

Table S1. Name, code, pedigree and origin of the used parents and check cultivars in the breeding program.

Genotype	Code	Use	Pedigree	Year of release	Origin
Giza-168	P1	Parent	MIL/BUC//Seri CM 93046-8M-04-0M-2Y-0B-062	1999	Egypt
Acsad-903	P2	Parent	ACSAD52914/C18224/C1683/3/Cno*2/7c//TopA cs-W-8024-20IZ-3IZ-4IZ-0IZ	2008	ACSAD
Acsad-949	P3	Parent	SNB,S,ASAD30SATS-W-8083-3IZ-5IZ-3IZ-0IZ	2008	ACSAD
Line1	P4	Parent	TEVEE-I/SHUHA-C6	2006	ICARDA
Line63	P5	Parent	CHAM-4/GRU90-202579	2006	ICARDA
Cham-6	P6	Parent	CM39992-2M-7Y-0M-OAP	2006	ICARDA
V-4	P7	Parent	Azeghar-2/3/Mrf2//Bcr/Gro1	2007	ICARDA
V-11	P8	Parent	Bcr/Gro1//Mgnl1	2007	ICARDA
V-12	P9	Parent	Geromtel-1/Icasyr-1	2007	ICARDA
Gemaiza-7	P10	Parent	CMH74 A. 630/5x//Seri 82/3/Agent CGM 4611- 2GM-3GM-1GM-0GM	1999	Egypt
Sakha-94	C1	Check	Opata/Rayon//KauzCMBW90Y3180-0T0PM-3Y- 010M-010Y-10M-015Y-0AP-0S OASIS/KAUZ//4*BCN/3/2*PASTOP	2004	CIMMYT
Misr-1	C2	Check	CMss00Y01881T-050M-030Y-030M-030WGY- 33M-0Y-0S.	2010	CIMMYT
Gemmiza-7	C3	Check	CMH74 A. 630/5x//Seri 82/3/Agent CGM 4611- 2GM-3GM-1GM-0GM	2000	Egypt
Gemmiza-9	C4	Check	Ald"S"/Huac"S"/CMH74A.630/5Xcgm4583- 5GM-1GM-0GM	2000	Egypt
Gemmiza-11	C5	Check	Bow"s"/Kvz"s"/7c/seri82/3/Giza168/Sakha61CG M7892-2GM-1GM-2GM-1GM-0GM	2010	Egypt

Table 2. Monthly average minimum temperature (Tmin, °C), maximum temperature (Tmax, °C), growing degree days (GDD, °C) and precipitation (Prec., mm) in the three growing seasons and 38 years' monthly averages (1983-2020).

Month	2017-2018				2018-2019				2019-2020				38 years average		
	Tmin	Tmax	GDD*	Prec	Tmin	Tmax	GDD*	Prec	Tmin	Tmax	GDD	Prec	Tmin	Tmax	Prec
November	14.6	26.9	433	5.7	14.7	25.0	582	6.4	15.1	26.1	418	4.2	13.4	23.9	7.4
December	10.3	20.7	416	9.1	9.6	18.5	326	8.5	9.9	19.1	439	8.4	9.4	19.0	8.1
January	7.9	17.5	384	4.5	7.1	17.4	468	1.7	7.0	16.8	347	2.8	7.6	17.4	7.7
February	9.3	19.8	483	7.2	8.2	18.9	499	8.7	8.2	18.6	399	9.3	8.0	18.9	6.7
March	10.5	22.3	491	8.2	9.7	21.8	559	7.2	10.2	22.4	476	6.9	9.9	22.4	7.2
April	12.1	27.5	524	2.7	12.5	25.4	664	2.1	13.1	26.1	594	3.7	13.1	27.0	3.7

* Average monthly growing degree days was calculated based on a 0 °C baseline.

Table 3. Chemical properties of soil and irrigation water at the experimental site.

Characteristics	Soil	Water
Soil particles distribution		
Sand (%)	86.95	
Silt (%)	8.75	
Clay (%)	4.30	
Textural class	Sandy loam	
Calcium carbonate (CaCO ₃ %)	57.99	
pH	8.15	7.96
Electrical conductivity (dS m ⁻¹)	7.74	8.35
Saturation soluble extract cations and anions (mg 100g⁻¹)		
Calcium (Ca ²⁺)	25.2	23.5
Magnesium (Mg ²⁺)	5.7	14.5
Sodium (Na ⁺)	57.8	66.1
Carbonate (CO ₃ ⁻)	0.0	0.0
Bicarbonate (HCO ₃ ⁻)	6.2	6.50
Chloride (Cl ⁻)	61.9	57.66
Sulphate (SO ₄ ⁻)	26.4	29.23