

# Germination of Palm Seed

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One question often asked of me is: "How long does it take a palm seed to germinate?" This is one question I do not know how to answer. Is there an answer? Can you answer it?

For several years I have kept careful germination records. I now submit them to The Palm Society in hopes that they may help someone, someday, to find the answer. Here are my data:

Name of palm*	No. of days
<i>Acrocomia mexicana</i> (2)	440
<i>A. sclerocarpa</i> (3)	878
<i>Actinorrhitis Calapparia</i>	71
<i>Aiphanes acanthophylla</i> (1)	91, 43 & 95
<i>A. caryotaeifolia</i> (1)	71, 60 & 61
<i>A. erosa</i> (1)	58 & 110
<i>Allagoptera campestre</i> (1)	62 & 62
<i>Archontophoenix Cunninghamiana</i>	90
<i>A. sp.</i>	53
<i>Areca Aliciae</i>	41
<i>A. Catechu</i> (1)	55, 25 & 30
<i>A. concinna</i> (1)	42 & 61
<i>A. Langloisiana</i>	114
<i>A. sp.</i>	31
<i>A. triandra</i> (1)	33 & 41
<i>Arenga Engleri</i> (1, 4)	111, 506, 626, 283 & 83
<i>A. microcarpa</i>	261
<i>A. obtusifolia</i> (1)	374, 232 & 238
<i>A. pinnata</i>	189
<i>A. sp.</i>	181
<i>A. tremula</i>	103
<i>A. undulatifolia</i>	268
<i>A. Wightii</i>	298
<i>Arikuryroba schizophylla</i> (1)	51 & 107

<i>Astrocaryum aculeatum</i>	1044
<i>A. sp.</i>	65
<i>A. Standleyanum</i> (1)	68, 47 & 96
<i>A. vulgare</i> (1)	413 & 334
<i>Bactris Gasipaes</i>	69
<i>B. major</i>	188
<i>B. raphidacantha</i>	197
<i>B. sp.</i> (Moore # 9529)	150
<i>Bentinckia nicobarica</i> (1)	85, 82 & 74
<i>Borassus</i> sp. (1)	283, 265 & 273
<i>Brassiophoenix drymophloeoides</i>	245
<i>Butia capitata</i>	149
<i>B. capitata</i> var. <i>capitata</i>	161
<i>B. eriospatha</i> (1)	673 & 230
<i>Calamus</i> sp. (1)	107 & 408
<i>Calyptrocalyx spicatus</i>	19
<i>Carpentaria acuminata</i>	78
<i>Caryota Cummingii</i> (1)	142 & 114
<i>C. mitis</i>	149
<i>C. urens</i>	198
<i>Chamaedorea cataractarum</i>	82
<i>C. costaricana</i>	41
<i>C. elatior</i>	118
<i>C. erumpens</i> (1)	235 & 194
<i>C. glaucifolia</i>	244
<i>C. metallica</i>	197
<i>C. microspadix</i> (1)	105, 98 & 65
<i>C. monostachys</i>	148
<i>C. oblongata</i> (1)	40 & 117
<i>C. oreophila</i>	214
<i>C. Seifrizii</i> (1, 5)	138, 203, 220 & 69
<i>C. Tepejilote</i>	41
<i>Chamaerops humilis</i> var. <i>arborescens</i>	67
<i>C. humilis</i> var. <i>humilis</i>	124
<i>Chelyocarpus</i> sp. (Moore # 9548)	179
<i>Chrysalidocarpus Cabadae</i> (1)	127 & 78
<i>Clinostigma Gronophyllum</i> (1)	113 & 127
<i>Coccothrinax acuminata</i>	49
<i>C. alta</i>	63
<i>C. argentata</i>	76

\* Numbers in parens following name refer to key at end of list.

<i>C. crinita</i> (1)	187 & 164	<i>H. Schatan</i>	38
<i>C. fragrans</i> (1)	240, 241, 201 & 59	<i>H. sp. # 1</i>	70
<i>C. Martii</i>	47	<i>H. sp. # 2</i> (1, 7)	290 & 96
<i>Cocos nucifera</i> (1)	125 & 182	<i>H. sp. # 3</i>	96
<i>C. nucifera</i> var. green Malay (1)	76, 151 & 153	<i>H. sp. # 4</i>	74
<i>C. nucifera</i> var. golden Malay	184	<i>H. sp. # 5</i>	207
<i>C. nucifera</i> var. yellow Malay	88	<i>H. thebaica</i> (1)	61, 82 & 66
<i>Copernicia glabrescens</i>	32	<i>H. turbinata</i>	147
<i>C. prunifera</i> ( <i>C. cerifera</i> )	56	<i>Jessenia Bataua</i>	67
<i>C. hospita</i> (1)	60 & 122	<i>J. sp.</i> (Moore # 9454)	37
<i>C. pauciflora</i>	33	<i>Kentiopsis olivaeformis</i>	317
<i>C. sp.</i>	174	<i>Laccospadix australasica</i> (1)	71 & 53
<i>C. Yarey</i>	122	<i>Latania Loddigesii</i> (1)	57 & 64
<i>C. Yarey</i> var. <i>robusta</i>	114	<i>L. lontaroides</i>	100
<i>Corozo oleifera</i>	379	<i>Licuala elegans</i>	74
<i>Corypha Lecomtei</i>	89	<i>L. gracilis</i>	363
<i>C. umbraculifera</i> (1)	117 & 226	<i>L. grandis</i> (1)	53, 85, 80, 168 & 107
<i>Cryosophila Warscewiczii</i>	68	<i>L. Lauterbachii</i>	220
<i>Cyrtostachys Renda</i>	114	<i>L. Muelleri</i>	123
<i>Deckenia nobilis</i>	257	<i>L. peltata</i> (1)	100 & 389
<i>Desmoncus horridus</i>	161	<i>L. sp.</i>	303
<i>D. sp. # 1</i>	45	<i>L. spinosa</i> (1)	78, 334, 475 & 361
<i>D. sp. # 3</i>	84	<i>Linospadix monostachya</i> (1)	54 & 110
<i>Dictyosperma album</i> (1)	86 & 43	<i>Livistona australis</i>	122
<i>D. aureum</i>	102	<i>L. chinensis</i> (1)	62 & 32
<i>Drymophloeus Beguinii</i> (1)	45, 43 & 34	<i>L. decipiens</i>	233
<i>D. olivaeformis</i>	123	<i>L. humilis</i>	48
<i>D. sp.</i>	104	<i>L. Jenkinsiana</i>	130
<i>Elaeis guineensis</i>	288	<i>L. Muelleri</i>	130
<i>Erythea armata</i>	161	<i>L. Robinsoniana</i> (1)	129, 175 & 141
<i>E. Brandegeei</i> (1)	297 & 383	<i>L. rotundifolia</i> (1)	67, 62 & 199
<i>E. Brandegeei</i> × <i>edulis</i>	238	<i>L. sp. (Australia)</i> (1)	110
<i>E. edulis</i> (1)	78, 186 & 141	<i>Manicaria</i> sp.	80
<i>E. sp.</i>	62	<i>Mascarena lagenicaulis</i>	65
<i>Eugeissona</i> sp.	144	<i>M. Revaughanii</i>	106
<i>E. triste</i>	210	<i>M. Verschaffeltii</i> (1)	84 & 58
<i>Euterpe edulis</i> (1)	53, 77 & 41	<i>Mauritia flexuosa</i>	199
<i>Gastrococos crispa</i> ( <i>G. armentalalis</i> ) (1)	66, 107 & 132	<i>Maximiliana Martiana</i>	361
<i>Gaussia attenuata</i> (1)	25, 148 & 287	<i>Microcoelum Weddelianum</i> (1)	86 & 174
<i>Geonoma baculifera</i>	209	<i>Neodypsis Decaryi</i>	52
<i>G. congesta</i>	184	<i>Neonicholsonia Watsonii</i>	127
<i>G. longisecta</i>	278	<i>Nephrosperma Vanhoutteanum</i> (1)	69, 57, 154 & 176
<i>G. membranacea</i> (1, 6)	48 & 141	<i>Normanbya Normanbyi</i>	79
<i>Heterospathe minor</i>	63	<i>Oenocarpus panamanus</i> (1)	25 & 41
<i>H. coriacea</i> (1)	73 & 223	<i>Opsiandra Maya</i> (1)	26, 38 & 79
<i>Hyphaene crinita</i>	72	<i>Orania appendiculata</i>	206
		<i>Orbignya</i> sp.	175

<i>Phoenicophorium Borsigianum</i> (1)	21,	<i>S. minor</i> (1)	123 & 122
	42, 81, 59 & 124	<i>S. Palmetto</i>	90
<i>Phoenix canariensis</i> (1)	34 & 39	<i>S. parviflora</i> (1)	22 & 51
<i>P. dactylifera</i>	78	<i>S. peregrina</i> (1)	48 & 49
<i>P. × macrocarpa</i>	30	<i>S. texana</i> (1)	82, 70 & 169
<i>P. reclinata</i>	67	<i>S. Yapa</i> (1)	82 & 127
<i>P. Roebelenii</i>	38	<i>Salacca conferta</i>	37
<i>P. rupicola</i>	114	<i>S. sp.</i>	33
<i>P. sp. # 1</i>	12	<i>Satakentia liukiuensis</i>	70
<i>P. sp. # 2</i>	47	<i>Scheelea Leandroana</i>	151
<i>P. sp. # 3</i>	57	<i>S. phalerata</i>	466
<i>P. sylvestris</i>	36	<i>S. Preussii</i> (1, 9)	86 & 304
<i>P. zeylanica</i>	25	<i>Siphokentia Beguinii</i>	117
<i>Phytelephas macrocarpa</i> (1)	376 & 192	<i>Socratea durissima</i>	137
<i>Pinanga Kuhlii</i> (1)	45, 66 & 36	<i>S. exorrhiza</i>	112
<i>P. sp.</i>	183	<i>Strongylocaryum</i> sp. (FG 60-2580)	40
<i>P. sp. W. S. # 1</i>	43	<i>Syagrus campestris</i>	135
<i>Polyandrococos caudescens</i>	59	<i>S. quinquefaria</i>	63
<i>Prestoea montana</i>	38	<i>S. Sancona</i>	77
<i>P. sp.</i>	26	<i>S. sp.</i>	51
<i>Pritchardia Hillebrandii</i>	40	<i>Thrinax Morrisii</i> (1)	64 & 179
<i>P. pacifica</i> (1)	46, 77 & 44	<i>Trachycarpus Fortunei</i> (1)	94 & 152
<i>P. sp.</i>	46	<i>Trithrinax acanthocoma</i>	72
<i>Pseudophoenix vinifera</i>	178	<i>Veitchia arecina</i>	43
<i>Ptychandra glauca</i>	49	<i>V. Joannis</i> (1)	30 & 42
<i>Ptychococcus paradoxus</i> (1)	192 & 180	<i>V. Merrillii</i> (1)	30, 51 & 35
<i>Ptychosperma angustifolium</i>	157	<i>V. Montgomeryana</i> (1)	38, 43, 34, 42,
<i>P. hospitum</i>	61		46 & 88
<i>P. Nicolai</i>	94	<i>V. sp. (FG 57-650C)</i>	35
<i>P. sp.</i>	370	<i>V. sp. (FG 57-668F)</i>	30
<i>Raphia Hookeri</i>	73	<i>V. Winin</i> (1)	33 & 26
<i>R. sp. (8)</i>	209, 237, 243, 545 & 619	<i>Verschaffeltia splendida</i> (1)	38, 52 & 58
<i>Reinhardtia gracilis</i>	95	<i>Wallichia</i> sp. # 1	184
<i>R. gracilis</i> var. <i>gracilior</i> (1)	88 & 64	<i>W. sp. # 2</i>	230
<i>Rhapis humilis</i> (1)	125 & 106	<i>Wettinia quinaria</i>	46
<i>Rhopaloblaste elegans</i>	35	<i>Zombia antillarum</i> (1)	57 & 141
<i>Rhopalostylistis Baueri</i> (1)	47, 82 & 129	Also:	
<i>R. Cheesemanii</i>	137	<i>Unidentified Amazonian palm</i> # 1	77
<i>Rhyticocos amara</i> (1)	53 & 45	" " "# 3	44
<i>Roystonea princeps</i>	34	" " "# 10	66
<i>R. regia</i>	119		
<i>Sabal bermudana</i>	137		
<i>S. Blackburniana</i>	99		
<i>S. causiarum</i> (1)	82, 43 & 107		
<i>S. domingensis</i>	48		
<i>S. jamaicensis</i>	37		
<i>S. mexicana</i>	48		

Note: Some time ago a fellow came into the nursery and handed me a bag of palm seed and told me he had just come from the Amazon the day before. The seeds were all mixed up and I could see 11 different species. He didn't know anything about palms.

## KEY

- (1) more than one planting.
- (2) *Acrocomia mexicana* 440 days total; after removing from the hard shell, 138 days.
- (3) *Acrocomia sclerocarpa* 878 days; after removing from the hard shell, 373 days.
- (4) *Arenga Engleri* (111, 506, 626) all from the same planting and the same inflorescence.
- (5) *Chamaedorea Seifrizii* (203, 220) divided seed in half, planted  $\frac{1}{2}$  in muck and  $\frac{1}{2}$  in Perlite.\* 203 in muck and 220 days in Perlite.
- (6) *Geonoma membranacea* 48 days fresh seed, 141 dried seed.
- (7) *Hyphaene* sp. (290, 96) both plantings were fresh seed from the same tree.
- (8) *Raphia* sp. old seed, all planted together at the same time.
- (9) *Scheelea Preussii* (86, 304) all from the same planting; 2 seeds germinated at 86 days, no more until 304 days.

One must recognize that there are many variables which can affect germination: temperature, type of planting medium, humidity, and probably most of all, freshness of the seed. We know that palm seed should be planted as soon as possible after maturity.

In southern Florida we have found that seed appears to germinate more rapidly and in greater numbers if planted in Perlite. Some of the tougher seed such as *Borassus*, *Cocos nucifera*,

\* Perlite is a trade name for a volcanic rock expanded by heating, then ground into tiny white "pearls." Very light and porous, it aids in aeration while retaining some moisture. It may be used alone, mixed with peat moss or soil. Since it contains no nutrients, plantlets should be placed in good soil at an early stage of growth.

*Hyphaene*, and *Veitchia* will germinate in soil without much difficulty.

There is much variability in palm seed from the same inflorescence, as noted in *Arenga Engleri*. Is there any reason why there should be a difference of 515 days in the germination of seed from the same inflorescence?\*\* These seeds were fully mature and all planted together at the same time.

A group of *Copernicia macroglossa* seed with pericarp removed germinated and the leaves were in long curls. Seed of the same species without the thin paper shell on them had straight leaves as in *Sabal*. Why would the thin shell make a difference such as this?

*Scheelea Leandroana* germinated with much confusion. Of the 157 seeds planted 22 seeds germinated double, 8 germinated triple, and 1 quadruple. Multiple germination has been noted here, but nothing compared to this.

It is my hope that some of the many so far unanswered questions may be resolved by members of The Palm Society pooling their information on germination.

\*\* August Braun suggests a reason in *Principes* 12: 54, 1968: "A most peculiar phenomenon and one typical for the palm family is the delayed germination of the seed at certain intervals. Early-germinating seeds, usually few in numbers, are followed at intervals by more groups of germinating seeds. Frequently, but depending on the species, the second batch represents the majority of seedlings. Delayed germination continues, but in reduced numbers. Often the last seedlings appear when the first seedlings have developed into strong young plants. There is an obvious benefit to the plant in delayed germination, especially in the natural habitat. Losses caused by climatic influences or herbivorous animals thus may be replaced by late-germinating seeds." Even assuming this to be a correct analysis, however, the mechanisms controlling the phenomenon seem not yet to be understood. ED.