

**Supplementary Table 1.** List of 160 tested bread wheat genotypes with their pedigree

Sl. No.	Selection History	Origin	Genotype	
			Name	Code
1	CMSA07M00022T-032(B=WMC221SR25HET)Y-040ZTM-074	MXI12-13\M24ISEPTON\25	KUBW003	G-1
2	CMSS08Y00924T-099TOPM-099Y-099M-099NJ-099NJ-10RGY-0B	MXI12-13\M25HRWSN\1053	KUBW005	G-2
3	CMSS08Y00224S-099Y-099M-099NJ-099NJ-1WGY-0B	MXI12-13\M47IBWSN\81	KUBW006	G-3
4	CMSS08B00861T-099TOPY-099M-099Y-13M-0WGY	MXI12-13\M47IBWSN\722	KUBW008	G-4
5	CMSA08M00458S-040ZTM-050Y-50ZTM-010Y-0B	MXI12-13\M25HRWSN\1174	KUBW011	G-5
6	CMSS93B00686S-12Y-010M-010Y-010M-7Y-1M-0Y-3SJ-0Y-2PZ-0Y	MXI12-13\M24ISEPTON\102	KUBW012	G-6
7	Adaptation trail	Adap	KUBW013	G-7
8	CMSS08Y00491S-099Y-099M-099NJ-37WGY-0B	MXI12-13\M47IBWSN\194	THBW345	G-8
9	CMSA08M00432S-040M-0NJ-10Y-0B	MXI12-13\M25HRWSN\1166	KUBW015	G-9
10	CMSA08M00466S-040ZTM-050Y-47ZTM-010Y-0B	MXI12-13\M25HRWSN\1175	KUBW016	G-10
11	CMSA07Y00597S-040ZTY-040ZTM-040Y-46ZTM-010Y-0B	MIX12-13\M24ISEPTON\56	THBW346	G-11
12	CMSS08B00911T-099TOPY-099M-099NJ-12WGY-0B	MXI12-13\M47IBWSN\779	KUBW018	G-12
13	CMSS08B00422S-099M-099NJ-5RGY-0B	MXI12-13\M25HRWSN\1100	KUBW019	G-13
14	CMSS08Y00611T-099TOPM-099Y-099M-099Y-2M-0WGY	MXI12-13\M47IBWSN\208	KUBW020	G-14
15	Commercial cultivar	Alidero	Alidero	G-15
16	Commercial Cultivar	Medawolabu	Medawolabu	G-16
17	Adaptation trial	Adap	KUBW026	G-17
18	CMSS08Y00869T-099TOPM-099Y-099M-099Y-22M-0WGY	MXI12-13\M47IBWSN\335	KUBW027	G-18
19	CMSS07Y00299S-0B-099Y-099M-099Y-2M-0WGY	MXI12-13\M24ISEPTON\69	KUBW028	G-19
20	CMSS08Y00483S-099Y-099M-099Y-11M-0WGY	MXI12-13\M47IBWSN\188	KUBW030	G-20
21	CMSS07B00311S-099M-099Y-099M-4WGY-0B	MXI12-13\M24ISEPTON\89	KUBW034	G-21
22	CMSA08Y00045T-024(CRE1)B-050ZTY-067(CRE1)ZTM-03Y-01B-0Y	MXI12-13\M24ISEPTON\32	KUBW037	G-22
23	Commercial cultivar	King-bird	king-bird	G-23
24	CMSS07B00191S-099M-099Y-099M-22WGY-0B	MXI12-13\M24ISEPTON\85	KUBW042	G-24
25	CMSS08Y00872T-099TOPM-099Y-099M-099NJ-099NJ-9RGY-0B	MXI12-13\M25HRWSN\1041	KUBW043	G-25
26	CMSA07M00634S-040ZTM-040ZTY-54ZTM-010Y-01B-0Y	MXI12-13\M24ISEPTON\12	KUBW045	G-26
27	CMSS08B00974T-099TOPY-099M-099Y-099B-38WGY-0B	MXI12-13\M47IBWSN\811	KUBW046	G-27
28	CMSA08Y00065T-099B-050Y-050ZTM-050Y-14BMX-010Y-0B	MXI12-13\M25HRWSN\1141	KUBW047	G-28
29	CMSS08Y00127S-099Y-099M-099NJ-30WGY-0B	MXI12-13\M47IBWSN\25	KUBW049	G-29
30	National Variety Trial 4	NVT4	KUBW051	G-30
31	CMSA07M00371S-040ZTM-040ZTY-19ZTM-010Y-02B-0Y	MXI12-13\M24ISEPTON\2	KUBW053	G-31
32	CMSA08Y00469S-050Y-040M-0NJ-20Y-0B	MXI12-13\M25HRWSN\1147	KUBW054	G-32
33	Preliminary Variety Trial	PVT	KUBW056	G-33
34	CMSS06Y01171T-099TOPM-099Y-099ZTM-099M-8WGY-0B	MXI11-12\M34ESWYT\218	KUBW059	G-34
35	CMSS07Y00346S-0B-099Y-099M-099NJ-099NJ-3WGY-0B	MXI12-13\M24ISEPTON\70	KUBW060	G-35
36	Preliminary Variety Trial	PVT	KUBW061	G-36
37	National Variety Trial 2	NVT2	KUBW062	G-37
38	CMSS06Y00631T-099TOPM-099Y-099ZTM-099Y-099M-2WGY-0B	MXI11-12\SELC23ISEPTO\31	KUBW064	G-38

39	CMSS08Y00182S-099Y-099M-099NJ-099NJ-2WGY-0B	MXI12-13\M47IBWSN\69	KUBW066	G-39
40	CMSS93B00686S-12Y-010M-010Y-010M-7Y-1M-0Y-3SJ-0Y-2PZ-0Y	MXI10-11\C22ISEPTON\102	KUBW067	G-40
41	CMSS08Y00627T-099TOPM-099Y-099M-099NJ-6WGY-0B	MXI12-13\M47IBWSN\221	KUBW073	G-41
42	CMSS08B00777T-099TOPY-099M-099NJ-099NJ-12RGY-0B	MXI12-13\M25HRWSN\1128	KUBW075	G-42
43	CMSS07Y00213S-0B-099Y-099M-099Y-20M-0WGY	MXI12-13\M24ISEPTON\65	KUBW076	G-43
44	WMC0221SR25HOM+HET)Y-9ZTM-010Y-01B-0Y	MXI11-12\M31SAWSN\93	KUBW077	G-44
45	Commercial cultivar	Danda	Danda	G-45
46	CMSS08Y01116T-099M-099Y-099M-099NJ-099NJ-14WGY-0B	MXI12-13\M47IBWSN\418	KUBW081	G-46
47	CMSA07M00455S-040M-0NJ-0NJ-2Y-0B	MXI12-13\M24ISEPTON\42	KUBW083	G-47
48	CMSS07Y00174S-0B-099Y-099M-099Y-22M-0WGY	MXI11-12\M34ESWYT\18	KUBW085	G-48
49	CMSA08M00446S-040ZTM-050Y-5ZTM-010Y-0B	MXI12-13\M25HRWSN\1170	KUBW086	G-49
50	CMSS07B00151S-099M-099Y-099M-7WGY-0B	MXI12-13\M24ISEPTON\83	KUBW087	G-50
51	CMSS07B00231S-099M-099Y-099M-47WGY-0B	MXI12-13\M24ISEPTON\86	KUBW089	G-51
52	CMSS07Y01307T-099Y-7M-0Y-3B-0Y	MXI11-12\M46IBWSN\320	KUBW090	G-52
53	CMSS97M03642T-040Y-020Y-030M-020Y-040M-7Y-3M-0Y	MXI12-13\M24ISEPTON\101	KUBW091	G-53
54	CMSA07WM00080S-050Y-040ZTM-040ZTY-78ZTM-010Y-02B-0Y	MXI12-13\M1STSWYPT\22	KUBW092	G-54
55	Y-040ZTM-040Y-36ZTM-010Y-02B-0Y	MXI12-13\M24ISEPTON\23	KUBW093	G-55
56	CMSS06Y00920T-099TOPM-099Y-099ZTM-099Y-099M-16WGY-0B	MXI11-12\SELC23ISEPTO\36	KUBW094	G-56
57	CMSS08Y00224S-099Y-099M-099NJ-099NJ-8RGY-0B	MXI12-13\M25HRWSN\1009	KUBW097	G-57
58	CMSA07Y00598S-040ZTY-040ZTM-040Y-5ZTM-010Y-0B	MXI12-13\M24ISEPTON\36	KUBW098	G-58
59	CMSS08Y00224S-099Y-099M-099NJ-099NJ-19RGY-0B	MXI12-13\M25HRWSN\1012	KUBW099	G-59
60	CMSA07M00043T-050Y-040ZTM-040ZTY-92ZTM-010Y-02B-0Y	MXI12-13\M24ISEPTON\13	KUBW103	G-60
61	CMSS07Y00032S-0B-099Y-099M-099Y-2M-0WGY	MXI12-13\M24ISEPTON\63	KUBW104	G-61
62	CMSS07Y00963T-099TOPM-099Y-099M-099Y-32M-0WGY	MXI11-12\M34ESWYT\72	KUBW105	G-62
63	CMSS07Y00255S-0B-099Y-099M-099NJ-099NJ-14WGY-0B	MXI12-13\M24ISEPTON\66	KUBW106	G-63
64	CMSS06Y00117S-0B-099Y-099ZTM-099Y-099M-12WGY-0B	MXI11-12\SELC23ISEPTO\12	KUBW107	G-64
65	CMSS08B00391S-099M-099Y-10M-0WGY	MXI12-13\M47IBWSN\496	KUBW108	G-65
66	Preliminary Variety Trial	PVT	KUBW109	G-66
67	CMSS06Y00946T-099TOPM-099Y-099ZTM-099Y-099M-13WGY-0B	MXI12-13\M24ISEPTON\97	KUBW110	G-67
68	CMSA07M00644S-040M-0NJ-0NJ-5Y-0B	MXI12-13\M24ISEPTON\44	KUBW112	G-68
69	CMSA08Y00378S-050Y-050ZTM-050Y-2BMX-010Y-0B	MXI12-13\M47IBWSN\830	KUBW114	G-69
70	CMSS08Y00627T-099TOPM-099Y-099M-099NJ-37WGY-0B	MXI12-13\M47IBWSN\224	KUBW115	G-70
71	CMSS08Y00182S-099Y-099M-099NJ-099NJ-9WGY-0B	MXI12-13\M47IBWSN\74	KUBW116	G-71
72	CMSS08Y00623T-099TOPM-099Y-099M-099NJ-099NJ-7WGY-0B	MXI12-13\M47IBWSN\217	KUBW117	G-72
73	CSLV34HOM+HET)Y-17ZTM-010Y-01B-0Y	MXI12-13\M24ISEPTON\26	KUBW120	G-73
74	CMSS08B00196S-099M-099NJ-099NJ-36RGY-0B	MXI12-13\M25HRWSN\1074	KUBW121	G-74
75	CMSS06Y00920T-099TOPM-099Y-099ZTM-099Y-099M-36WGY-0B	MXI11-12\SELC23ISEPTO\37	KUBW122	G-75
76	CMSS08B00776T-099TOPY-099M-099NJ-099NJ-21RGY-0B	MXI12-13\M25HRWSN\1124	KUBW123	G-76
77	CMSA07WM00080S-050Y-54ZTM-08Y-0B-03Y-(01B)-0Y	MXI11-12\M1STSWYPT\43	KUBW125	G-77
78	CMSA07M00022T-032(B=WMC221SR25HET)Y-040ZTM-074	MXI11-12\M21HRWYT\24	THBW347	G-78
79	CMSA07M00470S-040ZTM-040ZTY-15ZTM-010Y-02B-0Y	MXI12-13\M24ISEPTON\20	KUBW128	G-79
80	CMSS08B00776T-099TOPY-099M-099NJ-099NJ-14RGY-0B	MXI12-13\M25HRWSN\1123	KUBW129	G-80
81	CMSA07M00443S-040ZTM-040ZTY-47ZTM-010Y-02B-0Y	MXI12-13\M24ISEPTON\51	KUBW130	G-81

82	CMSS07B00248S-099M-099Y-099M-4WGY-0B	MXI11-12\M46IBWSN\215	KUBW131	G-82
83	CMSS08Y00351S-099Y-099M-099NJ-099NJ-4RGY-0B	MXI12-13\M25HRWSN\1023	KUBW132	G-83
84	CMSA08Y00556S-050Y-050ZTM-050Y-45BMX-010Y-0B	MXI12-13\M25HRWSN\1150	KUBW135	G-84
85	CMSS08B00919T-099TOPY-099M-099NJ-099NJ-7RGY-0B	MXI12-13\M25HRWSN\1137	KUBW136	G-85
86	CMSS08Y00182S-099Y-099M-099NJ-099NJ-8WGY-0B	MXI12-13\M47IBWSN\73	KUBW137	G-86
87	CMSA08M00445S-040ZTM-050Y-47ZTM-010Y-0B	MXI12-13\M25HRWSN\1169	KUBW139	G-87
88	CMSS07B00869T-099TOPY-099M-099Y-099M-1WGY-0B	MXI12-13\M24ISEPTON\95	KUBW140	G-88
89	CMSS08Y00224S-099Y-099M-099NJ-099NJ-4RGY-0B	MXI12-13\M25HRWSN\1008	KUBW141	G-89
90	CMSA07WM00080S-050Y-040ZTM-040ZTY-8ZTM-010Y-01B-0Y	MXI11-12\M1STSWYPT\20	KUBW143	G-90
91	CMSS07B00024S-099M-099Y-099M-21RGY-0B	MXI11-12\M24HRWSN\32	KUBW144	G-91
92	CMSS08Y00220S-099Y-099M-099Y-11M-0WGY	MXI12-13\M47IBWSN\78	KUBW145	G-92
93	CMSS08B00763T-099TOPY-099M-099NJ-19WGY-0B	MXI12-13\M47IBWSN\644	KUBW146	G-93
94	CMSA07M00403S-040ZTM-040ZTY-21ZTM-010Y-02B-0Y	MXI12-13\M24ISEPTON\16	KUBW148	G-94
95	CMSS07Y01253T-099TOPM-099Y-099M-099Y-16M-0RGY	MXI11-12\M21HRWYT\24	THBW348	G-95
96	CMSA08M00124T-050Y-040ZTM-050Y-8ZTM-010Y-0B	MXI12-13\M25HRWSN\1154	KUBW150	G-96
97	CMSS06Y00672T-099TOPM-099Y-099ZTM-099Y-099M-10WGY-0B	MXI11-12\SELC23ISEPTO\34	KUBW155	G-97
98	CMSA07M00453S-040ZTM-040ZTY-13ZTM-010Y-01B-0Y	MXI11-12\M21HRWYT-RF\4	KUBW157	G-98
99	National Variety Trial 6	NVT6	KUBW159	G-99
100	National Variety Trial 2	NVT2	KUBW165	G-100
101	National Variety Trial 5	NVT5	KUBW166	G-101
102	CMSS08Y00924T-099TOPM-099Y-099M-099NJ-099NJ-10RGY-0B	MIX12-13\M25HRWSN\1053	THBW349	G-102
103	Adaptation trial	Adap	KUBW168	G-103
104	CMSS08B00776T-099TOPY-099M-099NJ-099NJ-6RGY-0B	MXI12-13\M25HRWSN\1122	KUBW170	G-104
105	CMSS06Y00672T-099TOPM-099Y-099ZTM-099Y-099M-8WGY-0B	MXI11-12\SELC23ISEPTO\33	KUBW171	G-105
106	CMSS06B00201S-0Y-099ZTM-099Y-099M-8WGY-0B	MXI11-12\M34ESWYT\224	KUBW176	G-106
107	CMSS08Y00224S-099Y-099M-099NJ-099NJ-1WGY-0B	MXI12-13\M47IBWSN\81	THBW350	G-107
108	CMSS08Y00704T-099TOPM-099Y-099Y-11M-0WGY	MXI12-13\M47IBWSN\247	THBW351	G-108
109	CMSS08B00861T-099TOPY-099M-099Y-13M-0WGY	MXI12-13\M47IBWSN\722	THBW352	G-109
110	CMSA06M00637S-040ZTM-040ZTY-33ZTM-0Y-0B	MXI11-12\SELC23ISEPTO\95	THBW353	G-110
111	CMSA08M00458S-040ZTM-050Y-50ZTM-010Y-0B	MXI12-13\M25HRWSN\1174	THBW355	G-111
112	CMSS93B00686S-12Y-010M-010Y-010M-7Y-1M-0Y-3SJ-0Y-2PZ-0Y	MXI12-13\M24ISEPTON\102	THBW356	G-112
113	CMSA08M00432S-040M-0NJ-10Y-0B	MXI12-13\M25HRWSN\1166	THBW359	G-113
115	CMSS08B00911T-099TOPY-099M-099NJ-12WGY-0B	MXI12-13\M47IBWSN\779	THBW362	G-115
116	CMSS08B00422S-099M-099NJ-5RGY-0B	MXI12-13\M25HRWSN\1100	THBW363	G-116
117	CMSS08Y00611T-099TOPM-099Y-099M-099Y-2M-0WGY	MXI12-13\M47IBWSN\208	THBW364	G-117
118	CMSS08B00381S-099M-099Y-1M-0RGY	MXI12-13\M25HRWSN\1099	THBW385	G-118
119	CMSS07B00191S-099M-099Y-099M-22WGY-0B	MXI12-13\M24ISEPTON\85	THBW386	G-119
120	CMSS08Y00872T-099TOPM-099Y-099M-099NJ-099NJ-9RGY-0B	MXI12-13\M25HRWSN\1041	THBW387	G-120
121	CMSS07Y00815T-099TOPM-099Y-099M-099Y-7M-0RGY	MXI11-12\M21HRWYT\16	THBW388	G-121
122	CMSA07M00634S-040ZTM-040ZTY-54ZTM-010Y-01B-0Y	MXI12-13\M24ISEPTON\12	THBW389	G-122
123	CMSS08B00974T-099TOPY-099M-099Y-099B-38WGY-0B	MXI12-13\M47IBWSN\811	THBW390	G-123
124	CMSA08Y00065T-099B-050Y-050ZTM-050Y-14BMX-010Y-0B	MXI12-13\M25HRWSN\1141	THBW391	G-124
125	CMSS08Y00127S-099Y-099M-099NJ-30WGY-0B	MXI12-13\M47IBWSN\25	THBW393	G-125

126	CMSS08B00475S-099M-099Y-17M-0WGY	MXI12-13\M47IBWSN\517	THBW394	G-126
127	CMSS08B00283S-099M-099NJ-099NJ-8WGY-0B	MXI12-13\M47IBWSN\470	THBW396	G-127
128	CMSA07M00371S-040ZTM-040ZTY-19ZTM-010Y-02B-0Y	MXI12-13\M24ISEPTON\2	THBW397	G-128
129	CMSA08Y00469S-050Y-040M-0NJ-20Y-0B	MXI12-13\M25HRWSN\1147	THBW398	G-129
130	CMSS08Y00627T-099TOPM-099Y-099M-099NJ-5WGY-0B	MXI12-13\M47IBWSN\220	THBW399	G-130
131	CMSA07M00441S-040ZTM-040ZTY-20ZTM-010Y-01B-0Y	MXI12-13\M24ISEPTON\4	THBW401	G-131
132	CMSS07B00236S-099M-099Y-099M-13WGY-0B	MXI11-12\M46IBWSN\202	THBW402	G-132
133	CMSS06Y01171T-099TOPM-099Y-099ZTM-099Y-099M-8WGY-0B	MXI11-12\M34ESWYT\218	THBW403	G-133
134	CMSS07Y00346S-0B-099Y-099M-099NJ-099NJ-3WGY-0B	MXI12-13\M24ISEPTON\70	THBW404	G-134
135	Preliminary Variety Trial	PVT	THBW405	G-135
136	National Variety Trial 2	NVT2	THBW406	G-136
137	Adaptation trial	Adap	THBW407	G-137
138	CMSS06Y00631T-099TOPM-099Y-099ZTM-099Y-099M-2WGY-0B	MXI11-12\SELC23ISEPTO\31	THBW408	G-138
139	CMSS08Y00871T-099TOPM-099Y-099M-099NJ-099NJ-2WGY-0B	MXI12-13\M47IBWSN\345	THBW409	G-139
140	CMSS93B00686S-12Y-010M-010Y-010M-7Y-1M-0Y-3SJ-0Y-2PZ-0Y	MXI10-11\C22ISEPTON\102	THBW411	G-140
141	CMSA07M00443S-040ZTM-040ZTY-47ZTM-010Y-02B-0Y	MXI11-12\M21HRWYT-RF\2	THBW412	G-141
142	CMSA07Y01090T-045B-040Y-040ZTM-040Y-20ZTM-010Y-0B	MXI12-13\M24ISEPTON\34	THBW413	G-142
143	CMSS07B00264S-099M-099NJ-099NJ-8WGY-0B	MXI12-13\M24ISEPTON\88	THBW414	G-143
144	CMSS08Y00491S-099Y-099M-099NJ-099NJ-11WGY-0B	MXI12-13\M47IBWSN\196	THBW416	G-144
145	CMSS08Y00627T-099TOPM-099Y-099M-099NJ-6WGY-0B	MXI12-13\M47IBWSN\221	THBW417	G-145
146	CMSA08Y00109T-099B-050Y-050ZTM-050Y-42BMX-010Y-0B	MXI12-13\M47IBWSN\823	THBW418	G-146
147	CMSS08B00777T-099TOPY-099M-099NJ-099NJ-12RGY-0B	MXI12-13\M25HRWSN\1128	THBW419	G-147
148	CMSS07Y00213S-0B-099Y-099M-099Y-20M-0WGY	MXI12-13\M24ISEPTON\65	THBW420	G-148
149	CMSS07Y00672T-099TOPM-099Y-099M-099Y-36M-0WGY	MXI12-13\M24ISEPTON\71	THBW422	G-149
150	CMSS07B00614T-099TOPY-099M-099Y-099M-7WGY-0B	MXI12-13\M24ISEPTON\92	THBW423	G-150
151	CMSS08Y00869T-099TOPM-099Y-099M-099Y-22M-0WGY	MXI12-13\M47IBWSN\335	THBW371	G-151
152	CMSS07Y00299S-0B-099Y-099M-099Y-2M-0WGY	MXI12-13\M24ISEPTON\69	THBW372	G-152
153	CMSS08Y00477S-099Y-099M-099NJ-7WGY-0B	MXI12-13\M47IBWSN\185	THBW373	G-153
154	CMSS08Y00483S-099Y-099M-099Y-11M-0WGY	MXI12-13\M47IBWSN\188	THBW374	G-154
155	CMSS08B00777T-099TOPY-099M-099NJ-099NJ-5RGY-0B	MXI12-13\M25HRWSN\1127	THBW375	G-155
156	CMSA07M00376S-040ZTM-040ZTY-63ZTM-010Y-02B-0Y	MXI11-12\M31SAWSN\266	THBW376	G-156
157	CMSS07B00311S-099M-099Y-099M-4WGY-0B	MXI12-13\M24ISEPTON\89	THBW378	G-157
158	CMSS07Y00774T-099TOPM-099Y-099M-099NJ-099NJ-6WGY-0B	MXI12-13\M24ISEPTON\74	THBW379	G-158
159	CMSS08B00966T-099TOPY-099M-099Y-099B-17RGY-0B	MXI12-13\M25HRWSN\1138	THBW380	G-159
160	CMSA08Y00045T-024(CRE1)B-050ZTY-067(CRE1)ZTM-03Y-01B-0Y	MXI12-13\M24ISEPTON\32	THBW381	G-160

**Supplementary Table 2.** Combined mean of grain yield and other agronomic traits of bread wheat genotypes

Genotypes	Code	DH	DF	GFD	DM	PH	SL	NSS	NKS	NKPS	GY	TKW
KUBW003	G1	77.50	82.38	63.50	140.25	101.86	9.01	15.55	43.40	2.79	3943.25	41.06
KUBW005	G2	72.38	77.38	62.88	134.38	101.50	8.60	14.90	43.88	2.92	3886.04	40.02
KUBW006	G3	69.50	75.38	62.25	131.25	97.90	7.53	14.00	39.13	2.84	2956.24	33.80
KUBW008	G4	69.25	73.88	59.13	127.63	95.43	7.80	14.78	40.13	2.74	3549.60	37.91
KUBW011	G5	69.75	73.75	61.25	130.25	97.65	8.09	14.63	38.58	2.63	3111.52	34.04
KUBW012	G6	70.88	76.13	61.75	131.75	98.27	8.33	14.43	39.25	2.71	3651.18	40.83
KUBW013	G7	73.13	78.38	64.25	136.50	103.38	9.00	15.65	44.18	2.85	4144.34	45.00
THBW345	G8	73.88	79.25	63.13	136.38	103.83	9.35	16.43	45.60	2.79	4322.36	44.10
KUBW015	G9	71.75	76.75	60.50	131.38	98.55	8.11	14.15	38.51	2.73	3562.18	39.33
KUBW016	G10	72.38	78.13	63.00	135.00	100.53	9.01	15.91	44.13	2.77	4058.25	41.31
THBW346	G11	69.38	74.63	61.75	130.75	98.79	7.90	13.68	38.38	2.81	3174.07	33.40
KUBW018	G12	68.50	73.88	57.25	125.00	96.94	8.01	14.45	37.93	2.65	3124.23	35.59
KUBW019	G13	70.88	76.25	60.13	130.00	94.83	7.78	14.23	38.80	2.76	3283.41	37.34
KUBW020	G14	70.75	76.38	62.38	132.63	95.12	7.85	14.23	37.85	2.67	3444.32	37.87
Alidero	G15	71.50	76.50	62.50	133.00	97.36	8.03	13.58	38.20	2.80	3167.17	33.42
Medawolabu	G16	70.00	75.38	61.00	130.50	95.95	7.86	13.58	38.60	2.85	3210.45	36.14
KUBW026	G17	73.38	79.63	62.50	135.00	100.25	9.39	16.53	44.48	2.70	4211.02	41.86
KUBW027	G18	72.75	78.75	63.75	135.50	101.18	9.59	16.25	45.78	2.83	4220.44	42.62
KUBW028	G19	70.75	76.50	60.63	130.88	97.98	8.50	13.78	38.30	2.77	3316.47	34.70
KUBW030	G20	73.50	79.75	63.38	136.38	100.66	9.64	16.00	45.23	2.82	4519.48	46.88
KUBW034	G21	73.63	80.38	62.38	135.38	103.82	9.36	15.73	45.95	2.94	4500.55	45.40
KUBW037	G22	71.50	77.00	60.00	130.75	99.61	9.31	15.10	44.93	3.01	4336.19	43.37
king-bird	G23	72.13	77.88	62.38	133.63	97.08	7.95	14.30	38.75	2.70	3465.00	35.37
KUBW042	G24	74.25	80.13	67.00	140.25	102.78	9.34	15.70	44.65	2.88	4368.12	44.86
KUBW043	G25	78.88	84.75	62.25	139.88	105.94	9.91	16.35	46.50	2.89	4617.13	46.47
KUBW045	G26	80.63	86.63	61.50	141.25	105.93	10.08	16.40	45.80	2.84	4595.77	45.45
KUBW046	G27	73.38	78.88	67.88	140.13	96.99	7.60	14.03	38.83	2.78	3487.62	36.26
KUBW047	G28	74.88	80.75	67.75	141.63	104.43	9.71	16.23	45.78	2.86	4605.94	45.41
KUBW049	G29	77.25	83.63	64.88	140.88	104.63	9.64	16.40	45.43	2.80	4417.51	45.39
KUBW051	G30	77.75	84.25	65.25	142.00	107.34	10.69	16.93	49.20	2.93	5104.57	49.45
KUBW053	G31	76.63	82.13	65.13	140.63	103.80	9.31	15.55	43.88	2.85	4490.10	46.15
KUBW054	G32	76.88	83.13	64.13	140.38	103.81	9.79	16.38	45.46	2.80	4230.68	43.12
KUBW056	G33	76.13	82.00	60.63	135.88	104.98	9.46	15.28	44.55	2.94	4316.80	42.94
KUBW059	G34	76.25	83.13	64.13	139.63	106.19	10.38	17.18	48.85	2.86	5115.51	51.71
KUBW060	G35	71.13	76.63	63.38	133.75	98.98	8.49	14.30	39.28	2.75	3682.35	38.20
KUBW061	G36	71.75	77.50	60.88	132.13	98.33	8.08	13.90	38.38	2.75	3424.57	35.84
KUBW062	G37	74.00	80.00	63.13	136.13	106.61	10.58	17.23	48.75	2.89	5164.12	50.48
KUBW064	G38	71.63	77.13	59.38	130.00	95.78	7.63	13.73	37.23	2.72	3028.80	32.19
KUBW066	G39	72.25	77.38	61.25	132.63	97.20	7.95	13.83	39.35	2.84	3439.04	34.98
KUBW067	G40	74.13	80.00	62.38	135.88	102.83	9.46	15.43	43.83	2.89	4435.16	45.29
KUBW073	G41	73.63	79.25	62.13	134.75	104.09	9.53	15.18	44.83	2.96	3769.24	37.71

KUBW075	G42	74.75	79.38	59.88	133.63	102.46	9.19	15.13	44.28	2.94	4203.73	42.42
KUBW076	G43	73.13	78.88	64.88	137.38	97.11	7.69	14.25	38.70	2.76	3155.99	34.08
KUBW077	G44	78.50	84.50	64.00	141.63	105.41	10.15	16.10	46.55	2.91	4586.97	44.62
Danda	G45	74.88	82.25	64.13	137.88	97.53	7.59	14.65	38.63	2.68	3621.68	39.37
KUBW081	G46	72.75	78.38	65.38	137.00	96.61	7.64	14.50	38.15	2.68	3031.31	32.65
KUBW083	G47	74.63	80.38	62.38	136.00	102.94	9.53	15.85	46.63	2.98	3934.65	38.83
KUBW085	G48	77.75	83.75	62.38	139.00	102.33	9.48	15.70	46.38	2.97	4072.81	39.46
KUBW086	G49	76.63	83.00	64.75	140.63	102.33	9.81	15.38	44.93	2.95	4364.27	44.04
KUBW087	G50	76.88	83.63	65.00	141.25	103.08	9.50	15.45	44.63	2.89	4481.06	45.81
KUBW089	G51	74.38	80.13	61.75	135.50	101.49	10.01	16.75	45.23	2.73	4375.91	45.57
KUBW090	G52	76.38	82.13	65.50	140.75	102.08	9.09	15.60	44.20	2.86	4410.48	43.42
KUBW091	G53	76.75	82.88	65.63	141.75	104.80	9.89	16.43	45.08	2.78	4578.57	46.60
KUBW092	G54	69.50	76.63	61.88	131.00	103.33	9.74	16.63	45.25	2.74	4525.66	44.82
KUBW093	G55	68.63	74.13	60.88	129.00	95.49	7.96	14.13	38.00	2.71	3297.05	33.65
KUBW094	G56	69.50	74.88	58.50	127.25	95.51	7.96	14.30	39.05	2.75	3314.44	33.73
KUBW097	G57	70.38	76.13	61.25	130.75	100.43	9.24	15.90	44.68	2.84	4164.59	41.29
KUBW098	G58	68.00	73.50	59.75	127.13	94.98	7.60	14.00	38.35	2.76	3131.25	32.64
KUBW099	G59	69.75	76.38	63.75	132.75	102.04	9.48	15.63	44.38	2.86	4206.08	43.44
KUBW103	G60	70.63	76.63	62.00	131.75	96.38	7.98	13.93	38.45	2.77	3324.74	33.69
KUBW104	G61	70.00	77.13	63.75	133.00	100.30	9.34	15.24	43.55	2.88	4042.54	39.97
KUBW105	G62	70.50	77.25	64.88	134.75	102.21	8.79	15.45	44.85	2.91	4106.43	41.11
KUBW106	G63	69.25	75.50	60.00	128.75	96.94	7.69	13.68	38.38	2.80	3067.51	30.81
KUBW107	G64	69.50	75.63	63.00	132.00	96.74	7.68	13.76	37.93	2.77	3020.80	29.72
KUBW108	G65	72.25	78.88	63.25	135.00	105.61	9.35	15.79	45.48	2.90	4277.66	43.55
KUBW109	G66	70.50	77.00	61.00	131.13	104.06	9.24	15.63	45.48	2.94	3985.75	41.22
KUBW110	G67	69.88	77.25	62.88	132.13	101.34	8.65	15.35	44.20	2.88	4235.60	42.03
KUBW112	G68	67.63	74.00	59.00	126.25	95.25	7.33	13.30	37.65	2.83	3005.61	32.92
KUBW114	G69	70.00	75.63	63.13	132.50	103.94	8.90	16.03	45.13	2.83	3970.81	39.15
KUBW115	G70	67.63	72.88	59.25	126.25	96.16	7.43	13.95	38.60	2.79	2936.55	30.94
KUBW116	G71	71.25	77.00	61.50	132.38	103.78	8.85	15.63	44.50	2.87	3917.97	41.34
KUBW117	G72	71.50	78.00	63.00	134.13	104.05	9.26	15.58	44.73	2.89	3857.98	41.58
KUBW120	G73	71.38	77.50	60.63	131.50	97.03	8.46	14.25	39.00	2.74	3546.04	37.45
KUBW121	G74	72.38	78.00	60.38	131.88	97.06	8.33	14.45	39.53	2.76	3608.33	37.65
KUBW122	G75	74.75	80.38	64.88	138.50	96.40	7.53	13.58	37.78	2.79	2936.53	32.70
KUBW123	G76	74.63	81.88	66.13	139.88	103.50	9.34	15.83	45.00	2.87	4605.94	46.96
KUBW125	G77	73.38	78.75	62.50	134.75	96.78	7.29	13.88	37.95	2.75	2913.95	30.41
THBW347	G78	74.25	79.75	61.00	134.38	95.41	7.18	13.61	38.78	2.86	3084.20	34.07
KUBW128	G79	74.00	79.63	60.75	134.00	95.23	7.29	13.39	38.70	2.91	3080.35	31.53
KUBW129	G80	77.63	84.00	64.38	141.38	104.63	9.64	16.03	46.05	2.90	4713.81	45.69
KUBW130	G81	79.38	86.63	60.75	139.00	107.79	10.44	17.23	48.60	2.86	5160.88	51.47
KUBW131	G82	77.25	83.50	64.50	141.00	105.01	9.48	16.28	45.70	2.86	4469.34	45.56
KUBW132	G83	74.88	81.50	66.13	140.13	98.10	7.85	14.58	39.45	2.73	3671.67	39.03
KUBW135	G84	78.50	85.25	64.88	142.38	104.90	9.76	15.73	45.38	2.91	4467.48	45.87

KUBW136	G85	74.63	81.00	60.63	134.38	103.23	9.63	15.98	44.43	2.78	4472.52	45.41
KUBW137	G86	74.50	80.75	62.88	136.75	104.07	9.15	15.55	44.40	2.90	4450.56	45.12
KUBW139	G87	74.63	81.00	63.00	136.75	102.78	9.65	15.60	45.00	2.91	4261.23	42.27
KUBW140	G88	72.00	77.63	61.38	132.38	96.74	8.06	13.98	38.60	2.77	3110.75	32.21
KUBW141	G89	75.38	81.63	62.38	136.75	102.13	9.40	15.58	44.53	2.89	4378.86	43.40
KUBW143	G90	76.63	83.25	66.38	142.25	104.41	9.43	15.55	45.53	2.96	4532.07	45.58
KUBW144	G91	74.63	82.00	67.38	141.50	104.49	9.31	15.93	45.10	2.87	4453.60	43.09
KUBW145	G92	74.38	81.25	62.63	136.50	103.53	9.29	15.78	44.40	2.83	4379.04	45.29
KUBW146	G93	74.50	81.63	62.88	136.88	101.34	8.91	15.75	45.40	2.91	4159.65	41.80
KUBW148	G94	70.75	76.38	60.88	130.88	96.64	7.30	14.20	37.53	2.66	2980.76	30.87
THBW348	G95	70.88	76.13	60.25	130.38	96.01	7.49	13.83	38.88	2.81	3081.99	33.11
KUBW150	G96	70.38	76.13	63.63	133.25	97.39	7.64	14.13	39.03	2.77	3460.60	35.34
KUBW155	G97	72.13	77.88	59.38	130.88	96.74	7.48	13.70	37.93	2.78	3025.15	34.50
KUBW157	G98	73.75	80.38	62.25	135.50	102.58	9.10	15.98	46.28	2.91	4522.00	43.45
KUBW159	G99	72.13	78.88	64.38	136.13	102.88	9.09	16.10	44.93	2.81	4365.26	44.91
KUBW165	G100	72.00	78.75	64.63	136.00	104.41	9.60	15.50	45.45	2.96	4630.98	47.18
KUBW166	G101	71.88	79.25	65.75	137.00	101.40	9.41	15.73	44.38	2.83	4246.59	44.40
THBW349	G102	72.75	79.88	64.88	137.00	102.84	9.34	15.68	44.63	2.85	4361.81	43.99
KUBW168	G103	69.63	75.00	60.50	129.25	95.96	7.65	13.58	37.74	2.75	3043.71	32.04
KUBW170	G104	72.25	79.25	62.38	134.13	100.54	9.26	15.63	44.23	2.87	4216.11	42.72
KUBW171	G105	71.00	76.25	61.75	131.88	95.69	7.45	13.58	37.80	2.78	3070.25	33.53
KUBW176	G106	73.75	80.00	64.00	136.88	97.38	7.40	14.10	39.33	2.79	3390.34	34.27
THBW350	G107	76.50	83.25	66.50	141.75	103.01	9.29	15.65	45.93	2.93	4642.31	46.11
THBW351	G108	74.38	81.13	61.88	135.38	104.41	9.89	15.95	46.25	2.93	4714.87	44.59
THBW352	G109	71.00	76.13	59.25	129.38	96.10	7.39	13.38	38.00	2.83	3080.26	31.68
THBW353	G110	74.50	81.25	62.38	136.25	104.31	9.46	15.55	45.68	2.96	4324.94	43.90
THBW355	G111	73.13	80.00	62.63	134.88	102.25	9.39	15.78	44.15	2.81	3953.11	39.39
THBW356	G112	75.50	82.25	65.75	140.13	103.10	9.51	15.78	45.95	2.93	4441.80	43.85
THBW359	G113	75.50	82.00	62.50	137.13	103.24	9.41	15.60	44.23	2.84	4288.64	43.34
THBW360	G114	74.13	80.50	63.88	137.13	102.11	9.58	15.16	45.13	2.99	4496.80	43.68
THBW362	G115	72.75	77.75	62.75	134.38	95.80	7.75	14.05	38.83	2.77	3150.93	34.18
THBW363	G116	76.25	82.75	67.75	143.13	101.88	9.30	16.15	45.40	2.82	4659.77	45.64
THBW364	G117	72.63	77.88	64.50	136.25	97.83	7.86	14.08	39.83	2.83	3574.14	37.24
THBW385	G118	73.38	79.38	65.75	138.50	97.70	8.00	14.11	39.85	2.83	3548.95	35.70
THBW386	G119	76.50	83.25	60.50	136.38	104.14	9.53	16.08	46.75	2.94	4685.13	45.91
THBW387	G120	71.13	76.63	60.25	130.75	95.43	7.44	14.25	38.40	2.72	3030.69	33.56
THBW388	G121	74.25	80.25	63.63	137.25	101.61	9.21	15.55	44.90	2.89	4419.11	43.48
THBW389	G122	74.75	81.00	61.75	135.50	102.84	9.50	15.48	45.63	2.95	4158.33	43.25
THBW390	G123	73.13	79.63	62.38	134.63	102.76	9.20	16.05	45.45	2.85	4161.07	43.36
THBW391	G124	74.00	80.00	63.50	136.63	102.84	9.36	15.45	45.95	3.00	4415.57	43.32
THBW393	G125	74.88	80.88	62.88	136.88	102.49	9.53	15.68	45.48	2.92	4350.75	44.49
THBW394	G126	73.88	80.25	63.75	136.75	103.18	9.24	15.43	44.13	2.88	4216.07	41.66
THBW396	G127	72.75	79.25	69.38	141.50	101.69	9.15	15.35	44.13	2.90	4599.38	44.96

THBW397	G128	75.63	82.13	66.75	141.25	105.41	9.56	16.05	45.83	2.86	4700.99	46.11
THBW398	G129	78.50	85.25	64.38	141.88	105.16	9.58	16.35	46.45	2.89	4768.89	46.93
THBW399	G130	75.75	82.13	62.75	137.50	104.60	9.36	16.08	45.75	2.86	4423.54	42.31
THBW401	G131	72.50	77.88	62.25	133.88	97.09	7.63	13.95	38.78	2.77	3313.73	34.40
THBW402	G132	72.88	79.00	64.63	137.00	95.40	7.74	13.48	37.15	2.77	3051.02	33.40
THBW403	G133	72.63	78.25	61.50	133.25	96.89	7.86	13.68	38.93	2.84	3401.74	35.31
THBW404	G134	78.88	85.38	63.50	141.50	103.16	9.43	15.60	44.65	2.90	4374.87	45.15
THBW405	G135	73.25	79.38	62.75	135.13	95.33	7.66	13.75	37.93	2.76	3074.49	32.07
THBW406	G136	72.25	78.25	62.38	133.88	95.51	7.11	13.63	38.45	2.82	3114.73	31.49
THBW407	G137	76.50	82.88	64.88	140.63	102.59	9.30	15.78	45.23	2.88	4527.47	46.32
THBW408	G138	72.75	78.50	61.63	133.75	101.44	7.69	14.33	39.85	2.78	3329.25	33.74
THBW409	G139	79.25	85.50	59.88	138.25	102.99	9.48	16.13	46.10	2.87	4337.53	41.75
THBW411	G140	75.13	81.50	64.25	138.75	103.41	9.28	15.58	44.75	2.91	4503.46	45.57
THBW412	G141	71.50	77.38	60.75	131.75	96.03	7.51	13.98	37.85	2.72	3079.47	32.20
THBW413	G142	71.13	76.75	62.63	133.25	96.03	7.60	13.50	38.38	2.86	3002.17	33.07
THBW414	G143	71.63	77.13	62.00	133.00	95.64	7.46	13.80	37.75	2.76	2897.43	31.93
THBW416	G144	71.38	77.25	60.50	131.25	97.93	7.44	14.10	37.90	2.68	2950.23	31.87
THBW417	G145	71.63	77.38	62.38	133.50	95.76	7.68	14.20	38.35	2.71	3059.61	32.52
THBW418	G146	74.75	81.63	64.75	138.88	103.18	9.49	16.40	47.33	2.93	4622.89	46.36
THBW419	G147	72.13	77.88	59.50	130.75	96.99	7.88	13.98	39.15	2.82	3309.27	33.79
THBW420	G148	76.88	82.25	64.38	140.13	103.46	9.33	14.50	43.65	3.01	4299.67	42.99
THBW422	G149	75.88	82.25	65.38	140.63	104.34	9.69	16.03	46.58	2.92	4702.66	48.25
THBW423	G150	71.50	77.25	63.75	134.75	96.20	7.44	13.63	38.83	2.85	3125.34	31.84
THBW371	G151	75.75	83.00	66.38	141.50	104.25	9.33	15.85	44.10	2.81	4375.20	43.41
THBW372	G152	73.50	80.75	64.63	137.00	104.08	9.59	16.20	46.25	2.88	4405.89	43.69
THBW373	G153	74.13	80.88	62.63	136.00	104.66	9.36	15.63	44.50	2.87	4091.02	38.60
THBW374	G154	73.25	80.25	64.00	136.88	103.00	9.40	15.55	44.75	2.90	3918.14	40.06
THBW375	G155	74.13	79.75	60.63	133.88	103.95	9.55	15.00	44.38	2.97	4222.29	41.93
THBW376	G156	73.38	79.38	62.13	134.38	103.76	9.21	15.75	43.93	2.81	4355.56	44.21
THBW378	G157	74.50	80.75	62.75	136.25	103.93	9.06	15.60	43.93	2.84	4124.11	41.17
THBW379	G158	74.00	80.50	62.75	136.25	104.04	9.56	15.00	44.83	2.99	4087.12	39.64
THBW380	G159	74.88	81.75	67.00	141.25	103.75	9.59	15.80	45.63	2.92	4184.65	41.37
THBW381	G160	75.00	82.13	66.63	141.00	102.88	9.49	16.18	44.75	2.80	4055.87	41.25

DF = Days to 50 % flowering; DM = Days to 90 % maturity; GFD = Grain filling duration; TKW = Thousand kernel weight; PH = Plant height (cm); SL= Spike length (cm); NSS= Number of spikelet per spike; NKPS= Number of kernel per spikelet; NKS = Number of kernel per spike; GY= Grain yield.