

durian *of*
Sarawak



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1. INTRODUCTION

The equatorial forest of Borneo is the home of one of the richest plant genetic pools in the world and home of many indigenous tropical fruits. The world famous King of Fruits is also to be found here. In the State of Sarawak various *Durio* species are found to produce edible fruits and are described in this booklet.

1.1 *Durio* species indigenous to Sarawak

Of the many species, seven are considered as bearing fruits that have edible avils. In Sarawak, general term for durian refers to *Durio zibethinus* and the other six species are generally referred to as "wild" durians.

Scientific Name	Common Name
1. <i>D. zibethinus</i> Murr	Common Durian (Buyuh)
2. <i>D. kutejensis</i> (Hassk.) Becc	Durian Nyekak
3. <i>D. graveolens</i> Becc	Durian Kuning
4. <i>D. oxleyanus</i> Griff	Durian Isu
5. <i>D. dulcis</i> Becc	Durian Tutong
6. <i>D. marophyllus</i> Ridley	Durian Kura
7. <i>D. grandiflorus</i> (Mast.) Kost. Et Soeg	Durian Sukang

1.2 Food Value of *D. zibethinus*, *D. kutejensis* and *D. graveolens*

Item	<i>D. zibethinus</i> *	<i>D. kutejensis</i> **	<i>D. graveolens</i> **
Energy (kcal)	—	—	—
Moisture (%)	66.8	61.5	66.7
Crude protein (g)	2.5	2.6	2.6
Fat (g)	1.6	1.7	6.2
Carbohydrate (g)	28.3	30.9	21.5
Ash (%)	0.8	1.5	1.0
Sugar (mg)	—	—	13.0
Vitamin C (mg)	57.0	15.9	10.4
P (mg)	63.0	25.0	43.0
K (mg)	601.0	362.0	529.0
Ca (mg)	20.0	19.0	10.0
Mg (mg)	—	19.0	27.0
Fe (µg)	—	7.0	6.0
Mn (µg)	—	5.0	4.0
Cu (µg)	—	3.2	7.0
Zn (µg)	—	7.3	5.9

* Source : Leung et al. (1972)

**Source : Voon et al. (1990)



2. DESCRIPTION OF THE SPECIES

2.1 Common Durian (Buyuh) – *Durio zibethinus*

Durian fruit is among the largest in the plant kingdom. The shape is typically ovoid-oblong about 30 cm long and 15 cm in diameter. Immature fruits are green in color and ripen to a bronze yellow. Ripe fruit need to be forced open with a stout knife along five faint depression lines that run longitudinally along the fruit. Inside the fruit are five locules containing several seeds covered with the thick creamy pulp which is best consumed fresh.

The pulp can also be preserved with salt to make 'tempoyak' or boiled with sugar to make durian cake or 'lempok'. The potential use of durian for flavoring ice-cream, cakes and other confectionery products has not been fully developed. Through quick freeze methods,

due to cross-pollination, there is a vast diversity in the quality of the durian fruit. Every seedling tree will produce fruits that is different in various aspects from another seedling tree. The best durian aril is an attractive yellowish to orange color, very fragrant, thick, smooth consistency, sweet, aromatic and slightly on the dry side. The flesh should not stick to the fingers when consumed some connoisseurs prefer a bitter taste included.

Durian is high in protein and carbohydrate. It is moderately high in iron, a source of Vitamin B & C, and favorable Vitamin E. The delicate flavor of the fruit has been attributed to thiols, thioethers and esters. The pulp have strong aphrodisiac qualities. It is a popular belief that durian and alcohol cannot mix and anyone who partake the fruit is strongly advised not to drink for a couple of hours after that.

In Sarawak, the durian flowers twice a year with the heavier flowering in September – October and lighter one in March – April. The fruits ripens 3 – 4 months after fruit set. A dry period of about one month will encourage heavier flowering. The areas known to produce good quality durians are mainly in Kuching and Samarahan Divisions.



Common Durian (Buyuh)



2.2 Durian Nyekak – *Durio kutejensis*

The tree is of medium size with an average height of 12 meters. The five-valve fruits are light green when immature, ripening to predominantly yellow and the shape is ovoid to ellipsoid with or without lobes. Fruits are mostly small, ranging from 200g, slightly elastic and do not hurt the palms of the hands when the fruits is pressed to open it.

Nyekak grows on fertile clay-rich soils of undulating land of mixed dipterocarp forest. It is mainly found in the Selangau area of the Bintulu Division, Sibuti and Bakam areas of the Miri Division. It is cultivated by the Ibans in Selangau, Kedayans in Sibuti and the Malays in Bakam.



Durian Nyekak

Seedlings trees start bearing in 7 – 8 years when they reach a height of about 4 – 5 m. Each mature tree can bear 400 to 500 fruits and take above four months from flowering to fruit drop.

Ripen fruits can be distinguished by color change from light green to yellow while in the tree. In Sibuti area, most fruits are collected when they

fall from the tree. The trees have many low branches that touch the ground and close branching which make it easy to harvest and choose the ripe fruit.

2.3 Durian Kuning – *Durio graveolens*

The tree of *Durio graveolens*, is tall with large buttresses. Durian kuning fruits are globose with sizes ranging from small (400g) to big (over 2000g). Trees bearing large size fruits called "mongkom" varieties, which are rare. Skin color varied from greenish brown-yellow to yellow. The skin is thin, measuring about 0.5 – 1.0 cm.

Spikes are closely spaced, flattened, sharp about 1 – 1.5 cm long. Variations in the shape of the spikes occur with some resembling closely spaced spikes. The fruit-stalk is thin (1.0 cm in diameter) and short (2.5 to 5.0 cm). Calyx and stamens are persistent on the fruit.

In Limbang Division and Brunei, the fruit is held in high esteem. The most favored varieties are those with a milder flavor and taste closer to that of the ordinary durian and with a fine, sticky, sweet and chocolate texture. These varieties are called "durian suluk". Another trait in its flavor is that eating the fruit will not cause body "heatiness".

Seeds are ellipsoid, large and measuring 4 cm long by 2 cm wide. They are glossy brown and numbering one to four in each locule. Fallen ripe fruits can be kept for two days before splitting and spoilage of the flesh occur.

durian

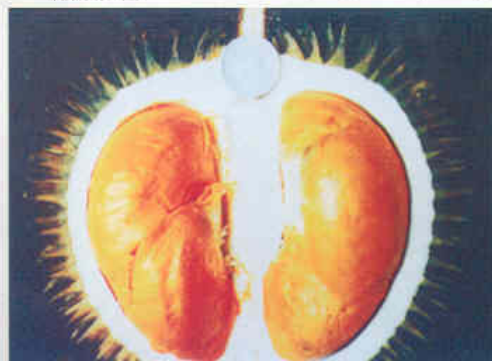
Durian Kuning is found scattered in the lowland to undulating land in the mixed dipterocarp forest. However, in the northern parts of Sarawak, it is a more common occurrence than the ordinary durian. The wide variation of fruits provide ample opportunities for selection of superior varieties. The tree appears to be able to withstand periodic running flood waters and is also found on peat soils growing together with sago plants. It is a fast growing and vigorous tree. It takes ten years to bear fruit under the natural habitat.



Durian Kuning

The Department of Agriculture has recommended two cultivars of durian kuning (DG1 & DG2) and another two cultivars of durian suluk (Suluk 2 & Suluk 3) for general planting.

Durian Isu



A well-known durian kuning is the "durian antu" found in Sungai Ud in Dalat. The canopy of this huge tree covers nearly half an acre of land.

2.4 Durian Isu – *Durioxleyanus*

This large tree grows very tall (40 m), with a long straight, cylindrical trunk and buttressed roots reaching to 3 meters high. Fruits are globular, grayish green and small (15 – 20 cm in diameter and about 200 gm to 500 gm). The fruit is armed with long, stiff and stout pointed, slightly curved, broadly pyramidal and angular spikes up to 4 cm long.

Smaller spines running longitudinally along the fruit indicates the margin of the valves or sutures. The pedicel or fruit scale is slender, 1 to 1.5 cm long and the calyx is persistent. The skin is about 1 cm thick and glossy white inside.

The fruits drop from the tree when ripe. Freshly dropped fruits are difficult to open and are often cut transversely into two halves. Fruits that are kept for a few days are easier to open but the aril are over-ripe and slightly soggy.

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durian jump

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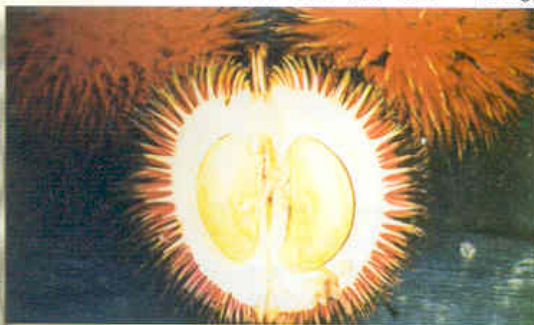
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The trees are found in damp places, preferring clay-rich alluvium that are frequently flooded and also grown on hill slopes. In Sarawak they only occur in scattered locations and are fast growing but not brought in cultivation due to its small fruit, long spines and difficult to open.

2.5 Durian Tutong – *Durio dulcis*

Durio dulcis is a huge, tall tree reaching 40 meter and 80 cm in diameter and mostly found in primary forest. It has large buttresses up to 4 meter high.

The most striking features of the fruit is the deep red color skin and around shape. Fruit are medium size (15 cm in diameter and 400 – 1000g)



Durian Tutong

with slender, no scale, 15 – 2.0 cm long thin spines. The hard and stiff spines makes the fruit difficult to handle. The shell is thick (1.0 cm) and white inside.

2.6 Durian Sukang – *Durio grandiflorus*

The fruit is ellipsoid up to 20 cm long and 15 cm diameter with no scale, broadly pyramidal stiff spines up to 20 mm long and 15 mm wide at the base. The color of the aril is yellow. This wild species is very rare in Sarawak.

2.7 Durian Kura – *Durio macrophyllus*

The size of the tree is small to medium reaching 10 to 25 meter tall, with a girth of 1.2 meter, low and rounded buttresses. Fruits shape varies from globose to ellipsoid, superficially 5-lobed and with a long, slender peduncle about 8 – 10 cm long. Skin are green in color and yellowish bronze when ripe. Spines are conical-pyramidal, not sharp and about 0.7 to 1.0 cm long.

The trees are mainly found in northern parts of Sarawak, towards Limbang Division. Though they require well-drained soils, the trees are also found to thrive well on low lying areas along the Limbang river banks which are frequently flooded. Here, the trees are cultivated by the Bisaya people who use the unripe fruits as a vegetable. Trees can start bearing when a girth of only 12 cm is attained. When flowering, the trees have to be protected with a wire mesh from domestic animals and birds.





Durian - Kura

3. POTENTIALS OF DURIO SPECIES

Among the seven species of wild durians, the nyekak followed by durian suluk has the best potential for immediate commercial exploitation for the local market and possibly for export.

The "nyekak" have excellent characteristics like high yielding, low and easily manageable tree, soft flexible spines which is easy to handle, good keeping qualities, very appealing aril color, good eating qualities with no offensive smell, free from fruit borers and different season of ripening. The "suluk" with its unsurpassed eating quality can have good demand if it is produced and introduced to the public.

Durian "kuning" is very good eating fruit but its unique flavor may put off consumers who have not acquired to such taste. This durian will remain important locally in Northern Sarawak

at the moment because there is a good demand in Brunei.

All the species are valuable as genetic materials for future work on hybridization. The wild species possess important traits like attractive color fine texture, precocity and resistance to fruit borers that can be used for breeding work.

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