

Molecular variability and population structure of a core collection of date palm (*Phoenix dactylifera* L.) cultivars from Australia and the Middle East

Ahmed Al-Najm, Shuming Luo, Nabil M. Ahmad^{*}, Mohammad Pourkheirandish, Richard Trethowan

Supplementary Table 1. Eighty two date palm (*Phoenix dactylifera*) accessions collected from Australia, Iraq and Jordan.

Accession	Cultivar name	Male/Female	Species	Collection Site	Propagation ^{**}
1	Ahmar Talal	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
2	Barhee	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
3	Bofakoos	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
4	Breem	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
5	Deglet noor	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
6	Hayani	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
7	Khadrawi	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
8	Khalas	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
9	Medjool	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
10	Zaghloul	Female	<i>P. dactylifera</i>	Deir Alla, Jordan	OS
11	Abdooly	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
12	Ashrasi	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
13	Barben	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
14	Barhee	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
15	Breem	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
16	Kastawi	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
17	Khadrawi	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
18	Maktoom	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS

19	Ostaomran	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
20	Shwithi	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
21	Tabrzal	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
22	Zahdi	Female	<i>P. dactylifera</i>	Diyala, Iraq	OS
23	<i>P. canariensis</i>	Female	<i>P. canariensis</i>	NSW, Australia	S
24	<i>P. roebelenii</i>	Female	<i>P. roebelenii</i>	NSW, Australia	S
25	<i>P. reclinata</i>	Female	<i>P. reclinata</i>	NSW, RBGS, Australia	S
26	<i>P. theophrasti</i> (A)	Female	<i>P. theophrasti</i>	NSW, RBGS, Australia	S
27	<i>P. theophrasti</i> (B)	Female	<i>P. theophrasti</i>	NSW, RBGS, Australia	S
28	BG 3	Male	<i>P. dactylifera</i>	NSW, RBGS, Australia	S
29	10-1	Male	<i>P. dactylifera</i>	NT, Australia	S
30	10-46	Male	<i>P. dactylifera</i>	NT, Australia	S
31	12-12	Male	<i>P. dactylifera</i>	NT, Australia	S
32	12-7	Male	<i>P. dactylifera</i>	NT, Australia	S
33	15-28	Male	<i>P. dactylifera</i>	NT, Australia	S
34	15-35	Male	<i>P. dactylifera</i>	NT, Australia	S
35	15-41	Male	<i>P. dactylifera</i>	NT, Australia	S
36	15-42	Male	<i>P. dactylifera</i>	NT, Australia	S
37	16-23	Male	<i>P. dactylifera</i>	NT, Australia	S
38	16-27	Male	<i>P. dactylifera</i>	NT, Australia	S
39	16-B	Male	<i>P. dactylifera</i>	NT, Australia	S
40	16-C	Male	<i>P. dactylifera</i>	NT, Australia	S
41	16-D	Male	<i>P. dactylifera</i>	NT, Australia	S
42	17-10	Male	<i>P. dactylifera</i>	NT, Australia	S
43	17-15	Male	<i>P. dactylifera</i>	NT, Australia	S
44	17-35	Male	<i>P. dactylifera</i>	NT, Australia	S
45	17-4	Male	<i>P. dactylifera</i>	NT, Australia	S
46	18-2	Male	<i>P. dactylifera</i>	NT, Australia	S
47	18-4	Male	<i>P. dactylifera</i>	NT, Australia	S
48	18-7	Male	<i>P. dactylifera</i>	NT, Australia	S

49	2-3	Male	<i>P. dactylifera</i>	NT, Australia	S
50	2-5	Male	<i>P. dactylifera</i>	NT, Australia	S
51	6-5	Male	<i>P. dactylifera</i>	NT, Australia	S
52	9-20	Male	<i>P. dactylifera</i>	NT, Australia	S
53	A-male	Male	<i>P. dactylifera</i>	NT, Australia	S
54	B.f	Female	<i>P. dactylifera</i>	NT, Australia	S
55	B.s	Female	<i>P. dactylifera</i>	NT, Australia	S
56	Baskary	Female	<i>P. dactylifera</i>	NT, Australia	OS
57	Basturami	Female	<i>P. dactylifera</i>	NT, Australia	OS
58	Deglet noor	Female	<i>P. dactylifera</i>	NT, Australia	OS
59	Halawi	Female	<i>P. dactylifera</i>	NT, Australia	OS
60	Hayani	Female	<i>P. dactylifera</i>	NT, Australia	OS
61	Khalas oman	Female	<i>P. dactylifera</i>	NT, Australia	OS
62	Thoree	Female	<i>P. dactylifera</i>	NT, Australia	OS
63	Zahdi	Female	<i>P. dactylifera</i>	NT, Australia	OS
64	AD1	Female	<i>P. dactylifera</i>	SA, Australia	TC
65	AD2	Female	<i>P. dactylifera</i>	SA, Australia	OS
66	AD3	Female	<i>P. dactylifera</i>	SA, Australia	TC
67	ADS	Female	<i>P. dactylifera</i>	SA, Australia	S
68	Barhee	Female	<i>P. dactylifera</i>	SA, Australia	TC
69	Dayri	Female	<i>P. dactylifera</i>	SA, Australia	TC
70	Fard Female	Female	<i>P. dactylifera</i>	SA, Australia	TC
71	Fard Male	Male	<i>P. dactylifera</i>	SA, Australia	TC
72	Ghanami	Male	<i>P. dactylifera</i>	SA, Australia	TC
73	Iraqi variety	Female	<i>P. dactylifera</i>	SA, Australia	TC
74	Jarvis	Male	<i>P. dactylifera</i>	SA, Australia	TC
75	Khadrawi	Female	<i>P. dactylifera</i>	SA, Australia	TC
76	Khalas	Female	<i>P. dactylifera</i>	SA, Australia	TC
77	Kha-5	Male	<i>P. dactylifera</i>	SA, Australia	S
78	Lulu	Female	<i>P. dactylifera</i>	SA, Australia	TC

79	Medjool	Female	<i>P. dactylifera</i>	SA, Australia	TC
80	Nemeishi	Female	<i>P. dactylifera</i>	SA, Australia	TC
81	Sagai	Female	<i>P. dactylifera</i>	SA, Australia	TC
82	Sultana	Female	<i>P. dactylifera</i>	SA, Australia	TC

NSW, New South Wales; NT, Northern Territory; RBGS, Royal Botanical Garden, Sydney; SA: South Australia.

* Accessions 29-53 are male palm trees originated from seeds and have been given codes according to their location within the orchard.

** OS, Vegetative propagation by offshoots; TC, Vegetative propagation by tissue culture; S, Sexual propagation.

*** Accession 65 coded AD2 is originated from Medjool offshoot.

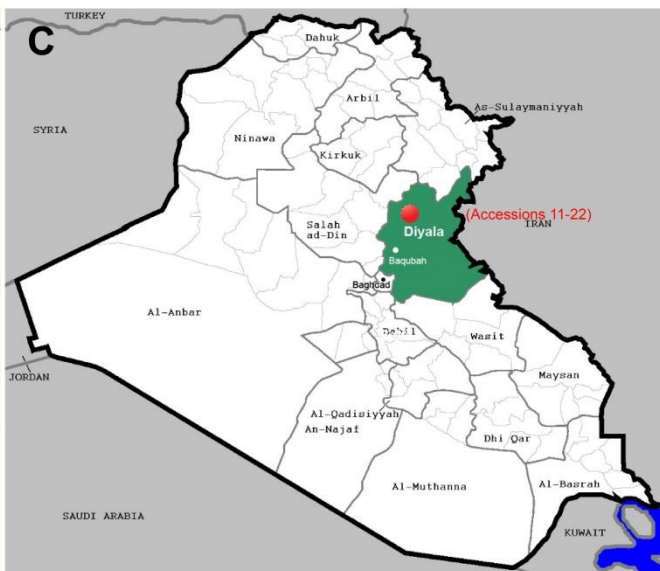
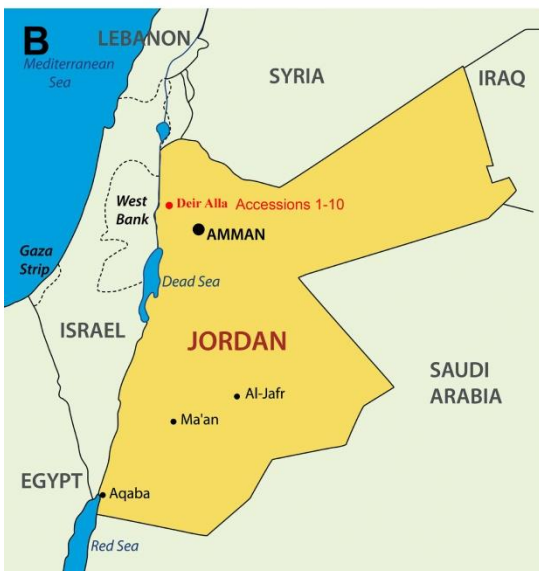
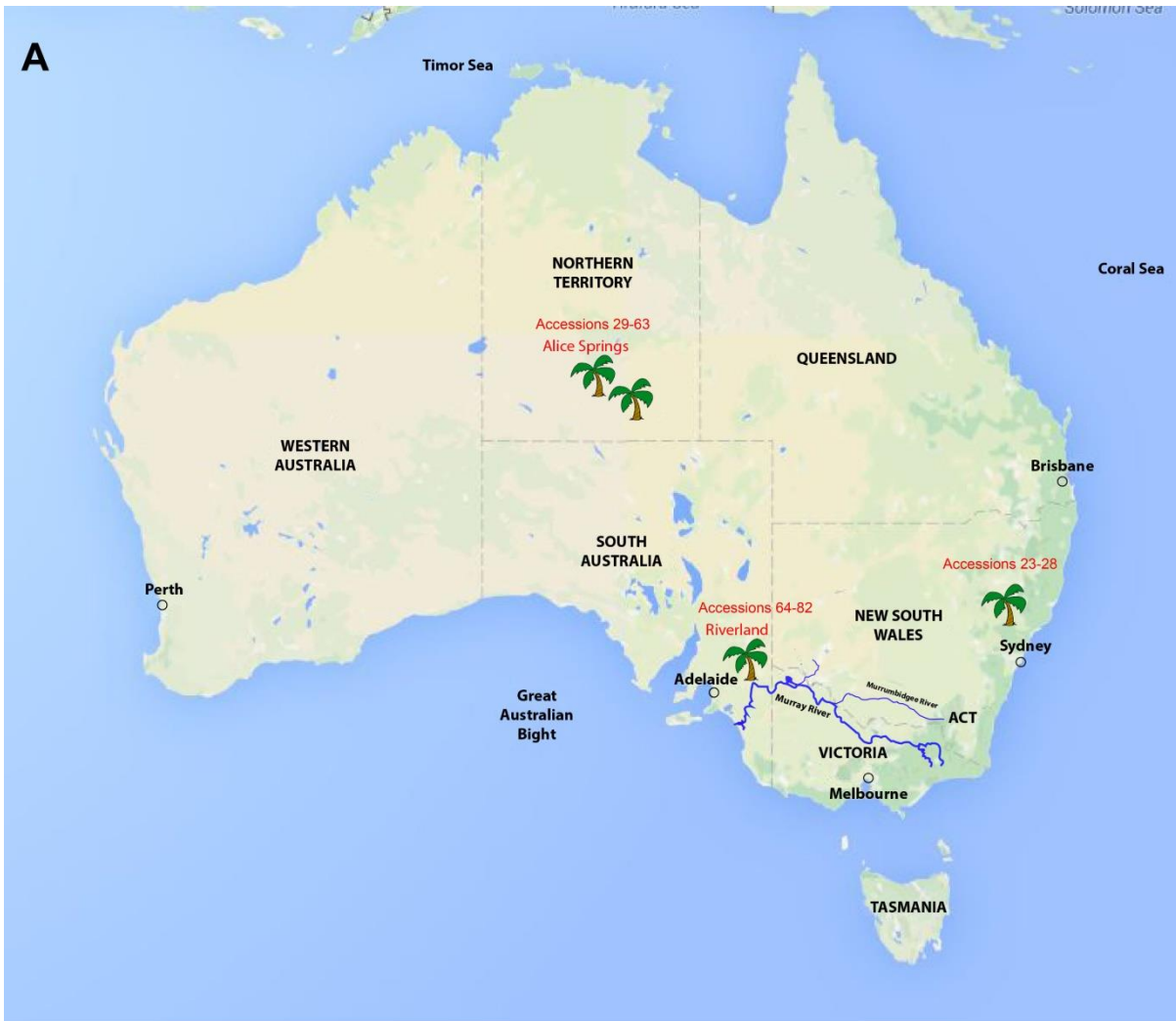
**** Accession 67 coded ADS is an outstanding plant originated from seed.

Supplementary Table 2. Seventeen SSR primers used in the detection of polymorphism among 82 date palm (*Phoenix dactylifera*) accessions.

SSR primer	Forward primer (5'-3')	Reverse primer (3'-5')	Ta°C	Alleles*	PIC ¹
mPdCIR015	AGCTGGCTCCTCCCTTCTTA	GCTCGGTTGGACTTGTGTCT	58°C	16	0.6770
mPdCIR016	AGCGGAAATGAAAAGGTAT	ATGAAAACGTGCCAAATGTC	58°C	17	0.6270
mPdCIR025	GCACGAGAAGGCTTATAGT	CCCCTCATTAGGATTCTAC	52°C	17	0.7109
mPdCIR032	CAATCTTTGCCGTGAG	GGTGTGGAGTAATCATGTAGTAG	53°C	18	0.5996
mPdCIR035	ACAAACGGCGATGGGATTAC	CCGCAGCTCACCTCTTCTAT	60°C	13	0.5544
mPdCIR048	CGAGACCTACCTTCAACAAA	CCACCAACCAAATCAAACAC	56°C	27	0.7651
mPdCIR050	CTGCCATTTCTTCTGAC	CACCATGCACAAAAATG	50°C	25	0.7761
mPdCIR063	CTTTTATGTGGTCTGAGAGA	TCTCTGATCTTGGGTTCTGT	51°C	20	0.8085
mPdCIR070	CAAGACCCAAGGCTAAC	GGAGGTGGTTTGTAGTAT	52°C	8	0.4771
mPdCIR078	TGGATTTCCATTGTGAG	CCCGAAGAGACGCTATT	51°C	24	0.7632
mPdCIR085	GAGAGAGGGTGGTGTTATT	TTCATCCAGAACCACAGTA	52°C	20	0.7336
mPdCIR090	GCAGTCAGTCCCTCATA	TGCTTGTAGCCCTTCAG	51°C	14	0.7073
mPdCIR093	CCATTTATCATTCCTCTCTTG	CTTGGTAGCTGCGTTCTTG	59°C	16	0.5556
PDCAT1	CTGAAATCTCTGTCAAATCCA	GTTTGATCTATTTGTGAGTATTTTCTTT	57°C	31	0.6845
PDCAT2	GGCCTTCTCTCCCTAATGGGA	GTTTCTTGCCCTGTTCTTCCCTC	65°C	20	0.6018
PDCAT3	CAAGGATAGGTGTGATGACCACC	GTTTGTCTTTAACTTCTTGCTGGAATT	63°C	5	0.5293
PDCAT4	TAACGAGTCCACACAC	CTGGGTAAAGCTTATAAG	45°C	22	0.8199
Mean				18.4	0.670

All forward primers were 5'-tailed with the 19 base pair M13 sequence (CACGACGTTGTAAAACGAC).

* Number of consistent alleles in two or three repeated experiments ¹PIC value is calculated as $PIC = 1 - \sum p_i^2$



Supplementary Fig 1. Maps of Australia, Iraq and Jordan showing collection sites of date palm and accession numbers for each site. Collection sites on the Australian map are represented by palm tree symbols and all areas have been labeled with the accession numbers of the collected genotypes.