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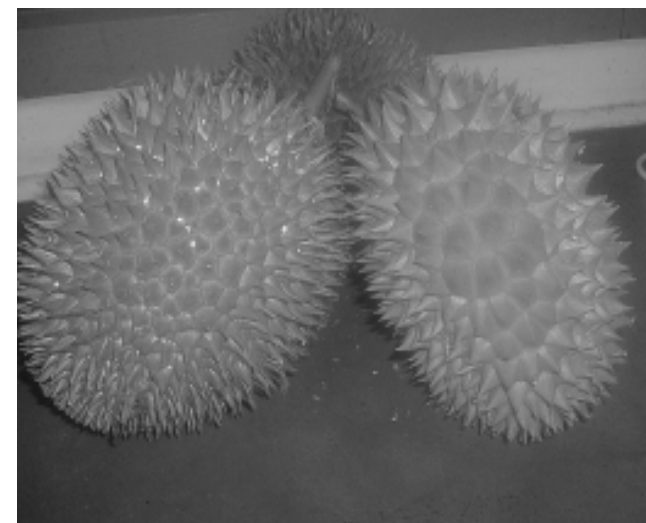
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National Agricultural Research Institute

DURIAN *(Durio zibethinus)*



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THE INSTITUTE

The National Agricultural Research Institute (NARI) was established by an Act of National Parliament of Papua New Guinea in July 1996 as a publicly funded, statutory research organisation, to conduct applied and development oriented research on food crops, alternative food and cash crops, livestock and resource management issues. Besides applied and adaptive research, NARI is responsible for providing authoritative technical, analytical and diagnostic services and up-to-date information to the entire agriculture sector in PNG. The major targets are the smallholder semi-commercial farmers in the country.

The mission of NARI is to contribute, through applied research and technical services, to the development of the agriculture sector and realization of the national goals by identifying, adapting and transferring agricultural technologies and information, so as to:

- Enhance the productivity, efficiency and sustainability of the smallholder agriculture, and
- Improve farmer income, food security and welfare of Papua New Guineans and the Nation.

The material presented in this bulletin is based on the best information available at the time of printing (December 2005)

Written by Tio Nevenimo currently working at NARI Wet Lowlands Islands Programme at Keravat, ENBP.

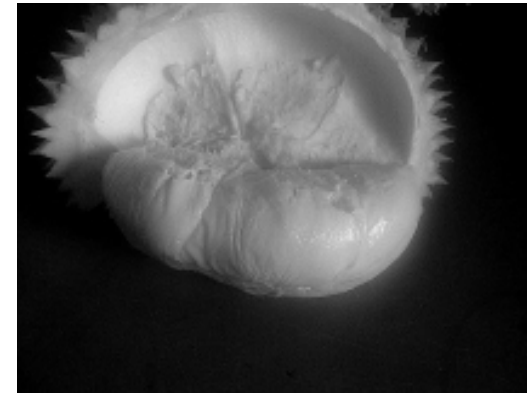


Figure 6: A locule that contains one seed.

The locule completely covered with the creamy white to deep yellow aril or pulp which is the main product or the edible part of the the durian fruit.

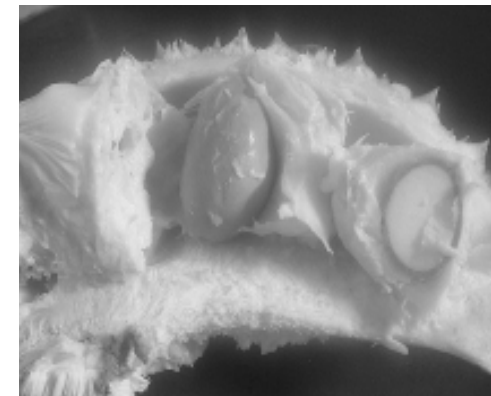


Figure 7: picture showing the seed embedded in or the fleshy pulp.

There are some seedless varieties but most plants will have a number of seeds ranging from one to seven



Figure 4: Typical splitting of fruit at ripening.

In some varieties the fruit when fully ripen will open along the fault line, while some will require cutting along these fault lines to expose the fruit with out damaging the fruit.



Figure 5: Fruit Split in half showing the locules.

Each fruit has five to six locules or segments that contain the aril or pulp, which is aromatic. It is usually creamy white to deep yellow.

Durian

Scientific name: *Durio zibethinus*

Other names: Durian (English, Malaysia, Indonesia), dyin (Burmese) thureen (Cambodian), saurieng (Vietnamese) and thurian (Thai)

Introduction

Durian (*Durio zibethinus*) Murr, is an important fruit tree species in the humid tropics and is a member of the family Bombacaceae. It grows extensively in South East Asia (SEA) where it originates. Thailand, Malaysia, and Indonesia are the current major producers. It is also grown extensively in Sri Lanka, India, Vietnam, Cambodia, Philippines and Burma

The durian is a fast growing large tree that can grow to a height of 40 –50 metres under favourable conditions. They produce straight trunks and almost vertical branches. Grafted seedlings rarely grow to a height of 25m and produce almost horizontal branches near the ground. The leaves are light green on the upper surface and rusty brown on the lower surface, which gives the durian tree a distinctive golden or silvery color. The flowers are borne on the under side of the mature main branches (Figure 1).

The durian fruit is well known for its unique smell at ripening, which is often unpleasant to many who come across the fruit for the first time. The aril, which is the edible part of the fruit, however has a distinctive delicious flavour. The fruit

is hangs on its stalk (Figure 2) and can weight up to four kilograms at maturity and have an olive-green or yellow, woody skin covered with hard sharp spines (Figure 3) which make the fruit difficult to handle. The fruit when fully ripen will open along the fault line (Figure 4). Each fruit has five to six locules or segments (figure 5) that contain the arid or pulp, which is aromatic. It is usually creamy white to deep yellow. The seeds are found embedded in the fleshy pulp. There some seedless varieties but number of seed per fruit may ranging from one to seven (Figure 6 & 7).

Durians were introduced into Papua New Guinea as seeds from South East Asia and planted at LAES Keravat in the early 1940s. Since than seeds and grafted planting material have been distributed to all parts of PNG.

Climate

Durian is suited to the wet warm lowland (0 – 700masl.) tropical climate with an evenly distributed rainfall (1500 to 3000mm though out the year. They will however require a stress period of one to two months to induce flowering but will not tolerate dry periods of more than three months.

Soil

Trees grow best in deep well drained sandy to light clay loam soils. Heavy clay soils and areas where the water table in high should be avoided, as durian root system is very sensitive to water logged conditions.



Figure 2: Young fruit hanging from the branch.
The fruit hangs on its stalk and can weigh up to four kilograms at maturity



Figure 3: Mature fruits collected after they have dropped to the ground.

The mature fruits have an olive-green or yellow, woody skin covered with hard sharp spines

Uses

The fruit is mainly eaten fresh, however durian can be preserved and used in many ways. The immature fruits can be boiled and used as vegetable or fried as chips while the fruit can be used in flavouring in cakes, ice cream etc.

The wood is good firewood and the timber can be used for construction.

Information

For detailed information on durian refer to *NARI Information Bulletin Series No 2*, titled, ***Durian***: Also available from all NARI Information Centres

Pictures of durian



Figure 1: Clusters of flowers with different stages
The flowers are borne on the under side of the mature main branches

Planting material and varieties

Trees established from seed are variable and usually take a long time (8-10 years) to come into bearing. To maintain fruit quality trees with superior fruit characteristics are grafted. Grafting ensures that:

- Planting materials are true to type and maintain all the superior characteristics of the fruit.
- Trees are small and compact (15-25) metres compared to large tall (30–40 metres) trees produced by seedling trees. This means that can be planted at closer spacings thus increasing production per unit land area.
- Trees come into bearing at 4 - 6 years compared to 8 -10 years for seedlings trees.
- Tree will give a uniform production, as all trees will come into production at roughly the same time.

NARI Keravat has officially recommended 8 clones as superior planting material and they are:

1. KDZ5
2. KDZ7
3. KDZ8
4. KDZ9
5. KDZ11
6. KDZ12
7. KDZ15
8. KDZ20

Cultivation

Propagation

Durian is usually planted from seed but because its quality is very unpredictable, when planting on commercial scale they should be grown from grafted seedlings. For more information on vegetative propagation see *Durian NARI Information Bulletin Series No 2*.

Field Preparation and Planting

Field preparation for planting should be done in the same ways as those for planting cocoa. Because durian is a fast growing large tree they are usually planted at a wider spacing of 10 to 12 metres. Young trees require shade, which is gradually thinned out. If planting just one or two trees should be planted at least ten metres away from the next tree or permanent structure like house.

Management

Little or no pruning is necessary, however it will require frequent weeding in the juvenile phase of the tree. No fertilizer is recommended at this stage.

Harvest

Fruits will mature in 90–150 days after flowering depending on the cultivar used. Fruits harvested prematurely have inferior fruit eating qualities and it is often not harvested off the trees. They are usually left to drop and collected

however fruit damage is high. In countries where it is grown on commercial scale they are often harvested off the tree or they go to extreme to prevent it falling on to the ground by securing the fruit to the tree. For more details see *Durian: NARI Information Bulletin Series No 2*.

Pests

Major pests observed at LAES Keravat include:

- Grey weevils which feed on the young shoots and leaves of young seedlings,
- Durian fruit bore damages up to 50% of the fruits at LAES Keravat. The larva bores into and feeds on the skin and the internal parts of the fruit.
- Mealy bugs have also been reported as major pest on the fruits. The insect feeds by sucking the sap of both immature and mature fruits and also young shoots of the plants. The insect secretes honeydew, which induces sooty mould that caused blackening of fruits, shoots and the leaves.

Diseases

Major diseases reported at LAES include:

- Patch canker caused by *Phytophthora palmivora*, which affects the roots and trunk of the durian tree.
- Other diseases include; root rot and pink disease. These might increase with increase in durian planting.