

Coconut Nursery Establishment Techniques

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Coconut palm is one of the versatile tree crops providing nutritious food and refreshing drink, oil for edible and non-edible uses, fibre of commercial value, shell for fuel, thatch for roofing, timber and an array of products of domestic and industrial applications. Indonesia, Philippines and India are the major coconut growers among the 93 coconut growing countries across the globe. India produced 21,384 million nuts from an area of 2.1 million ha, with productivity of 9,815 nuts per hectare as per CDB statistics 2018-19. In a crop like coconut which exhibits considerable genetic variations and is capable of being propagated only through seeds, the selection and use of planting materials of higher

prove to be highly uneconomical and a continuous source of loss to the grower. Since coconut culture involves substantial pre-bearing investment, greater emphasis must be given to the selection and use of the right type of planting material. Success of coconut plantation establishment starts with the production of good quality planting materials and hence paramount importance is attached to nursery preparation and management.

Site selection for a nursery

Nursery area should be flat with low gradient, well drained with friable, sandy loam / loamy texture to facilitate removal of seedlings from the nursery at the time of planting. In Laterite soils, sand has to be applied to the nursery beds. Shallow soils with underlying hard rock, heavy clay soils and waterlogged soils are to be avoided. The ideal soil pH for a nursery is 5.5 to 7.0 and the seedlings are tolerant to a pH range of 4.5 to 8.5. Coconut seedlings tolerate soil salinity and alkalinity under irrigated conditions.

Nursery Structures

Nursery can be raised in the interspaces of coconut plantations. If it is an open space, nursery area should be provided with 50-75 % shade using shade net. About 120m² area is required to sow 1000 nuts in flat or raised beds whereas larger area of 200 m² would be required to maintain 1000 poly bag coconut seedlings. Nursery should have good source of water and should be accessible for transportation. It should be isolated from the potential sources



Flat beds of width 1.5 m

intrinsic value assumes considerable significance. The palm continues to yield for over 80 years and the full bearing capacity becomes known only 10 to 15 years after planting. If the original planting material happens to be of inferior in quality, the garden will



Horizontally sown seed nuts



Vertically sown seed nuts

of insect pests and diseases, e.g., saw mills, pile of decaying logs, manure pit etc. Nursery should have a fence for security and a shed to house the implements.

Seed beds & Sowing

Seed beds should preferably be laid in the centre of the nursery. To facilitate sowing of nuts it should be cleared, ploughed and harrowed to a fine tilth. The elevation of the seed bed should be 10 - 20 cm with a width of 1.5 m and length of 2 m. Pathway of 0.75 - 1m should be provided between seed beds to facilitate inspection, selection, maintenance and seedling transfer activities. Flat beds can also be used for sowing seeds.

The seed beds should be drenched with Chlorpyrifos @ 0.05% before sowing of seed nuts in areas with termite problem. To prevent bud rot in seedlings, the nursery can be drenched with 1% Bordeaux mixture in bud rot endemic areas. Before planting, the seed nuts devoid of nut water and rotten kernels should be discarded. Seed nuts should be planted in beds at a spacing of 30 x 30 cm horizontally at 20 - 25 cm depth and covered with soil to about 2/3 of their size buried. If the seed nuts are sown vertically, there will be a mild set back in the early stages but at the later stages the seedling growth is faster. Seed nuts should be sown vertically for seedlings that warrant long distance transportation. Seed nuts can be sown through out the year under favorable climatic conditions and good irrigation facilities. A name board should be placed in front of each bed bearing

the details of the name of the variety/type, date of sowing, number of nuts sown, seed bed number, date when nuts are harvested and date when nuts are received in the nursery.

Maintenance of seed beds

Need based irrigation, weeding, partial shading and regular monitoring is essential. Sprinkler/ Micro Jet Sprinkler/ Hose irrigation systems are well suited for coconut nurseries. The seed beds should be irrigated regularly (once in three days normally and in alternate days during summer months) to ensure that the soil is moist. About 10 mm of water should be applied for every irrigation.

Germination of seed nuts

Generally, germination is recorded till the 5th month of sowing and a good seed lot will have 80 - 90% germination. Those seedlings which germinate within five months after sowing

are to be selected and others should be discarded. The seedlings which are deformed or with stunted growth should be eliminated. Chemical fertilizers need not be applied to the seedlings in the nursery since the seedlings are usually nourished by the endosperm.

Seedling production in poly bags

Poly bag nursery system can be adopted for producing more vigorous seedlings with better root system, to ensure better establishment and early bearing, for reduced transplanting shock,

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Growth stages of seedlings



Well Established Nurseries

for easier weeding and watering. In order to produce poly bag seedlings, the seed nuts are laid vertically and set close to each other and allowed to germinate in a pre nursery bed till the sprouts are 8-10 cm long. Germinated seedlings are picked out from the nursery once 80% of the nuts have germinated or 5 months from sowing, whichever is earlier.

Germinated seed nuts are transplanted in biodegradable, black, UV resistant polybags of size 60 x 45 cm for bigger nuts and 45 x 45 cm for smaller

Poly bags are to be placed at a spacing of 2 feet. To minimize shading, polybag rows should be oriented in North – South direction. The earliest germinating seedlings are placed in the first row in the eastern side of the area and the last ones to germinate are placed in the western side to reduce competition from sunlight for the early germination of seedlings.

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, rapid growth and seedling vigour. Ten to twelve month old seedlings should possess six to eight leaves and nine month old seedlings should have four leaves. Collar girth should be 10-12 cm. Early splitting of leaves is a good indicator of the rapid development and early bearing.

Conclusion

The demand of coconut seedlings from the farm-front far exceeds the production and hence there exists ample scope for establishing commercial coconut nurseries. Since quality seedling fetches premium price in the market, establishment of coconut nursery shall be a viable and profitable business venture and open the gate of self employment opportunities for rural youth. Rearing coconut seedlings in a well-maintained nursery facilitates efficient selection of normal uniform seedlings. High quality planting materials provide a good start to sustain the coconut palms productive and economic for long years in the field under extremely variable conditions. Selecting the best planting materials before planting assures higher productivity per unit area per unit time. ■



Poly bag nursery

nuts. The bottom corners can be folded inward for firm standing of the bags. Poly bags of bigger nut size require 13 – 15 kg of potting mixture to fill two third of the bag. The bottom of the bag is provided with 8 – 10 holes for draining the excess water. The germinated nuts are placed in half filled poly bags with the sprout positioned upwards in the centre of the bag and sufficient potting mixture is added to fill the remaining portion and the sides are slightly pressed to keep the nut firm.