# COMPARATIVE PERFORMANCE OF COCONUT NURSERY RAISED IN POLYBAGS AND CEMENT TANKS ON DIFFERENT MEDIA

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## ABSTRACT

A field experiment was conducted during 1994 at CPCRI, Kasaragod in open field to study the performance of WCT coconut seedlings grown in polybags and cement tanks with different media in comparison of conventional field nursery. The germination was highest in cement tank with coir dust medium (72.50%) as compared to sowing in polybag with soil (58.50%), and conventional method at 5th month (60.75%). The growth characters such as seedling height, number of leaves/seedling, and girth at collar were also superior at 9th and 12th months in cement tank with coir dust, followed by sowing in polybag with coir dust as compared to conventional nursery. Drymatter production above ground was significantly higher in polybag with coir dust (166.18g/seedling), and cement tank with coir dust (150.78 g/ seedling) compared to rest of the treatments. The number of roots/seedling was significantly higher in polybag with coir dust (16.0) compared to conventional nursery (6.75), cement tank with soil (9.25) and germination bed planting in nursery (10.0). The final recovery of vigorous seedlings was significantly higher in cement tank with coir dust (65.0%) followed by polybag with coir dust (58.75%) compared to conventional nursery (42.5%). Considering the advantage of reduced transplanting shock at field, raising coconut seedlings in polybag with coir dust may be preferred.

## INTRODUCTION

Polybag nursery in coconut was first introduced in the Ivory Coast in 1969 (Wuidart, 1981), superceding the conventional field nursery and is now popular in all major coconut growing countries except India because of certain advantages such as reduced transplanting shock at field due to the absence of root damage and ease of irrigation and fertilizer application in the bag. The better water holding capacity of the potting medium would also help to maintain required moisture for early germination. This technique does have certain drawbacks. Unless seedlings are raised in close proximity to the planting site the cost of transportation would be more. Besides, the e xtra labour for filling bags and material costs are leading to higher cost of production of seedlings. However, this higher cost would be amply compensated by way of early bearing by about 6 months to 1 year when field planted. In India, this technique in coconut is yet to be popularized. Therefore, present study was undertaken to know the performance of coconut seedlings raised in polybags

and cement tank using different medium.

## MATERIALS AND METHODS

A field experiment was conducted during 1994 at CPCRI farm, Kasargod in open space with artificial shade, to study the effect of sowing coconuts in polybags and cement tanks with differnet mediam on growth characters and recovery of vigorous seedlings in WCT nursery. The experiment comprised of six treatments (T1-Conventional, T2-Polybag (PB) with soil, T3 - Polybag with coir dust, T4-Germination bed (GB) and then planting in nursery, T5-Cement tank (CT) with soil and T6-Cement tank with coir dust) with plot size of 200 nuts/ treatment. The trial was conducted in a randomized block design with 4 replications. The seed nuts were collected during April-May and stored under shade till sowing during the first fortnight of June in the nursery. Germination count was recorded at 5th month after sowing and growth characters such as seedling height, girth and number of leaves/seedling were recorded at 9th and 12th months. Drymatter production (DMP) above ground, leaf area and number of roots/seedling were recorded at 12th month. Leaf area (LA) was estimated by recording the number of leaves (N), and product of length and width of 3rd leaf (X) by the equation $Log(Y) = 0.819-0.041 Log(N)+0.915 Log(X)$ as given by Satheesan et al. (1983).

## RESULTS AND DISCUSSION

The germination percentage at 5th month varied significantly due to different methods of sowing. Significantly higher germination was recorded in cement tank with coir dust (72.50%) followed by sowing in polybag with coir dust (64.50%) compared to sowing in polybag with soil (58.50%) and conventional nursery (Table 1).

The mean plant height recorded at 9th month varied significantly due to different methods of sowing. The highest plant height was observed in cement tank with coir dust (96.8cm) and it was significantly superior to all other treatments except cement tank with soil. The number of leaves per seedling did not differ significantly in various sowing methods, but girth at collar recorded at 9th month showed significant differences. the maximum girth of 9.7 cm was recordedin sowing in cement tank with coir dust followed by polybag with coir dust (9.4cm) and lowest girth was recorded in polybag with soil (8.3cm) and conventional method (8.6 cm) (Table 1).

**Table 1: Germination and growth characters at 9th month as influenced by sowing methods and growing media in WCT coconut nursery**

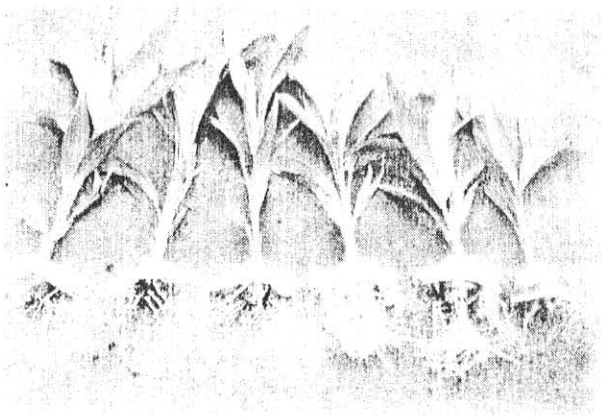
| Treatments | Germination (%) | Height (cm) | No. of leaves | Girth (cm) |
|---|---|---|---|---|
| Conventional | 60.75 | 80.80 | 3.40 | 8.60 |
| PB-Soil | 58.50 | 77.20 | 3.40 | 8.30 |
| PB-Coir dust | 64.50 | 83.90 | 3.40 | 9.40 |
| GB & planting | - | 73.10 | 3.60 | 8.90 |
| CT-Soil | 63.50 | 89.50 | 3.80 | 9.20 |
| CT-Coir dust | 72.50 | 96.80 | 3.90 | 9.70 |
| S.E/plot | 5.98 | 9.68 | 0.28 | 0.45 |
| CD at 5% | 9.22 | 12.19 | NS | 0.68 |

At 12th month, highest seedling height was recorded in cement tank with coir dust (136.88cm) and polybag with coir dust (132.8cm) compared to 119.8 cm in germination bed, and then sowing in nursery. The collar girth and number of leaves/ seedling also followed similar trend (Table 2). Leaf area/seedling was not significantly different among the treatments. However, sowing in coir dust either in cement tank or polybag recorded relatively higher leaf area as compared to rest of the treatments. Dry

matter production (above ground) was significantly higher in polybag with coir dust (166.18g/ seedling), cement tank with coir dust (150.78g/seedling) and cement tank with soil (139.25 g/seedling) compared to rest of the treatments (Table 2) . The number of roots/seedling was significantly higher in polybag with coir dust (16.0) compared to conventional method (6.75) cement tank with soil (9.25) and germination bed and sowing in nursery (10.0). However, polybag with soil and cement tank with soil were on par with sowing in cement tank with coir dust (Fig. 1). The recovery of good seedlings was significantly higher in cement tank with coir dust (65%) compared to conventional method of sowing (42.50%). Indication of better growth parameters in sowing in coir dust either in cement tank or poly bag could be attributed to better moisture retention in coir dust and consequently better root mass.

**Table 2: Growth characters and recovery of seedlings at 12th month as influenced by sowing methods and growing media in WCT coconut nursery.**

| Treatments | Height (cm) | Girth (cm) | No.of leaves | LA ($cm^2$) | DMP (g/ seedling) | No.of roots | Recovery (%) |
|---|---|---|---|---|---|---|---|
| Conventional | 128.85 | 11.61 | 4.94 | 3026.7 | 96.63 | 6.75 | 42.50 |
| PB-Soil | 127.54 | 11.56 | 5.15 | 3248.0 | 102.30 | 13.25 | 49.75 |
| PB-Coir dust | 132.84 | 12.14 | 4.90 | 3379.9 | 166.18 | 16.00 | 58.75 |
| GB & planting | 119.79 | 11.11 | 4.81 | 2850.3 | 96.70 | 10.00 | 56.18 |
| CT-Soil | 128.40 | 12.00 | 5.20 | 3289.1 | 139.25 | 9.25 | 50.50 |
| CT-Coir dust | 136.88 | 12.45 | 5.31 | 3540.9 | 150.78 | 12.00 | 65.00 |
| S.E/plot | 8.5 | 90.46 | 0.17 | 346.63 | 6.63 | 3.18 | 7.71 |
| CD at 5% | 12.94 | 0.69 | 0.26 | NS | 34.42 | 4.79 | 11.61 |



**Root mas in defferent treatments at one year age**

## CONCLUTIONS

This study indicated that sowing in coir dust either in cement tank or polybag produced seedlings with better growth characters and root mass and hence can be followed for production of vigorous seedlings in coconut. Considering the advantage of reduced transplanting shock when field planted with the polybag seedlings (Wuidart, 1981), raising seedlings in polybag with coir dust could be preferred.

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