Areca nut

Subjects: Forestry
Contributor: Kamlesh Verma , Prashant Sharma

Scientific name: Areca catechu L.
Family: Arecaceae
Centre of origin: South-East Asia
Common name: kamuhu, adakka, adike, Pinang palm, Betel palm, Areca palm, Supari, Kaunga
The generic name is derived from the common name used by the people of the Malabar Coast in southwestern India.

areca nut | propagation | agroforestry | distribution

1. Description

Arecanut is an erect, unbranched palm reaching heights of 12-30 m, depending upon the environmental conditions. The stem, marked with scars of fallen leaves in a regular annulated form, becomes visible only when the palm is about 3 years old. Girth depends on genetic variation and soil conditions. Root system adventitious, typical of monocots. Arecanut palm is a monoecious plant with male and female flowers occurring on the same spadix. Every year 3-4 inflorescences are produced. The first inflorescence on young palms may produce only male flowers.

2. Distribution

In India, Arecanut is mainly distributed in Karnataka, Kerala, Assam, Tamilnadu, Maharashtra, Andhra Pradesh, West Bengal and Odisha.

Varieties:- Subamangala, Mangala, Sumangala, Mohitnagar, Hirehalli dwarf, Samruthi (Andaman), VTLAH 1, 2, Thirthahalli dwarf and Srimangala are the main commercial varieties cultivated in India.

3. Uses

It is the main source of common masticatory nut (supari), extensively used for religious and social ceremonies, tough leaf bases are used for hats, the inner sole of slippers. Husk is used for insulating wool, leaf sheaths are used for wrapping materials, extract of areca nut is used as a black and red dye.

4. Agroforestry practices

- **Crop shade/ overstory**:- short-rotation annuals and biennials like cardamom, cocoa, banana.
- **Home garden**:- Arecanuts are planned around the homestead for home consumption of nuts.
- **Boundary Markers**:- In some countries, areca nuts are grown as boundary markers.
- **Energy source**:- thinning old areca nut palms provide a source of fuelwood.
- **Host plant trellising**:- Black piper or betel piper vines are often trained on the trunk of areca nut plant.
- **Bee forage**:- The male flower is used as bee flora
- **Ornamental:** In some countries, Arecanut is grown as an ornamental plant.

4.1 The factor making Areca as a favourable choice for Agroforestry

Root system adventitious and more than 80% of roots are within a radius of 75 cm from the base and uses only one-third of the land. A study conducted by Shahapurmath *et al.,* 2003 at Karnataka found that there is more total number of plants per hectare when areca nuts is grown in a mixed cropping system (up to 4754) as compared to the areca nut mono-cropping (1372) at the same spacing (2.7m x 2.7m). Also, the net returns from the Areca nut+ cardamom + pepper was increased by 141.30% as compared to the sole areca nut crop. The total number of weed species are also less in areca nut-based agroforestry systems (7-13) as compared to areca nut alone (14).

5. Site Factors

5.1 Climate

The cultivation of areca nut is mostly confined to 28º north and south of the equator. It grows well within the temperature range of 14ºC and 36ºC and is adversely affected by temperatures below 10ºC and above 40ºC. Extremes of temperature and wide diurnal variations are not conducive to the healthy growth of the palms. Arecanut can be grown in areas receiving annual rainfall of 750 mm to 4,500 mm. In areas where there is a prolonged dry spell, the palms are irrigated. Due to its susceptibility to low temperature, a good crop of areca nut cannot be obtained at an altitude of more than 1000 m MSL.

5.2 Soil

The areca nut palm is grown in a variety of soils such as laterite soils of the West Coast, the *red* loamy soils of the Mettupalayam (Tamil Nadu), the alluvial soils of Assam and West Bengal and the loam of Orissa. The largest. the area is lateritic soils. The soil also should be deep and well-drained. Waterlogged, soils should be avoided. The depth of soil should be at least 1 m with 4.5-7.6 pH. Adequate irrigation facilities are required for its satisfactory production.

5.3 Land Preparation

Land should be ploughed and harrowed a couple of times to bring the soil to the fine tilth stage and make the field weed-free from previous crops.

6. Propagation techniques

Propagation in areca nut is done through seeds. The selection of proper planting material is of almost importance as it is a perennial crop.

6.1 Selection of Mother Palms

Select mother palms showing earliness in bearing and a high percentage of fruit set. The age of the palm should be 20-40 years and have a regular bearing habit. Less than 10 leaves and 4 bunches per year and poor yielding mother trees should be rejected.

6.2 Selection of Seed Nuts

Select fully tree-ripe nuts for use as seeds. Discard nuts that are undersized, malformed and low in weight.

6.3 Raising of Seedlings

Sow selected seed nuts soon after harvest in nursery bed with stalk end up and with a spacing of 5-6 cm. Cover the seed nuts with sand and irrigate daily. Germination starts about 40 days after sowing and the sprouts are ready for transplanting when they are about three months old having 2-3 leaves.

Prepare secondary nursery beds of 150 cm. width and a convenient length. Apply FYM @ 5 t/ha basal dose. Transplant sprouts at a spacing of 30cm x30 cm with the onset of the monsoon. Partial shade to the seedlings can also be provided by banana, *Coecinia indicated* or using artificial way. Provide irrigation during hot and dry periods and drainage during monsoon Periodical weeding and mulching are necessary.

6.4 Selection of Seedlings

Twelve to eighteen-month-old seedlings are to be selected and transplanted in the main field. Seedlings with a maximum number of leaves (five or above), minimum height and maximum girth are to be selected for planting. The selected seedlings should be removed with a ball of earth adhering to the roots for planting.

6.5 Planting

Dwarf and compact seedlings with more number of leaves should be selected. Seedlings of 1 - 2 years of age are planted in pits of about 90 cm x 90 cm x 90 cm at a spacing of 2.75 m either way and covered with soil to the collar level and pressed around. Provide shade during the summer months. Growing Banana or other crops in advance may also provide shade.

6.6 Depth of Planting

In well-drained soils and in the fields where proper drainage can be provided, deep planting is preferred. Deeper planting provides a firm anchorage and a larger volume of space for root development. In areas where the water table is high, shallow planting is preferred. Thus in well-drained soils, planting at a depth of 90 cm is recommended and in heavy soils planting at a depth of 60 cm is recommended.

6.7 Season of planting

In areas where the South-West monsoon is severe, planting in the month of September-October is recommended. In other areas planting can also be done in the months of May-June.

6.8 Spacing

This depends on the rooting pattern of the crop along with the fertility and depth of the soil. The studies conducted at different places with different spacing have revealed that a spacing of 2.7 m X 2.7 m is optimum for areca nut.

7. Management

7.1 Irrigation

Irrigate weekly once during November – February, once in 4 days during March-May. Flood irrigation 175 lit/ tree/ day. In drip irrigation 16 – 20 lit/ tree/ day.

7.2 Drainage

For better growth and development of the plants proper drainage is essential. The number of drainage channels depends upon the soil type. In light soils, the number of channels may be less and in heavy soils, the channels should be dug in each row for proper draining of the excess water. The channels should be at least 15 – 30 cm deeper than the depth at which the seedlings are planted.

7.3 Shading

The palms are highly susceptible to sun scorching. The seedlings should be given protection against direct exposure to the sun. This may be done either by covering the plants with areca or coconut leaves or by raising crops like bananas in between two rows of areca nut. Sun scorching is mostly seen during October – January. For protection from sun scorching nurse crops like banana is used while the leaves of areca nut and coconut are also used for protection.

7.4 Manuring

Apply to each bearing palm (5 years and above) 10 - 15 kg of FYM or green leaf. 100:40:140 g of NPK/ tree/ year. To palms less than five years old, half of the above dose is recommended. Manures are applied during January -

February after the North-East monsoon in a basin of 0.75-1.00 m radius around the tree to a depth of 20 - 30 cm.

7.5 After cultivation

Weeding is done twice or thrice a year by spade digging. Wherever land is sloppy, terracing has to be done to prevent soil erosion.

8. Plant protection

8.1 Pests

Mites: Mites can be controlled by spraying Dicofol 18.5 EC at 2.5 ml/lit.

Spindle bug: Drenching spray with Methyl parathion 1.3 D @ 2.5 g/lit of water or Dimethoate @ 1.5 ml/lit.

Inflorescence caterpillars: Dust Methyl parathion 20 EC 2 ml/lit or WP @ 2.5 g in one litre of water.

Nematode: Soil application of *P. fluorescens* (Pfbv 22) and *B. subtilis* (Bbv 57) each @ g / vine was found to be effective in reducing the root-knot and reniform nematode population in black pepper.

8.2 Diseases

Bud rot or Mahali disease: Infected tissues of the bud should be scooped off and treated with 10 % Bordeaux paste. Destruction and removal of seed palms and also bunches affected by Mahali and drenching crowns of surrounding healthy palms with 1 % Bordeaux mixture would help in minimizing the incidence of the disease.

Footrot or Anabe: Affected palms have to be isolated by digging trenches all around. The severely affected palms should be cut and destroyed. The stumps should be pulled out by digging and the drainage improved. Soil application of neem cake @ 2 kg/palm/year followed by root feeding with 125 ml of 1.5 % (15 ml/litre of water) Tridemorph at 3 months interval or Soil drenching of Bordeaux mixture (1%).

Stem breaking: Wrap up of the green portion of the stem which is exposed to the South-West sun to protect against sun-scorch.

Yellow Leaf Disease:

- Application of balanced nutrients with an additional quantity of superphosphate
- Apply 1 kg of lime/tree/year
- Apply organic manures @ 12 kg/ tree/year.

Leaf spot

Foliar spray with Bordeaux mixture 1 % or 0.2 % Dithane M 45

Nut crack

Spray Borax 2 g/lit with proper water management

9. Harvesting

The nut-bearing starts after 5 years of planting. Generally, nuts are harvested when they are three-quarters ripe. The number of harvestings will vary from 3 to 6 in 1 year depending upon the season and place of cultivation.

Yield: In areca nut cultivation, an average yield of 300 to 400 nuts/palm/year or 1250 kg/ha can be obtained.