

# Successful establishment of coconut garden- tips and techniques

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Coconut (*Cocos nucifera L.*) is one of the most versatile crops of the tropics on account of its multi-faceted uses to mankind. Coconut is generally seed propagated and it provides nutritious food and refreshing drink, edible oil and non-edible uses, fiber of commercial value, shells for fuel and industrial uses, timber and a variety of miscellaneous products for domestic and industrial uses.

Quality planting material is one of the important components for enhancing the production and productivity of any crop. It has more relevance in a crop like coconut with a gestation period of four to six years and a bearing period of more than 60 years. Area expansion scheme of coconut promoted by Coconut Development Board is taking place at a faster pace in many North Eastern States. It is also happening in states like Kerala, where State Government funded schemes like Coconut Development Council programme aims to increase the area under coconut cultivation. Selecting the right variety and the initial care holds the key for successful establishment of coconut gardens. Tips for selecting the ideal coconut

variety and standard procedures to be followed after purchasing the seedlings from a reliable source and the initial care to be provided are listed in this article.

## Identification of suitable varieties for the location

There are two types of coconut-Talls and Dwarfs. The tall cultivars that are extensively grown are the West Coast Tall and East Coast Tall. The dwarf variety is shorter in stature and its life span is short as compared to the tall. The tall palms are the most commonly cultivated for commercial production in all coconut growing regions of the world. Dwarf palms have gained importance in recent times due to tender nut water qualities and resistance to certain diseases. The selection variety depends on suitability of the variety to a particular location, purpose of cultivation and interest of the farmers. For example, if the location is water scarce area, select drought tolerant varieties, or if the location is root disease prevalent tract, select root (wilt) resistant/ tolerant varieties. If the farmer is interested in commercial



cultivation of coconut for copra and oil, tall varieties are preferred, and for tendernut purpose dwarf and hybrids are preferred. For large-scale cultivation, either tall alone or tall, dwarf and hybrids in 60:20:20 is preferable, and for homestead cultivation with limited space, dwarfs or hybrids are preferred. Some of coconut varieties recommended for cultivation are given in Table 1.

**Table 1. Varieties of coconut based on utility**

| Sl. No. | Purpose                       | Varieties  |
|---------|-------------------------------|--|
| 1       | Tendernut purpose             | Kalpasree, Kalparaksha, Kalpa Surya, Kalpa Jyothi, Chowghat Orange Dwarf |
| 2       | Oil and copra                 | Chandra Kalpa, Kalpa Prathibha, Kalpa Mitra, Kalpa Dhenu                 |
| 3       | Neera                         | Chandra Kalpa  |
| 4       | Ball copra                    | Kalpatharu   |
| 5       | Dual purpose                  | Kera Chandra, Kalpa Prathibha, Kalpa Haritha                             |
| 6       | Coir fibre                    | Kalpatharu   |
| 7       | Pest and diseases             | Root (wilt) disease tract- Kalpasree, Kalparaksha, Kalpa Sankara         |
|         | Eriophyid Mite: Kalpa Haritha |  |
| 8       | Drought                       | Chandra Kalpa, Kalpa Mitra, Kalpa Dhenu, Kalpatharu                      |

### Sources of quality planting materials

Good quality planting materials are first and foremost factor for successful coconut farming. Always purchase quality planting materials from reliable sources like, State government accredited/ NHB accredited nurseries, State Agricultural Universities, Farms of Coconut Development Board, ICAR-CPCRI etc. Farmers also can raise seedlings following the standard protocols.

### Criteria for selection of quality seedlings of coconut

The best time when seedlings can be removed from nursery for transplanting is when they are one year old. An ideal one-year-old coconut seedling has the following characters.

1. Seedlings should be healthy, vigorous and robust-looking, with large numbers of leaves, and large number of roots.
2. Early splitting of leaves into leaflets is a good sign of vigour
3. Number of leaves should be more than six
4. Collar girth of seedling should be more than 10 cm



### Age of seedlings selected for planting

In general, one year old seedlings are preferred for planting in the field. However, seedlings upto the age of two years can also be used for planting especially in water logged areas. This is being practiced in Tamilnadu and Andhra Pradesh. In these cases, care should be taken for uprooting the seedling without damaging the root system. Two or three year old seedlings are generally preferred for planting in bunds of rice fields or similar situations and after planting they have to be held firm by suitable props for about a year till the seedlings strike roots and get established. The research on developing seedling standard for six month and nine month old seedling is in progress at ICAR-CPCRI.

### Holding time of seedling after uprooting

It is always advisable to plant the seedlings as early as possible after uprooting from the nursery. However, under unavoidable circumstances (field is not ready due to heavy rain) coconut seedling can be kept for about two weeks under careful storage. In such cases, the seedlings should be kept under shade

and also watered. Care should be taken to protect the husk portion of the seedlings from termite attack during storage.

| Table 2 |                         |   |
|---------|-------------------------|---|
| Sl.No.  | Recommended location    | Varieties   |
| 1       | Kerala                  | Kalpa Jyothi, Kalpa Surya, Chandra Kalpa, Kera Chandra, Kalpa Pratibha, KalpaDhenu, Kalpa Mitra, Kalpatharu, Kera Keralam, Kalpa Haritha, KalpaShatabti, KalpaRatna, Chandra Sankara, Kera Sankara, KalpaSamrudhi, KalpaSreshta |
| 2       | Tamilnadu               | ALR (CN) 2, Kera Keralam, Kalpa Surya, Kalpa Pratibha, KalpaDhenu (East Coast), Kalpatharu, KalpaShatabti, KalpaRatna   |
| 3       | Karnataka               | Kalpatharu, Kalpa Jyothi, Kalpa Surya, Chandra Kalpa, Kalpa Haritha, KalpaShatabti, Chandra Sankara, KalpaSreshta   |
| 4       | Andhra                  | Gauthami Ganga, Chandra Kalpa, Kera Chandra (coastal area), Kalpa Pratibha, KalpaDhenu, Kera Sankara(Coastal)   |
| 5       | Maharashtra             | Pratap, Chandra Kalpa, Kera Chandra(Konkan), Kalpa Pratibha, Kera Sankara(Coastal)  |
| 6       | West Bengal             | Kalyani Coconut-1, Kera Chandra, Kalpa Mitra, Kera Keralam  |
| 7       | Assam                   | Kamrupa, KalpaSamrudhi  |
| 8       | Chhattisgarh            | Kera Bastar   |
| 9       | Andaman& Nicobar island | CARI-C1 (Annapurna), CARI- C2 (Surya), CARI- C3 (Omkar), CARI- C4 (Chandan), KalpaDhenu   |

### Polybag seedlings- Advantages

Generally, coconut seedlings are sold during the month of May/June and polybags seedlings are ideal in situation where the field is not ready due to water stagnation. The polybag seedling can be planted when the situation becomes favourable for planting. Another advantage of polybag seedlings is that there is no transplanting shock and the seedlings will grow continuously with better vigour after planting.

### Scientific planting of coconut seedlings

Well drained sandy loam soils are best suited for coconut cultivation. The land should be open without any trees so as to get maximum sunlight to the palms. If the land is uneven and full of shrubs, the shrubs have to be cleared and leveled before taking pits. Adequate supply of water either through well



distributed rainfall or irrigation are to be ensured. In sloppy areas, soil and water conservation measures are to be adopted. In low-lying water-logged areas, planting is done on raised mounds. In laterite soils, addition of 2 kg common salt prior to 6 months of planting will help in loosening the soil. A spacing of 7.5 m x 7.5 m is generally recommended. The depth of pits will depend upon the type of soil. In laterite soils deeper and wide pits, size 1.2 x 1.2 x 1.2 m, may be dug and in sandy loam soils, pits of size, 1 x 1 x 1 m is sufficient. The pit is filled with top soil, powdered cow dung, and ash upto a height of 60 cm and a small pit is dug at the centre for planting the seedling.

At the time of planting, older roots can be removed as new roots emerge after planting. After planting, press the soil well around the seedling. Bio-priming of seedlings with bio-inoculants such as *Pseudomonas fluorescens* imparts tolerance to disease as well as promotes better seedling growth. Initial establishment of such seedlings was found to be superior in the main field with enhanced vigour and field tolerance to diseases. At the time of planting in the main field, dip coconut seedlings in 200 of *P.fluorescens* with 500g organic manure.

### Precaution while taking up underplanting

Under planting can be taken up at 7.5 m X 7.5 m spacing. However, for better establishment of underplanted palms it is advisable to remove the old palms @ 25% annually. This ensures that in a period of four years the entire old palms are removed and the underplanted palms gets sufficient sunlight for good establishment and early flowering. Shade of the old palms will have a detrimental effect on the flowering of underplanted palms. Any delay in removing the old palms will naturally delay flowering of the underplanted palms.

| Table 3             |                       |               |     |                    |               |      |
|---------------------|-----------------------|---------------|-----|--------------------|---------------|------|
| Year of planting    | May - June            |               |     | September- October |               |      |
|                     | Urea                  | Musso-riephos | MOP | Urea               | Musso-riephos | MOP  |
| First year          | Planting in May- June |               |     | 110                | 150           | 170  |
| Second year         | 120                   | 170           | 190 | 240                | 340           | 375  |
| Third year          | 240                   | 340           | 380 | 480                | 680           | 750  |
| Fourth year onwards | 365                   | 500           | 565 | 730                | 1000          | 1125 |



## Manuring

Regular manuring right from the first year of planting is essential for good vegetative growth, early flowering and bearing and high yield of coconut palms. The first application of fertilizer should be done three months after planting. During initial year the quantity of chemical fertilizer to be applied is one tenth of recommended dose of fertilizer for adult palm. During the second year, one third of the dose recommended for adult palms may be applied in two split doses in May- June and September- October. This dosage may be doubled during the third year. From fourth year onwards, fertilizer may be applied at the rate recommended for adult palms. The fertilizer schedule for young palms is given in table3. Along with second split dose during September - October, 3-5 kg organic manures such as vermicompost or neemcake (first year 3kg, second year 5kg, third year onwards 10kg) may be spread in the pits and after applying the fertilizers, covered with soil.

## Pest management in young coconut palms

Rhinoceros beetle infestation is commonly seen in young coconut palms and is more predominant

in dwarf varieties than in tall. Adult beetle bores into the collar region of the coconut seedlings and brings forth dead heart-like symptoms. Central core of the spindle is severely affected and irrecoverable loss is induced. Extrusion of chewed up fibres at the bore hole is one of the characteristic symptoms of identification. In many cases, the growing point gets twisted, malformed and remarkable loss in vigour is observed. Presence of geometric V-shaped cuts on leaflets is quite common in juvenile palms. As prophylactic measure, the inner most leaf axils may be filled with neem cake or marotti cake @250g/palm mixed with equal quantity of sand may be applied. Placement of two naphthalene balls (8g) in the leaf axils and covering with sand at 45 days interval is also effective. Alternatively placement of small perforated sachet containing 4-5 g Ferterra/ Fipronil in the inner most leaf axils may be attempted. Placement of old fish nets around collar region is also used for trapping the rhinoceros beetles.

It should be noted that dwarf varieties needs special care and attention till its flowering stage. Hence, dwarf varieties are recommended for planting in gardens very near to the place where the farmer stays. Tall are more robust and can be selected for establishing commercial gardens. As hybrids perform well under better management, it should be planted in situations where irrigation and recommended nutrients can be provided. Hybrids are not recommended for average management dependent solely on rainfed farming.

“Work your garden diligently. For the fruit will feed you today and the seeds hold the promise of being fed tomorrow”— Craig D. Lounsbrough ■