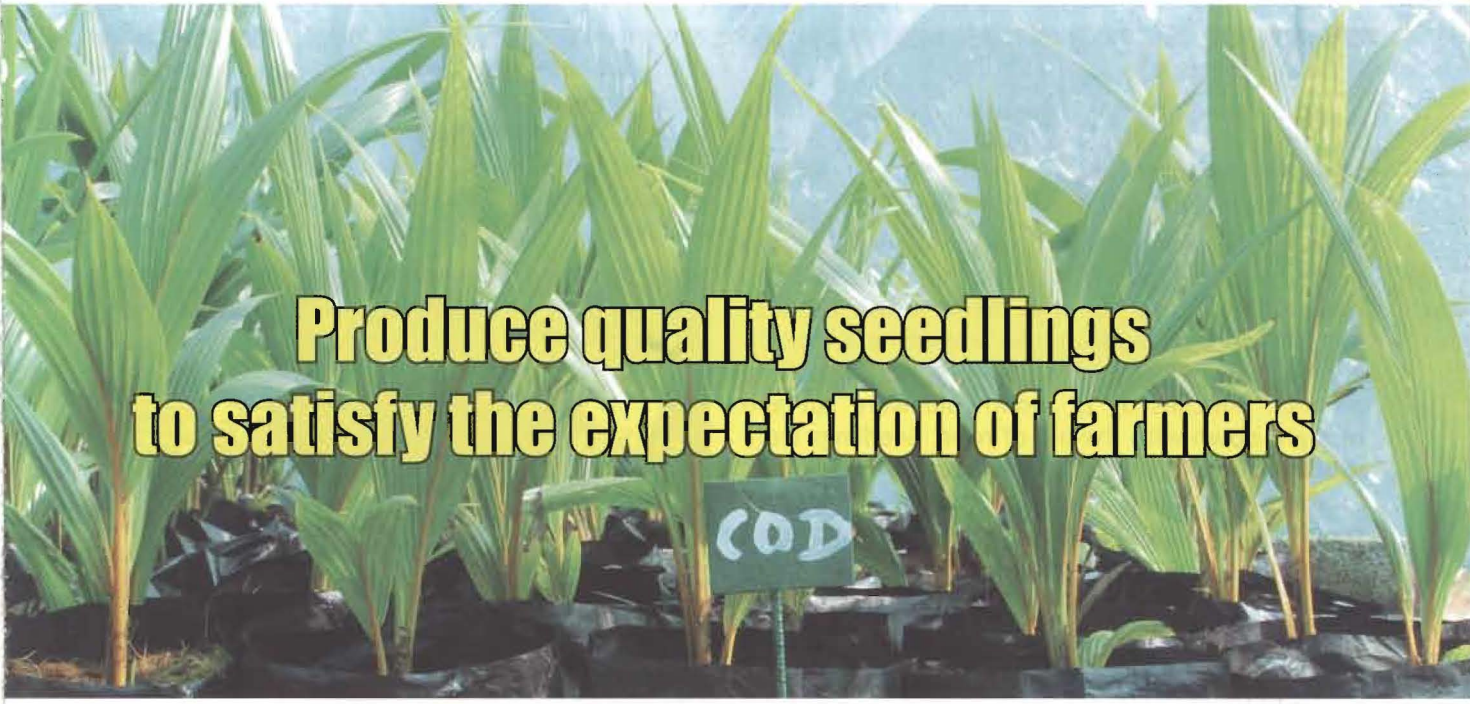


Produce quality seedlings to satisfy the expectation of farmers

Jnanadevan.R
Deputy Director, CDB, Kochi - 11

The expectation of every farmer while purchasing coconut seedlings for planting will be that it should be early bearing, high yielding, should be of short stature etc. If poor quality planting materials are used for planting, the performance of the palm will not satisfy the expectation of the farmer causing considerable loss of time and money to the farmer. In the absence of commercially viable vegetative propagation techniques, only seed propagation is possible in coconut. But planting seed nut directly in the plating pit is not recommended because it will not facilitate all the desirable qualities of a good quality seedling. The desirable qualities are controlling by the genes present in 32 chromosomes in each cell of coconut palm which is transferred from generation to generation through seeds. The quality of coconut seedlings, (i.e. the ratio of the performance of seedling in the field and the expectation of farmers) is highly correlated with mother palm characters. Selection of high yielding mother palms and practice of raising seedlings in the nursery is essential to produce good quality seedlings. It is possible to improve the quality of the planting materials through a series of selections at various levels of seedling production. For production of quality coconut planting material it is essential to have good seed gardens and quality mother palms of the desired varieties. The present scientific approach recommended is to select seed parents or mother palms in selected blocks based on yield and other

Selection of high yielding mother palms and practice of raising seedlings in the nursery is essential to produce good quality seedlings. It is possible to improve the quality of the planting materials through a series of selections at various levels of seedling production.

desirable characteristics followed by seed nut and seedling selection.

In Srilanka, it was observed that by mother palm selection alone 50% quality efficiency can be achieved and it could be raised to 90% by planting selected seedlings obtained from the palm.

In Kerala there was a custom to set apart selected palms as seed parent by traditional farmers in earlier days. Short statured palms which produce large number of big to medium sized nuts without exhibiting irregular bearing were selected as seed parents. Bunches of 12 month old were cut and brought down with the aid of rope. Seedlings were produced in every year in nursery beds maintained in home gardens. Early germinated vigorous seedlings thus produced were selected and used for under planting and new planting. This system was discontinued by young generation in the state. Mother palm selection and selection of seedlings in the nursery stage at different levels are a key factor in planting material production of coconut. Production and management of planting material in the nursery decides the performance coconut in the field.

This article provides information on some of the most important aspects of coconut nursery management and the important points to be considered while purchasing good quality seedlings.

1. Select the right location for coconut nursery

The land should be flat or with low gradient. The soil should be loose and friable with adequate drainage and irrigation facilities. Sandy and sandy loam areas with well drained soil are the best location. Prepare raised beds if water stagnation is a problem during rainy season. Nursery can be raised either in the open with artificial shade or in interspaces of coconut gardens where the trees provide shade. Under heavy shade seedlings tend to become lanky. Ensure sufficiently trained manpower to carry out nursery operations at the site.

2. Collect seed nuts from superior mother palms

Mother palm slection is a key factor in planting material production of coconut. It should be done with great care on them basis of the following procedures. Palms selected should have reached full bearing stages and have been giving consistently high yields for at least four years. Avoid very old palms of above 60 years age. Palms which produce barren nuts or those shedding large number of immature nuts should be discarded. Collect seed nuts from January to April in the West Coast region. Only fully matured nuts i.e. about 12 months old should be harvested. Nuts should not be damaged while harvesting. Discard nuts having irregular shape and size.

Select individual palms from identified garden based on desirable agronomic features as mentioned below.

Quality Standards of Tall Mother Palms
Regular bearing yielding 80-100 nuts per year
Stout Strait trunk with closely spaced leaf scars
Age- 15 to 50 years
Steady bearing palms also can be selected as mother palms irrespective of age
More than 30 fully opened leaves with short strong petioles and wide leaf base firmly attached to the stem. Leaf orientation should be in all direction . ie, umbrella shaped
Bearing at least 12 bunches of nuts with short and strong bunch stalks. Bunches of medium sized nuts in sufficient numbers.
Quality Standards of Dwarf Mother Palms
High yielding with above 60 nuts/tree/year
Age 8 to 30 years
Steady bearing palms- irrespective of age
26-28 opened leaves with short strong petioles and wide leaf base firmly attached to the stem.
Bearing at least 12 bunches of nuts with strong bunch stalks
Possess all typical characters of dwarf with regard to stem, crown, nut and inflorescence. The girth of the stem will be less compared to tall. The width of the leaflet will be considerably narrower than tall.

3. Adopt right time and method of sowing of seed nuts

The proper time for sowing nuts in the nursery will vary from tract to tract depending upon the monsoon. By sowing at the time of monsoon it will be possible to avoid heavy and frequent watering required for good germination. May- June is the best time for sowing seed nuts in the nursery in the west coast region. Seed nuts should be sown in raised beds at a spacing of 30cm between nuts in rows and 40 cm between rows. Normal size of nursery bed should be to accommodate 5 rows and the length of the bed can be as desired in order to facilitate routine activities. Each nursery beds are with a spacing of 60 cm apart.

Seed nuts are sown in the nursery either vertically or horizontally in 20-25cm deep trenches. At the time of sowing, seed nuts are to be checked and nuts in which water has dried up should be discarded. Advantage of vertical planting is that there will be less damage during transit. However, in delayed sowing when the nut water goes down considerably it is good to go for horizontal sowing for better germination. Horizontal sowing with widest of three segments of seed nuts placed upper most has been reported to give a higher percentage early and total germination and vigorous seedlings with thick collar girth. Studies conducted at Papua New Guinea reported that the rate of germination and subsequent growth of seedlings were much faster in horizontal sowing than in vertical sowing. It is advisable to have horizontal sowing when we raise nursery in small scale for home garden requirements. A sign board should be placed in front of each nursery bed providing information viz; name of variety/ cultivar, date when nuts were harvested, date when nuts were received in the nursery, date of sowing, number of seeds nuts sown, seed bed number etc.

4. Use fully matured nuts only as seed nuts

Selection of fully matured nuts is very important in coconut seedling production. Germination of seed nuts and quality of seedling produced has got a direct bearing maturity. Germination and vigor of seedlings depend very much on quantity and quality of kernel in the nut. Eleven to twelve months is the standard maturity time for selection of seed nuts. Mature nuts will produce a resonant and ringing sound on tapping which can be identified by experience Imature nuts will produce a dull sound. Under matured nuts should not be used as seed nuts as it produce low quality seedlings only.

5. Remove all non-germinated nuts from the nursery timely

All non germinated nuts should be removed at the end of six months from sowing. In a well managed nursery at least 80% of seed nuts should have been germinated by this time. Recommended standard for sprouting period is up to six months after sowing.

6. Raise seedlings in Poly bags for early flowering

Vigorous seedlings could be prepared by this method. For this germinated seed nuts are transplanted in poly bags of size 60 x 45 cm with 8-10 holes at the bottom. The potting mixture is in the 2:1:1 ratio of topsoil, sand and compost mixture. The advantage of poly bag seedlings is that there is no transplanting shock and the seedlings are with better vigor. But the disadvantage is the increased transportation and seedling cost.

7. Select only good quality seedlings from the nursery

Selection of seedlings from the nursery is an important step for ensuring high yield. Only seedlings

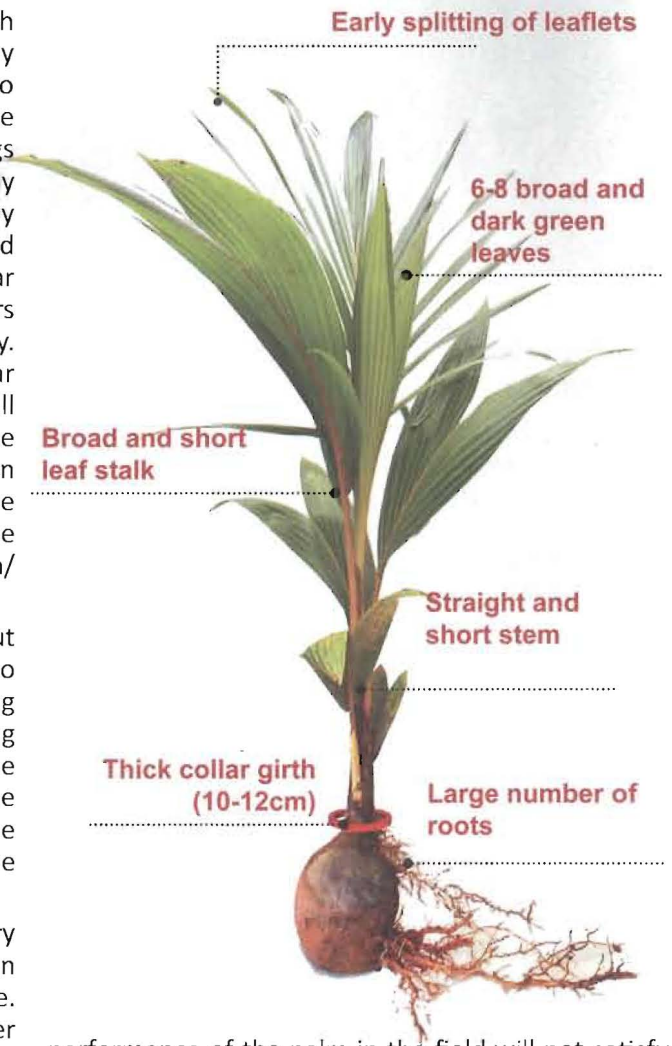
with good quality should be selected through a rigorous selection based on characteristics viz: early germination, rapid growth and seedling vigor, six to eight leaves with short and stout leaf stalk, with thick collar girth and early splitting of leaves. Early germination is an important factor to be taken in to account in the selection of good seedlings from the nursery. Early germinated nuts produce seedlings giving a faster rate of leaf production and early flowering. The vigor of the seedling is indicated by healthy leaves with early splitting, short and broad leaf stalks with good girth at collar region. The collar girth is one of most important quality parameters insisted while selecting seedlings from the nursery. This will wary from 5cm to 20cm and minimum collar girth for qulity seedlings should be 10-12 cm for Tall and 8-10 cm for dwarf. The color of the petiole of the seedling leaf can also be used as a selection criterion for dwarfs and hybrids. The dwarfs should exhibit the petiole colour of the mother palm while, the petiole colour of hybrid seedlings may range from green/ brown/intermediate shades of the parents.

There are no serious pest and diseases in coconut nurseries. However, bud rot affected seedlings are to be avoided for planting. The symptoms are yellowing and withering of the spindle leaf followed by drying and death of the seedlings. The spindle of the affected seedlings will easily come out with a gentle pull and rotting can be seen in the lower end of the detached spindle. Seedlings that do not meet the above criteria should be discarded.

The first selection of seedlings from the nursery should be made six months after sowing and all non germinated nuts should be removed at this stage. The rest of the nuts even if they germinate under favourable condition will result in poor growth. Hence it will not be at use to keep such nuts in the nursery. A second selection is done 7-8 months after sowing and all non-vigorous poor quality seedlings should be removed. In a well managed nursery the rejections should be kept @ 30-35 % (non-germinated 8-10%, late germinated 10-12 %, and low quality 12-15 %) In a well managed coconut nursery recovery of good seedlings selected, based on the above characteristics will be 60 to 65% of the total seed nuts sown. All rejected seedlings ie, 35 to 40% should be removed before sale.

There should be greater emphasis in popularizing the importance of using quality planting material in coconut production and quality parameters for selection of mother gardens, seed nuts and seedlings. If the quality seedling used for plating is poor the performance of the palm in the field will not satisfy the expectation of the farmers causing considerable loss of time and money. Hence while producing seedlings the quality parameters explained above shall be strictly followed.

Recognized Standards for Selection of Vigorous Seedlings



Procurement of seed coconut by farmers and raising seedlings by observing quality parameters fallowed in earlier days by traditional farmers of Kerala should also be promoted to meet their requirements. This will help to reduce transportation cost and ensure better availability.

There should a very strong farmer and nursery owners awareness building programme on the quality parameters for selection of mother palm and quality seedling production by professional group continuously. Put in visual, audio and print media also in the awareness programmes ■