

Selection Criteria for Coconut Mother Palm

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Abstract:

The coconut palm, *Cocos nucifera* L., is one of the most beautiful and useful palms in the world. It provides a variety of useful products like food, fuel and timber. It is grown in India in about 1.51 million ha. With an annual production of about 9283.4 million nuts. It ranks third in world in area and production, first and second being Indonesia and Philippines respectively. Among the different coconut growing states in India, Kerala, Tamil Nadu, Karnataka and Andhra Pradesh account for nearly 90percent in area and production. Coconut seedling production involves substantial pre-bearing investment, greater emphasis must be given for the selection of the right type of planting material.

Introduction

The coconut palm, *Cocos nucifera* L., is one of the most beautiful and useful palms in the world. Origin of coconut is believed to be somewhere in South East Asia. Coconut, botanically *Cocas nucifera* has only one species under the genus *Cocos*. It is a tall stately unbranched palm growing to a height of 12m to 24m. The stem is marked by rings of leaf scars which are often not prominent at the base. The palm has an adventitious root system, having numerous thick roots from the base of the stem almost throughout its life. The roots are localized generally at the lower most region of the stem which has been termed the bole. Leaves are large, long, borne on the crown. The palm is monoecious with relatively few female flowers. Male flowers are numerous small with six stamens and in female flowers, the ovary is tricarpic, usually one ovuled.

Fruit is large, one seed drupe. The outer layers of the pericarp are thick and fibrous. The inner layer (endocarp of shell) is very hard, horny or stony and the thin testa cohering to the endocarp is lined with white albuminous endosperm (meat), enclosing a large cavity, partially filled with

sweet fluid. The inflorescence develops within a strong, tough pointed double sheath called spathe which after full developed splits along its underside from top to bottom and releases the inflorescence. This usually occurs from 75-95 days after the first appearance of its tip in the leaf axil. The primordia of the inflorescence begin to form the leaf axil about 32 months before the opening of the spathe. In bearing coconut palm every leaf axil can produce a spadix and under normal conditions it varies from 12-15 per annum. However, this number may be reduced due to adverse weather condition. In India, the female flower production is high during the period from March- May and low from September – January. In general, the number of female per inflorescence varies from 10-50. Female flowers normally become receptive 19-20 days after the opening of the spathe. Genetically the dwarf palms are autogamous while tall types allogamous. Both winds and insects are considered to be the main pollinating agents. A large number of buttons (female flowers) fail to develop into due to lack of pollination and fertilization, defect in the flowers, physiological disorders, genetic nature of the variety, pests and disease and unfavorable environment etc. Generally not more than 2 to 40% of the female flowers to reach maturity under normal conditions.

Quality seed nuts and seedlings are obtained through a series of selections made at various stages.

MOTHER PALM SELECTION

For production of quality planting materials, it is essential to have good quality mother palms of the desired varieties. Mother palms are selected based on the following procedure

The important features of superior mother palms are:

- ✓ Age of the palm should be minimum 20 years and maximum 60 years with regular yielding for four years consistently
- ✓ A mother palm should have at least 30 fully opened leaves having leaf orientation in all directions i.e., umbrella shaped fronds, spherical or semi spherical crown
- ✓ Straight stout trunk with even growth and closely spaced leaf scars.
- ✓ Every leaf axil should have one inflorescence with large number of spikes (30 to 35 spikes per inflorescence) and one or two female flowers per spike.
- ✓ Select palms with strong petiole with wide leaf base firmly attached to the stem.

- ✓ Bearing twelve bunches of nuts with strong bunch stalks.
- ✓ Fully dried unhusked nuts should weigh more than 1.20 kg and husked nut should be more than 600 g with copra content of 150 g and above.
- ✓ High yielding mother palms giving not less than 100 nuts/palm/annum under irrigated condition (70-80 nuts/annum under rainfed conditions) should be chosen for collecting seed nuts
- ✓ Nuts of round and oblong shape should be selected
- ✓ Free from pests and diseases.

Avoid palms which have the following characteristics

- ✓ Palm selection should be restricted to 5 to 10 % in each block
- ✓ Long and thin petioles are not desirable because they are liable to be weak and may easily bend or break under pressure.
- ✓ Palms producing barren nuts or those shedding large number of immature nuts should be discarded.
- ✓ Palms produce long, narrow, small sized or barren nuts
- ✓ Palms showing alternate bearing tendency also should be avoided.
- ✓ Palms are grown under favorable environmental conditions. E.g. Trees near manure pits.

Maturity of Seed Nut

- ✓ The seed nuts takes about 12 months for its full maturity. The mature nuts are harvested when at least one nut in the oldest bunch starts becoming dry.
- ✓ In Tall varieties, it takes 11-12 months to become a matured seed nut whereas in dwarfs, nuts will mature in 10-11 months after emergence of the inflorescence.
- ✓ Mature nuts will produce a resonant and ringing sound on tapping which can be identified by experience. There will be dry husk with distinct browning of the inner fibers in case of fully mature nuts.
- ✓ Immature nuts will produce dull sound.
- ✓ Harvest the bunches intended for seed nut by lowering them to the ground using a rope to avoid injury to seed nuts when palms are tall and ground is hard.

Selection of Seed Nuts

- ✓ Harvest seed nuts during the months of February - August in Tamil Nadu to get maximum germination and good quality seedlings.
- ✓ Tall varieties are sown one or two months after collection whereas dwarfs should be sown immediately after harvest (within 10 to 15 days).

Selection of seedlings

- ✓ Seed nuts, which do not germinate within 5 months of sowing as well as those with dead sprouts should be removed.
- ✓ Only 9 – 12 months old good quality seedlings should be selected based on early germination normally 2 to 3 months (8 to 10 weeks), rapid growth and seedling vigour should be selected.
- ✓ The vigorous seedlings which are one year old, having minimum of six leaves and girth of 10 cm at the collar should be selected. Collar girth of the seedling should be 10-12 cm.
- ✓ Early splitting of leaves is a good indicator of the rapid development and early bearing.
- ✓ The colour of the petiole and seedling vigour can be used as a selection criterion for dwarfs and hybrids.
- ✓ The dwarfs should exhibit the petiole colour of the mother palm.
- ✓ Hybrids usually exhibit hybrid vigour at the seedling stage itself. Seedlings of dwarf varieties can be easily identified by their early germination (3 months after sowing), short height, short and sturdy leaves with short and narrow leaflets.

Conclusion

Production of Coconut Seedlings since coconut cultivation involves substantial pre-bearing investment, greater emphasis must be given for the selection of the right type of planting material. Mother palm should be selected based on the criteria like age of the mother palm, High yielding palms for more than three consecutive years, Nut shape, Free from pests and diseases, Selection of seed nuts based on vigorous growing condition should be followed

Reference



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