Arecanut (Areca catechu L.) is an important commercial plantation crop of India and our country is the largest producer of arecanut, which accounts for 85% of World's output. The other countries in which it is grown are Bangladesh, Sri Lanka, Malaysia, Indonesia, Philippines and some of the Pacific Islands in smaller area. In our country the states like Karnataka, Assam and Kerala account for almost 90% of the area. The total area under arecanut cultivation in India is about 2.64 lakh hectares, producing 3.13 million tonnes of nuts annually. India exports arecanuts to UK, UAE, Canada, Maldives, Nepal, Singapore, Italy and South Africa and it exports 191.83 tonnes valued at Rs.2.05 crores. India also exports 'scented supari' in which powdered arecanut is used as a principle ingredient. These products of 883.4 tonnes valued at Rs.34.91 crores are exported to UAE, Saudi Arabia, Canada and UK (Vikas Singhal, 1999). The hard dried endosperm of ripe and unripe seed called 'nut' is chewed as a masticator and narcotic in popularity on a world basis. It may be chewed alone or as a constituent, along with leaves of Piper betel, slaked lime and chewing tobacco. Arecanut seed has the alkaloids like arecaine, arecoline, arecaidine, guvacoline, guvacine and chlonine and these compounds have pharmacological properties include actions on intestinal helminths and parasympathetic system.

Arecanut has lot of potential in our country economy and it is necessary to take much care for the increased productivity. The productivity can be improved by judicious selection of seedlings at the time of planting. Hence, production of good quality seedlings is of foremost important and it is possible through the use of quality seeds for sowing purposes. Here, the age of the mother palm plays a major role for obtaining the quality seeds. Therefore it is necessary to know the influence of the mother palm age on the seedling emergence and vigour and hence the present study was undertaken.

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Fully matured seeds of arecanut cultivar, 'Mettupalayam Local' were collected from the plants of different ages viz. 7,14,21,28,45 and 60 years old at Thondamuthur village in Coimbatore. In each age group four trees were selected. The nuts collected were individually evaluated in the Department of Seed Science and Technology, Tamil Nadu Agricultural University, Coimbatore during 1998-2001.

The germination test was conducted in sand medium with 50 seeds for each replication at 25 ± 2°C and 95 ± 2 per cent relative humidity (ISTA, 1999). At the end of 90 days, the number of normal seedlings were counted and the germination per cent was calculated. During the germination test, the number of seeds germinated was counted from the day of first emergence and continued up to 90 days. Then, the speed of germination was computed adopting the formula by Maguire (1962). From the germination test, ten normal seedlings were selected at random and the shoot length, sheath length, root length, stem girth, number of roots and seedling dry matter were recorded. The vigour index was computed using the formula proposed by Abdul-Baki and Anderson, (1973). The data collected were subjected to statistical analysis for their significance (Panse and Sukhatme, 1967).

When mother palms are to be selected from large plantations, it is advisable to select palms, which have reached the full bearing stage (Pillai, 1994). Farooqi and Sreeramu (1999) suggested that of many mother palm characters, age of first bearing and per cent nut set have been found to be correlated with yield. In the present investigation, there was no significant difference in parameters like shoot length (15.1 cm), sheath length (10.6 cm), stem girth (2.0 cm), root length (14.7 cm), number of roots (4.9), seedling dry weight (0.450) g seedling-1 and vigour index (2898) values were maximum in seeds collected from 45 years old palms (Table 1). The seeds from 60 years old palm were also showed the significant differences, and was followed by the seeds from 45 years old palm. Aiyer (1966) reported that in Mysore state, seed nuts of arecanut were taken from trees between 25 and 30 years of age for the quality seeds. Farooqi and Sreeramu (1999) were also supported the present results and they found that when mother palms are to be selected from a large coconut plantation, it is advisable to select palms that reached the full bearing age. Also in the Northern parts of Kerala, the farmers prefer old trees for the selection of areca seed nuts and the farmers in the Southern parts of Kerala, collect seed nuts from young trees. Thampan (1981) also reported that coconut seed and seedling characters to those of adult palms that sprout early are related to early bearing and high yield. According to him, the middle-aged trees performed better compared to young trees.

The better performance of middle-aged trees might be attributed to a wide-open canopy, which allows free flow of air and light interception resulting in greater carbon assimilation and abundant food reserve. Extensive roots foraging over large area and deeper layers of soil provide unimpeded supply of water and nutrients might have favoured the production of quality seeds as reported by Ponnusamy (1993). Similar result was observed in the present study that young palms produced seedlings with low vigour. In another report, Pillai (1994) has suggested that very old trees may also be avoided for seed collection and it is also evident from the present study. It concluded that the seed nuts from 45 years old palm produced the seedlings with maximum vigour.

Acknowledgement
The first author thank the Indian Society for Plantation Crops (ISPC), Central Plantation Crops Research Institute (CPCRI), Kasaragod, Kerala for financial assistance to carry out this work successfully.
Table 1. Effect of mother palm age on seed germination (%) and seedling vigour in arecanut cultivar Mettupalayam Local

<table>
<thead>
<tr>
<th>Mother palm age (years)</th>
<th>Germination (%)</th>
<th>Speed of germination (cm)</th>
<th>Shoot length (cm)</th>
<th>Sheath length (cm)</th>
<th>Stem girth (cm)</th>
<th>Root length (cm)</th>
<th>No. of roots</th>
<th>Seedling dry weight (g seedling−1)</th>
<th>Vigour index</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>95 (80.78)</td>
<td>0.17</td>
<td>9.5</td>
<td>7.6</td>
<td>1.6</td>
<td>10.9</td>
<td>5.1</td>
<td>0.301</td>
<td>1944</td>
</tr>
<tr>
<td>14</td>
<td>92 (80.39)</td>
<td>0.13</td>
<td>9.0</td>
<td>8.2</td>
<td>1.7</td>
<td>8.5</td>
<td>4.1</td>
<td>0.212</td>
<td>1582</td>
</tr>
<tr>
<td>21</td>
<td>95 (80.78)</td>
<td>0.18</td>
<td>9.9</td>
<td>8.1</td>
<td>1.8</td>
<td>13.3</td>
<td>4.0</td>
<td>0.304</td>
<td>1773</td>
</tr>
<tr>
<td>28</td>
<td>95 (80.78)</td>
<td>0.17</td>
<td>11.7</td>
<td>9.8</td>
<td>1.8</td>
<td>14.0</td>
<td>4.4</td>
<td>0.348</td>
<td>2443</td>
</tr>
<tr>
<td>45</td>
<td>97 (85.39)</td>
<td>0.20</td>
<td>15.1</td>
<td>10.6</td>
<td>2.0</td>
<td>14.7</td>
<td>4.9</td>
<td>0.450</td>
<td>2898</td>
</tr>
<tr>
<td>60</td>
<td>97 (85.39)</td>
<td>0.19</td>
<td>12.1</td>
<td>8.3</td>
<td>1.9</td>
<td>14.7</td>
<td>4.5</td>
<td>0.371</td>
<td>2514</td>
</tr>
<tr>
<td>SEd</td>
<td>0.01</td>
<td>0.69</td>
<td>0.91</td>
<td>0.06</td>
<td>1.25</td>
<td>0.22</td>
<td>0.03</td>
<td>158.8</td>
<td></td>
</tr>
<tr>
<td>CD (P=0.05)</td>
<td>0.02</td>
<td>1.45</td>
<td>1.91</td>
<td>0.12</td>
<td>2.62</td>
<td>0.47</td>
<td>0.06</td>
<td>333.6</td>
<td></td>
</tr>
</tbody>
</table>

(Values in parentheses indicate arc sine values)

References


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