

Table S1. List of test accessions by country of origin, accession code (AC), and subspecies.

SN ¹	Origin	AC	Subspecies				
1	Albania	116052	small	62	Libya	111910	small
2	Albania	116053	small	63	Libya	111911	large
3	Albania	116054	small	64	Libya	111909	small
4	Algeria	106398	large	65	Morocco	112112	large
5	Algeria	106399	large	66	Morocco	112114	large
6	Algeria	106401	large	67	Morocco	112115	large
7	Algeria	106402	large	68	Morocco	112118	large
8	Algeria	106404	large	69	Morocco	112120	large
9	Algeria	106405	large	70	Morocco	112164	large
10	Algeria	106360	small	71	Morocco	112113	small
11	Algeria	106365	small	72	Morocco	112116	small
12	Algeria	106403	small	73	Morocco	112117	small
13	Algeria	107516	small	74	Morocco	112163	small
14	Cyprus	112366	large	75	Spain	107186	large
15	Cyprus	112367	large	76	Spain	107187	large
16	Cyprus	112369	large	77	Spain	107188	large
17	Cyprus	112377	large	78	Spain	107189	large
18	Cyprus	112379	large	79	Spain	109690	small
19	Cyprus	112380	large	80	Spain	109691	small
20	Cyprus	112370	small	81	Tunisia	106673	large
21	Cyprus	112374	small	82	Tunisia	106676	large
22	Cyprus	112375	small	83	Tunisia	106688	large
23	Cyprus	112382	small	84	Tunisia	106699	large
24	Egypt	110830	small	85	Tunisia	106754	large
25	Egypt	110832	small	86	Tunisia	106763	large
26	Egypt	110833	small	87	Tunisia	106679	small
27	Egypt	110834	small	88	Tunisia	106682	small
28	Egypt	110835	small	89	Tunisia	106692	small
29	Egypt	111660	small	90	Tunisia	106729	small
30	Egypt	111662	small	01	Tunisia	106743	small
31	Egypt	111664	small	92	Tunisia	106746	small
32	Egypt	111819	small	93	Tunisia	106748	small
33	Egypt	111820	small	94	Iran	106286	small
34	Greece	107574	large	95	Iran	106287	small
35	Greece	107565	small	96	Nepal	109605	small
36	Greece	107585	small	97	Nepal	109606	small
37	Greece	110336	small	98	Pakistan	107385	small
38	Italy	103215	large	99	Pakistan	107386	small
39	Italy	106892	large	100	Pakistan	107390	small
40	Italy	106899	large	101	Pakistan	107396	small
41	Italy	110287	large	102	Pakistan	107400	small
42	Italy	110288	large	103	Pakistan	107409	small
43	Italy	110438	large	104	Pakistan	107410	small
44	Italy	110918	large	105	Pakistan	107420	small
45	Italy	111863	large	106	Pakistan	107424	small
46	Italy	103653	small	107	Pakistan	107425	small
47	Italy	106665	small	108	Ethiopia	103504	small
48	Italy	110290	small	109	Ethiopia	106309	small
49	Italy	111106	small	110	Ethiopia	106312	small
50	Italy	111849	small	111	Ethiopia	106315	small
51	Italy	111854	small	112	Ethiopia	106321	small
52	Italy	112253	small	113	Ethiopia	106322	small
53	Italy	113060	small	114	Ethiopia	106325	small
54	Italy	115108	small	115	Ethiopia	106353	small
55	Italy	115109	small	116	Ethiopia	103593	small
56	Italy	115496	small	117	South Africa	115437	small
57	Italy	115963	small	118	ICARDA	7535	small
58	Italy	116218	small	119	ICARDA	7202	small
59	Italy	116219	small	120	USA	Eston	small
60	Italy	116221	small	121	Canada	Laird	large
61	Italy	116222	small				

¹ SN = sequence number.

Table S2a. Bio agronomic and quality characteristics of genotypes sampled by country of origin and by year (average values).

Origin	NP (no m ⁻²)			GY (t ha ⁻¹)			BY (t ha ⁻¹)			DASF (dd)			DASM (dd)			PH (cm)		
	Year			Year			Year			Year			Year			Year		
	1	2	Mean	1	2	Mean	1	2	Mean	1	2	Mean	1	2	Mean	1	2	Mean
Albania	183	180	182	2.03	1.74	1.89	6.72	6.43	6.58	130	129	129	184	178	181	41.3	40.7	41.0
Algeria	189	186	188	2.57	2.32	2.44	7.34	7.13	7.23	118	116	117	173	175	174	45.5	45.6	45.5
Cyprus	184	189	187	2.65	2.40	2.53	7.09	6.93	7.01	116	111	113	174	175	174	43.4	43.6	43.5
Egypt	195	192	194	2.61	2.78	2.69	7.00	6.66	6.83	115	111	113	167	174	171	44.1	41.1	42.6
Ethiopia	191	190	190	2.15	2.26	2.20	5.74	5.26	5.50	109	105	107	163	172	168	38.4	35.6	37.0
Greece	185	188	187	2.16	2.24	2.20	7.12	7.11	7.12	121	119	120	177	177	177	47.6	46.2	46.9
Iran	186	190	188	2.72	2.27	2.49	6.71	6.51	6.61	116	118	117	170	175	173	40.8	40.5	40.6
Italy	188	182	185	1.98	2.00	1.99	7.30	6.83	7.06	123	121	122	179	179	179	46.9	45.4	46.1
Libya	189	184	186	2.10	2.07	2.08	6.93	6.57	6.75	118	115	116	175	179	177	43.5	39.9	41.7
Morocco	188	187	187	2.27	2.26	2.27	7.30	6.91	7.10	117	117	117	178	179	178	46.9	47.5	47.2
Nepal	188	191	189	2.72	2.39	2.56	5.10	4.82	4.96	113	111	112	168	175	171	31.0	30.4	30.7
Pakistan	184	188	186	2.45	2.05	2.25	5.99	5.79	5.89	122	119	120	171	175	173	37.7	34.8	36.2
Spain	183	181	182	1.97	1.81	1.89	7.40	6.95	7.18	124	121	122	181	180	180	46.8	45.2	46.0
South Africa	177	186	181	1.53	1.67	1.60	5.37	5.19	5.28	124	125	125	177	183	180	35.5	31.0	33.3
Tunisia	188	189	188	2.42	2.31	2.36	7.02	6.67	6.85	118	116	117	174	178	176	44.2	43.5	43.8
ICARDA	194	196	195	3.02	2.93	2.97	6.89	6.18	6.54	114	110	112	174	177	175	42.0	39.2	40.6
Varieties	190	186	188	2.03	1.70	1.86	7.18	6.87	7.03	129	125	127	186	183	184	49.0	53.0	51.0
Mean	188	187	187	2.31	2.22	2.26	6.91	6.57	6.74	119	116	118	174	177	176	43.9	42.6	43.2

Abbreviations: NP = plant density; GY = grain yield; BY = biological yield; DASF = flowering, days after sowing; DASM = maturity, days after sowing; PH = plant height.

Table S2b. Bio agronomic and quality characteristics of genotypes sampled by country of origin and by year (average values).

Origin	FPH (cm)			PP (no)			SP (no)			GYP (g d.m.)			TSW (g)			GP (% d.m.)		
	Year			Year			Year			Year			Year			Year		
	1	2	Mean	1	2	Mean	1	2	Mean	1	2	Mean	1	2	Mean	1	2	Mean
Albania	27.2	29.1	28.2	42.5	39.5	41.0	1.24	1.22	1.23	1.10	1.01	1.05	23.7	24.7	24.2	29.8	30.0	29.9
Algeria	29.9	33.6	31.8	32.7	30.4	31.6	1.32	1.30	1.31	1.37	1.25	1.31	47.0	45.7	46.4	27.5	27.7	27.6
Cyprus	28.5	28.0	28.2	29.9	27.8	28.9	1.14	1.12	1.13	1.26	1.15	1.20	49.8	47.1	48.4	28.2	28.4	28.3
Egypt	29.0	25.2	27.1	45.5	42.3	43.9	1.37	1.35	1.36	1.17	1.07	1.12	26.3	24.1	25.2	28.5	28.7	28.6
Ethiopia	25.3	24.0	24.6	27.4	24.5	25.9	0.97	1.00	0.99	0.70	0.59	0.64	31.4	27.8	29.6	26.4	26.7	26.6
Greece	31.3	31.7	31.5	29.0	27.0	28.0	1.17	1.15	1.16	0.97	0.88	0.92	34.9	34.2	34.5	27.6	27.8	27.7
Iran	26.8	23.0	24.9	38.9	36.2	37.5	1.34	1.32	1.33	1.48	1.36	1.42	33.2	31.3	32.2	27.3	27.5	27.4
Italy	30.8	31.2	31.0	25.4	23.6	24.5	1.15	1.13	1.14	0.86	0.78	0.82	39.2	39.3	39.3	28.0	28.2	28.1
Libya	28.6	26.0	27.3	24.1	22.4	23.3	1.16	1.14	1.15	1.00	0.92	0.96	41.2	39.4	40.3	28.6	28.8	28.7
Morocco	30.8	33.7	32.3	26.3	24.5	25.4	1.17	1.15	1.16	1.02	0.93	0.98	42.8	41.4	42.1	27.4	27.6	27.5
Nepal	20.4	20.6	20.5	38.9	36.1	37.5	1.70	1.68	1.69	1.37	1.26	1.31	22.4	19.8	21.1	26.0	26.2	26.1
Pakistan	24.8	22.7	23.7	40.7	37.9	39.3	1.49	1.47	1.48	1.16	1.07	1.11	21.9	21.1	21.5	27.3	27.5	27.4
Spain	30.8	31.9	31.3	26.6	24.7	25.7	1.02	1.00	1.01	0.97	0.89	0.93	48.8	49.4	49.1	26.9	27.1	27.0
South Africa	23.4	23.8	23.6	25.8	30.9	28.4	1.45	1.06	1.25	0.55	0.54	0.54	19.1	20.5	19.8	28.1	29.1	28.6
Tunisia	29.1	28.4	28.7	35.8	33.3	34.5	1.35	1.33	1.34	1.19	1.09	1.14	38.5	37.4	38.0	27.5	27.9	27.7
ICARDA	27.6	23.4	25.5	34.1	31.2	32.6	1.21	1.08	1.14	1.54	1.20	1.37	39.7	38.5	39.1	29.8	30.3	30.1
Varieties	32.2	31.1	31.7	31.9	32.5	32.2	1.00	1.06	1.03	1.10	1.20	1.06	47.9	48.7	48.3	29.3	28.5	28.9

Mean	28.9	28.8	28.7	31.9	29.7	30.8	1.23	1.21	1.22	1.07	0.98	1.02	37.5	36.3	36.9	27.7	27.9	27.8
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Abbreviations: FPH = First pod height ; PP = pods per plant; SP = seeds per pod; GYP = grain yield per plant; TSW = thousand seed weight; GP = grain protein content.

Table S3a. Bio agronomic and quality characteristics of genotypes sampled by country of origin, by year, and subspecies *microsperma* (S) and *macrosperma* (L) (average values).

Origin	NP (no m ⁻²)						GY (t ha ⁻¹)						BY (t ha ⁻¹)						DASF (dd)					
	Year / subspecies			Mean			Year / subspecies			Mean			Year / subspecies			Mean			Year / subspecies			Mean		
	1		2		Mean		1		2		Mean		1		2		Mean		1		2		Mean	
	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L
Albania	183		180		181		2.03		1.74		1.89		6.72		6.93		6.83		130		129		129	
Algeria	195	185	191	183	192	184	2.76	2.44	2.69	2.08	2.72	2.26	7.11	7.49	6.91	8.11	7.01	7.80	117	119	115	116	116	118
Cyprus	186	183	193	186	189	184	2.97	2.43	2.60	2.28	2.78	2.35	7.15	7.05	7.64	7.30	7.39	7.17	115	117	111	111	113	114
Egypt	195		192		193		2.61		2.78		2.69		7.00		7.16		7.08		115		111		113	
\Ethiopia	191		190		190		2.15		2.26		2.20		5.74		5.76		5.75		109		105		107	
Greece	186	181	188	188	187	184	2.22	2.00	2.32	2.00	2.27	2.00	7.31	6.56	7.96	6.55	7.64	6.55	122	118	120	117	121	117
Iran	186		190		187		2.72		2.27		2.49		6.71		7.01		6.86		116		118		117	
Italy	192	181	184	177	187	178	2.08	1.77	2.09	1.82	2.08	1.80	7.42	7.06	7.42	7.15	7.42	7.11	123	123	121	120	122	122
Libya	192	182	187	178	189	180	2.37	1.56	2.29	1.62	2.33	1.59	6.84	7.10	7.19	6.82	7.01	6.96	115	123	113	120	114	121
Morocco	194	184	189	185	191	184	2.41	2.18	2.29	2.24	2.35	2.21	7.35	7.26	7.58	7.30	7.47	7.28	117	118	117	117	117	117
Nepal	188		191		189		2.72		2.39		2.56		5.10		5.32		5.21		113		111		112	
Pakistan	184		188		186		2.45		2.05		2.25		5.99		6.29		6.14		122		119		120	
Spain	188	181	191	177	189	179	2.28	1.81	1.85	1.79	2.07	1.80	7.24	7.48	7.42	7.47	7.33	7.48	129	122	120	121	124	122
South Africa	177		186		181		1.53		1.67		1.60		5.37		5.69		5.53		124		125		125	
Tunisia	190	185	196	181	192	183	2.95	1.80	2.65	1.91	2.80	1.85	6.89	7.19	7.14	7.21	7.01	7.20	115	121	113	119	114	120
ICARDA	194		196		195		3.01		2.93		2.97		6.88		6.68		6.78		114		110		112	
Varieties	194	187	182	189	188	187	1.95	2.11	1.62	1.77	1.79	1.94	6.31	8.06	6.17	8.58	6.24	8.32	127	130	123	127	125	128
Mean	190	183	189	182	189	182	2.42	2.01	2.26	1.95	2.34	1.98	6.76	7.23	6.92	7.40	6.84	7.31	118	120	115	118	117	119

Abbreviations: NP = plant density; GY = grain yield; BY = biological yield; DASF = flowering, days after sowing.

Table S3b. Bio agronomic and quality characteristics of genotypes sampled by country of origin, by year, and subspecies *microsperma* (S) and *macrosperma* (L) (average values).

Origin	DASM (dd)						PH (cm)						FPH (cm)						PP (no)					
	Year / subspecies			Mean			Year / subspecies			Mean			Year / subspecies			Mean			Year / subspecies			Mean		
	1		2		Mean		1		2		Mean		1		2		Mean		1		2		Mean	
	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L
Albania	184		178		181		41.3		40.7		41.0		27.2		29.1		28.2		42.5		39.5		41.0	
Algeria	171	174	176	174	174	174	42.0	47.8	42.1	48.0	42.1	47.9	27.6	31.4	28.6	36.9	28.1	34.2	42.6	26.2	39.6	24.3	41.1	25.2
Cyprus	173	174	175	175	174	175	42.8	43.8	41.9	44.7	42.3	44.2	28.1	28.8	26.7	28.8	27.4	28.8	33.0	27.9	30.7	26.0	31.8	26.9
Egypt	167		174		171		44.1		41.1		42.6		29.0		25.2		27.1		45.5		42.3		43.9	
Ethiopia	163		172		168		38.4		35.6		37.0		25.3		24.0		24.6		27.4		24.5		25.9	
Greece	177	177	178	176	177	176	48.3	45.5	47.5	42.3	47.9	43.9	31.8	29.9	32.4	29.6	32.1	29.8	24.6	42.2	22.8	39.3	23.7	40.8
Iran	170		175		173		40.8		40.5		40.6		26.8		23.0		24.9		38.9		36.2		37.5	
Italy	179	181	180	176	179	179	46.8	47.0	45.3	45.6	46.0	46.3	30.8	30.9	31.0	31.6	30.9	31.3	28.8	18.7	26.7	17.4	27.8	18.0
Libya	171	183	177	183	174	183	43.5	43.5	38.8	42.3	41.1	42.9	28.6	28.6	26.1	25.9	27.3	27.3	24.6	23.1	22.9	21.5	23.8	22.3
Morocco	176	179	179	179	177	179	46.6	47.0	48.2	47.0	47.4	47.0	30.7	30.9	34.9	32.9	32.8	31.9	30.2	23.7	28.1	22.1	29.2	22.9
Nepal	168		175		171		31.0		30.4		30.7		20.4		20.6		20.5		38.9		36.1		37.5	

Pakistan	171		175		173		37.7		34.8		36.2		24.8		22.7		23.7		40.7		37.9		39.3	
Spain	182	180	181	180	181	180	47.8	46.4	45.7	45.0	46.7	45.7	31.4	30.5	29.2	33.2	30.3	31.9	40.7	19.5	37.8	18.2	39.2	18.9
South Africa	177		183		180		35.5		31.0		33.3		23.4		23.8		23.6		25.8		30.9		28.4	
Tunisia	168	180	176	180	172	180	39.5	49.8	38.9	48.8	39.2	49.3	26.0	32.7	23.4	34.2	24.7	33.5	43.7	26.6	40.6	24.8	42.1	25.7
ICARDA	174		177		175		42		39		40.6		28		23		25.5		34		31		32.6	
Varieties	187	185	183	183	185	184	43.0	55.0	45.1	60.9	44.1	57.9	28.3	36.2	20.4	29.8	24.3	33.0	33.2	30.5	35.8	29.1	34.5	29.8
Mean	172	178	176	178	174	178	42.3	47.1	40.7	46.7	41.5	46.9	27.9	31.0	26.7	32.5	27.3	31.7	33.1	22.7	35.5	24.4	34.3	23.5

Abbreviations: DASM = maturity, days after sowing; PH = plant height; FPH = First pod height; PP = pods per plant.

Table S3c. Bio agronomic and quality characteristics of genotypes sampled by country of origin, by year, and subspecies *microsperma* (S) and *macrosperma* (L) (average values).

Origin	SP (no)						GYP (g d.m.)						TSW (g)						GP (% d.m.)					
	Year / subspecies						Year / subspecies						Year / subspecies						Year / subspecies					
	1 year		2 year		Mean		1 year		2 year		Mean		1 year		2 year		Mean		1 year		2 year		Mean	
	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L	S	L
Albania	1.24		1.22		1.23		1.10		1.01		1.05		23.7		24.7		24.2		29.8		30.0		29.9	
Algeria	1.66	1.10	1.64	1.08	1.65	1.09	1.35	1.38	1.24	1.26	1.29	1.32	26.1	61.0	23.6	60.4	24.8	60.7	28.2	27.0	28.4	27.1	28.3	27.0
Cyprus	1.09	1.18	1.07	1.16	1.08	1.17	1.23	1.27	1.12	1.16	1.18	1.22	39.9	53.0	39.8	50.3	39.9	51.6	27.8	28.4	28.0	28.6	27.9	28.5
Egypt	1.37		1.35		1.36		1.17		1.07		1.12		26.3		24.1		25.2		28.5		28.7		28.6	
Ethiopia	0.97		1.00		0.99		0.70		0.59		0.64		31.4		27.8		29.6		26.4		26.7		26.6	
Greece	1.20	1.10	1.18	1.08	1.19	1.09	0.91	1.13	0.84	1.03	0.87	1.08	30.6	47.6	30.1	46.3	30.4	47.0	27.8	26.7	28.0	26.9	27.9	26.8
Iran	1.34		1.32		1.33		1.48		1.36		1.42		33.2		31.3		32.2		27.3		27.5		27.4	
Italy	1.23	0.97	1.21	0.95	1.22	0.96	0.92	0.73	0.84	0.67	0.88	0.70	32.4	52.8	31.9	54.3	32.2	53.5	28.3	27.4	28.5	27.6	28.4	27.5
Libya	1.28	0.91	1.26	0.89	1.27	0.90	1.03	0.96	0.94	0.87	0.98	0.91	35.6	52.4	33.3	51.4	34.5	51.9	29.3	27.3	29.5	27.5	29.4	27.4
Morocco	1.15	1.18	1.13	1.16	1.14	1.17	1.05	1.00	0.96	0.91	1.01	0.95	39.3	45.2	37.7	44.0	38.5	44.6	27.6	27.2	27.8	27.4	27.7	27.3
Nepal	1.70		1.68		1.69		1.37		1.26		1.31		22.4		19.8		21.1		26.0		26.2		26.1	
Pakistan	1.49		1.47		1.48		1.16		1.07		1.11		21.9		21.1		21.5		27.3		27.5		27.4	
Spain	1.22	0.91	1.20	0.89	1.21	0.90	1.04	0.94	0.95	0.86	0.99	0.90	25.7	60.4	25.6	61.3	25.7	60.8	27.3	26.8	27.5	27.0	27.4	26.9
South Africa	1.45		1.06		1.25		0.55		0.54		0.54		19.1		20.5		19.8		28.1		29.1		28.6	
Tunisia	1.66	0.98	1.64	0.96	1.65	0.97	1.28	1.07	1.18	0.97	1.23	1.02	22.6	57.1	20.4	57.4	21.5	57.2	27.7	27.1	28.4	27.3	28.1	27.2
ICARDA	1.21	0.00	1.08		1.14		1.54		1.20		1.37		39.7		38.5		39.1		29.8		30.3		30.1	
Varieties	1.08	0.93	1.13	1.00	1.10	0.96	0.59	1.22	1.53	0.92	1.06	1.07	29.9	65.9	30.7	66.7	30.3	66.3	28.8	29.8	29.6	27.3	29.2	28.6
Mean	1.31	1.05	1.29	1.03	1.30	1.04	1.07	1.06	0.98	0.96	1.03	1.01	29.4	55.0	28.3	54.7	28.8	54.8	27.9	27.4	28.2	27.5	28.0	27.5

Abbreviations: SP = seeds per pod; GYP = grain yield per plant; TSW = thousand seed weight; GP = grain protein content.

Table S4. Eigenvalue and cumulative variance for the entire collection.

PC	Eigenvalue	% of variance	Cum. % of variance
PC-1	4.624	46.236	46.236
PC-2	1.720	17.197	63.433
PC-3	1.426	14.257	77.690
PC-4	0.794	7.936	85.627
PC-5	0.521	5.211	90.838
PC-6	0.396	3.962	94.800
PC-7	0.255	2.545	97.346
PC-8	0.128	1.283	98.629
PC-9	0.072	0.716	99.345
PC-10	0.066	0.655	100.000

Abbreviation: PC = Principal Component.

Table S5. Eigenvalue and cumulative variance for *ssp micro*.

PC	Eigenvalue	% of variance	Cum. % of variance
PC-1	4.169	41.691	41.691
PC-2	2.078	20.776	62.467
PC-3	1.438	14.376	76.844
PC-4	0.820	8.204	85.048
PC-5	0.637	6.368	91.416
PC-6	0.441	4.415	95.831
PC-7	0.192	1.919	97.749
PC-8	0.108	1.077	98.827
PC-9	0.073	0.730	99.556
PC-10	0.044	0.444	100.000

Abbreviation: PC = Principal Component.

Table S6. Eigenvalue and cumulative variance for *ssp macro*.

PC	Eigenvalue	% of variance	Cum. % of variance
PC-1	3.996	39.956	39.956
PC-2	1.920	19.200	59.157
PC-3	1.297	12.968	72.125
PC-4	0.961	9.610	81.735
PC-5	0.648	6.477	88.213
PC-6	0.469	4.686	92.898
PC-7	0.313	3.128	96.026
PC-8	0.199	1.990	98.016
PC-9	0.136	1.361	99.377
PC-10	0.062	0.623	100.000

Abbreviation: PC = Principal Component.

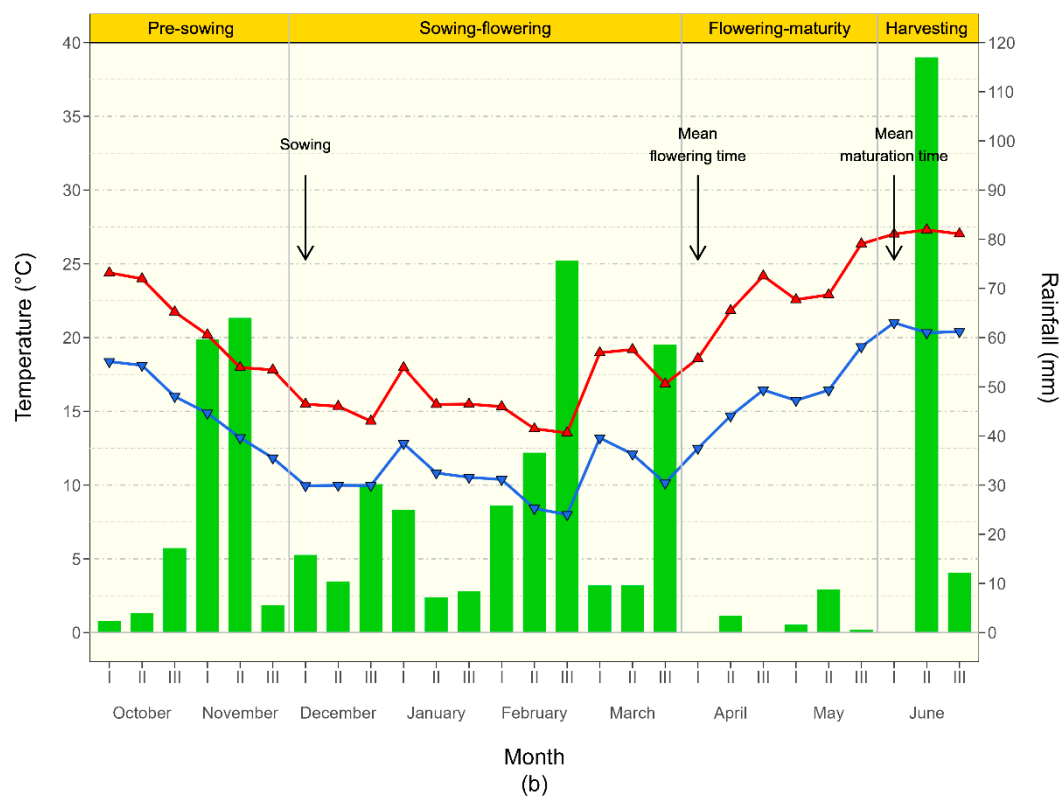
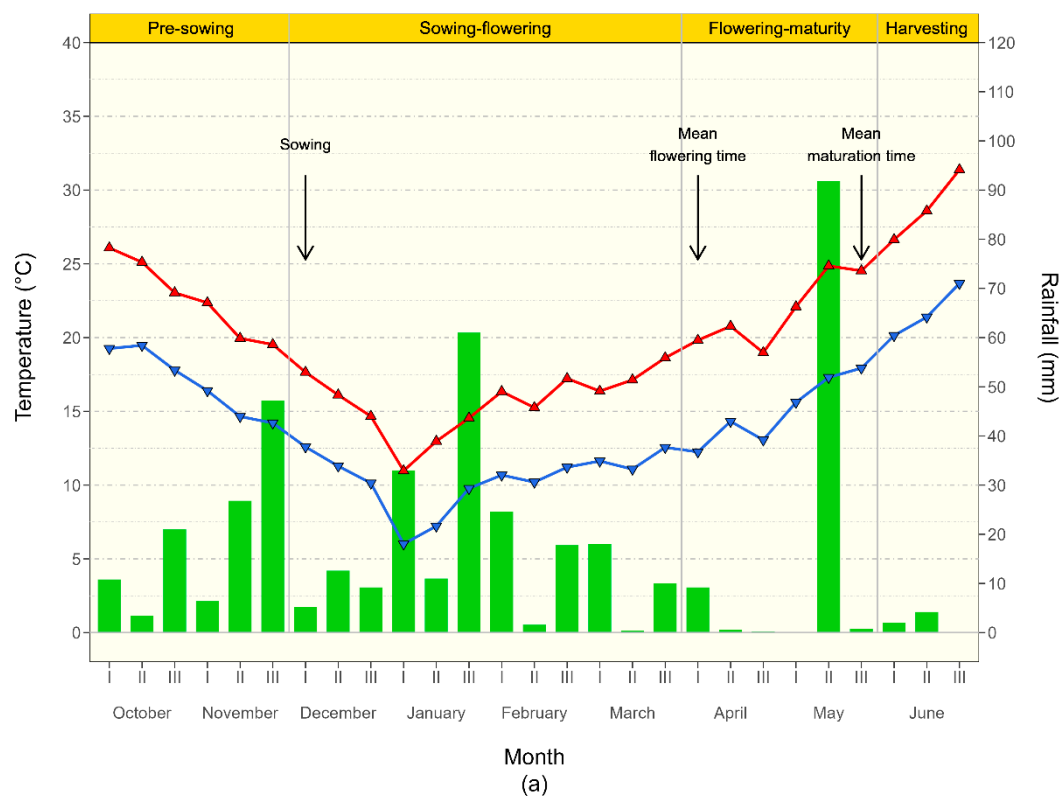


Figure S1. Thermo-pluviometric trend in the two growing seasons: (a) 2016/2017; (b) 2017/2018. The three ten-day periods are shown on the x-axis (I, II, III) for each month. Maximum temperatures are shown in red; minimum temperatures are shown in blue; rainfall are represented as green bars. Data are divided by cultivation phases (pre-sowing and harvesting) and plant development stages (sowing-flowering and flowering-maturity). The arrows specify: the sowing time (4th of December (a); 7th of December (b)); the mean flowering time (2nd of April (a); 5th of April (b)); the mean maturation time (29th of May (a); 3rd of June (b)).