INTRODUCTION

- An important sub-tropical evergreen fruit crop.
- A delicious, juicy fruit of excellent quality
- Liked very much as a table fruit in India, China, Japan, Australia, South Africa, Thailand, Hong Kong, Myanmar, Indonesia, Israel, Mauritius, United States, West Indies, Brazil and New Zealand.
- It is highly specific to climatic requirements and probably due to this reason its cultivation is restricted to few countries in the world.
COMPOSITION

- Litchi fruit consists of about 60% juice, 8% rag, 19% seed and 13% skin.
- The food value mainly lies in its sugar and acid contents.
- The moisture content varies from 77-83%.
- The sugar content indifferent cultivar ranges from 6.74-18.86% in India.
- Litchi contains 1.1% protein, 0.1% fat, considerable amount of calcium and phosphorus and vitamin C, B1 and B2.
- The acidity varies from 0.20-0.64%.
- The ascorbic acid content varies from 40.2-90 mg/100g.
USES

- Makes an excellent canned fruit.
- Preservation of fruits in syrup is a traditional practice. Preservation in honey is also possible and practiced in China.
- A highly flavoured squash is also prepared.
- Various other products, such as pickles, preserves, sherbet, ice cream and wine are also made from litchi in China.
- Dried litchi, commonly known as ‘litchi nut’, is very popular among the Chinese.
ORIGIN & DISTRIBUTION

- Originated in China
- Introduced to Myanmar and India by the end of 17th century and to the West Indies by the 18th century.
- Introduced into Australia, South Africa and Hawai‘i by the end of the 19th century.
- Grown as a major commercial crop in China, Taiwan, Vietnam, Thailand, India, South Africa and to a limited scale in Australia, New Zealand, Indonesia, Israel, Mauritius, Spain, United States and Mexico.
Area and Production

- India and China account for 91 percent of the world litchi production but it is mainly marketed locally.
- In India, 428,900 metric tonnes of litchi is produced annually from 56,200 hectares.
- In H.P. area under litchi is 3759 ha and production is 2851 MT.
- In India, 74% of production is recorded in Bihar, particularly in its northern part (Muzaffarpur and neighbouring districts), followed by 15% in West Bengal and 6% in U.P.
- In India, it is grown commercially in North Bihar, Saharanpur, Dehradun, Tripura, West Begal, U.P., Punjab, Haryana and Kangra valley of H.P.
BOTANICAL NAME: *Litchi chinensis*

Family: Sapindaceae

Longan, Rambutan are other members of this family.

The genus *Litchi* has 3 species i.e. *chinensis, philippinensis* and *javenensis*
Trees are long-lived, medium to large, much branched, round-topped, evergreen, reaching up to 10 metres or more in height with a short stocky trunk.

Leaves are compound, alternate, consisting of 4-7 oblong leaflets, glossy dark green above and grayish green under surface. Bark is greyish green and rough.

Inflorescence is a compound raceme developing both from terminal and axillary buds. Flowers are small, male, pseudo-hermaphrodite and hermaphrodite.

Fruits are one-seeded nuts, oval in shape and develop in bunches.

Edible portion is ‘aril’.
CULTIVARS

- About 50 cultivars of litchi are grown in India.

<table>
<thead>
<tr>
<th>States</th>
<th>Cultivars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bihar</td>
<td>Shahi, Kasba, China, Deshi, Purbi, Bedana, Early Bedana, Maclean and Swarna Rupa</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>Dehradun, Early Large Red, Early Bedana, Late Large Red, Rose Scented, Late Bedana, Calcuttia</td>
</tr>
<tr>
<td>West Bengal</td>
<td>Bombai, Elaichi, China, Deshi, Purbi and Kasba</td>
</tr>
<tr>
<td>Punjab &amp; Haryana</td>
<td>Saharanpur, Dehradun, Rose Scented, Calcutta and Sedless Late.</td>
</tr>
</tbody>
</table>
CULTIVARS FOR H.P:

- Dehradun
- Rose Scented
- Calcuttia
Adapted to the warm sub-tropics, cropping best in regions with brief, cool, dry, frost free winters & long hot summers with high rainfall & humidity.

Litchi usually likes low elevations but can be grown up to 800m amsl with varying degree of success.

Sub-tropical to mild temperate climate in the foothills and valleys of the Himalayas are also suitable.

Dry hot winds in summer during fruit development are very harmful.

A wet spring and summer, a dry fall and winter are desirable conditions for fruiting.

High intensity of sunlight in summer also causes sun-burning and skin cracking in litchi fruits.

Ideal temperature for fruit setting is 19-22\(^\circ\)C.

Low humidity is detrimental for fruit set.
SOIL

- Sandy loam or clay loam with pH 5.5-7.0 and sufficient soil depth is ideal soil.

- Water table should not be less than 1.5 to 2m down.

- New plants should be grown in soil taken from vicinity of old trees to introduce mycorrhizae, which is beneficial for the establishment and quick growth of newly planted trees.
PROPAGATION

• **Air layering/Goottie/Marcottage**: During July-August.
PLANTING:

- **DISTANCE:** 8-10m
- **SYSTEM:** Square
- **SEASON:** July-August
- **PIT SIZE:** 1 cubic m
- Thatching should be done to avoid frost.
- **INTER CROPS:** Papaya, Phalsa etc.
• Training of young plants to establish a good framework is necessary.

• Once the desired shape and a strong framework is achieved, no pruning is necessary except the removal of dead or diseased branches and damaged shoots or crossed limbs.

• Pruning to promote new growth, by snipping of old branches, appears to be justified. In India, this is done indirectly when a part of the shoot bearing the cluster of fruit is removed during harvesting.
<table>
<thead>
<tr>
<th>AGE (Yr.)</th>
<th>FYM (kg)</th>
<th>N (g)</th>
<th>P$_2$O$_5$ (g)</th>
<th>K$_2$O (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>60</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>120</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>180</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>10</td>
<td>55</td>
<td>600</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>11 &amp; above</td>
<td>60</td>
<td>700</td>
<td>350</td>
<td>350</td>
</tr>
</tbody>
</table>
## MANURES & FERTILIZERS

<table>
<thead>
<tr>
<th>AGE (Yr.)</th>
<th>CAN (g)</th>
<th>SP (g)</th>
<th>MOP (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>240</td>
<td>190</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>480</td>
<td>380</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>720</td>
<td>570</td>
<td>150</td>
</tr>
<tr>
<td>10</td>
<td>2400</td>
<td>1900</td>
<td>500</td>
</tr>
<tr>
<td>11 &amp; above</td>
<td>2800</td>
<td>2190</td>
<td>580</td>
</tr>
</tbody>
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Time of Fertilizer Application

- Apply FYM, P and K in the end of December.
- Apply ½ N in February, ¼ dose in April and remaining ¼ in July (after harvesting of fruits).
- Zinc deficiency is also common. It can be corrected by spraying 4 Kg zinc sulphate and 2 Kg hydrated lime dissolved in 500 L water.
IRRIGATION

- Jan. end to onset of monsoon is critical period.
- Withhold irrigation 4 weeks prior to flower initiation.
- Mulching.
HARVESTING:

CRITERIA FOR MATURITY:
- Flatness of tubercles.
- Smoothness of epicarp.
- Change in fruit colour.
- Days after fruit set (55-80 days).

HARVESTING TIME: Maturity commences first in Tripura, followed by West Bengal and then in Bihar.
- Eastern region: 1st and 2nd week of May
- Bihar: 3rd - 4th week of May & continues up to 1st week of June.
- U.P. and Punjab: 2nd - 3rd week of June.
- H.P.: Last week of June.

Fruits are available only for 3-4 weeks.

YIELD: 80-150kg/tree.
• Non-Climacteric fruit.
• After harvesting, the fruits should be kept in cool, dry and well-ventilated rooms.
• While packing, the fruit should not be loose in the container and air should circulate freely in it.
• PACKAGE: Ventilated containers (Shallow bamboo baskets & wooden crates).
• The product for export and distant domestic markets is typically packed in 2 kg cartons after pre-cooling and sulphuring. Domestic marketing generally receives litchi in 10 kg wooden cages or 15 to 18 kg baskets.
• STORAGE: Temp. 2.1°C, RH 90-95% for 3-5 weeks.
PHYSIOLOGICAL DISORDERS:

FRUIT CRACKING:

CAUSE:

• Very High Temp.
• Low RH.
• Low Soil Moisture.

CONTROL:

• Frequent Irrigations.
• Spray Boric Acid @ 0.2%
• 2 Sprays of NAA @ 20ppm: first at pea stage of fruit development and second 10 days after first spray.
• Swarna Rupa - Resistant Variety.