

# Cultivars of Main Longan in Thailand

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## Abstract

Longan is believed to originate in China where it was introduced to many countries including Thailand. There are many cultivars known today, these cultivars are mainly derived from the selection of seedling plants. Confusion arose in the naming of longan cultivars in many countries. In Thailand, the longan cultivars are divided into two groups, namely, the lowland or tropical longan as they are well adapted and commercially grown in the central region with warm winter months. The second group of longan is known as the sub-tropical longan. Almost 25 cultivars are known, and they are commercially grown in the northern part of the country where the winter months are rather cool. These longan cultivars cover a major production area and are considered to contribute more economical value than the low land longan.

## Introduction

Longan is the main economic subtropical fruit of Thailand. The longan belongs to the family Sapindaceae, all plants in this family have rather similar horticultural characters (Subhadrabandhu and Yapwattanaphun, 2000). The family Sapindaceae includes about 140 genera and 1,350 species widespread in all tropical and subtropical regions of the world. Approximately 23 genera with 41 species are found in Thailand (Bhumiwasana, 1984). The most widely cultivated fruit trees in this family included longan (*Dimocarpus longan* Lour.), lychee (*Litchi chinensis* Sonn.) and rambutan (*Nephelium lappaceum* L.) (Choo and Ketsa, 1992). Minor fruits, mainly cultivated for domestic consumption in home gardens include akee (*Blighia supida* Koen.), pulasan (*Nephelium mutabile* Blume.), khorlaen (*Nephelium hypoleucum* kurz) and ngoh direk (*Dimocarpus longan* Lour. ssp. *malesianus* var. *malesianus*. Leehn.) (Wangnai, 1983). *Dimocarpus* is classified in the tribe *Nepheliaea* of the subfamily Sapindodeae. Five species are found distributed from Sri Lanka to South-East Asia and West Malaysia.

The commercial longan (*Dimocarpus longan*) is a highly esteemed arilloid fruit species in Asia and belongs to the family of Sapindaceae. It grows and crops satisfactorily in a range of tropical and

subtropical countries but is exploited commercially only in Thailand, China, Taiwan and recently, Vietnam. Other areas which grow longan include Queensland in Australia and Florida and Hawaii in USA (Subhadrabandhu, 1990). The longan resembles the lychee ( *Litchi chinensis* ) in that the tree is grown for its fleshy, translucent, white aril which surrounds a red brown to black seed from which it separates easily. In many countries where both the fruit species are grown, longan has not achieved the importance of the lychee. However, in Thailand longan production is regarded to be more economically important than lychee. Despite this importance there is a general lack of published material on the statistics and production of longan (Wong, 2000).

In Thailand, it is believed that longan clones were brought from South China . In the very beginning the longan plants were thought to be grown in Bangkok area as the old Bangkokians at the time of 50 years ago. The story of longan cultivation in Thailand was dated back to the year 1896 when a Chinese brought in 5 marcotted longan plants from China and presented them to Queen Dararusmi, in Rama V reign. A few years after that time more longan plants were introduced from China into Chiang Mai and these were suspected to be the ancestors of the Biew Khiew variety. Since that time the area of cultivation was expanding with

many new cultivars names resulting from the variation of the plants grown from open pollinated seeds.

## Cultivars in Thailand

In Thailand, the longan cultivars can be divided according to the adaptability into two groups.

### 1. Subtropical cultivars

The cultivars in this group require a longer, cool period for flowering. These cultivars are commercially grown in the northern part of Thailand where the climate is classified as subtropical. Large orchards are found growing in Chiang Mai, Chiang Rai and Lamphun provinces.

#### 1.1 'Daw'

This is the most popular cultivar in Thailand growing in about 80 percent of the total longan area in the country. It is an early bearing cultivar, The trees flower in December and the fruits can be harvested from late June to early July. The flesh or the aril is rather tough, not so crispy as that of Biew khiew. The fruit fetch high premium from foreign markets due to the early harvest. This cultivar is the most consistent bearer and has no alternative bearing problem. In addition, the cultivar is

relatively free from infection by witches'broom disease (Subhadrabandhu, 2001). Although the fruit is large it has a big seed and, therefore, low aril recovery rate. Fruit do not keep well on the tree and seed may even germinate within the fruit. The fruits can be consumed fresh or processed. This cultivar is normally grown in the northern provinces where the cool winter months are necessary for induction of flowering (Menzel *et al.*, 1990).

### 1.2 '*Biew khiew*'

This is another well sought after cultivar. It is a late-maturing cultivar flowering in late January and harvesting of fruits in late August to September. Mature fruit is round, large, brownish green in colour and has good aril recovery percentage. The aril is crispy and sweet (TSS of 22 percent) and of excellent quality. The fruit skin is rather thick and, therefore, advantageous in longer shelf life. This cultivar exhibits irregular bearing and is susceptible to witches'broom disorder.

### 1.3 '*Chompoo*'

This is a medium bearing cultivar, under the northern Thailand, the plant flowers from late December to early January and the fruits can

be harvested about middle July to early August. The leaf is rather narrow and long. The fruits are of medium size, oval shape with greenish light brown fruit. The aril is slightly pink and thus the name 'Chompoo' meaning pink. It is very sweet (TSS of 21-22 percent) and has a pleasant aroma. The seed is small, thus this cultivar has high aril recovery rate. The weakness of this cultivar is its irregular cropping habit as a result of poor flowering. For high production, the tree requires high fertilizer application and good management. This cultivar is normally grown in the northern provinces where the cool winter months are necessary for induction of flowering.

#### 1.4 'Haew'

This is a late bearing cultivar which flowers in late January to early February. The harvest time is in mid to late August. The plant grows very fast but the branch seems rather brittle and can be broken easily. The cultivar is readily flowering and can produce rather high yield. The fruit is medium to large in size with rather small seed and has an average recovery percentage. The aril is firm and good eating quality. The fruit rind is rather rough and thick and therefore, advantageous for longer shelf life. The fruit are suitable for canning.

### 1.5 'Dang'

'Dang' is a Thai word, means red. As indicated by the local name, this cultivar produces fruits with reddish brown skin. This is a mid-maturing cultivar whose fruit can be harvested in mid-July to early August. The branch is rather brittle with dark brown bark. The trees are susceptible to waterlogging.

### 1.6 'Baidum'

The special character of this cultivar is small and dark green leaves. It is classified as the medium bearing cultivar. The trees flower in late December to early January and harvesting of fruits is around mid-July to early August. The fruit is medium in size with rough rind, small seed and average aril recovery percentage. The aril is of acceptable flavour, crispy, very sweet and is bright white in colour. This cultivar is a regular bearing and can stand drought quite well.

## 2. Lowland or tropical cultivars

The cultivars in this group do not require a cool period for flowering. These cultivars are sometimes classified as lowland longan or tropical longan since they are commercially grown in the Central of

Thailand and at present the biggest growing area of these longan is in Samut Songkhram , Samut Sakhon and Nakhonpathom provinces. The descriptions of some leading cultivars in this group are as follows.

### 2.1 'Phetsakon'

This cultivar is different from all the other cultivars. It is a lowland cultivar which does not require a cool climate for induction of flowering. 'Phetsakon' is an early-maturing cultivar and it flowers readily. It is grown in the central region of the country in Samut Sakhon and Ratchaburi provinces (Subhadrabandhu, 1990).

### Naming of cultivars

Thailand has many varieties of longan. Some varieties are mainly cultivated in the northern and northeastern parts including Daw, Chompoo, Biew Khiew, Haew, Daeng, Talab Nak, Dwarf Haew , Chompoo Num , Daw Chanthaburi , Daw 13 , Daw 75 , Daw Gaaong , Daw Yorddaeng and Baidam. Some are variety in central part including Kaloke Daeng, Kaloke Dam, Phetsakhon, Narapirom and Lamyai Khruen (Ramingwong, 1985). Phenotypic expression of many varieties can not be used with confidence in distinguishing the varieties as the morphological

characters are affected by environment. The nomenclature of Thai longan varieties has been complicated by a widespread use of synonyms under different names of the same genetic race, or using the same.

### Conclusion

One of the main problems in the identification of longan in Thailand is the confusion about cultivar names. Many cultivars, which were renamed, because "new cultivars" at new places. Growers usually name them after both vegetative characteristics and reproductive one. Molecular techniques, e.g. isozyme analysis, protein analysis or DNA fingerprint that are more effective to identify cultivar names, should be applied to solve this problem. The best advantage of using molecular technique is due to its quickness and young tree can be used to identify cultivars.

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