

[Article ID : 01/V/05/0521]

## **RAMBUTAN (ADI LITCHI/ JUNGLE LITCHI) -AN UNDEREXPLOITED FRUIT CROP IN ARUNACHAL PRADESH**

**S. Romen Singh\*, L. Hemanta and Y. Somi Singh**

<sup>1</sup>College of Horticulture & Forestry, Central Agricultural University  
Pasighat-791 102, Arunachal Pradesh (India)

<sup>2</sup>Department of Horticulture, School of Agricultural Sciences and Rural Development  
Nagaland University, Medziphema-797206, Nagaland (India)

<sup>3</sup>Department of Horticulture, NEHU, Tura campus  
West Garo Hills-794 002, Meghalaya (India)

\*Corresponding author: romensenjam@yahoo.com

### **Abstract**

Survey from East Siang district of Arunachal Pradesh revealed that two morphotypes of rambutan locally known as *Adi* Jungle litchi have observed one having sweet taste (dull red colour fruit) and another having acidic taste (red colour fruit). Flowering period is observed during the month of Feb-Mar and the fruits ripe during April-May before the available of litchi in the market. The fruits are attractive and have a good demand in the market. However, till now this fruit is grown in wild in the forest area as underexploited fruit crop and which need standardization its propagation and its cultivation aspects for commercial cultivation for the future.

### **Introduction**

Rambutan or hairy litchi (*Nephelium lappaceum*) is a medium sized evergreen tree with an open structure growing 12-15m high, is a native of the Malaysian-Indonesian region. In *Adi* language, the tribe which is inhabited in East Siang district of Arunachal Pradesh locally called it as *Adi* litchi or Jungle litchi. It belongs to the family Sapindaceae which includes fruit tree of about 37 genera and 72 species, but a few species are important. It produces ellipsoidal fruits in clusters of 15-20 fruits. Fruits weigh 40-50g each and resemble litchi but because of long, thick, soft hairs or spines on the surface these are known as rambutan in common language. It word is derived from Malay 'rambut' stands for hair. The hairy outgrowth has eye-catching red and yellow colours and it imparts a distinctive exotic appearance to its fruits (Chadha, 2006). It is strictly a tropical fruit requiring a moist warm climate with a well distributed annual rainfall of at least 200cm. The plants can grow at 10-500m above mean sea level, but areas with dry winds are harmful for the trees growth, which leads to browning of leaf margins. They are grown mainly for fruits in which the juicy, white, translucent, subacid – sweet flavoured sarcotesta (aril) is the edible flesh. The sweet fruits are consumed fresh whereas the sour ones are eaten stewed in other countries. However, in Arunachal Pradesh they are use for the fresh consumption for desert purpose. The aril of rambutan is very nutritive and rich is sugar, vitamin and mineral content. Due to difference in latitudes, sugar and vitamin C content of fruits and due to growing environment, the composition of quality in terms flavour and taste is affected. However, till now this fruit remain as underexploited fruit crop and found in the forest areas only which need domestication and standardization its cultivation aspect due to its good demand in the market.



## Composition of fruit and its nutrition value

**Table 1: Composition of rambutan fruits per 100 g edible portion**

Constituent	Content (g)	Constituent	Content (g)
Water	82.1	Niacin	0.5
Protein	0.9	Carotene	0
Fat	0.3	Phosphorus	0
Ash	0.3	Calcium	15
Glucose	2.8	Iron	0.1-2.5
Fructose	3.0	Vitamin C	70
Sucrose	9.9	Riboflavin	0.7
Starch	2.8	potassium	140
Dietary fibre	0.05	Sodium	2
Malic acid	0.31	Magnesium	10
Citric acid	297KJ	Thiamine	0.01
Energy			

(Source: Bose et al., 2002)



**Fig 1: Mature and ripe stage of rambutan (Adi litchi)**

### Distribution in East Siang district of Arunachal Pradesh

Rambutan is indigenous to the Malay Archipelago and has spread and grown in the tropical region of south East Asia, central America and Africa where the temperature and humidity are high enough the year round. From Malaysia, the center of production, it spread westward to the countries, such as Thailand, Myanmar, Sri Lanka, India and eastward to Vietnam, Philippines, Indonesia and Hawaii. In Arunachal Pradesh, they are grown in few pockets having the mild-subtropical climatic condition. In East Siang district, it is confined mostly in Ruksin, Ayeng, Balak and Sillay vallages. It is mostly found in the forest area and prefer shade for its luxurious growth. Type of rambutan found in Arunachal Pradesh is unique and different from the commercial variety like Arka Croog Arun and Arka Croog Patib which are sweet in taste and ripen during September-October as compared to *Adi litchi* which are sour in taste in ripen during April-May and prefer hillock having shade condition as favourable site for its growing.



### Morphotype of rambutan in Arunachal Pradesh

Rambutan being a cross-pollinated crop, large genetic variation has occurred in nature over generations and numerous varieties have been identified but their nomenclature is confused. Most of them can be distinguished by spine length, fruit wall colour, aril thickness, aroma, adherence of aril to the seed, vitamin C content and fruit set. In East Siang district of Arunachal Pradesh, two types of morphotype are found viz. sweet and sour type. Sweet type is smaller in size both in fruit and seed size and dull red colour when it is fully ripe whereas sour type is bigger in size both seed and fruit and have bright red colour when it is in fully ripe stage (Singh et al., 2017). Sweet type are rarely found mostly sour type are common which need selection and conservation of superior genotype for the future.



Fig 2. Sour type



Fig 3. Sweet type

**Table 2. Morphological characteristics features of acid and sweet types of Rambutan (*N. lappaceum* L.) of Arunachal Pradesh**

Characters	Acid type	Sweet type
Fruit shape	Elongated and larger size	Round and smaller size
Fruit colour	Dark red colour	Dull red colour
Flesh attachment	Tightly attached to seed	Same
Seed colour	Pinkish colour	Yellowish colour
Fruit length (cm)	6.2 <sup>a</sup>	6.0 <sup>a</sup>
Fruit breadth (cm)	3.5 <sup>a</sup>	3.2 <sup>a</sup>
Fruit weight (g)	47.3 <sup>a</sup>	45.8 <sup>a</sup>
Peel weight (g)	6.5 <sup>a</sup>	10.1 <sup>a</sup>
Peel thickness (g)	0.6 <sup>a</sup>	0.5 <sup>a</sup>
Spine length (cm)	0.5 <sup>a</sup>	0.7 <sup>a</sup>
Seed length (cm)	2.5 <sup>a</sup>	2 <sup>a</sup>
Seed breadth (cm)	2.5 <sup>a</sup>	2 <sup>a</sup>
Pulp weight (g)	10.1 <sup>a</sup>	6.5 <sup>a</sup>

<sup>a</sup> All data of this column represents average value  
(Source Singh et al., 2017)





**Fig 4. Variability of seed size and seed colour**

### **Major problem for cultivation of rambutan cultivation in Arunachal Pradesh**

1. Lack of superior planting materials and no superior variety is not identified till now
2. There is lacking of scientific way of cultivation
3. Since the fruit have low shelf life under ambient room temperature (3-4 days only), marketing is a major problem during the harvesting period
4. There is lacking of knowledge about the different process products from this fruit
5. Rambutan species found in Arunachal Pradesh prefer partial shade in young stage of the plant and sensitive to open field condition

### **Conclusion**

Rambutan is an attractive fruit having spiny and aesthetic tree in nature. In East Siang district of Arunachal Pradesh, there is variability of rambutan viz. sweet and sour morphotype found in the forest region as an underexploited fruit crop. So, selection of superior genotype having sweet in taste and standardization of its propagation as well as its cultivation aspects is necessary due to its good demand in the market.

### **Reference**

- Bose TK., Mitra SK. and Sanyal D (2002). Rambutan: In: Fruits: Tropical and Subtropical, Volume 2. Published by Naya Udyog, 206 Bidhan Sarani, Calcutta-700 006, pp.565-578.
- Chadha KL (2003). Rambutan. In: Handbook of Horticulture. Published by Directorate of information and publications of Agriculture, ICAR, New Delhi, pp. 305-307.
- S. R. Singh, A.K.Phurailatpam, Siddhartha Singh and M. Chandrakumar (2017). Studies on variability of rambutan (*Nephelium lappaceum* Linn.) in East Siang district of Arunachal Pradesh. *Bangladesh Journal of Botany*, 46 (1):223-229.

