

## Supplementary material

**Table S1.** Names of genotypes and their respective pedigrees used in this study.

ENTRY	PEDIGREE
Genotypes from CIMMYT Heat Stress Tolerance Nursery	
BW28	CMSA05Y01011T-040M-040ZTP0Y-040ZTM-040SY-14ZTM-03Y-0B
BW48	CMSA04M00346S-040ZTP0Y-040ZTM-040SY-27ZTM-04Y-0B
BW49	CMSA04M00346S-040ZTP0Y-040ZTM-040SY-28ZTM-01Y-0B
BW58	CMSA04M00067S-040ZTB-040ZTY-040ZTM-040SY-2ZTM-02Y-0B
BW63	CMSA04M01020T-050Y-040ZTP0M-040ZTY-040ZTM-040SY-5ZTM-03Y-0B
BW71	CMSA05Y00325S-040ZTP0Y-040ZTM-040SY-7ZTM-01Y-0B
BW103	CMSS05B00581S-099Y-099M-099Y-099ZTM-2WGY-0B
BW111	CMSS05B00663S-099Y-099M-099Y-099ZTM-13WGY-0B
BW116	CMSS05B00742S-099Y-099M-099Y-099ZTM-5WGY-0B
BW124	CGSS05B00153T-099TOPY-099M-099NJ-22WGY-0B
BW127	CGSS05B00162T-099TOPY-099M-099Y-099ZTM-15WGY-0B
BW128	CGSS05B00162T-099TOPY-099M-099NJ-13WGY-0B
BW129	CGSS05B00162T-099TOPY-099M-099NJ-099NJ-7WGY-0B
BW141	CGSS05B00243T-099TOPY-099M-099NJ-099NJ-1WGY-0B
BW142	CGSS05B00243T-099TOPY-099M-099NJ-099NJ-2WGY-0B
BW145	CGSS05B00253T-099TOPY-099M-099Y-099ZTM-8WGY-0B
BW147	CGSS05B00256T-099TOPY-099M-099NJ-099NJ-5WGY-0B
BW148	CGSS05B00258T-099TOPY-099M-099Y-099ZTM-3WGY-0B
BW149	CGSS05B00258T-099TOPY-099M-099Y-099ZTM-11WGY-0B
BW150	CGSS05B00258T-099TOPY-099M-099Y-099ZTM-12WGY-0B
BW151	CGSS05B00258T-099TOPY-099M-099Y-099ZTM-13WGY-0B
BW152	CGSS05B00258T-099TOPY-099M-099NJ-1WGY-0B
BW157	CGSS05B00261T-099TOPY-099M-099NJ-099NJ-8WGY-0B
BW157	CGSS05B00261T-099TOPY-099M-099NJ-099NJ-8WGY-0B
BW159	CGSS05B00290T-099TOPY-099M-099NJ-099NJ-7WGY-0B
BW162	CGSS05B00304T-099TOPY-099M-099NJ-099NJ-3WGY-0B
LM01	ACHTAR*3//KANZ/KS85-8-5/4/MILAN/KAUZ//PRINIA/3/BAV92/5/MILAN/KAUZ//PRINIA/3/BAV92
LM12	SOKOLL/ROLF07
LM14	MILAN/KAUZ//PRINIA/3/BAV92/4/WBLL1*2/KUKUNA
LM15	RL6043/4*NAC//PASTOR/3/BAV92/4/ATTILA/BAV92//PASTOR
LM16	PASTOR*2/BAV92/3/FRET2/KUKUNA//FRET2
LM17	ESDA/KKTS
LM18	GOUBARA-1/2*SOKOLL
LM19	SOKOLL*2/4/CHEN/AEGILOPS SQUARROSA (TAUS)//FCT/3/STAR
LM20	PBW343
LM21	PRL/2*PASTOR
LM22	MUNAL #1

**Table S1.** Continued.

ENTRY	PEDIGREE
Genotypes from CIMMYT Heat Stress Tolerance Nursery	
LM23	QUAIU
LM24	WBLL1*2/BRAMBLING
LM25	WHEAR//2*PRL/2*PASTOR
LM26	ATTILA*2/PBW65//TAM200/TUI
LM27	YUNMAI 48//2*WBLL1*2/KURUKU

LM28	ATTILA/3*BCN//BAV92/3/TILHI/4/SHA7/VEE#5//ARIV92
LM29	PRL/2*PASTOR*2//SKAUZ/BAV92
LM30	C80.1/3*BATAVIA//2*WBLL1/3/ATTILA/3*BCN*2//BAV92/4/WBLL1*2/KURUKU
LM31	ATTILA*2/HUITES//FINSI/3/ATTILA*2/PBW65
LM32	ATTILA*2//CHIL/BUC*2/3/KUKUNA
LM33	ATTILA*2/PBW65//KACHU
LM35	WBLL1//UP2338*2/VIVITSI
LM36	WBLL1*2/4/SNI/TRAP#1/3/KAUZ*2/TRAP//KAUZ/5/KACHU
LM37	KACHU/SAUAL
LM38	SAUAL/3/MILAN/S87230//BAV92
LM39	ATTILA/3*BCN//BAV92/3/TILHI/5/BAV92/3/PRL/SARA//TSI/VEE#5/4/CROC_1/AE.SQU ARROSA (224)//2*OPATA
LM40	WBLL1*2/VIVITSI/6/CNDO/R143//ENTE/MEXI_2/3/AEGILOPS SQUARROSA (TAUS)/4/WEAVER/5/2*JANZ
LM41	C80.1/3*BATAVIA//2*WBLL1/5/REH/HARE//2*BCN/3/CROC_1/AE.SQUARROSA (213)//PGO/4/HUITES
LM42	TRCH/5/REH/HARE//2*BCN/3/CROC_1/AE.SQUARROSA (213)//PGO/4/HUITES
LM43	ROLF07*2/6/PVN//CAR422/ANA/5/BOW/CROW//BUC/PVN/3/YR/4/TRAP#1
LM44	ROLF07/TUKURU/5/WBLL1*2/4/YACO/PBW65/3/KAUZ*2/TRAP//KAUZ
LM46	FRET2/KUKUNA//FRET2/3/PARUS/5/FRET2*2/4/SNI/TRAP#1/3/KAUZ*2/TRAP//KAUZ
LM47	FRET2/KUKUNA//FRET2/3/YANAC/4/FRET2/KIRITATI
LM48	FRET2/KUKUNA//FRET2/3/PASTOR//HXL7573/2*BAU/5/FRET2*2/4/SNI/TRAP#1/3/KAUZ*2/TRAP//KAUZ
LM49	TRCH/SRTU//KACHU
LM50	HUW234+LR34/PRINIA*2//SNLG
LM51	HUW234+LR34/PRINIA*2//YANAC
LM52	HUW234+LR34/PRINIA*2//WHEAR
LM54	PBW343*2/KUKUNA*2//KITE
LM55	PBW343*2/KUKUNA//PARUS/3/PBW343*2/KUKUNA
LM56	PBW343*2/KUKUNA*2//YANAC
LM57	PBW343*2/KUKUNA//SRTU/3/PBW343*2/KHVAKI
LM58	ATTILA*2/PBW65/6/PVN//CAR422/ANA/5/BOW/CROW//BUC/PVN/3/YR/4/TRAP#1/7/ATTILA/2*PASTOR
LM59	FRET2/KUKUNA//FRET2/3/WHEAR/4/FRET2/TUKURU//FRET2
LM60	ALD/CEP75630//CEP75234/PT7219/3/BUC/BJY/4/CBRD/5/TNMU/PF85487/6/PBW343*2/KU-KUNA/7/CNO79//PF70354/MUS/3/PASTOR/4/BAV92

**Table S1.** Continued.

ENTRY	PEDIGREE
Genotypes from CIMMYT Drought Stress Tolerance Nursery	
LM71	BABAX/3/PRL/SARA//TSI/VEE#5/4/CROC_1/AE.SQUARROSA (224)//2*OPATA
LM72	BABAX/3/PRL/SARA//TSI/VEE#5/4/WBLL1
LM75	BUC/MN72253//PASTOR
LM76	MILAN/KAUZ//PRINIA/3/BABAX
LM77	CNDO/R143//ENTE/MEXI_2/3/AEGILOPS SQUARROSA (TAUS)/4/WEAVER/5/2*FRAME
LM79	CROC_1/AE.SQUARROSA (205)//BORL95/3/KENNEDY
LM80	CROC_1/AE.SQUARROSA (205)//KAUZ/3/SLVS
LM81	CROC_1/AE.SQUARROSA (224)//2*OPATA/3/2*RAC655
LM82	HD30/5/CNDO/R143//ENTE/MEXI75/3/AE.SQ/4/2*OCI
LM83	PASTOR/3/VEE#5//DOVE/BUC
LM84	SRN/AE.SQUARROSA (358)//MILAN/SHA7
LM85	SW94.60002/4/KAUZ*2//DOVE/BUC/3/KAUZ/5/SW91-12331

<b>LM86</b>	CHAM 6
<b>LM90</b>	CROC_1/AE.SQUARROSA (205)//BORL95/3/KENNEDY-2
<b>LM91</b>	FRTL/CMH83.2517
<b>LM93</b>	PASTOR/FLORKWA.1//PASTOR
<b>LM96</b>	ALTAR 84/AE.SQ//2*OPATA/3/PIFED
<b>LM97</b>	KRICHAUFF/2*PASTOR
<b>LM98</b>	KABY//2*ALUBUC/BAYA
<b>ENTRY</b>	PEDIGREE
<b>LM99</b>	ALTAR 84/AEGILOPS SQUARROSA (TAUS)//OCI/3/VEE/MJI//2*TUI
<b>LM100</b>	SW89.5277/BORL95//SKAUZ
<b>Checks</b>	
<b>LM70</b>	Check
<b>BW80</b>	Check
<b>BW100</b>	Check
<b>BW120</b>	Check
<b>BW140</b>	Check