



Title	Morphology of Commercial House Plants from Pyin Oo Lwin
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# **Morphology of Commercial House Plants from Pyin Oo Lwin**

Ngu Wah Win

## **Abstract**

Twenty two cultivars of commercially cultivated potted flowering plants have been collected from Pyin Oo Lwin Township. These cultivars belonged to 19 genera of 16 families. In these cultivars, *Anthurium* 'Rubrum' and 'Rubustum', *Euphorbia* and *splendens* Boj., are cultivated for decoration in house by pots. *Antirrhinum majus* L., *Calendula officinalis* Lour., *Kickxia ramosissima* (Wall.) Janch., *Petunia hybrida*, *Phlox drummondii* Hk., *Mesembryanthmum crinoflorum* 'Sparkle Mixed', *Tropaeolum majus* L., *Viola tricolor* L. var. *hortensis* are cultivated for landscaping plants morphological and agronomical studies have been done and described. Cultivar name, family name, local name, English name, taxonomic characters were studied in morphological description. Preparation of soil, cultivation, fertilizer requirement and containers using were presented in agronomical description.

## **Introduction**

Pyin Oo Lwin Township is formerly known as “**Flower Capital**”. Although flowers are beautiful in everywhere, there are no well known places as Pyin Oo Lwin Township for the cultivation of flowers. The flowers are commercially cultivated in most of the area of Pyin Oo Lwin Township and transported commercially to other area of upper and lower Myanmar, especially to Mandalay and Yangon. The study intended to know the commercially cultivated flowers of plant resources, to give detail taxonomic information on commercial flowers, and to give the knowledge of cultivated procedure of traditional ways from study area to other interested peoples and researchers. This township is one of the interested places for researchers of botanists and agriculturalists because of the possessing of natural vegetation and commercially cultivated ornamental plants.

Pyin Oo Lwin Township, situated in Central Myanmar lies on the eastern part of Mandalay Region. Its average elevation is 3539 feet above sea level. The area of Pyin Oo Lwin Township is 488,794 acres or 763.74 square miles. It is situated between the latitudes of 21° 24' and 22° 46' North and the longitudes of 95° 54' and 96° 46' East. The yearly mean temperature of Pyin Oo Lwin Township is 19.3 °C. In humidity condition, the month of highest average humidity in the morning is September of 86.1% and the lowest is March of 53% , according to the data from 2001 to 2005. The highest average humidity month, September is 10.39 inches of rainfall and the lowest month, March is 0.43 inches of rainfall. As Pyin Oo Lwin Township is a mountainous upland region, 'Mountainous Red Earth' is also found commonly in the Township. The natural vegetation of Pyin Oo Lwin Township is depending upon the temperature, rainfall, altitudes and soil.

The present research had accumulated the 22 cultivars of house plants from Pyin Oo Lwin Township.

House plants are grown usually for the purpose of interior decoration, for their fascinating foliage and flowers or bizarre life forms. In recent year there has been a manifold increase in the demand of house plants as people are getting conscious about their significance in making environment healthy and beautiful.

Ornamental plants and flowers have been playing a vital role in folk festivals, religious worships, public celebration, ritual activities and all kinds of other social occasions that has led to the development of a blooming trade all around the world.

Pyin Oo Lwin Township is economically grown nearly all the year round. Beautiful flowers are cultivated not only those as fields but also those as potted by economy.

Although commercial flowers are involving in men's daily life, there was no systematic survey on taxonomy and agronomy of commercial flowers grown in Pyin Oo Lwin Township. Therefore, present study emphasizes on the 22 cultivars of commercial house plants by describing its morphology, preparation of soil, the methods of propagation.

## Materials and Methods

The location map of Pyin Oo Lwin Township is detected from Land Record Department, Pyin Oo Lwin. For the morphological investigation, the specimen collection was done by potted commercial flowering plants.

In potted commercial flowering plants, before collection, the list of plants was first accumulated from professional gardeners in this township. Then, collected and identified to know the accurate cultivars names as above method.

These cultivars are recorded with photographs and checked the specimens by using Flora of Java (1963-68), Flora of British India (1897) and internet information. The species and cultivars are arranging in alphabetical order of their botanical names. The Myanmar names of commercial cultivars are stated by the reference of Myanmar-English Dictionary.

Agronomic data were recorded by interviewing to commercially cultivated farmers and professional gardeners of potted plants. Ornamental value had been detected and commercial house plants had been available with the help of plant growers by interviewing them.

## Results

### A Morphological Description of Potted Flowering plants

- |    |                 |                                     |
|----|-----------------|-------------------------------------|
| 1. | Scientific name | - <i>Anthurium andraeanum</i> Andre |
|    | Family          | - Araceae                           |
|    | Myanmar name    | - Pein-pan                          |
|    | English name    | - Unknown                           |

#### 1.1 *Anthurium andraeanum* 'Rubrum'

**Fig 1(A)**

Perennial herbs with tuberous rhizomes. Leaves simple, crowded in a rosette; petioles tapering upward, very long, sheathing at the base; blades reflexed, ovate-sagittate, deeply cordate at the base, entire along the margin, apiculate at the apex, glabrous on both surfaces. Inflorescences axillary spadix, within the spathe, terminated by a conspicuous sterile appendage. Spathe ovate or broadly ovate or orbicular, deeply cordate at the base, apiculate at the apex, deep red, waxy. Spadix white, yellow-tipped. Flowers small, unisexual. Tepals 4. Stamen 4; filaments strap-shaped; anthers

dehiscent by slit. Ovary globose, 2-loculed, with one ovule on the sub-apical placenta; style short; stigma globose.

**Ornamental value:** Cultivated for its beautiful spadix inflorescences with waxy deep red color.

Durable period of inflorescences : 30-45 days

## 1.2 *Anthurium andraeanum* ‘Rubustum’

**Fig 1(B)**

Perennial herbs with tuberous rhizomes. Leaves simple, large; petioles very long, sheathing at the base; blades broadly ovate-cordate, cordate at the base, entire along the margin, apiculate at the apex, glabrous on both surfaces. Inflorescences axillary spadix, within the spathe, terminated by a conspicuous sterile appendage. Spathe cordate, green, waxy; spathe-vein brownish-purple. Spadix brownish-purple. Flowers small, unisexual. Tepals 4. Stamen 4; filaments strap-shaped; anthers dehiscent by slit. Ovary globose, 2-loculed, with one ovule on the sub-apical placenta; style short; stigma globose.

**Ornamental value:** Cultivated for its beautiful spadix inflorescences with waxy green color.

2.	Scientific name	- <i>Antirrhinum majus</i> L.	<b>Fig 1(C)</b>
	Family	- Scrophulariaceae	
	Myanmar name	- Kya pazat	
	English name	- Snapdragon	

Unarmed, erect-ascending, annual herbs. Stems and branches terete, often glandular-hairy toward apex. Leaves simple, with lower leaves opposite or spirally arranged or phyllotaxis mixed, green; blades lanceolate, narrowed towards both ends, aequilateral at the base, entire along the margin, acute at the apex; shortly petiolate. Inflorescences terminal, racemes; pedicels with viscid hairs. Flowers bisexual, zygomorphic, white, red, orange, deep pink or mauve, personate, 2.0-3.2 cm across at anthesis; bract ovate. Calyx 5, green, with glandular-hairy, lobe ovate-elliptic, obtuse, unequal. Corolla 5, bilabiate, white, red, orange, deep pink or mauve; tube saccate; upper lip 2-lobed, in bud outside, with recurved margin; lower lip 3-lobed, apex of palate often yellow, opposite the anthers, mid-lobe of lower lip smallest. Stamens 4, included, didynamous; filaments free; anthers dithecous, divergent. Ovary bilocular,

many ovules in each locule, axil placentation; style filiform, red at the tip; stigma small, green.

**Ornamental value:** Cultivated for its beautiful terminal raceme with red, orange or deep pink personate flowers.

Durable period of inflorescence : 15-20 days

3. Scientific name - *Arctotis stoechadifolia* Berg. **Fig 1(D)**  
 Family - Asteraceae (Compositae)  
 Myanmar name - Kya myet lon  
 English name - African Daisy

Perennial herbs. Stems ribbed, densely grey-lanate. Leaves simple, alternate; sessile or narrowed into the petiole; blades oblong- spatulate, attenuate or cuneate at the base, lacerate along the margin, acute at the apex. Inflorescences terminal axillary head, involucre bracts 3 - 4 seriate, semi-globose; outer bracts with ovate lower part and lanceolate grey-lanate upper part; inner bracts elliptic-oblong, rounded at the top, membranous, glabrous. Receptacles flat, long pilose. Pappus scales oblong, rounded at the top. Ray florets with 3-toothed, numerous, ligulate, unisexual, various in color. Disk florets numerous, tubuliform, 5-lobed, bisexual, yellowish above and paler base with violet. Stamens 5, syngenesious; anther obtuse or shortly sagittate at the base and acute at the tip. Ovary oblong, unilocular with one ovule on basal placenta; style arms truncate.

**Ornamental value:** Cultivated for its beautiful inflorescences head with various colour.

Durable period of inflorescence : 25-30 days

4. Scientific name - *Begonia semperflorens* 'Lotto Mixed' **Fig 1(E)**  
 Family - Begoniaceae  
 Myanmar name - Begonia  
 English name - Unknown

Erect, fleshy, inermous perennial herbs. Stems and branches terete, red or green, glabrous. Leaves simple, alternate, the stipules semipersistent; blades cordate, green or reddish-green, oblique at the base, dentate, aculeolate, red along the margin, acute at the apex. Inflorescences axillary, dichasial cyme. Flowers unisexual, zygomorphic, deeply pink, pale pink, white or red, 1.5-2.0 cm across at anthesis; pedicellate; bracteolate.

Perianths 4, the 2 outer tepals rounded shape, 1.2-1.5 cm by 1.0-1.3 cm, the 2 inner ones ligulate, 0.3-0.5 cm by 1.0-1.3 cm, deeply pink, pale pink, white or red in staminate flowers. Perianths 5, free, unequal, the 2 outer tepals rounded shape, the 2 inner ones rounded and another ligulate in pistillate flowers. Stamens numerous, exerted, yellow; filaments slightly connate; anthers ditheous, basifixed, longitudinal dehiscence. Ovary inferior, 3-winged, unilocular with many ovules in each locule, pink; style 3, very short; stigma 3, obvious, often twisted.

**Ornamental value:** Cultivated as pot plants for its fleshy green habit, various colored inflorescences and covering with flowers on whole plants.

Durable period of inflorescence : 5-7 days

5. Scientific name - *Brunfelsia pauciflora* Benth. Fig 1(F)  
 Family - Solanaceae  
 Myanmar name - Phyu pya mu yar  
 English name - Unknown

Erect, unarmed, glabrous shrubs to small trees. Stems and branches terete. Leaves simple, spirally arranged, sessile; petiolate; blades oval or obovate, cuneate at the base, undulate along the margin, acute or slightly obtuse at the apex. Inflorescences terminal, solitary, sessile. Flowers unisexual, actinomorphic, white and blue, 3.0-3.5 cm across at anthesis, fragrant; pedicel short; bracteolate. Calyx 5-lobed, sympetalous, green, campanulate; lobes ovate-triangular. Corolla 5, white and blue, hypocrateriform; tube narrow, curved near apex, widen curvature above; limb patent; lobes broad, rounded. Stamens 4, inserted within widened apex of corolla-tube; filaments didynamous, short curved at apex, running downwards as finely pubescent ridges; anthers ditheous, basifixed, short, longitudinal dehiscence. Ovary sessile, 2-loculed with many ovules in each locule; style filiform, curved at thickened at apex; stigma 2-lobed.

**Ornamental value:** Cultivated for its fragrant and showy flowers with two colours.

Durable period of inflorescence: 8-10 days

6. Scientific name - *Calendula officinalis* 'Citrus Cocktail' Fig 2(A)  
 Family - Asteraceae ( Compositae )  
 Myanmar name - Shwe ta sok  
 English name - Calendula; Pot marigold

Aromatic, glandular-hairy, annual herbs. Stems angular, solid, much branched from the base. Leaves simple, alternate or lower one rosulate, sessile; blades lanceolate or spatulate, pale-green, semi-amplexicaul at the base, entire or undulate along the margin, obtuse or rounded at the apex, glandular hairy on both surface. Inflorescences terminal, solitary or corymbose heads, large, radiate; involucre bracts 2 to 3 seriate, campanulate; bracts gladiate with gland-hairs, red. Receptacles flat. Ray florets numerous, 3-seriate, oblong-spatulate, unisexual, 3-toothed at the apex, the tube short with gland-hairs, the limb 1.8-2.0 cm by 0.4-0.7 cm, orange. Disk florets numerous, tubuliform or funnel-shaped, bisexual, 5-lobed at the apex, 0.7-0.9 cm, orange. Stamens 5, syngenesious, attached to the corolla-tube; anther sagittate at the base. Ovary linear, unilocular with one ovule on basal placenta; style arms long, subulate in ray florets, entire or shortly 2-lobed in disk florets, orange.

**Ornamental value:** Cultivated for its long persistent orange head.  
 Durable period of inflorescence : 30-40 days

7. Scientific name - *Cyclamen persicum* 'Lazer Mixed' Fig 2(B)  
 Family - Primulaceae  
 Myanmar name - Nil  
 English name - Cyclamen

Perennial herbs with tuberous subterraneous rhizome. Stems without a superterraneous. Leaves simple, spirally arranged exstipulate; blades cordate-ovate, fleshy, glabrous, rounded lobes at the base, irregularly, obtusely denticulate-crenulate along the margin, acute at the apex, pale green beneath, dark green above, pale-blotched; petiole 7.0-12.0 cm long, pale greenish-white or red. Inflorescences axillary, solitary. Flowers bisexual, actinomorphic, pink, rotate, 4.0-5.5 cm across at anthesis; pedicels erect or obliquely erect, usually longer than the petioles, red. Calyx 5-segments, overlapping to the right, ovate, pale green with reddish hairs. Corolla 5 or 6, sympetalous; tube short, cup-shaped, 0.5-0.7 cm long; limb much exceeding the tube, ovate, reflexed, often twisted, 2-3 cm long, pink. Stamens 5 or 6, inserted at the base of the corolla-tube; filaments very short;



anthers ditheous, acuminate, basifixed. Ovary globose, unilocular with many ovules in each locule; style subulate; stigma simple.

**Ornamental value:** Cultivated for its beautiful pink flowers.

Durable period of inflorescence : 10-15 days

- |    |                 |                                   |                 |
|----|-----------------|-----------------------------------|-----------------|
| 8. | Scientific name | - <i>Euphorbia splendens</i> Boj. | <b>Fig 2(C)</b> |
|    | Family          | - Euphorbiaceae                   |                 |
|    | Myanmar name    | - Sha zaung tinganeck             |                 |
|    | English name    | - Kiss me quick                   |                 |

Perennial, monoecious, aculeate, laticiferous shrubs. Stems and branches obtusangular-ribbed, brown-purple, covered with thin hoary layer, with 5 or 6 verticle row of tubercles, bearing many prickles on the tubercles; prickles 2-4 together at each tubercles. Leaves simple, alternate; blades obovate-oblong, cuneate at the base, entire along the margin, retuse at the apex, glabrous on both surfaces. Inflorescences axillary or terminal, cyathia, combined into corymbose dichasia; bracts 2, crescent-shaped, red, white, pink, green or yellowish-green. Involucre 5-lobed, companulate, apically bearing 5-nectary glands; lobes ovate, red; glands orange or red. Flowers unisexual, actinomorphic, apetalous, various in coloured, 4-6.5 cm across at anthesis. Staminate flowers numerous, small, with articulate pedicels, surround a single pistillate flower. Stamen 1, greenish-yellow; filaments pinkish-orange; anthers ditheous, basifixed. Pistillate flowers solitary, central, sessile. Ovary globose, trilocular, with one ovule in each locule on the pendulous placenta; style 1; stigma 3, each bifid.

**Ornamental value:** Cultivated for its xerophyte stem and beautiful flowers with various colours. Its inflorescences is long time persistence.

Durable period of inflorescence : 30-40 days

- |    |                 |                           |                 |
|----|-----------------|---------------------------|-----------------|
| 9. | Scientific name | - <i>Gazania</i> sp.      | <b>Fig 2(D)</b> |
|    | Family          | - Asteraceae (Compositae) |                 |
|    | Myanmar name    | - Nil                     |                 |
|    | English name    | - Gazania                 |                 |

### 9.1. *Gazania* 'Kiss Bronze'

Low growing or acaulous herbs. Stems decumbent. Leaves simple, radical, sessile; blades Linear, attenuate at the base, denticulate along the margin, obtuse or slightly acute at the apex, pale green tomentose beneath,

glabrous above. Inflorescences terminal, solitary head, 7.0-8.5 cm across at anthesis. Ray florets numerous, tubuliform, 5-lobed, bisexual, ligulate; tube very short, unisexual, orange with red and a brown blotch at the base. Disk florets numerous, tubuliform, 5-lobed, bisexual, yellow. Stamens 5, syngenesious; anther sagittate at the base. Ovary rectangular oblong, unilocular with one ovule on basal placenta.

**9.2. *Gazania* 'Talent Mixed' Fig 2(E)**

Leaves blades pinnatisect, attenuate at the base, cleft or lobed with prickles along the margin, obtuse at the apex, pale green tomentose beneath, glabrous above. Inflorescences terminal, solitary head, 6.0-8.0 cm across at anthesis; involucre bracts many seriate, cup-shaped, connate at the base, imbricate. Receptacle naked. Pappus with hyaline scales. Ray florets numerous, ligulate; tube very short, unisexual, yellow with red and a dark blotch at the base. Disk florets numerous, tubuliform, 5-lobed, bisexual, yellow. Stamens 5, syngenesious, attached to the corolla tube; anther ditheous, basifixed, sagittate at the base. Ovary rectangular oblong, unilocular with one ovule on basal placenta.

**9.3. *Gazania* 'Tiger Stripes Mixed' Fig 2(F)**

Leaves blades pinnatisect, attenuate at the base, cleft or lobed with prickles along the margin, slightly acute or obtuse at the apex, pale green tomentose beneath, glabrous above. Inflorescences terminal, solitary head, 8.0-9.0 cm across at anthesis. Ray florets numerous, ligulate; tube very short, unisexual, yellow with red and a dark blotch above brown blotch at the base. Disk florets numerous, yellow. Stamens 5, syngenesious; sagittate at the base. Ovary rectangular oblong, unilocular with one ovule on basal placenta.

**Ornamental value:** Cultivated for their beautiful head inflorescences.

Durable period of inflorescence : 15-20 days

<b>10.</b>	Scientific name	- <i>Geranium</i> sp.	<b>Fig 3(A)</b>
	Family	- Geraniaceae	
	Myanmar name	- Nil	
	English name	- Geranium	

Perennial, erect shrubs. Stems and branches terete. Leaves simple, alternate; petioles long; blades orbicular, deeply emarginate at the base, lobed along the margin, rounded at the apex. Inflorescences umbel, 4- to 8-

flowered; peduncles long. Flowers bisexual, actinomorphic, red, mauve, pink or white, 4.0-5.5 cm across at anthesis; pedicels green or red; bracteolate; bracts ovate, obvious. Sepals 5, free, ovate-elliptic-oblong, green. Petal 5, free, obovate-oblong, red, mauve, pink or white, with red striation at the base of two petals. Stamens 10; filament pink or white, shortly united at the base; anther ditheous, basifixed, longitudinal dehiscence. Ovary 5, linear, pentalocular with 1- 2 ovules in each locule on axile placenta, hairy on the ovary wall, white; style simple, red; stigma 5, linear, free.

**Ornamental value:** Cultivated for its beautiful flowers and its attractive leaves.

Durable period of inflorescence : 15-25 days

- |     |                 |                          |                 |
|-----|-----------------|--------------------------|-----------------|
| 11. | Scientific name | - <i>Iberis amara</i> L. | <b>Fig 3(B)</b> |
|     | Family          | - Brassicaceae           |                 |
|     | Myanmar name    | - Pauk pauk sok          |                 |
|     | English name    | - Candituft              |                 |

Annual herbs. Stem and branches angular or ribbed. Leaves simple, alternate, sessile; blades linear-oblong, attenuate at the base, dentate along the margin, acute at the apex. Inflorescences racemes, many flowered, dense. Flowers bisexual, zygomorphic, white, 0.5-0.7 cm across at anthesis. Calyx 4, green. Corolla 4, white, unequal, the 2 exterior ones much the larger. Stamens 6, free; filaments edentate; anther ditheous, basifixed, yellow. Ovary sessile, 2-ovuled in each locule; style obvious; stigma subcapitate.

**Ornamental value:** Cultivated for its very dense inflorescences with white flowers.

Durable period of inflorescence : 10-15 days

- |     |                 |                                             |                 |
|-----|-----------------|---------------------------------------------|-----------------|
| 12. | Scientific name | - <i>Kickxia ramosissima</i> (Wall.) Janch. | <b>Fig 3(C)</b> |
|     | Family          | - Scrophulariaceae                          |                 |
|     | Myanmar name    | - Kyaung pazat                              |                 |
|     | English name    | - Unknown                                   |                 |

Unarmed, annual erect herbs. Stems and branches terete. Leaves simple, spirally arranged, sessile; blades linear, acute at the base, entire along the margin, acute at the apex. Inflorescences terminal racemes. Flowers bisexual, zygomorphic, bracteolate, blue or white, spurred, 0.5-1.2



Annual erect, unarmed, viscid, slightly fetid, hairy herbs. Stems terete, hollow, glandular-hairy. Leaves simple, alternate, sessile; blades ovate-oval-lanceolate, cuneate decurrent at the base, undulate along the margin, acute to obtuse at the apex. Inflorescences axillary, solitary. Flowers bisexual, actinomorphic, purplish-white, funnel-shaped, 5.0-7.2 cm across at anthesis; pedicels erecto-patent, soft-hairy. Calyx 5, symsepalous, green, glandular-hairy, persistent. Corolla 5, sympetalous, funnel-shaped, purplish-white; tube widened upwards, with red striations, patently hairy; lobe obtuse or broadly rounded, shortly acuminate or divided into short segments. Stamens 5, inserted below the mid of corolla-tube; filaments shorter than the corolla, curved, unequal; anthers ditheous, oval-globose, longitudinal dehiscence. Ovary 2, many ovules in each locule; style filiform; stigma capitate.

**Ornamental value:** Cultivated for its funnel-shaped purplish-white flowers with viscidhairs.

Durable period of inflorescence : 17-25 days

15. Scientific name - *Phlox drummondii* 'Baby Buttons' Fig 3(F)  
 Family - Polemoniaceae  
 Myanmar name - Thayet hte pan  
 English name - Unknown

Annual herbs. Stem and branches densely patently glandular-hairy, green. Leaves simple, lower leaves opposite, higher ones spirally arranged, sessile; blades oblanceolate, subcordate-rounded at the base, entire along the margin, acute at the apex, pubescent. Inflorescences terminal, corymb cymes. Flowers bisexual, actinomorphic, violet, explanate, 2.3-2.5 cm across at anthesis. Calyx 5, symsepalous, green, recurved, tipped by a short awn. Corolla 5, sympetalous, deep pink, rotate, red or white in the center; tube 1.2-1.5 cm long, hairy; limb 1.0-1.3 cm by 1.2-1.4 cm. Stamens 5, on the corolla-tube, alternating with the segments; filament free, very short, included; anthers ditheous, dorsifixed, longitudinal dehiscence. Ovary trilocular, with 1-2 ovules in each locule, inferior; style short; stigma trifid.

**Ornamental value:** Cultivated for its flowers with attracting corolla.

Durable period of inflorescence : 15-25 days

16. Scientific name - *Primula praenitens* Ker-Gawl. **Fig 4(A)**  
 Family - Primulaceae  
 Myanmar name - Nil  
 English name - Primula

Perennial herbs with rosette. Leaves simple, whorled, exstipulate; blades obovate-oblongate, truncate at the base, dentate along the margin, obtuse at the apex, pale green beneath, dark green above. Inflorescences axillary, solitary. Flowers bisexual, actinomorphic, white, pink, red, or violet; silver-shaped, 4.0-5.0 cm across at anthesis; pedicels 3.5-4.0 cm long. Calyx 6, symsepalous, inflated, with a broad, truncate-impressed base, split at the apex, green with shortly pubescent. Corolla 6, sympetalous; tube 0.7-1.3 cm long; limb obcordate at the apex, 2.0-2.3 cm by 1.8-2.5 cm, white, pink, red or violet, pale yellow or deeply yellow at the base of corolla-limbs. Stamens 6, inserted on the corolla-tube; filaments very short; anthers ditheous, basifixed. Ovary globose, unilocular with many ovules in each locule; style simple; stigma capitate.

**Ornamental value:** Cultivated for its flowers by various color luxuriant on the plant.

Durable period of inflorescence: 20-25 days

17. Scientific name - *Sedum spurium* 'Dragon's Blood' **Fig 4(B)**  
 Family - Crassulaceae  
 Myanmar name - Ywet kya; Moe ma kha  
 English name - Unknown

Numberous, annual, erect, succulent herbs. Stems and branches terete, red. Leaves simple, opposite and decussate or verticillate; exstipulate; petiolate; blades ovate, green, cuneate at the base, crenate, red along the margin, rounded at the apex. Inflorescences axillary or terminal, dichasial cymes. Flowers bisexual, actinomorphic, bracteate, red or orange, campanulate, 1.0-1.3 cm across at anthesis. Calyx 4, free, reddish-green. Corolla 4-lobed, sympetalous; tube 0.6-0.8 cm long, green; lobe ovate, 0.4-0.5 cm by 0.3-0.4 cm, red or orange. Stamens numerous, 2 series, included, epipetalous; filaments filiform; anthers ditheous, basifixed, longitudinal dehiscence. Carpels 4, apocarpous, unilocular with many ovules on parietal placenta, hypogynous scales present at the base of ovary, yellow; styles 4; stigma inconspicuous.

**Ornamental value:** Cultivated for its succulent leaves and bright color of flowers.

Durable period of inflorescence: 10-15 days

18. Scientific name - *Tropaeolum majus* L. **Fig 4(C)**  
 Family - Tropaeolaceae  
 Myanmar name - Taung kya  
 English name - Garden Nasturtium Wood sorrel

Climbing, perennial, inermous herbs. Leaves simple, alternate, yellowish-green; stipulate; petioles long, flexuous or twining; blades orbicular, entire along the margin, glaucous on both surfaces. Inflorescences axillary, solitary. Flowers bisexual, actinomorphic, yellow or orange, 4.0-5.5 cm across at anthesis; pedicel about 9 cm long. Calyx 5, free, yellow, acute, spurred. Corolla 5, free, yellow or orange, reddish-brown striations inside the corolla, broadly rounded-slightly notched, the 2 posterior petals with cuneate claw, the 3 anterior ones slightly longer, with linear claw. Stamen 8, free; filaments linear, red; anthers ditheous, basifixed, longitudinal dehiscence. Carpels 3, apocarpous, trilocular, with one ovule in each locule on the axile placenta; style filiform; stigma trifid.

**Ornamental value:** Cultivated for its petate leaves and yellow color flowers.

Durable period of inflorescence : 20-25 days

19. Scientific name - *Viola tricolor* L. var. *hortensis* **Fig 4(D)**  
 Family - Violaceae  
 Myanmar name - Dauk mi kwet  
 English name - Pansy

Annual herbs. Stems superterraneous. Leaves simple, rosulate, stipulate; blades ovate-oblong, with deeply lobed segments at the base, serrate-crenate along the margin, acute or slightly rounded at the apex. Inflorescences terminal, cymose; peduncle long. Flowers bisexual, zygomorphic, extremely variable in colour, rotate, 5.0-7.0 cm across at anthesis. Calyx 5, green, unequal, 1.5-1.8 cm by 0.5-0.7 cm. Corolla 5, white, blue or yellow, unequal, anterior one mostly larger than the basal spur, 2.5-3.3 cm by 2.8-4.7 cm . Stamens 5, alternating with the petals, cohering; filaments free; anther ditheous, longitudinal dehiscence;

connectives with a membranous apical appendage, red. Ovary sessile, trilocular with many ovules in each locule on parietal placentation; style very short; stigma globose.

**Ornamental value:** Cultivated for its beautiful flowers in various color.

Durable period of inflorescence : 15-21 days

## **B. Agronomical Description of Potted Commercial Flowers**

### **1. Preparation of Soil**

For the medium of *Anthurium*, the equal amount of charcoal pieces, wood chips, brick pieces are mixed. In the mixture, 0.5% solution of Aldrin dust is added to prevent from ants and termites attacks.

In most species, the soil must be needed to prepare for cultivation. Then the cultivated soil must be prepared with the mixture of 4 parts of compost, 1 part of animal dung manure, 1 part of burnt paddy husk, 1 part of sand and 140 g of N, P, K containing urea producing from AWB Co. Ltd.. After that, this prepared soil can be added to the clay pots or plastic pots or bags.

### **2. Cultivation**

*Anthurium* must be sown by the young plants. If the young plant must be appeared near the bottom of the mother plant, this plant must be pulled out. Potted flowering plants of some species are grown by seeds or cutting or budding methods.

### **3. Fertilizer requirement**

For *Anthurium* sp., the natural fertilizers come from charcoal pieces, coconut fibres, and wood chips. The chemical fertilizers are Aldrin dust and Burplex.

For other species, the compost soil, animal drug manure and burnt paddy husk are natural fertilizers. The chemical fertilizers are using N, P, K that containing in urea.

### **4. Containers using**

The transparent plastic bags or black plastic bags can be used to cultivate the local potted plants for selling. The showing plants usually cultivate in porcelain pots, clay pots and plastic pots.



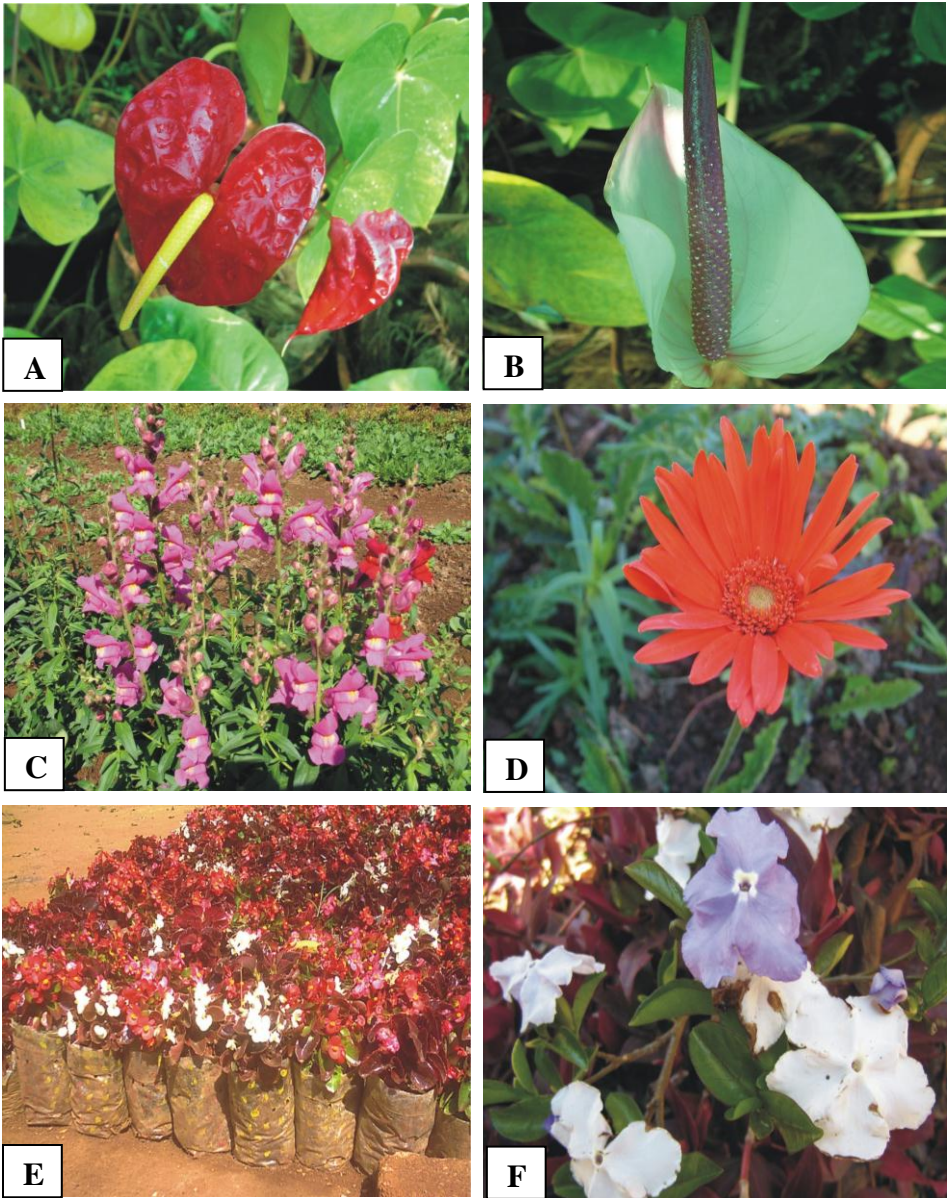


Figure 1. A. *Anthurium andraeanum* 'Rubrum'  
 B. *Anthurium andraeanum* 'Rubustum'  
 C. *Antirrhinum majus* L.  
 D. *Arctotis stoechadifolia* Berg.  
 E. *Begonia semperflorens* 'Lotto Mixed'  
 F. *Brunfelsia pauciflora* Benth.

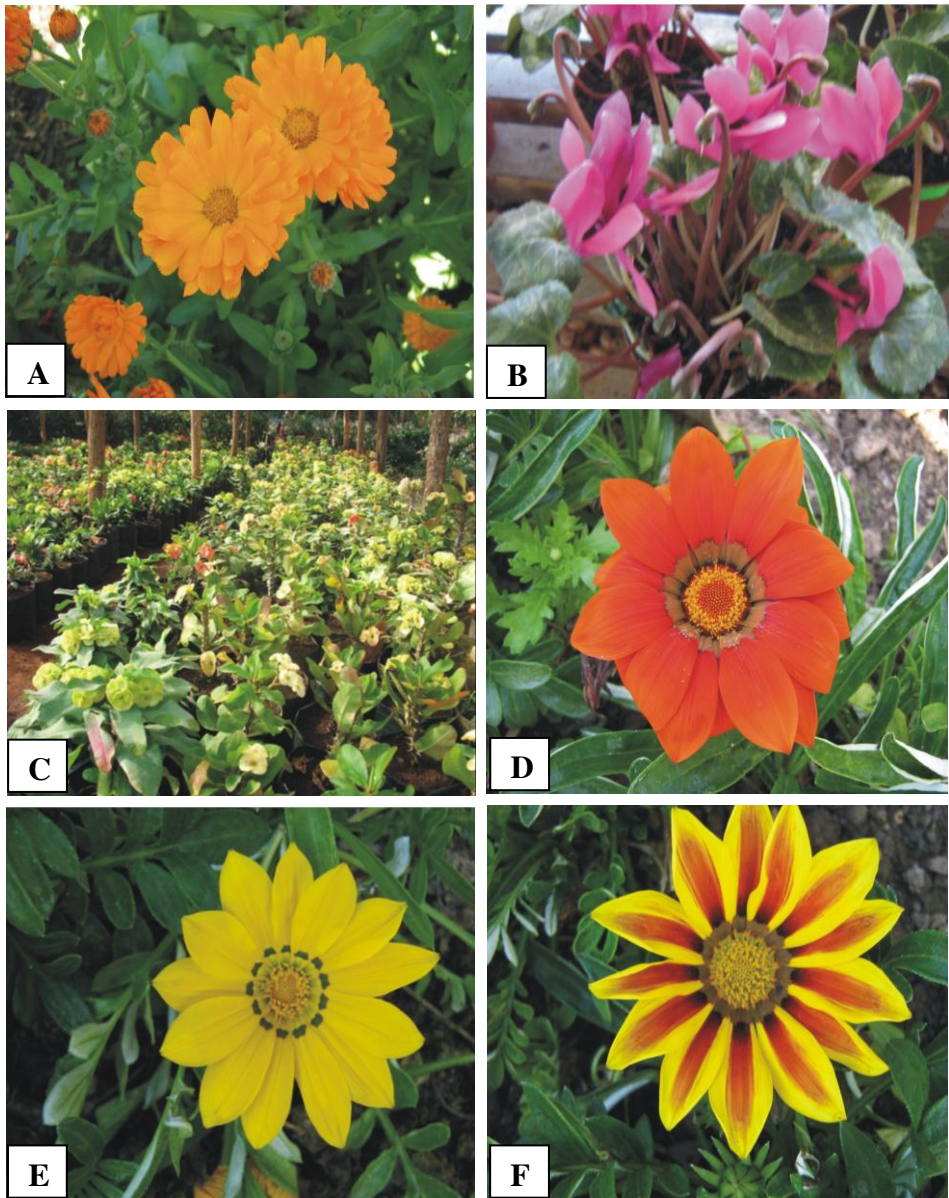


Figure 2. A. *Calendula officinalis* 'Citrus Cocktail'  
 B. *Cyclamen persicum* 'Lazer Mixed'  
 C. *Euphorbia splendens* Boj.  
 D. *Gazania* 'Kiss Bronze'  
 E. *Gazania* 'Talent Mixed'  
 F. *Gazania* 'Tiger Stripes Mixed'

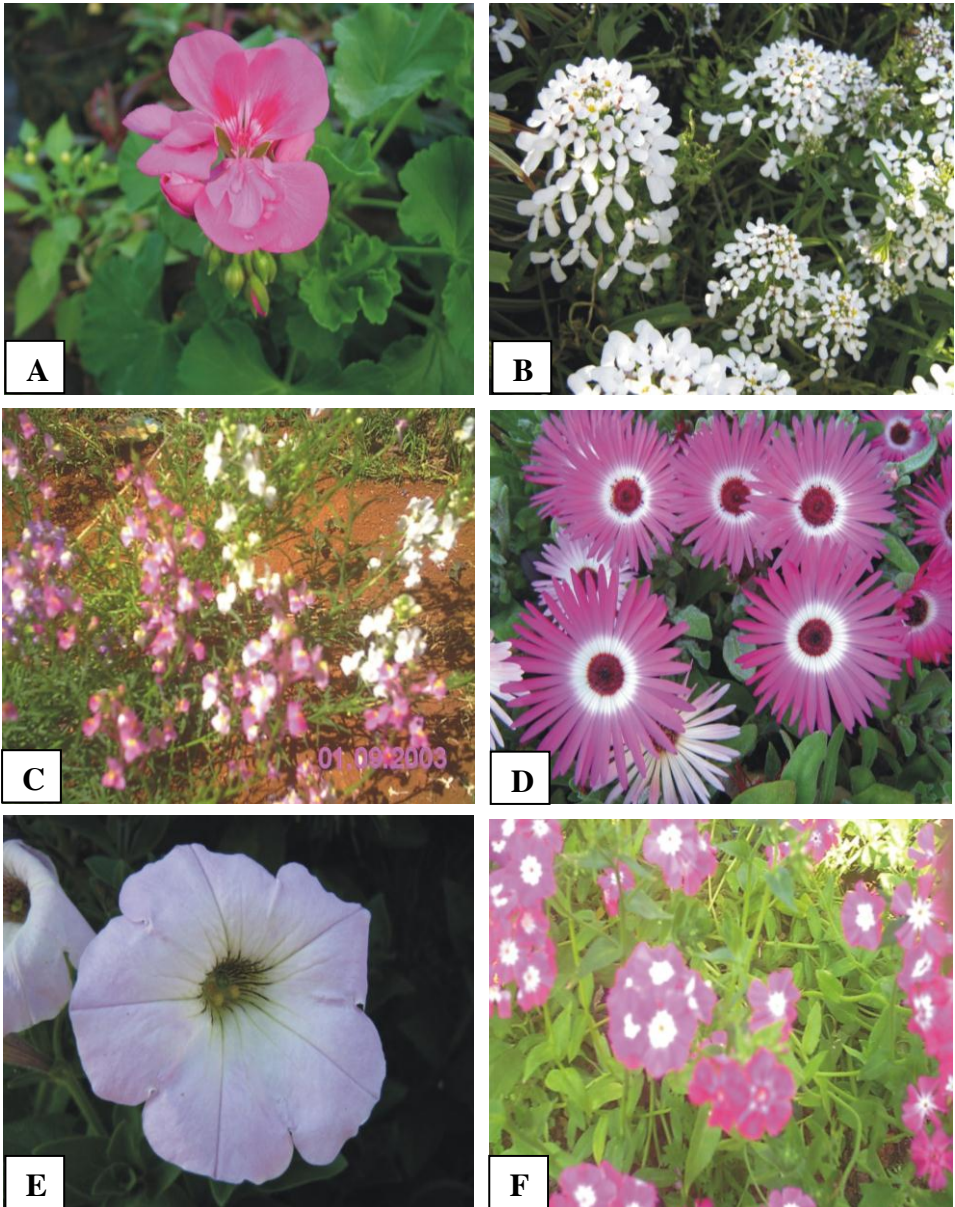


Figure 3. A. *Geranium* sp.  
 B. *Iberis amara* L.  
 C. *Kickxia ramosissima* (Wall.) Janch.  
 D. *Mesembryanthum crinoflorum* 'Sparkle Mixed'  
 E. *Petunia hybrida* 'Pearls Azure Blue'  
 F. *Phlox drummondii* 'Baby Buttons'



Figure 4. A. *Primula praenitens* Ker-Gawl.  
 B. *Sedum spurium* 'Dragon's Blood'  
 C. *Tropaeolum majus* L.  
 D. *Viola tricolor* L. var. *hortensis*

### Discussion and Conclusion

As Pyin Oo Lwin Township is a part of the Shan Plateau region, it is hilly. Its elevation is about 3,500 feet above sea level. The yearly average temperature of Pyin Oo Lwin Township is 19.3 °C and the normal rainfall is 4.9 inches. The climatic type of Pyin Oo Lwin Township is humid subtropical climate. All these ecological backgrounds are well enough for cultivation of flowers and crops.

New cultivars of flowers are tested to grow continuously in there. The flowers can be economically grown by fields and by potted flowering plants.

The favorable physical conditions, the soil texture and road and communication must be fine, these facts partially supported to yield the best of flowers. All these facts that the flowers are bloomed continuously throughout the year and Pyin oo lwin is also known as “**Flower Capital**”.

In present research, 22 cultivars house plants have been collected from Pyin Oo Lwin Township. Most of these cultivars are herbs. *Euphorbia splendens* Boj. is shrub. Spadix inflorescences as in *Anthurium* ‘Rubrum’ and ‘Rubustum’; pernate flowers in *Antirrhinum majus* L., *Kickxia ramosissima* ( Wall. ) Janch.; two kinds of florets (Ray and Disk florets) in *Calendula officinalis* Lour.; staminate and pistillate flowers separating in one plant in *Begonia semperflorens* Link & Otto; xerophytic stem in *Euphorbia splendens* Boj.; spurrate calyx in *Tropaeolum majus* L.; flowers with viscid hairs in *Petunia hybrida* and plants with fleshy leaves in *Mesembryanthmum crinoflorum* ‘Sparkle Mixed’ must be collected by various distinct characters in potted flowering plants at Pyin Oo Lwin Township. In these species, *Mesembryanthmum crinoflorum* ‘Sparkle Mixed’ and *Gazania* plants habit to bloom from 10:00 AM to 4:00 PM. These distinctive characters of plants by house plants in this township have practically cultivated for commercially.

In these cultivars, *Anthurium* ‘Rubrum’ and ‘Rubustum’, and *Euphorbia splendens* Boj., use to cultivate for decoration in house by pots. *Antirrhinum majus* L., *Calendula officinalis* Lour, *Kickxia ramosissima* ( Wall. ) Janch., *Petunia hybrida*, *Phlox drummondii* Hk., *Mesembryanthmum crinoflorum* ‘Sparkle Mixed’, *Tropaeolum majus* L., *Viola tricolor* L. var. *hortensis* should be to cultivate for landscaping plants choosing with suitable climate in everywhere. *Mesembryanthmum crinoflorum* ‘Sparkle Mixed’ should be especially suitable for cool weather. If not weather, it has not been thrived.

*Iberis amara* L., *Petunia x hybrida*, *Phlox drummondii* Hk., *Viola tricolor* L. var. *hortensis* should be to cultivate for decoration in garden, park and home garden. *Begonia semperflorens* Link & Otto, *Cyclamen persicum* Mill. ‘Lazer Mixed’, *Erigeron kerwinskianum* DC., *Gazania* ‘Kiss Bronze’, *Gazania* ‘Talent Mixed’ and *Gazania* ‘Tiger Stripes Mixed’, *Eschscholtzia douglasii* Walp., *Primula praenitens* Ker-Gawl. and *Mesembryanthmum crinoflorum* ‘Sparkle Mixed’ should be to grow as table flowering plants in parlour and office room.

The cultivation of potted flowering plants is easily. In Pyin Oo Lwin Township, these plants are economically cultivated like goods produced from factory.

These potted flowering plants can mostly be grown from seeds. Some plants can be cultivated by budding and by cutting as in *Begonia semperflorens* 'Lotto Mixed' and *Brunsfelsia pauciflora* Benth.. Potted flowering plants are mainly used natural fertilizers, such as compost soil, animal dung manures, burnt paddy husk, coconut fibres, wood chips, barks and chemical fertilizers use a little. Potted plants from Pyin Oo Lwin Township were bought to cultivate every place in present. Beside that, house plants cultivars were economically done by selling seeds and prepared soil bags and pots.

Some cultivars must be grown to sell with clay pots. These should be grown in house for ornamental. These pots should be grown in office table as table plants for decoration.

In present study, the profit is the most getting by selling with plastic pots but it must be dull. The natural lovers mostly bought the plants with cultivating plastic pots for decorating in house.

In Pyin Oo Lwin Township, the house plants must be mostly sold by plastic bags because it can be easily carried, the cost is cheap, it is brisk and the money is seen at a moment. The organizations buy these plants with growing plastic bags for landscaping and decorating in office.

Therefore, some plant growers from Pyin Oo Lwin Township were stayed by economy with cultivating of house plants.

According to the study of commercial flowering plants in Pyin Oo Lwin Township, there were 9133 agriculturalists. Among them 8203 persons were engaged in cultivation of the Garden lands. Some cultivars were grown vegetables and most were economically grown flowering plants.

Finally, it is hoped that the present study will give some information to botanist and horticulturists, landscape architects, interior decorators and designers, the nursery men and professional gardeners, nature lovers and those who desire to grow house plants in the homes. Then, this is also interested for the business man and will be given some information for the future study of researchers and the knowledge of cultivation for the students.

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