

NOTES ON CULTURE

Studies on the germination of palm seeds

The Indian Botanic Garden, Calcutta, has a rich collection of palms growing all over the garden. The majority of the palm species under cultivation are of ornamental interest only, excepting few economic species such as *Cocos nucifera*, *Elaeis guineensis*, *Borassus flabellifer*, *Phoenix sylvestris* etc., which are also included in the collection. An effort has been made to study the germination of palm seeds of different species available in this garden with the idea of furnishing definite information to the palm growers who are sometimes disappointed by the long period required for the palm seeds to germinate. Seeds of about thirty species were studied covering a major portion of the palms which are growing here.

There are many workers who have worked on the germination of economic palm species particularly on the factors controlling the germination. It has also been found from the works of others that palm seeds germinate readily without applying treatment for hastening germination. However, breaking of seed coat, removal of exocarp, or scarification by dilute sulphuric acid sometimes hasten the germination in some palm seeds. The present experiment has been restricted to record the number of days actually required for germination of each species on normal conditions.

The ripe seeds were collected from the trees growing in the garden and the date of collection was recorded. After collection the fleshy pericarp portion, if any, was removed and seeds were thoroughly washed with water, air dried and cleaned. The seeds were sown in test beds constructed in a row with bricks and cement mortar at the Nursery No. 1 (Figure 1).



1. A section of a test bed in the nursery at the Indian Botanic Garden.

The germinating medium consisted of pure sand washed several times with water and completely dried in sun. The seeds were planted within twenty four hours after collection. About 100 seeds of each species were scattered smoothly over the surface, firmed into the medium and covered with an additional amount of sand to a depth of quarter to half inch. The beds were labelled and the record of sowing dates were noted. The seed beds were never allowed to dry out, nor were they allowed to become over watered. Germination was recorded as occurring on the first day a leaf shoot appeared above the surface of the germinating medium. Exact germination data was kept for all palm species for two years and are summarised in the attached table showing the species sown and the number of days taken for germination.

The medium of germination and the methods used in the present study differ slightly from the methods used by other workers. At the United States Plant Introduction Section near Miami, Florida, palm seeds were sown in seed pans or large flat lightly filled with a heat sterilized mixture of 1 part of rubbed peat moss and 3 parts of screened wood ash. Sand medium was chosen for the present study because of its low water



2. Seedlings of *Dictyosperma album* at the Indian Botanic Garden.

holding capacity and for better protection of the seeds and seedlings against fungal infestation. Results: with the exception of *Elaeis guineensis*, *Licuala spinosa*, and *Acoelorrhaphe wrightii*, which took 152, 280 and 180 days respectively for germination, the remaining 27 species may be classed under four heads on the basis of duration of germination.

(i) 18–30 days :- *Caryota urens*, *Corypha elata*, *Dictyosperma album*, *Livistona decipiens*, *Phoenix canariensis*, *Phoenix reclinata*, *Phoenix sylvestris* and *Thrinax "barbadensis."*

(ii) 31–50 days :- *Chrysalidocarpus*



3. Seedlings of *Pritchardia pacifica* (foreground) and *Licuala grandis* (background) at the Indian Botanic Garden.

lutescens, *Areca triandra*, *Howeia belmoreana*, *Livistona chinensis*, *L. rotundifolia*, *Roystonea regia*, *Ptychoraphis singaporensis*.

(iii) 51–80 days :- *Caryota mitis*, *Latania loddigesii*, *Phoenix humilis*, *P. rupicola*, *Ptychosperma macarthurii*, *P. elegans*.

(iv) 81–130 days :- *Areca catechu*, *Chrysalidocarpus madagascariensis*, *Licuala grandis*, *Sabal blackburnia*, *S. mexicana* and *Thrinax parviflora*.

Sr. no.	Species	No. of days to germinate
1.	<i>Acoelorrhaphe wrightii</i>	180
2.	<i>Areca catechu</i>	90
3.	<i>Areca triandra</i>	50
4.	<i>Caryota urens</i>	30
5.	<i>C. mitis</i>	76
6.	<i>Chrysalidocarpus lutescens</i>	38
7.	<i>C. madagascariensis</i>	84
8.	<i>Corypha elata</i>	20
9.	<i>Dictyosperma album</i>	30
10.	<i>Elaeis guineensis</i>	152
11.	<i>Howeia belmoreana</i>	40
12.	<i>Latania loddigesii</i>	54
13.	<i>Licuala grandis</i>	120
14.	<i>L. spinosa</i>	280
15.	<i>Livistona chinensis</i>	31
16.	<i>L. decipiens</i>	24
17.	<i>L. rotundifolia</i>	45
18.	<i>Phoenix canariensis</i>	18
19.	<i>P. humilis</i>	52
20.	<i>P. reclinata</i>	25
21.	<i>P. rupicola</i>	60
22.	<i>P. sylvestris</i>	20
23.	<i>Ptychosperma elegans</i>	59
24.	<i>P. macarthurii</i>	58
25.	<i>Ptychoraphis singaporensis</i>	41
26.	<i>Roystonea regia</i>	38
27.	<i>Sabal blackburnia</i>	120
28.	<i>S. mexicana</i>	120
29.	<i>Thrinax "barbadensis"</i>	21
30.	<i>T. parviflora</i>	99

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