

# ARECANUT



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- Arecanut cultivated primarily for its kernel obtained from the fruit, which is chewed for its tender, ripe, and processed form and it is called as supari or beetle nut.
- Arecanut stand as a backyard crop
- Arecotine (0.1%) found in areca nut as Stimulating agent.

**B.N.:-*Areca catechu***

**Family:-aAecaceae**

**2n:-32**

**C.O:-Indonesia**

- India is largest producer and consumer of arecanut.
- Area:-57% and world production of 53%.
- Nearly 90% of arecanut production come from karnataka(38%) Assam and kerala.
- Small extent:-TN, Meghalaya, WB, MH.
- Maximum productivity state:-Maharastra(3,947kg/ha).
- Export country:-Nepal, UK, Singapore, Maldives, and Saudiarab.



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## **Climate and soil**

- Areca nut is a tropical crop.
- Mostly confined to 28° north and south .
- Altitude:-1000m msl
- Rainfall:-range of 1000mm-5000mm
- Temp:-14°c and 36°c and is adversely affected by temperatures below 10°c and above 40°c.
- Soil:-lateritic,red loam,alluvial soil is good
- Soil should be deep and well drained(soil depth should fall below 1m.)
- Slightly acidic soil to neutral soil.

## **Varieties:**

There are few local varieties known by the name of the place where they are grown and are **South Kanara, Thirthahalli, Sreevardhan, Mettupalayam, Mohitnagar, Kahikuchi**. Central Plantation Crops Research Institute, Regional Station, Vittal has released three improved cultivars, they are: **Mangala, Sumangla, Sreemangala**.



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### ❑ Selection and raising of planting materials:

- ❑ Collection of seed nuts should be confined to high yielding palms which commence to bear early as well as those which give more than 50 per cent of fruit set.
- ❑ From these selected mother palms, fully ripe nuts are alone collected.
- ❑ All undersized and malformed nuts must be rejected.
- ❑ Heavier seed nuts (above 35 g) within a bunch are alone selected, as they give higher percentage of germination and produce seedlings of better vigour than lighter ones.
- ❑ The selected seed nuts are sown immediately after harvest, 5 cm apart in sand beds under partial shade with their stalk ends pointing upwards.
- ❑ Sand is spread over the nuts just to cover them.
- ❑ The beds may be watered daily.

- ❑ Germination comence in about 40 days after sowing and the sprouts can be transplanted to the second nursery when they are about three months old.
- ❑ At this stage, the sprouts might have produced two to three leaves.
- ❑ The Secondary nursery beds of 150cm width and of convenient length are prepared for transplanting the sprouts.
- ❑ The sprouts are transplanted at a spacing of 30cm x 30cm with the onset of monsoon.



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- Partial shade to the seedlings can also be provided during summer by pandal or growing banana.
  - Care should be taken to drain the nursery beds during the monsoon and to irrigate them during the dry months.
  - Weeding and mulching should be done periodically.
  - Seed nuts can also be sown in polythene bags (25 x 15cm size, 150 gauge) after filling the bags with potting mixture containing 7 parts of loam or top soil, 3 parts of dried and powdered farm yard manure and 2 parts of sand.
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- The seedlings will be ready for transplanting to the main field when they are 12 to 18 months old.
  - Seedlings having 5 or more number of leaves should be selected.
  - The height of seedlings and the time of planting has a negative correlation with the subsequent yield of the plant.
  - Hence shorter seedlings with maximum number of leaves are remove with a ball of earth for transplanting.
  - If the seedlings are raised in polythene bags, these can be straight way transported to any distance without much damage.



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## **Planting**

- Pit size:-(90cm)<sup>3</sup>
- Spacing:-1.25x1.25m or 3.6x3.6m
- Planting system:-square system of planting.
- Multi-tier cropping system.
- Planting time:-May-June

## **Intercultural operation**

Drainage:-heavy soils-channels should be at least 15 – 30 cm

Deeper than the depth at which the seedlings are planted.

Shading:-the palms are highly susceptible for sun scorching so

Raising crops like banana in between two rows of arecanut.

Manuring:-100:40:140(n:p:k) and green leaf manure and compost:-

12 kg/plant

Irrigation:-4-7 days interval@175 ltrs/palm in hot and dry Weather. Sprinkler and drip irrigations can save 20 and 44 per cent

Respectively of water



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## FERTIGATION:-

Initial stages of areca garden only 75% of the recommended dose Of fertilizer is sufficient

Fertilizer should be split into ten parts and should be applied once in 20 days from november to may.

□ Cover crop:-mimosa invisa.Stylosanthus gracilis in April- May.

□ Mixed crop:-areca nut with cocoa(1:1 ratio with 2.7m x2.7m Spacing) mixed crop viz., Pepper, cocoa, banana, lime and betel vine.



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**Harvesting & Yield:** The stage of harvesting depends on the type of produce to be prepared for the market. The most popular trade type of arecanut is the dried, wholenut known as chali or kottapak. Fully ripe, nine months old fruits having yellow to orange red colour is the best suited for the above purpose. Ripe fruits are dried in the sun for 35 to 40 days on dry levelled ground. More than 10 kg of ripe nuts per palm at the 10th year is considered as normal yield in any plantation.



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# TEA

- ❑ The oldest known beverage, tea is native of China in South East Asia.
- ❑ It was known to the Chinese as early as 2737BC, but attained the status of a popular drink in England in 1664 AD.
- ❑ India is the largest producer, consumer and exporter in tea industry.
- ❑ Tea belongs to the genus *Camellia* and family Camelliaceae. The original species, which produces tea, were *C.assamica* (Assam jats), *C.sinensis* (China jats) and their natural hybrid, *C.assamica* subspecies *lasiocalyx* (Indo China or cambod type).
- ❑ Being a highly cross pollinated crop, the present day seedling populations are mixture of both the above two species, however, from their major share of characters – Assam or China type can be distinguished.





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**Varieties:** Clonal selection from seedling population was taken up by UPASI, Tea Scientific Department, Cinchona and also by other Tea Research Institutes. UPASI has so far released 27 clones. Certain outstanding clones released by other Institutes are also used in South India.

**URASI-2 (Jayaram)**- An average yielding clone, suitable for all elevations, tolerant to drought and wind.

**URASI-3 (Sundaram)**- Very high yielding and quality clone.

**URASI-6 (Brooklands)**- Fares well at mid and higher elevations.

**URASI-8 (Golconda)**- High yielding, suitable for all elevations.

**URASI-9 (Athrey)**- High yielding, fairly tolerant to drought, Can withstand slightly high pH.

**URASI-10 (Pandian)**- Hardy clone, resistant to drought and wind; suitable for high elevation.

**URASI-14 (Singara)**- Quality clone, suitable for higher elevations.

**URASI-17**- A high yielding clone.

**TRI-2024 (Sri Lanka)**- High yielding clone.

**URASI-2025 (Sri Lanka)**- Average yielding; hardy clone.



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**Climate and soil:** Tea is exacting in its climatic requirements. The temperature may vary from 16 to 32°C and annual rainfall should be 125 to 150 cm, which is well distributed over 8-9 months in a year. The atmospheric humidity should be always around 80% during most of the time. Very dry atmosphere is not congenial for tea. It is grown in plains in North Eastern States but in South India, it is grown in hill ranges from 600 to 2200 m above M.S.L. Tea is a calcifuge crop requiring comparatively low amounts of calcium but high quantities of potassium and silicon. They can be grown in lateritic, alluvial and peaty soils. Optimum pH range is 4.5 to 5.0 and soil depth should be 1.0 to 1.5m.

### **PROPOGATION:**

Tea plants are propagated from seed or by cutting; it takes approximately 4 to 12 years for a tea plant to bear seed, and about 3 years before a new plant is ready for harvesting.

**Planting:** The land is cleared of the roots of the fallen trees and drains are taken at suitable intervals depending upon the slope to conserve the soil. In the olden days, up and down system of planting at 1.2x1.2m are followed. Presently, contour planting either in a single hedge or double hedge system is followed.



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**After care:** Immediately after planting, the soil surface around the plants should be mulched, usually cutgrasses of gautemala are employed for this purpose. About 25 tonnes of grass is required to mulch one hectare. Care must be taken to keep the mulch materials away from the collar region last they may cause collar diseases. If there is a dry weather, mud tubes or etah tubes may be buried 15cm deep near the plant in a slanting position and one litre of water per plant may be poured or injected at weekly intervals. This subsoil irrigation helps to minimise the causality besides encourages developing deeper roots.

**Weed control:** Weeds will be a problem in young and pruned fields. Manual weeding is never recommended in tea lest more soil erosion and damage to surface roots and collar regions. Therefore, the following chemical weed control is alone recommended in tea.

<b>Type of weeds</b>	<b>Herbicides</b>	<b>Dosage</b>
Dicots	Paraquat (gramoxone)	1.12 lit. /ha.
Dicots	Sodium salt of 2,4-D (Fernoxone)	1.4 kg. /ha.
Grasses	2,2-Dichloro propionic acid (Dalapon)	5.6 kg. /ha.
	Glyphosate	2.3 lit. /ha.



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**Shade management:** Tea requires filtered shade and if it is exposed to direct sun, its growth is affected. Shade is hence essential and beneficial to tea as

- It regulates the temperature.
- It minimises the effects of drought and radiation injury.
- It increases the soil fertility
- It helps in recycling of nutrients.
- It helps in getting even distribution of crop.
- It serves as windbreak.
- It reduces the incidences of pests.
- It generates additional income by way of timber and fuel.
- The desirable characters of a good shade tree like
  - It must be an evergreen tree, easy to propagate having quick growing and deep rooted characters.
  - It provides filtered shade and withstands frequent lopping.
  - It tolerates wind and frost.
  - It does not have allelopathic effect.
  - It has commercial timber value also.



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- ❖ **Training and Pruning:** In the young tea, when it has established well, centering i.e. removing the growing point leaving 8 to 10 mature leaves from the bottom, is done to induce secondaries. When the secondaries reach more than 60 cm, they are tipped at 50-55 cm height by removing 3 to 4 leaves and bud to induce tertiaries. Therefore, plucking at mother leaf stage is continued for better frame development. It takes nearly 18 to 20 months from planting to reach regular plucking field stage. Pruning is done in tea
- ❖ to maintain to convenient height for plucking
  - ❖ to induce more vegetative growth
  - ❖ to remove dead and de funct wood and
  - ❖ to remove the knots and interlaced branches.

Pruning is normally done 4 to 6 years interval depending upon the altitude of the garden, nature of the materials etc. the bushes marked for pruning should have adequate starch reserves in roots otherwise the sprouting following pruning should have adequate starch reserves in roots otherwise the sprouting following pruning will be less. This can be normally tested by the common Iodine test and if the starch reserve is less, bushes are allowed to rest for 2 to 3 months. Immediately after the rejuvenation or hard pruning, the cut ends are smeared with a paste made of copper oxychloride and linseed oil (1:1).



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**Manures and fertilisers:** Tea responds to manuring and it has been estimated that to produce 100kg of made tea, tea plant utilises on an average 10.2, 3.2 and 5.4kg of Nitrogen, Phosphorus and Potash per ha. Manuring in tea starts from nursery stage itself. Once they strike roots (after 4 months) 30g of soluble mixtures (Ammonium phosphate (20:20) 35 parts, potassium sulphate and Magnesium sulphate each 15 parts and zinc sulphate and Magnesium sulphate each 15 parts and zinc sulphate – 3 parts) is dissolved in 10 litres of water and is applied with rosecan for about 900 plants. This must be repeated at 15 days intervals.



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**Harvesting or Plucking:** Plucking consists of harvesting 2 to 3 leaves and a bud. It is the most labour intensive operation in a tea industry and also decides the yield and quality of made tea. Normally, a pluckable shoot takes 60 to 90 days for harvesting since its sprouting from the axillary buds. When the shoot is plucked upto mother leaf, it is known as light plucking and if it is plucked below mother leaf, it is called hard plucking. It is essential to add one tier of active maintenance foliage to the bush every year. This is done by mother leaf plucking during January to March. During the rest of the period level plucking can be carried out. Consequent to plucking, bush height increases every year in the order of 10cm over tipping height in the first year, 7.5cm, 7.5cm, 5cm and 5cm over the previous year height in the second, third, fourth and fifth year respectively.



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## **Yield:**

Yield of made tea per hectare depends upon many factors such as elevation, clonal or seedling jats, management practices, severity of pruning, processing techniques etc.,

Generally, in tea industry, a field which yields upto 2000kg of made tea/ha is considered as low yielding and 2000 to 3000kg as medium yielding and anything above 3000kg as high yielding fields.





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**Plant Protection:** Many pests and diseases are known to infect tea bushes and cause economic losses. The important pests and diseases, their typical symptoms and control measures are

### **Pests**

1. Tea mosquitoes
2. Shot-hole borer (*Xyleborus fornicatus*)
3. Red spider mite (*Oligonychus coffeae*)
4. Scarlet mite (*Brevipalpus californicus*)
5. Thrips (*Scirtothrips bispinosus*)
6. Nematodes (*Meloidogyne javanica*, *M. incognita*)

### **Diseases**

1. Blister blight (*Exobasidium vexans*)
2. Black root diseases (*Rosellinia arcuata*)
3. Red root disease (*Poria hypolateritia*)