

## Study on Traditional Uses of Plants in Meiktila Township

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### Abstract

This paper deals with the study on traditional uses of foodstuff, stems, leaves, roots, flowers, fruits and seeds from different plant species. This research is an attempt to assess the 15 genera belonging to the 14 families of traditional uses of plants collected from Meiktila Township. The plants investigated in this research have been classified, identified and their outstanding characters were presented with the help of photomicrographs. The method of index performance (IP) was calculated.

**Key words:** Traditional uses, Index Performance (IP), Meiktila Township

### Introduction

Meiktila District is located in central Myanmar. The area selected for the study of the research paper is Meiktila Township, which is the central and tropical region of Myanmar. It is one of the 30 townships of Mandalay Division. Meiktila is about 338 miles (543.96 km) north of Yangon and about 96 miles (154.49 km) south of Mandalay. Meiktila Township is located between North latitude 20° 40' and 21° 00' and East longitude 95° 30' and 96° 01' as presented in Figure 1. Humans depend on plants for the essentials of their life-like food, fiber, medicine and shelter. Therefore, they cultivate many agricultural plants in their surroundings. Human use plants for their daily requirements which mean not only for food, clothes, building, medicine etc., but also for enjoyment and recreation with the beauty of plants and its environments.

In this paper, 15 species belonging to 15 genera of 14 families are observed according to the role of plants used as salad and medicinal plants and economic value. They comprise both cultivated and wild plants.

The value of plants has been emphasized since ancient times in Myanmar. There is scarcely a plant which is of no medicinal use. The traditional uses of plants vary according to different traditions. Different tribes use plants in different locations in different ways. The edible plants can be used in various ways by different tribes in different regions. The parts of plants mostly consumed are flowers and leaves. Just as food functions as medicine, so medicine functions as food.

The uses of vegetation are different in different areas. Eating flowers is one of the traditions in some Southeast Asian countries. In Myanmar, the ways of eating flowers differ in different regions, depending upon the tribes. The paper deals with the medicinal uses of leaves and flowers and the ways of eating them at Meiktila Township.

### Materials and Method

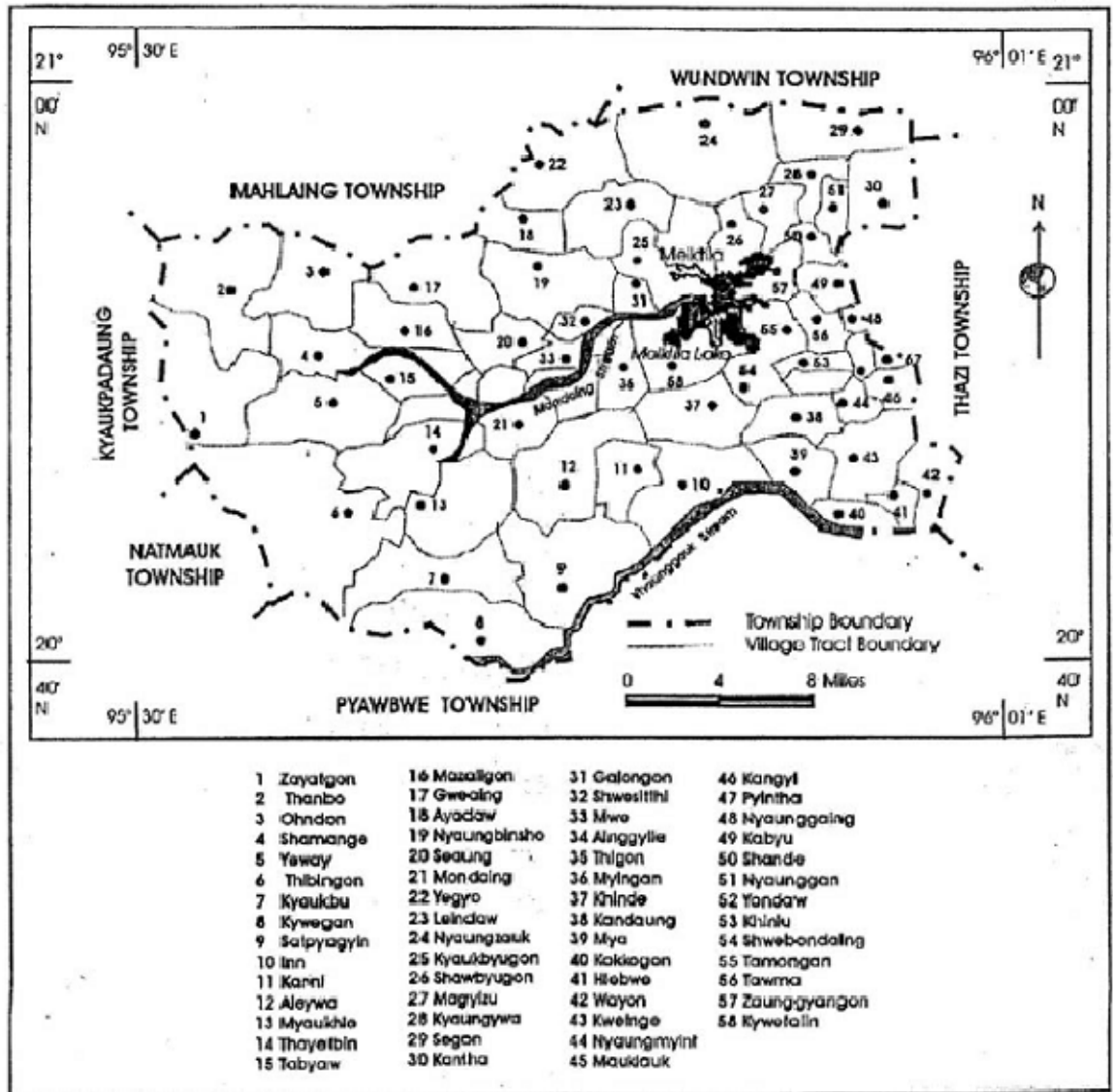
Some traditional uses of plants and fruits were collected from selected villages of Meiktila Township (Figure 1). These are Yegyo, Nyaungbinsho, Mezabilin, Nyaungzauk, Aleywa, Tawma, Kinde Wayon, Kanni and Shamange. Collected specimens were identified according to Hooker (1875 – 1897) and Kress *et al.* (2003).

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In this study, interviewing and observation were carried out in the fields and home gardens. The structural interviews described by Kress *et al.* (2003) were conducted during data collection. In the study area, interview and discussion were firstly done with local growers and then with vegetable sellers in the market. The outstanding characters, civilization, marketing and uses are recorded from local horticulturalist, growers and traders of Meiktila Township. The research data of these plants are received from both the respective departments and growers' record.



Source: Land Records Department, Meiktila Township.

Figure 1. A location map of the study area in Meiktila Township

### Index Performance (IP)

The Index Performance (IP) selected from various plants can be pointed with the specimens concerned as follows:

The Index Performance (IP) was calculated as mentioned by Betti (2004).

This method consists of gathering data on the popular use of traditional plants in a given area. Following this method, the data for this study were obtained from the direct interview with the local people of Meiktila Township.

The Index Performance (IP) was calculated as follows:

C1 = number of the citations of specific species for treating specific uses

C2 = number of the citations of species in all uses

C3 = total number of citations of the specific uses

C4 = total number of citations for all uses

$P1 = (\text{Observed}) = C1 / C2$

$P2 = (\text{Theoretical}) = C3 / C4$

$D = P1 - P2$  (The difference (D) between the two proportions in them used to define an Index Performance (IP), which ranges from 0 to 3 according to the following arbitrary scale.)

\* If  $P1 - P2 < 0$ , the plant concerned were rejected, not significant

\* If  $0 < P1 - P2 \leq 1/3$ , IP = 1; average performance

\* If  $1/3 < P1 - P2 \leq 2/3$ , IP = 2; high performance

\* If  $P1 - P2 > 2/3$ , IP = 3; very high performance

## Results

The importance of each useful vegetable plant is evaluated on the number of citations made by villages. First of all popular and random use of traditional plants are considered and noted among the varieties of vegetables and the considerations are as follows:

Citations made for the vegetable plants collected among the study area are given in Table 2.

### Abbreviations of the citations

1. Food

2. Med = medicinal

3. Shady

4. Orn = Ornamental

5. Land = Landscaping

6. R/R = Ritual and Religious

7. Fuel

8. Fodder

9. H/h = house hold utensil

10. Timb = Timber

TNC = Total Number Citations.

A total of 15 plant species were studied on their traditional uses in Meiktila Township (Table 1 and Figure 2).

Table 1. List of plant species collected from Meiktila Township

No.	Scientific name	Local name	Family
1	<i>Acacia leucophloea</i> (Roxb.) Willd	Htanaung	Mimosaceae
2	<i>Aegle marmelos</i> (L.) Correa	Okshit-thee	Rutaceae
3	<i>Aloe vera</i> L.	Sha-zauang-let-pat	Liliaceae
4	<i>Azadirachta indica</i> A. Juss.	Ta-ma	Miliaceae
5	<i>Bombox ceiba</i> L.	Let-pan	Bombaceae
6	<i>Calotropis gigantea</i> (Dryand)	Mayo-gyi	Asclepiadaceae
7	<i>Carica papaya</i> L.	Thin-baw	Cariaceae
8	<i>Cassia siamea</i> (Lamk.) Irwin & Barneby.	Mezali	Caesalpinaceae
9	<i>Limonia acidissima</i> L.	Thee	Rutaceae
10	<i>Millingtonia hortensis</i> L.	Aega-yit	Bignoniaceae
11	<i>Moringa oleifera</i> Lamk. Encycl.	Dan-da-lun	Moringaceae
12	<i>Piper betle</i> L.	Kwan-ywet	Piperaceae
13	<i>Tamarindus indica</i> L.	Magyi	Leguminosae
14	<i>Tinospora crispa</i> (L) Hook. F.	Sindon-ma-nwe	Menispermaceae
15	<i>Jatropha curcas</i> L.	Siyo-kyet-su	Euphorbiaceae

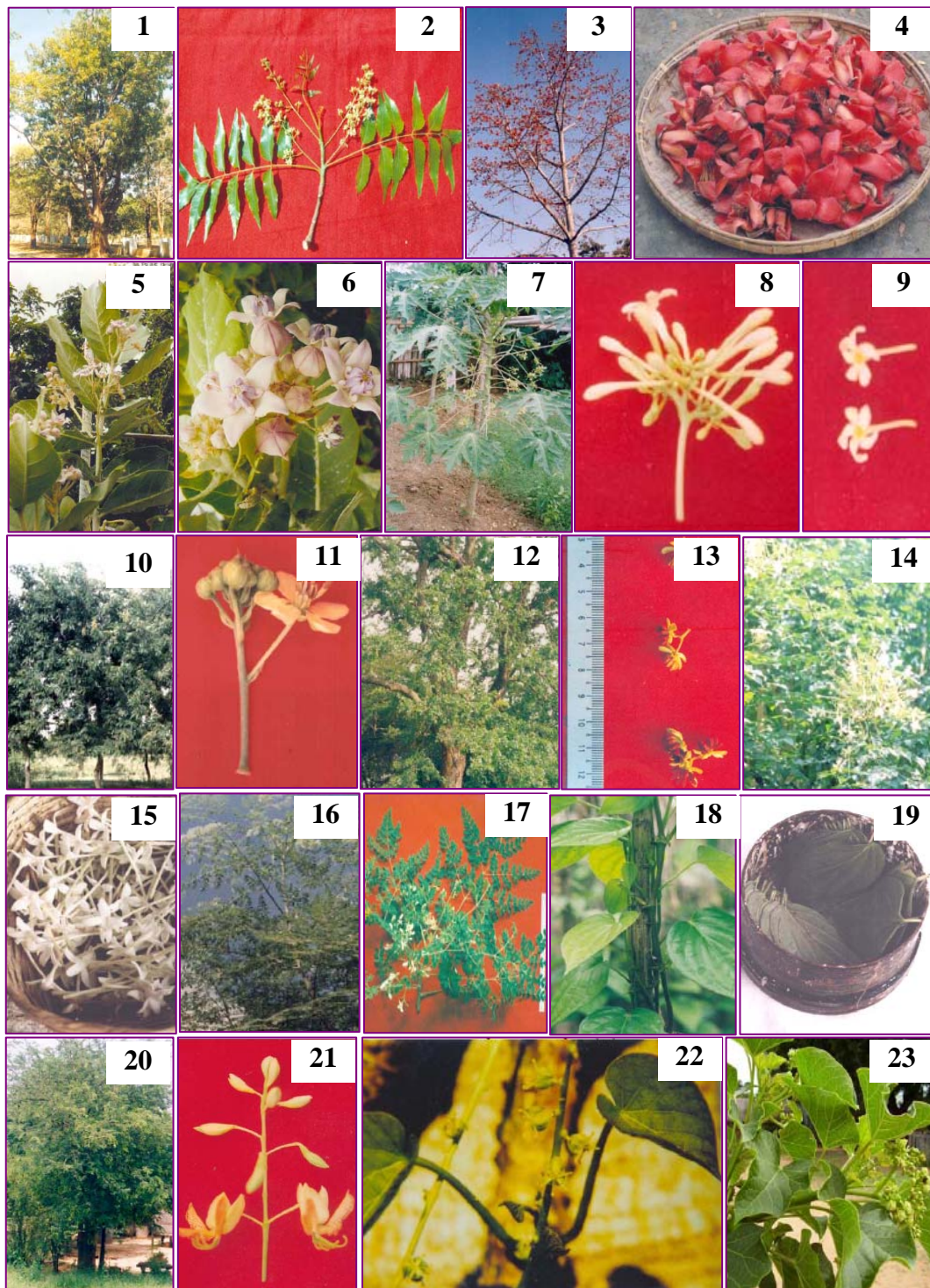


Figure 2. Collected plant species from Meiktila Township: (1) Habit and (2) Inflorescences of *Azadirachta indica* A. Juss.; (3) Habit and (4) Flowers of *Bombox ceiba* L.; (5) Habit and (6) Inflorescences of *Calotropis gigantea* (Dryand); (7) Habit, (8) Inflorescence and (9) Staminate flowers of *Carica papaya* L.; (10) Habit and (11) Inflorescence of *Cassia siamea* (Lamk.) Irwin & Barneby.; (12) Habit and (13) Flowers of *Limonia acidissima* L.; (14) Habit and (15) Flowers of *Millingtonia hortensis* L.; (16) Habit and (17) Leaves with flowers of *Moringa oleifera* Lamk. Encycl.; (18) Habit and (19) Betel boxes, bowls and trays of *Piper betle* L.; (20) Habit and (21) Inflorescence of *Tamarindus indica* L.; (22) Habit of *Tinospora crispa* (L) F.; (23) Habit of *Jatropha curcas* L.

Table 2. Citation of useful plants in the household utensil among the local people of Meiktila Township

No.	Scientific name	Food	Med	Shady	Orn	Land	Fuel	Fodder	R/R	H/h	Timb	DYE	TNC
1	<i>Acacia leucophloen</i> (Roxb) Willd	30	20	20	—	15	10	—	—	—	5	15	115
2	<i>Aegle marmelos</i> (L) Correa	30	20	5	—	—	7	5	5	10	—	15	97
3	<i>Aloe vera</i> L.	10	30	—	—	—	—	—	—	15	—	—	55
4	<i>Azadirachta indica</i> A. Juss	30	25	420	10	15	5	—	—	18	5	5	133
5	<i>Bombox ceiba</i> L.	25	10	10	10	—	—	—	—	20	15	—	90
6	<i>Calotropis gigantea</i> (Dryand)	10	15	—	—	—	—	—	10	20	—	—	55
7	<i>Carica papaya</i> L.	30	25	—	—	—	—	—	—	—	—	—	55
8	<i>Cassia siamea</i> (lamk) Irwin	30	20	25	15	5	10	—	15	—	—	—	120
9	<i>Limonia acidissima</i> L.	25	10	—	—	—	5	—	15	15	—	—	70
10	<i>Millingtonia hortensis</i> L.	20	20	10	—	5	—	—	—	—	—	—	55
11	<i>Moringa oleifera</i> Lamk Enaycl	30	25	—	—	—	—	—	—	—	—	—	55
12	<i>Piper betle</i> L.	30	20	—	—	—	—	—	25	15	—	—	90
13	<i>Tamarindus indica</i> L.	30	20	30	—	15	20	2	—	20	30	3	170
14	<i>Tinospora crispa</i> (L) Miers	5	30	—	—	—	—	—	—	6	—	—	41
15	<i>Jatropha curcas</i> L.	5	15	—	—	—	15	—	—	15	—	—	50
	TNC	340	305	120	35	55	72	7	70	154	55	38	1251

The proportions were calculated from the ratios of number of citation for uses. The number of citations for each recorded plant species used for a specific use is shown

1	<i>Acacia leucophloen</i> (Roxb) Willd	0	0	1	—	1	1	—	—	—	0	1	115
2	<i>Aegle marmelos</i> (L) Correa	1	0	0	—	—	1	1	0	0	—	1	97
3	<i>Aloe vera</i> L.	0	1	—	—	—	—	—	—	1	—	—	55
4	<i>Azadirachta indica</i> A. Juss	0	0	1	1	1	0	—	—	1	0	1	133
5	<i>Bombox ceiba</i> L.	1	0	1	1	—	—	—	—	1	1	—	90
6	<i>Calotropis gigantea</i> (Dryand)	0	1	—	—	—	—	—	1	1	—	—	55
7	<i>Carica papaya</i> L.	1	1	—	—	—	—	—	—	—	—	—	55
8	<i>Cassia siamea</i> (lamk) Irwin	0	0	1	1	0	1	—	1	—	—	—	120
9	<i>Limonia acidissima</i> L.	1	0	—	—	—	1	—	1	1	—	—	70
10	<i>Millingtonia hortensis</i> L.	1	1	1	—	1	—	—	—	—	—	—	55
11	<i>Moringa oleifera</i> Lamk Enaycl	1	1	—	—	—	—	—	—	—	—	—	55
12	<i>Piper betle</i> L.	1	0	—	—	—	—	—	1	1	—	—	90
13	<i>Tamarindus indica</i> L.	0	0	1	—	1	1	0	—	0	1	0	170
14	<i>Tinospora crispa</i> (L) Miers	0	2	—	—	—	—	—	—	1	—	—	41
15	<i>Jatropha curcas</i> L.	0	1	—	—	—	1	—	—	1	—	—	50
	TNC	340	305	120	35	55	72	7	70	154	55	38	1251

TNC = Total number of citation

Med = Medicine

Orn = Ornamental

Land = Landscaping

R/R = Ritual and Religious

H/h = house hold utensil

Timb = Timber

Table 3 Traditional uses of the whole plant in Meiktila Township

No.	Scientific name	Local name	English name	Family	Part used of plant	Domestic/Types of Uses*	Taste
1	<i>Acacia leucophloea</i> (Roxb) Willd.	Hta-naung	White-barked Acacia	Mimosaceae	Tender shoots, Flowers	Soup, Fried leaves, Salad	Sweet and astringent tasting
2	<i>Carica papaya</i> Linn.	Thin-baw	Papaya	Caricaceae	Green leaves, fruits, staminate flowers and tender shoots	Soup, Salad	Sweet and bitter tasting
3	<i>Cassia siamea</i> (Lamk.) Irwin & Barneby	Mezali	-	Caesalpiniaceae	Flowers and floral buds young leaves	Flowers and floral buds eating, Ah-thok	Slightly sweet and bitter tasting
4	<i>Millingtonia hortensis</i> Linn.	Aegayit	Indian Cork Tree	Bignoniaceae	Flowers and leaves and tender shoot	Soup, Salad	Slightly bitter tasting
5	<i>Moringa oleifera</i> Lamk. Encycl	Dant-da-lun, Dant-tha-lun	Drumstick Tree, Indian Horse radish	Moringaceae	Leaves, flowers and fruits	Flowers eating, soup, Salad	Sweet and bitter tasting
6	<i>Tamarindus indica</i> Linn.	Magyi	Tamarind tree	Caesalpiniaceae	Tender shoot and flower, fruits	Sauce, tender shoot and flowers eating, Salad	Slightly sour tasting
7	<i>Azadirachta indica</i> A. Juss <i>Melia azadirachta</i> Linn.	Tama, Tama-kha	Neem margosa Tree	Miliaceae	Leaves and buds	Pickle, it is often used for food as a Tosaya	Bitter tasting
8	<i>Piper betel</i> Linn.	Kun-ywet	Betel leaf vine, betel pepper	Piperaceae	Fresh leaves	The art of betel chewing. Betel quid.	The leaves have a sharp pungent taste and sustaining properties
9	<i>Aegle marmelos</i> Correa	Ok-shit	Bael Fruit Tree, Golden Apple, Bergal quine	Rutaceae	Leaves and fruits	Edible Fruits and vegetable*	-
10	<i>Aloe vera</i> L.	Sha-zaung-let-pat	Barbados Aloe	Liliaceae	Leaves	Medicine*	-
11	<i>Bombax ceiba</i> L.	Let-pan	Semal Tree, Silk Cotton Tree	Bombacaceae	Roots, barks, leaves, fruits, seeds and resin	Medicinem and vegetables*	-
12	<i>Calotropis gigantea</i> L.	Mayo, Mayo-gyi	Madar; Vercum Gigantic Swallow-wort	Asclepiadaceae	Stem, branch and latex	Solidified milk*	-
13	<i>Limonia acidissima</i> L.	Thee	Elephant, Wood Apple	Rutaceae	Fruits and barks	Edible fruits, barks, like Thanat-kha*	-
14	<i>Jatropha curcas</i> L.	Siyo-kyet-su		Euphorbiaceae	Seeds	Industrial Oils, Biodiesel*	-
15	<i>Tinspora crispa</i> (L.)	Sindon-ma-nwe	Heart-leaved, Moon seed	Menispermaceae	Stems and leaves	Externally used for skin diseases*	-

Table 4 List of fruit types and uses in Meiktila Township

No.	Scientific Name	Local Name	English Name	Family	Fruits Type	Uses
1.	<i>Aegle marmelos</i> (L.) Correa	Ok-shit	Bael fruit	Rutaceae	Fleshy amphisarca	diarrhoeo, astringent, stomatic, cement, varnish; good laxative, dye, cooling drink.
2.	<i>Arachis hypogaea</i> L.	Myae-pe	Ground-nut	Fabaceae	Legume	peanut butter, oil-cooking, margarine; oil-cake-fodder, protein-synthetic fibre
3.	<i>Carica papaya</i> L.	Thinbaw	Papaya	Caricaceae	Berry	soft drinks, jam, pies, chewing gum, salad, tenderizing meal, carminative, laxative
4.	<i>Cajanus cajan</i> (L.) Mill	Pesin-gon	Pigeon pea	Papilionaceae	Legume	greens pods are used as vegetable, dried stalks use for making baskets, green leaves and broken pods uses as fodder for cattle
5.	<i>Capsicum minimum</i> Roxb	Nga-yok	Chilli	Solanaceae	Berry	spices and condiment, pungent
6.	<i>Cicer arietinum</i> L.	Kala-pe	Chickpea	Fabaceae	Legume	cooked
7.	<i>Limonia acidissima</i> L	Thee	Elephant apple, Wood apple	Rutaceae	Amphisarca	eaten raw as salad, jam
8.	<i>Moringa oleifera</i> Lam	Dan-dalon	Drum stick	Moringaceae	Pod	vegetable curries
9.	<i>Mangifera indica</i> L.	Thayet	Mango	Anacardiaceae	Drupe	preserves, salads and sauces, chutneys, culinary preparations, cooked, juices, squash, jams and jellies
10.	<i>Tamarindus indica</i> L.	Magyi	Tamarind	Caesalpiniaceae	Lomentum	carminative, laxative, curries, preserve, chutneys and sauces, to clean copper and brass
11.	<i>Vitis vinifera</i> L.	Sapyit	Grape	Vitaceae	Fleshy berry	wine, eaten raw, table fruits
12.	<i>Zizyphus mauritina</i> Lam.	Zi	Jujuba tree	Rhamnaceae	Drupe	fresh, dried or preserved, cooking and candy, making, sedative, stomachic, tonic, anticancer, recommended for arthritis



## Discussion and Conclusion

In this study, traditional uses of plants: 15 species, 15 genera belonging to the 14 families collected from Meiktila Township, were studied, described and identified according to Hooker (1875-1897), Hundley & Chit Ko Ko (1961), Brink & Escobin (2003) and Kress *et al.* (2003). Besides agricultural and horticultural crops, home garden crops which contributed not only to the daily home consumption but also to additional income were also studied.

Fruits and vegetables which have been used in this area are very valuable for human welfare not only for their edible purposes but also for their medicinal value. In the study area, they are grown fully as much for stock feed as for human consumption because the plantation does not require so much hand labour.

According to this study, the edible young shoots, leaves and flowers of some garden plants which contain a rich supply of carbohydrates, vitamins, amino acids and minerals are eaten in central Myanmar. The custom of eating fresh wild vegetables, which retain most of the nutrition has not been destroyed in the part of central Myanmar. It is very beneficial to health. Meanwhile, most of the wild vegetables can be used as herbal medicine and may cure diseases.

Plants were mainly used as medicine for the survival of man throughout the early history. Therefore this research concerns with the partial relationship between the people and plants within the scope of medicinal and food purpose.

Skin diseases can be treated with a variety of drugs derived from medicinal plants and counts as herbal products; *Aloe vera* (Sha-zaung-let-pat), *Calotropis gigantea* (Mayo, Mayo-gyi), and *Tinospora crispa* (Sindon-ma-nwe) are common in the floristic areas. A traditional medicinal plant *Tinospora cordifolia* (Sindon-ma-nwe), is an ingredient of many preparations used for chronic skin diseases. Medicated oils prepared with the drug are used as a liniment in skin diseases and in rheumatic and other nervous complaints. The paste of the leaves is a useful application over bites of poultic insects, and stings of bees. Aloe is an immensely popular herbal remedy today, but this should not obscure the fact that its use originated over 2,000 years ago. It has always been highly valued in the treatment of minor cuts and skin irritations and is most effective in the treatment of insect bites and, especially of sunburns. It is believed by many to have a drawing quality and has been recommended for use in preventing and treating infections of the skin.

There is a practice of eating salads of Mezali *Senna siamea* leaves with belief that it has medicinal property if eaten before midnight on the full moon day of Tazaungmon. The soup either sweet or sour can be made with the leaves of *Moringa oleifera* Lamk., Dant-thalun, and *Tamarindus indica* L. Magyi. The flowers and plant parts in season can be eaten as seasonal food.

The tamarind (*Tamarindus indica* L), Magyi tree is an important feature in Myanmar life. Tender leaves are used for salad and soup; young fruits pounded into pulp and cooked with a flavouring of garlic, chillies and onions and ripe fruits used to make cold drinks.

All the flowers, fruits and leaves can serve as medicine and food. Myanmar like their meals hot. Some people may find this dish bitter. Myanmar people find bitter a welcome taste to whet the appetite. "Bitter" has been proven to have medicinal qualities. The juice of squeezed bitter gourd is good for treating diabetes.

Betel (*Piper betle* L.), Kwan-ywet chewing is still as much a habit as smoking cheroots in Myanmar.

This study deals with the traditional uses of plants with leaves and flowers and the ways of consuming them at Meiktila Township in central Myanmar. Fifteen species of important plants were presented. In interviewing with the inhabitants it had known that most of the local people know well about the morphological characteristics, habitats and different qualities of various plants in the studied area. To compare uses of home garden plants which gave some additional income, Index Performance was calculated for each plant. Mostly the values of IP (Index Performance) were nearly the same for all the traditional uses of plants in our country. Though only a few possess high value of IP, some possess mean value of IP. Nearly all the traditional uses of plants possess common value of IP.

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