Agnote

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Rambutan
1. Characteristics and Cultivars

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ORIGIN AND DISTRIBUTION IN AUSTRALIA

Rambutan is indigenous to the hot, wet and humid equatorial tropics of Malaysia and Sumatra (Indonesia). It was first introduced into Australia late last century and interest in clonal material only developed after the 1960s. Since then, more than 50 varieties have been introduced from Southeast Asian countries. The crop was introduced into the Northern Territory in the early 1980s.

In the Northern Territory, rambutan thrives and fruits in areas around Darwin and south to Adelaide River, 12° 2' to 12° 7'S, but is limited by the cold night temperatures in the Dry in areas south of Adelaide River.

Trees in the NT are generally less than 10 years old and yield averages 35 kg for 6-8 year old trees. Average yields reported in Malaysia and Thailand are 2-5.6 tons/ha and 6.3 tons/ha respectively. However, it is not unusual to find orchards producing 20 tons/ha in their 11th year in Thailand.

AGROECOLOGICAL REQUIREMENTS

Rambutan thrive well in a hot wet, and humid environment, especially in areas with mean diurnal fluctuations between 22-32°C and mean annual precipitation ranging from 2,000-3,500 mm, evenly distributed throughout the year, and humidity greater than 70% throughout the year. Low humidity and strong, dry winds with wind speed greater than 15 kph are detrimental to crop growth, pollination and fruit development and the use of windbreaks is highly recommended. Evidence suggests that 4-5 hours below 15°C for several consecutive days in the dry season could initiate flower bud formation as can a period of mild water stress. However night temperatures below 15°C and low humidity during the Dry can inhibit shoot development and cause young leaf, flower and fruit abortion.

Rambutan grows best in a well-drained, deep loamy soil with pH ranging from 5.5 to 6.5 and does not do well on alkaline soils with high bicarbonate or calcium levels.

Rambutan is mainly grown on sandy loams in the Northern Territory. Soils which are too sandy do not support good growth because of the low fertility, inferior nutrient retention and poor water-holding capacity, which necessitates frequent irrigation and fertiliser scheduling.

Table 1. Some characteristics of popular rambutan clones grown by growers

Clone	Colour	Origin	Shape	Mean Flesh Recover Ratio %	Mean Spintern length (mm)	Mean Spintern Density no/sq cm
Binjai	red/orange	Indonesia	round/ovate	40.13	14.0	6.5
Jitlee	orange/red	Singapore	round	36.20	15.0	6.2
Lebak Bulus	red	Indonesia	round	53.18	11.5	7.3
R3 (Gula Batu)	red	Malaysia	ovate	53.66	16.5	7.2
R7	orange/red	Malaysia	ovate	45.54	11.4	7.8
R9	red/orange	Malaysia	oval	37.12	13.1	7.5
R99	scarlet red	Malaysia	ovate	41.39	12.9	5.1
R134	orange/red	Malaysia	ovate	42.65	14.4	6.6
R156	yellow	Malaysia	round	60.03	9.60	6.8
R163	yellow	Malaysia	ovate	59.61	10.8	6.6
R167	orange/red	Malaysia	ovate	43.83	14.6	7
R168	red	Malaysia	oblong	48.80	14.5	5.1
Rapiah	red/orange	Indonesia	round	42.29	12.2	7.1
Rongrein	red	Thailand	round	41.00	16.6	7.00

VARIETIES

More than 50 cultivars have been introduced from Southeast Asia, but several have been erroneously labelled or misidentified. About 15 are popularly cultivated in commercial orchards in the Northern Territory and Queensland (Table 1). Most of these varieties have been vegetatively propagated by inarching or bud grafting.

Some attributes of a good variety are:

(a) Fruit weight over 40 g with flesh recovery ratio over 50% (i.e. fruit is more than 50% flesh by weight).
(b) Red/orange colour which is resistant to insect attack. Yellow fruit is more susceptible.
(c) Resistance to stem canker.
(d) Fruit with fewer than 5.5 spinterns/cm^2 fruit surface and a spintern length under 12 mm to reduce moisture loss.
(e) Fruit with a freestone and testa-free flesh which is firm and crisp.

(f) Early and contracted flowering to reduce fruit loss from bird attack.
(g) Yields of 12-15 tons/ha based on 8 year old trees at a spacing of 100 tree/ha, and
(h) Tolerance of temperatures below 15°C.

GROWTH HABIT

Clonal trees are shorter in stature and tend to bear earlier than seedling trees, frequently 2-3 years after planting out. Generally, in the Northern Territory, rambutan exhibits 4-5 vegetative growth flushes. The timing of these could vary by several weeks depending on existing weather conditions and locality. In the Northern Territory, the major growth flush occurs in January- early February and minor ones in March-early April, May and a much smaller one in the midst of flowering in July/August. Flowering usually starts in June with a peak in July and extends right up to end of September. Fruit development starts in late June, culminating in late August-September and fruits are harvested in October to end of January. In some years harvesting flows over to mid February.

Rambutan requires cross pollination for fertilisation. Trees established from seeds tend to produce 50% male flowering trees which will never bear fruits, and 50% female functional flowers. However, most of the commercially cultivated clones produce a large number of hermaphrodite flowers which function as female, and a low percentage of male flowers (0.05-1%) which will provide enough pollen. Some clones like Seetmatjaan (Simacan) will produce 100% female functional flowers, while others like Sinyonya, See Chompoo and Rongrien produce such low numbers of male flowers that they must be mixed with other cultivars to provide a pollen source or they have to be sprayed with a sodium salt of naphthalene acetic acid (NAA) to produce abundant pollen. Spraying several panicles randomly on the tree with 10-50 ppm of NAA at 25%, 50% and 75% flowering is recommended. Most growers establish mixed varieties in varietal rows in a block to overcome any pollination problem. Insects such as domesticated and native bees are the main pollinators.

Differences occur in flowering and fruiting among varieties which are dependent on locality and prevailing meteorological conditions. Some varieties show contracted flowering while others have a protracted flowering because of the flowering of a few terminals over a long period. This can also be influenced by the weather. Although, some varieties like Binjai, Jitlee, R 134, R 156 etc. are deemed early, earliness of varieties to flower also depends on locality and season. Rongrein generally flower later than the rest in the Northern Territory but early in north Queensland. Some growers have observed that rootstock may cause variation in vegetative growth and floral precocity of a clone but no studies have been undertaken on rootstock-scion interactions in rambutan.

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