jard. Bot. Buitenzorg sér. 2, 27:31. (1918).

Perennial, herb, cultivated in homestead and kitchen gardens; 24-36 " tall plant; many whitish or creamy white flower emerged from rhizome in one stalk, 5- corollas, 2 anther, 1 pistil; rhizome is yellow; green leaves turned to yellow.

Fl. and Fr.: Young leaves coming out in the months of April and May. Flowering starts from September.

Distribution: Native origin unknown. It's cultivated throughout tropical Asia.

Specimen Examined: MMA309; 12-10-2012; Masjid campus, Chandel.

Hedychium, J. Koenig

Observ. Bot. 3: 61. (1783)

Herbs terrestrial or epiphytic, with tuberous rhizomes; pseudo-stems erect, leafy; ligule conspicuous; leaf blade usually oblong or lanceolate; inflorescence a terminal spike, densely numerous flowered; bracts imbricate or lax, 1 or more flowered; bracteoles tubular; labellum suborbicular, capsule globose, 3-valved; seeds numerous; aril lacerate. 87(out of 140) species has been accepted worldwide.

Hedychium coccineum Buch.-Ham.ex Sm., Cycl.17:5.1811.; Buch.-Ham. Ex Sm., Cycl. 1: Hedychium no. 5(1811); (Roxb.) Baker.Fl. Brit. India 6: 231(1892); (Roscoe) Baker, Fl.Brit.India 6: 232(1892); (Roxb.) Baker, Fl.Brit. India 6: 226(1892); Lodd.) Baker, Fl. Brit. India 6: 226 (1892).

Perennial, herbaceous, growing wild in forest and hill sides; herbaceous plant; leaves sheaths present, 3 leaves at each nodes; inflorescence terminal; fleshy rhizomes present; flowers bear red-yellow mix colour corolla.

Fl. and Fr.: Flower in July-September.

Distribution: Found in Bhutan, NE India, Myanmar, Nepal, Sikkim, Sri Lanka and Thailand.

Specimen Examined: MMA247; 10-9-2012; Lilong.

49. Iridaceae

Juss., Gen.Pl. 57 (1789)

Belamcanda, Adanson

Fam.Pl.2:60, 524(1763)

Herbs, perennial, rhizomatous; rhizome knobbly; well developed aerial stem, erect, leafy; leaves cauline, 2-ranked, oriented edgewise to aerial stem, sword-shaped; inflorescence a ± dichotomously branched panicle of rhipidia; stamens inserted at base of perianth segments; style 1. Only one (1) species is known under this genus. This species has not been accepted till date.

Belamcanda chinensis (L.) DC, Liliac. 3: t. 121 (1805)= *Iris domestica* (L.) Goldblatt & Mabb. Novon 15(1): 129–132, f. 1. (2005).

Perennial, growing and cultivated in the gardens, herbaceous; leaves at nodes; flower terminal, red-yellow mix corolla, flower umbel, bearing rhizome

Fl. and Fr.: Flowering July to September.

Distribution: Found in Bhutan, Myanmar and India. It's Chinese origin plant.

Specimen Examined: MMA980; 30-9-2015; Chandel.

50. Liliaceae

Juss, Gen. Pl. 48 (1789)

Allium, L.

Sp. Pl. 1: 294. (1753)

Herbs, perennial, bulbiferous, sometimes with well-developed, thick or thin rhizomes, rarely with stolons or tuberous roots, usually with onion-like, garlic-like odor when fresh; bulb covered with a tunic; leaves sessile, inflorescence a terminal umbel, sometimes with bulblets, rarely flowerless and with bulblets only, enclosed in a spathe-like bract before anthesis; pedicels with or without basal bracteoles; flowers bisexual; very rarely degenerating into unisexual (when plants dioecious); perianth segments free or united into a tube at base; seeds black, rhomboidal or spheroidal.

887(out of 1826) species has been accepted worldwide.

Keys to species

Bulb consisting of many bulbels.....*Allium sativum*

Bulbs without bulbels.....*Allium ramosum*

Allium sativum L., Sp. Pl. 1: 296-297(1753); (Link) Schubl. & G. Martenes, Fl. Wurtemberg Ed. 1: 220(1834); (Link) Doll, Rhein. Fl. 197 (1843); (Porkhanov) F. Mack., J.Jap.Bot. 15: 149 (1939); (Porkhanov) Makino, Ill. Fl. Jap. Ed. 2: 840(1961).

Annual, herb, cultivated in kitchen gardens/pots and fields; 9.5-10 cm bulb, consisting many bulbels, transparent scales, tuberous roots, 27 cm long green leaves.

Fl. and Fr.: Harvesting of bulbs in April - May

Distribution: It's native to Asia. It's widely cultivated.

Specimen Examined: MMA367; 3-3-2013; Lilong

Allium ramosum L., Sp.Pl.1.296. (1753) =*Allium odorum* L., Mant.Pl. 2: 62 (1771); Georgi, Beschr. Nation. Russ. Reich 3(4): 892(1779); Jacq., Misc. Austriac. 2: 303 (1781).

Annual, herb, growing and cultivated in the house garden; white bulb of 2.5-3 cm long x 1 cm broad, without bulbels; green elongated leaves, 2-4 leaves coming out of one bulb; 6 white tepals, 6 anthers.

Fl. and Fr.: White flowers in the month of May.

Distribution: Native places are Asia-Temperate (Siberia), Russian Federation Middle Asia (Kazakhstan) and Mongolia (Far East China).

Specimen Examined: MMA404; 5-5-2013; Chandel HQ Mosque.

51. Cyperaceae

Juss, Gen. Pl. 26. (1789)

Keys to Genus

Herb with rhizome.....*Kyllinga*

Herb without rhizome.....*Scirpus*

Kyllinga, Rottb.

Descr. Icon. Rar. 12, Pl. 4. (1773)

Herbs, perennial or rarely annual, with fibrous roots; culms tufted or scattered, usually slightly slender, rarely slightly stout; leaves basal, 3-ranked; ligule absent; leaf blade elongated or reduced; involucre bracts spreading, leaflike; Inflorescences terminal, capitate, with 1-3 spikes, spikes sessile, capitate, with densely numerous spikelets, spikelets short, compressed, each usually with bisexual flowers; flowers without perianth bristles/scale-like perianth parts; stigmas two. 74 (out of 245) species has been accepted worldwide.

Kyllinga brevifolia Rottb., Descr. Icon.Rar. Pl. 13. (1773);Rottb., Mant. 134(1824); Nees, Contr. Bot. India 91(1834)=*Cyperus brevifolius* (Rottb.)Hassk., Cat. Hort. Bot. Bogor. 24 (1844); C.B. Clarke in Hook.f, Fl. Brit. India 6: 588. (1893); (Kuk) Lye, Nordic J.Bot. 1: 747(2010).

Perennial, herb, growing wild in gardens and hills; 6 leaves; brick red colour flower 2-6 in groups coming out of axils of leaves, 1-6 sessile spikes, numerous spikelets; underground hard rhizome bearing leaves 8-15 cm long; 3 ridged and 3 furrowed stem, rhizome c.1cm.; fibrous roots.

Fl.and Fr.: Flowering April to June.

Distribution: Tropical and Sub-tropical regions. This plant is available in all the continents.

Specimen Examined: MMA382; 2-4-2013; Lilong.

Scirpus, L.

Sp.Pl. 1:47 (1753)

Herbs, perennials; culms tufted, 3-angled to obtusely 3-angled, rarely terete, few to many nodose; leaves basal and cauline; leaf blade linear, grasslike, ligulate, base sheathing; inflorescence a terminal corymbiform anthela, with many spikelets; spikelets ovoid to ellipsoid, generally rather small; glumes spirally arranged, deciduous, each subtending a flower; flowers bisexual; perianth-bristles 3-6, Stamens 1-3; style base not thickened, persistent; stigmas 2/3. 67 (out of 1405) species has been accepted worldwide.

Scirpus mucronatus L., Sp.Pl.50 (1753);Pollich, Hist. Pl. Palat. 1: 44(1776); Tent. Fl. Germ. 1: 23(1788); Miq., Ann. Mus. Bot. Lugduno- Batavi 2: 143(1865); Kuk, Bot. Jahrab. Syst.69: 259(1938).

Perennial, herb, wild, ccultivated in ponds, lakes, marshy places and rivers; leaves basal; 0.3 mm to 0.7 mm stem round, 0 .4 mm long 9- spikelets, 48 to 72 " tall herb; cylindrical stem.

Fl.and Fr.: Flowers October-November

Distribution: This is believed to be old world plant including Southeast Asia.

Specimen Examined: MMA299; 22-11-12; Lilong

52. Poaceae

Barnhart, Bull. Torrey Bot. Club 22: 7. (1895)

Keys to Genus

Stem solid, strong, stilt roots at base nodes.....	Saccharum
Stem erect, curly, unbranched.....	Imperata
Stem erect and ascending.....	Oryza
Stem strong, solid, stilt roots.....	Zea
Stem tall, strong.....	Cymbopogon
Stem strong, erect, decumbent.....	Coix
Stem weak to strong.....	Cynodon
Stem erect to pendulous, rarely subscandent.....	Bambusa
Stem occasionally scrambling.....	Dendrocalamus
Stem diffuse, internode terete.....	Melocanna
Stem big and strong.....	Echinochloa

Saccharum, L

Sp. Pl. 1: 54. (1753)

Perennials, rhizomatous or tufted; culms robust, up to 7 m tall; leaf midrib usually broad, white; inflorescence terminal, a large plumose panicle with elongate central axis, its branches bearing numerous hairy racemes; racemes fragile, sessile and pedicelled spikelet of a pair similar, both fertile; spikelets usually small, lanceolate. 37(out of 198) species has been accepted worldwide.

Saccharum officinarum L., Sp. Pl.1:54(1753); Pers.Syn.Pl.1:102(1805); Roem & Schult. Syst. Veg. (ed. 15 bis) 2: 285(1817); Hack, Monogr. Phan.6: 112(1889); Hook.f. Fl.Brit.Ind.7:118(1897); Sickenb, Mem. Inst. Egypt.4: 302 (1901); (Jeswiet) Burkill, Dict. Econ. Prod. Malay Penins. 2: 1927(1935).

Perennial, grass, growing in the gardens, frontyard and fields; 96-120" tall grass, erect; nodes and internodes present, internodes 6 " long; nodes bear eye spot,

corrugated long leaves, bears fibrous hairs, rough leaves, mid ribs prominent, sharp leaf blade.

Fl.and Fr.: Harvesting time November to January.

Distribution: Cultivated in China-Yunnan region, Southeast Asia and Pacific islands.

Specimen Examined: MMA204; 2-7-2012; Lilong.

Imperata, Cirillo

Pl. Rar. Neapol. 2: 26. (1792)

Perennials, strongly rhizomatous; culms erect, unbranched; leaf blades mainly basal, linear, flat/rolled; ligule membranous; inflorescence a terminal, silky-white, spike-like panicle, branches bearing numerous very short racemes; racemes with tough rachis, spikelets of a pair both pedicelled with one pedicel longer than the other, deciduous at maturity within a plumose involucre of hairs; rachis internodes and pedicels persistent, densely silky hairy, tips expanded; spikelets small, delicate, ± terete, enveloped in hairs; callus very small, spikelet awnless; palea short, broad; lodicules absent; stamens one or two. 11(out of 50) species has been accepted worldwide.

Imperata cylindrica (L.) Raeusch, Nomencl. Bot. ed. 3:10. (1797); (L.) P. Beuv, Ess. Agrost. Ogr.8, 165, 177, Pl. 5, f.1 (1812); (Anderson) Asch.& Graebn. Syn. Mittleur. Fl. 2: 37(1898); (Retz.) Tzvelev, Zlaki SSSR 691(1976); (Rupr.) D.B. Ward., Novon 14(3): 368-369(2004).

Perennial, wild and cultivated in the fields; grass 12-48 " long; 13" long inflorescence, white flowers; leaves long 1.5 cm - 2.2 cm wide.

Fl.and Fr.: Flower July-September.

Distribution: Widely cultivated in Southeast Asia, Pacific Islands and also widely cultivated elsewhere.

Specimen Examined: MMA491; 13-7-2013; Lilong.

Oryza, L.

Sp.Pl. 1:333 (1753)

Annual or perennial; culms erect or ascending; leaf blades mainly cauline, broadly linear, flat; inflorescence a panicle, usually many-spiculate pedicels short; spikelets with 3 florets, 2 lower florets reduced, sterile, upper floret fertile, glumes vestigial, remaining after disarticulation as a shallow lobed frill at pedicel apex; sterile florets reduced to 2 narrow lemmas at base of fertile floret; fertile lemma boat-shaped, keeled, leathery, apex awnless to long awned; awn straight; palea resembling lemma but narrower, apex beaked; 6 stamens. 18(out of 73) species has been accepted worldwide.

Oryza sativa L., Pl.1:333 (1753); Desv. J. Bot. (Paris) 3: 77(1813); Blanco, Fl.Filip. (1837); Hook. f., Fl. Brit. India 7:102 (1897); Porteres, J. Agric. Trop. Bot, Appl.2 576, 595 (1955); Porteres, J. Agric. Trop. Bot. Appl. 3(11): 674(1956).

Annual, grass, cultivated in agricultural fields; stem/straw has swollen nodes, internodes 8.5-16 cm long, 36-54" tall grass, ex-stipulate; simple leaves, alternate, apex acute, sheathing; cultivated plant, seed 1cm long, golden yellow colour hard seed coat.

Fl.and Fr.: Harvesting November to December.

Distribution: Cultivated in Southeast Asia.

Specimen Examined: MMA298; 22-11-12; Lilong.

Zea, L

Sp.Pl. 2:971 (1753)

Annual; culms robust, often tall with stilt roots, solid; leaf blades large, broadly linear; inflorescences terminal and axillary, spikelets unisexual, separated into male and female inflorescences, spikelets in a pair alike, female inflorescence axillary; spikelets all sessile in many longitudinal rows, almost woody axis, glumes and lemmas chaffy, awnless, lower floret sterile; styles long, silky, pendulous from inflorescence apex; male inflorescence terminal, of many digitate/paniculate racemes. 6(out of 40) species has been accepted worldwide.

Zea mays L., Sp.Pl.2: 971(1753); Larranaga ex A. St.- Hil. Ann. Sci. Nat., Bot. 16: 144 (1829); Bonaf., Hist. Nat. Mais. 37, t. 10, f. 15(1836); Hook.f., Fl.Brit.India7:102. (1897); G. E. Schmaraevev, Kult. Fl. SSSR 6: 36(1982); (Iltis & Doebley, Maydica 35: 148 (1990).

Annual, cultivated, growing in fields and kitchen gardens; grass, cultivated plant, 48 – 84 " tall plant; bears elongated and opposite leaves; nodes bear leaves; axil of leaves bears cobs and tassels; 3 fertile anthers.

Fl.and Fr.: May-August.

Distribution: Originated in America. It's cultivated in India.

Specimen Examined: MMA431; 12-6-2013; Lilong.

Cymbopogon, Spreng.

Pl. Min. Cogn.Pug. 2: 14. (1815)

Perennial, rarely annual; culms often tall, robust; leaf blades aromatic, filiform to broadly linear; ligule scarious; inflorescence a dense spathate compound panicle, sessile spikelet dorsally compressed; callus obtuse, shortly bearded, inserted into internode apex; lower glume papery, flat/concave, pedicelled spikelet male/sterile, narrowly lanceolate, awnless. 54(out of 185) species has been accepted worldwide.

Cymbopogon nardus (L.) Rendle.,W.P.Heirn, Cat.Afr.Pl.ii:155(1899); (Nees ex Steud.); Haines, Bot. Bihar Orissa 1047(1924); (Steud.) Stapf ex Bor, J.Bombay Nat. Hist. Soc. 51: 905(1953); (Nees ex Steud.); Roberty, Boissiera 9: 174(1960); (Hook.f.) N.Rama Rao, J. Econ. Taxon. Bot. 12(2): 378(1988).

Perennial, grass, wild, growing by the side of marshy lakes, near ponds and foothills; Around 120-144" tall grass; stem smooth, internodes long, nodes bears elongated leaves of 10-15" long, stem hard, leaf blades are sharp; non-branched panicle inflorescence of around 30 cm long, flower clusters, spikelets without stalks, keels boat shaped, 5-8 cm long.

Fr. and Fl.: Flowering August-October

Distribution: It's native to South India and Sri Lanka.

Specimen examined: MMA727; 10-9-2014; Thoubal Moijing

Coix, L.

Sp. Pl. 2: 972. (1753)

Annual or perennial; culms robust, erect/decumbent, sometimes floating, usually solid; leaves cauline; leaf blades large, usually broad, flat; inflorescences many, each inflorescence comprising 2 racemes, female raceme of 1 sessile fertile spikelet accompanied by 2 free stout pedicels; female spikelet: lower glume broad, upper glume narrower, keeled; lower floret reduced to a broad hyaline lemma; upper floret with hyaline lemma and palea; lodicules absent; stigmas 2, elongate; male raceme deciduous at maturity, composed of imbricate spikelets borne in pairs or triads, sessile and 1 pedicelled, pedicelled spikelet often reduced in triads; male spikelets: glumes subequal, herbaceous; lower glume flat on back, margins keeled, keels winged upward; upper glume boat-shaped. 4 (out of 36) species has been accepted worldwide.

Coix lacryma jobi L., Sp Pl.2:972(1753); Hook. f., Fl.Brit.India.7:99(1897).

Annual, growing wild on road side, grass of around 30-40 " tall.; stem hard and tufted, one side bears trough; leaves alternate, green, sheathing; leaves 21 – 28 cm long excluding sheath and 3.5 to 5.5 cm wide; inflorescence coming out of nodes; seeds smooth and shining, 2 stigmas; it bears spikelets at tip of seeds; around 7-10 male spikelets: each spikelet bears 3 anthers.

Fl. and Fr.: March to August

Distribution: It's cultivated in China, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand and Vietnam.

Specimen Examined: MMA406; 5-5-2013; Lilong.

Cynodon, Rich.

Sy. Pl. 1: 85. (1805)

Perennials, rhizomatous or stoloniferous; culms slender to robust, leafy, internodes short; leaf blades broadly linear to filiform, flat; ligule membranous or ciliate; inflorescence digitate or sometimes 2 or more closely spaced whorls; spikelets sessile, imbricate, biseriate; spikelets strongly laterally compressed, floret 1, with or without rachilla extension (very rarely 2nd floret present), narrowly ovate, awnless,

disarticulating above glumes; glumes subequal, shorter or as long as floret, narrow, herbaceous, both or only lower glume persistent; lemma keeled, boat-shaped, cartilaginous, 3-veined, usually pubescent on keel, apex entire, awnless; caryopsis ellipsoid. 10(out of 97) species has been accepted worldwide.

Cynodon dactylon Pers. Syn., Pl.1:85 (1805); Sweet, Hort. Brit. (ed.2) 558(1830); (Caro & E.A. Sanchez) Romero-Zarco, Lagasalia 14(1): 171(1986); (Ohwi) T. Koyama, Grass Jap. Neighb.Reg. 498 (1987); Hook.f., Fl.Brit.India 7:288 (1897).

Perennial, prostrate, 5-10 cm tall grass, wild, growing in fields, lakes, lawns and Ponds; grass apex upward, hard stolon/rhizome trailing underground; 1.8-2.3 cm long leaves, small, leaves alternate at each nodes; stem green-brown-purple colour, stem c. 0.3mm, nodes 2-3 cm long; roots at stolons.

Fl. and Fr.: Flower July.

Distribution: It's cultivated as a lawn grass in tropical and warm-temperate regions of the world.

Specimen Examined: MMA207; 12-12-2012; Lilong.

Bambusa, Schreber

Gen. Pl. 236. (1789)

Arborescent bamboos, occasionally shrubby or scrambling, 1–20 m; rhizomes short necked, culms unicaespitose, erect to pendulous, rarely subscandent; internodes terete; nodes not raised; branches several to many, often 1–3 dominant, branchlets of lower branches sometimes forming tough or weak thorns; culm sheaths deciduous, rarely persistent; auricles usually conspicuous; blade usually erect; leaf blade variable in size; pseudo-spikelets rarely solitary, usually several to many clustered to capitate on flowering branches; pseudo-spikelets prophyllate. 137(out of 457) species has been accepted worldwide.

Keys to species

- >330 " tall bamboo.....*Bambusa tulda*
- >340 " tall bamboo.....*Bambusa nutans*
- >350" tall bamboo.....*Bambusa nana*

>690 " tall bamboo.....*Bambusa kingiana*

Bambusa tulda Roxb., Fl. Ind. ed. (1832), 2: 193; Roxb., Hort. Bengal. 25(1814).

Perennial, bamboos, grass, growing near graves and homestead forest; stem internode 10 to 16" long; stem diam. 6-10" , 240 to 360" tall bamboo; sheath (17 " long x 8" broad; leaves 5-7 "long; branch sheath 2-4 cm long; 6 mm long creamy white colour anthers-6.

Fl. and Fr.: Flower March to July.

Distribution: Grown in Yunnan, Bangladesh, Bhutan, India, Nepal, Thailand and Vietnam.

Specimen Examined: MMA608; 10-3-2014; Kwakta

Bambusa nutans Wall. ex. Munro, Trans. Linn. Soc. London 26: 92. (1868); Stapleton, Edinburgh J. Bot. 51(1): 17, f.6 (1994).

Perennial, > 340" tall bamboo, growing near graveyards and homestead forest; stem internode 11 to 21 " long, stem diam. 10 "; leaves 8 to 10 " long x 1 inch broad.

Fl. and Fr.: Young shoots appear May to September.

Distribution: Grown in Bangladesh, China, India, Laos, Thailand and Vietnam.

Specimen Examined: MMA630; 10-4-2014; Yairipok Ningthounai.

Bambusa nana Roxb., Hort. Bengal. 25 (1814); Roxb. Fl. Ind. 2: 199. (1832); Hook. f., Fl. Brit. India 7: 390 (1897); Makino, J. Jap. Bot. 1(8): 28 (1917); E. G. Camus, Bambusees 121 (1935).

Perennial, bamboos, grass, cultivated in homestead forest and graveyards; stem 9 to 15 " long internode, stem diam. 5 to 7", 240 to 360 " tall bamboo; leaves 6 to 9 cm long, leaves sheath present; stem sheaths 5 " broad x 6.5" long bears black hairs.

Fl. and Fr.: Young bamboo shoots arises in May to September.

Distribution: It's originated in Indo-China region. It's widely cultivated in tropics and subtropics.

Specimen Examined: MMA449; 10-7-2013; Lilong.

Bambusa kingiana Gamble., Ann. Roy. Bot. Gard. 7: 46(1896); Hook. f., Fl.Brit. India 7: 393 (1897).

Perennial, bamboos, grass, growing near graves and in homestead forest; stem 10 to 16 " long internode, stem diam. 1 to 14 ", much branched, sheath present both in branches and stem, 600-720 " tall bamboo; 4 mm long inflorescence coming out in bunches from branch nodes; leaves (2-2.5" long x .5 cm broad); flowers at each nodes of branches.

Fl. and Fr.: Young shoots appear May to September.

Distribution: Originated from Asia tropical and Indo-china.

Specimen Examined: MMA263; 3-10-2012; Yairipok Ningthounai.

Dendrocalamus, Nees

Linnaea 9(4): 476. (1835)

Arborescent bamboos, large-sized; clumps dense; rhizomes short necked; culms unicaespitose, erect or occasionally scrambling; internodes terete; branches several to many, none to 3 dominant; culm sheaths deciduous; ligule conspicuous; auricles often absent or small; blade usually recurved or erect; leaf blades usually large; inflorescence fully bracteate, subtended by a narrow single-keeled prophyll, pseudo-spikelets clustered in soft or spiky globose mass at nodes of leafless flowering branches; pseudo-spikelets prophyllate. 53 (out of 146) species has been accepted worldwide.

Keys to species

- >550 " tall bamboo.....*Dendrocalamus giganteus*
- >330 " tall bamboo.....*Dendrocalamus sericeus*
- >550 " tall bamboo.....*Dendrocalamus membranaceus*

Dendrocalamus giganteus Munro., Trans.Linn.Soc.26 (1868) 150; Hook.f., Fl.Brit. India 7: 406 (1897).

Perennial, arborescent bamboos, grass, grown in homestead forest, graveyards, roadsides; 9 to 11 " long stem node, hairy stem diam.13 to 15 "; 480-600 "

tall bamboo; leaves 19 cm long x 3 cm broad; hairy sheath 39 cm long x 26 cm broad, bamboo shoot bitter in taste.

Fl. and Fr.: Young shoots arises June to October.

Distribution: The plant is commonly planted in India, Sri Lanka, Bangladesh and southern China. The exact location of origin is not known.

Specimen Examined: MMA638; 28-4-2014; Lilong.

Dendrocalamus sericeus Munro., Trans. Linn. Soc. 26(1):148(1868); A. Camus, Bull. Mus. Natl. Hist. Nat. 25: 672(1919).

Perennial, arborecent bamboo, grass, grown in homestead forest graveyards and roadsides; 240-360 " tall bamboo; stem 6 to 16 " long, stem diam. 11 to 15 ", stem sheath (17 " long x 8 " broad) bears black hairs; 4-6 " long leaves.

Fl. and Fr.: Young shoots ascends June to October.

Distribution: Asia tropical: Indo-China.

Specimen Examined: MMA861; 1-4-2015; Lilong.

Dendrocalamus membranaceus Munro, Trans. Linn. Soc. London 26(1): 149(1868) = *Dendrocalamus longifimbriatus* Gamble in Ann. Roy. Bot. Gard. (Calcutta) 7: 92 (1896); Hook.f. Fl. Brit. India 7: 408 (1897); Hsueh & D.Z. Li, J. Bamboo Res. 7(4): 4 (1988); Hsueh & D.Z. Li, J. Bamboo Res. 7(4): 3-4.

Perennial, arborescent bamboos, grass, growing near graveyards and homestead forest; stem node 10 to 13 " long, stem diam. 30-35 ", 16.8 " long stem sheath; up to 600 " tall; leaves small of 8 mm-6.5 " long.

Fl. and Fr.: Young shoots appear in May- September.

Distribution: Southern Thailand and Southern Myanmar.

Specimen Examined: MMA881; 1-5-2014; Lilong.

Melocanna, Trin

Neue Entdeck. Pflanzenk 2: 43. (1821)

Arborescent bamboo, moderately sized; rhizome long necked, pachymorph; culms diffuse or in open clumps, erect; internodes terete; wall thin; nodal ridge not prominent; culm sheaths persistent, shorter than internodes, distally corrugate, with

external ligule; leaves large, glabrous, transverse veins visible abaxially; inflorescence fully bracteate, terminal; pseudo-spikelets slightly compressed bilaterally; fruit pear-shaped, large. 2 (out of 9) species has been accepted worldwide.

Melocanna bambusoides Trin., Neue Entd. 2: 43 (1821) =
Melocanna baccifera (Roxb.) Kurz. Prelim. Rep. Forest Pegu App. B: 94 (1875).

Perennial, arborescent bamboos, grass, planted near graveyards, homestead forest; 1 to 16 " long internode, stem c. 6 ", 330 to 420" tall bamboo; 9.5-11" long leaves; 7 " long sheath.; nodes bear roots.

Fl. and Fr.: Young shoots appears May to October.

Distribution: It is originated from North eastern India, Bangladesh and Myanmar.

Specimen Examined: MMA365; 5-3-2013; Lilong.

Echinochloa, P. Beauv.

Ess. Agrostogr. 53, 161. (1812)

Annual/perennial; culms often coarse and robust; leaf blades flat, linear/broadly linear; inflorescence composed of racemes along a central axis; racemes simple/compound, densely spiculate, spikelets paired in 4 rows/congested on secondary racemelets; spikelets narrowly elliptic to subrotund, plump. 35 (out of 124) species has been accepted worldwide.

Echinochloa stagnina (Retz.) P. Beauv., Ess. Agrost. 53, 161, 171. (1812).

Perennial, grass, creeper, growing wild in lawn, ponds, and lakes, trailing on the ground; stem green to light brown colour; growing near the ponds/lakes; 72-120 " tall grass; nodes bears roots and leaves, nodes bears only one leaf, internodes 3.5-6 " long, .c 0.5mm stem; green leaves 4-8 " long leaves rough, leaf blades sharp, apex pointed.

Fl. and Fr.: Active growth during monsoon

Distribution: It exists in tropical Africa and tropical Asia.

Specimen Examined: MMA266; 10-10-2012; Mayang Imphal