

YLANG-YLANG : A VALUABLE ESSENTIAL OIL FOR PERFUMERY INDUSTRYS.R. Singh¹, Pu Fan² and Chang Bin Jhi³

Ylang-ylang oil is obtained from the yellow colour flowers of *Cananga odorata* (Hook. F. et. Thoms) belonging to the family *Annonaceae*. It is a precious tree grown in sub-tropical rainy forest of China. There are two types of essential oil derived from such flowers i.e. ylang-ylang oil (fractionated) and *Cananga* oil (non-fractionated). The flowers of the tree have sweet and pleasant aroma. It is one of the most valuable oils next only to jasmine and rose, used in high grade perfumes. It is a woody tree with economic life of about 60 years of age and its flower gives highest oil content of about 3%. This yield is quite higher than the flowers of Jasmine and rose. In China, generally people say, it is a money tree for rural people. A single tree, during its age of about 8-10 years, gives one Kg of essential oil per year, priced Rs. 3,000 per kg.

The tree is a native of Phillipines and Java. Java people were unknown about the distillation practice, but from 1860-1900 th ylang-ylang became popular in Madagaskar, Reunion and South-Africa. Now a days Comoro, Reunion and Madagaskar share about 80% of world production and market of its oil. Total world production of ylang-ylang oil is about 200 tons per year. China shares about one ton of its oil per year in the world trade.

Cultivars : Still, there is no breeding programme available in literature on Ylang-Ylang tree. Generally, two cultivars are grown by the people, one introduced from Laos in 1961. Commonly, it is planted as an ornamental tree around the houses, having low oil content of 1.9-2.0%. The aroma of the flowers is not good and quantity of flowers produce by the tree is also very less.

Other cultivar was introduced from Srilankā in the same year which is superior in respect of quantity of flowers produce and having pleasant aroma. The oil content of 2.5-3.0% is obtained from the flowers of Srilankan cultivar. Hence, the cultivar introduced from Srilanka is most prevalent among the growers of Comoro, Reunion, Madagaskar and China.

Collection of Seeds : It is a cross pollinated crop, so it is necessary to avoid cross pollination by air, birds and insects. Around the garden a fencing should be made by other tall trees to check the contamination through above factors to maintain the purity of seeds. This practice is generally applied in China and called as 'snack forest belt'. Collection of seeds is possible in rainy season and in October-November also. One fruit of ylang-ylang contains about 6-12 seeds of brown colour. The seeds should be :

- (i) Full, healthy and in good shape.
- (ii) Ripe and matured.
- (iii) Dis-shaped, diseased and infected seeds should be resort.

One kg fruits of ylang-ylang provide about 1400-1600 number of healthy seeds. Because of high fat content seeds can not be stored for a long time. Effect of storage time on germination percentage of seeds can be seen in table-1. It is evident from the table-I that seeds should be used within 30 days of collection. In some special cases seeds can be stored for a short

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period mixing with sand, but it has been proved that fresh seeds provide good results at the time of germination.

Table-1 : Effect of storage time on germination percentage

S.No.	Period of storage	Effect on germination	Remarks
1.	10 days.	90% germination.]	This period is recommended for sowing.
2.	30 days.	70% germination.]	
3.	60 days.	40% germination.	
4.	90 days	NO germination.	

Pre-Treatment of Seeds : To ensure good germination, seed should be treated by some physical treatments. Some times, to loose the seed coat, seeds should be treated for an hour with hot water of 60°C. After an hour seeds transfer to room temperature, this practice is necessary to loose seed coat which ensure good germination.

Preparation of Nursery Beds : Following characters in the soil is considered best to get maximum number of seedlings.

- (i) Soil should be loose, fine, friable and clear.
- (ii) Soil should be plain with good water holding capacity.
- (iii) Field should be properly drainagable.

Temperature at Propagation : To ensure the maximum number of seedlings in the nursery beds 25°C-28°C temperature is required for about twenty days for good germination. If the temperature goes down below 18°C, some special measures are to be taken to maintain the temperature for quick and proper germination of seeds. The temperature of nursery beds can be maintained by spreading of rice husk and straw. After germination of seeds in the beds, the artificial mulching should be removed completely.

Transplanting : After two months, 5-6 baby leaves appear, the seedlings can be transplanted into "transplanting nursery beds" ("transplanting nursery beds" is a place where small and baby seedling, 2 months old, are transplanted from initial nursery beds). In the 'transplanting nursery' baby seedlings kept for about four months to make them vigorous, sturdy and strong. In the initial stage seedlings are more fragile, weak and to short of about 10 cm in height. After getting the height of about 40 cm, seedlings can be transplanted in the main field. During the initial stage of nursery particular intensity of shade is required (the requirement of shade at the different stages of nursery can be seen in the table-2).

Table-2 : Requirement of shade at the different stages of nursery.

S.No.	Requirement of shade	Stage of nursery
1.	80% shade	Initial stage.
2.	50% shade.	After 20 days.

Transplanting in the main field : Transplanting can be done in the month of June-July. Before transplanting 0.8 × 1.0 × 0.6 m dia pits are dug prior to one month of rainy season. These pits are filled by mixture of domestic manure and fertilizers. Generally, 50 kg of domestic manure and 1 kg phosphorus required for each pit. Then planting can be done at proper time.

Adminstration of Field :

- (i) Inter-cropping can be done by maize and peanut.

- (ii) Because of shade loving plant, patchouli can be done in the ylang-ylang field.
- (iii) July-August is the best period for fertilizers application.
- (iv) Roots of plant should be mulched by rice straw and grasses to protect the plant roots in the winter season.
- (v) If temperature goes down below than 18°C frequent irrigation is required to maintain the soil temperature and moisture.
- (vi) Gap filling should be done in the rainy season.

Topping : It is an important practice by which plant height can be maintained to make easy flowers picking. Generally, without topping, plant grows frequently upto 25-30 mt height. From such a big tree, flowers picking is very tedious so topping process is very necessary to check the height of plant and it is also encourage the flowers formation in the tree. Topped tree produce more lateral branches resulting maximum flowering in the coming year. Percentage of blossom in the different part of the plant can be seen in table-3. Maximum number of flowers appear on the top portion of the plant because of frequent availability of light. Generally, third branches of the tree bear maximum bunch of flowers in comparison to the second and first branches of the tree. It can be seen in the table-4. The colour of flowers also affect the yield of essential oil (seen table-5).

S.No.	Part of the plant	Percentage of blossom
1.	Upper branches.	94.5%
2.	Middle branches.	5.5%
3.	Lower branches.	No light no blossom.

S.No.	Type of branch	Percentage of blossom
1.	Illrd branch.	77.1% of total blossom.
2.	IInd branch.	12.2% of total blossom.
3.	Ist branch.	10.7% of total blossom.

Collection of flowers : July and August is the best period for collection of flowers. Collection of flowers prefer in sunny days and early in the morning because at this stage quantity and quality is much better than the later collection. Collection of flowers is done at the interval of 5 days, maximum 50 kg yield of flowers per plant has been recorded. Afternoon plucking of flowers affect the yield and aroma of the flowers. The quality standard of essential oil distilled from the flowers can be seen in the table-VI.

S.No.	Flower colour	Oil content (%age)
1.	Green	1.9 - 2.0
2.	Yellow	2.0 - 2.5%
3.	Deep yellow	1.8 - 1.9%

S.No.	Parameters	Values
1.	Sp. Gravity.	0.9522
2.	Acid value.	2.2
3.	Ester value.	45 - 98
4.	Ref. Index.	1.5047
5.	Op. Rotation.	- 27° to - 55°6

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