

**Supplemental Table 1.** The origin or pedigree, subpopulation and phenotype of 144 maize inbred lines used in this study

ID.	Inbred line	Origin/Pedigree	Sub-population	BLUP value (%)
1	T477	(T75×YJ7) ×YJ7	G3	35.43
2	T437	T75×YJ7	G3	37.75
3	T458	Unknown	G3	36.93
4	T75	8112×YJ7	G3	24.05
5	4A	Derived from synthetic variety	G3	25.44
6	T877	(YJ7×E28) ×YJ7	G3	30.75
7	Su951	Ye478×Ji183	G3	34.71
8	Chang7-2	(V59×Huangzaosi)×S901	G2	29.35
9	Nongda1145	Recycled line from hybrid 78599	G3	38.21
10	Qi319	Recycled line from hybrid 78599	G3	33.84
11	T249	5U×P6C1	G3	35.12
12	9409	Derived from Su951	G2	34.71
13	Dan598	Dan340×78599	G3	38.94
14	HL40	Derived from synthetic variety	G2	29.05
15	Sheng137	Derived from 6JK111	G3	33.32
16	4AC	4A×HuangC	G3	33.06
17	S651	Recycled line from hybrid 78599	G2	33.94
18	Wu314	(302×Huangbaoli)×Huangzaosi	G2	29.15
19	T812	Derived from U8	G3	32.50
20	F2	Derived from synthetic variety	G3	38.78
21	Xin19M	Derived from mutant of Ye478	G3	38.52
22	Zheng58	Derived from mutant of Ye478	G3	35.28
23	H991	Ye478×5003	G3	37.49
24	YJ7	Recycled line from hybrid 78599	G3	35.28
25	N18	Maize inbred line of N18 from U.S.	G2	32.65
26	N3	Maize inbred line of N3 from U.S.	G2	39.35
27	N21	Maize inbred line of N21 from U.S.	G2	37.96
28	Dan340	Baizhulu-9×wild maize	G3	33.12
29	K22	K11×Ye478	G3	37.75
30	T803	8112×5003	G3	31.52
31	C8605	7922×5003	G3	37.13
32	Ye478	8112×5003	G3	36.46
33	HuangC	(Huangxiao162/o2×Zi330/o2)×Tuxpeno-1	G3	39.40
34	7922	Recycled line from hybrid 3382	G3	37.54
35	DH02	Derived from Mixed Population of Lv28 and Lv9	G3	37.65
36	Mo17	187-2×103	G2	32.70
37	Zi330	OH43×Keli67	G2	37.54
38	DH65232	6237×5003	G3	33.84
39	8723	Unknown	G3	30.28

40	Xun92-6	Chang7-2×J7H	G2	32.39
41	lx9801	Ye502×H21	G2	36.26
42	Y85	515×P78599	G2	39.04
43	CCM	Unknown	G3	27.40
44	Zong3	Derived from Zi330 Synthetic	G2	26.78
45	Zong31	Derived from Zi330 Synthetic	G2	35.02
46	Xun248	78599×8085	G3	39.30
47	T178	Recycled line from hybrid 78599	G3	33.94
48	Zhong128	2118×Zhongzi7490	G1	38.47
49	P138	Recycled line from hybrid 78599	G3	36.05
50	Q1261	Unknown	G2	37.08
51	K12	Huangzaosi×Weicunhuang	G2	34.81
52	ZGF	Unknown	G1	40.43
53	Zheng37	Derived from Synthetic Population	G2	28.79
54	Huangzaosi	Tangsipingtou	G2	31.98
55	Luyuan92	Yuanqi123×1137	G2	25.39
56	107	Derived from XL80	G2	35.59
57	DH4866	7922×Ye478	G3	37.29
58	JH78-2	Recycled line from hybrid 78599	G3	39.09
59	JH3372	Shen5003×Zi330	G3	37.49
60	Zheng39	(Ji533×Zheng32)×Ji533	G1	35.28
61	J2	Recycled line from hybrid 78599	G3	39.30
62	T66	8112×78599	G3	32.75
63	568G	8112×78599	G3	34.87
64	L162	8112×T75	G1	30.75
65	H0424	Unknown	G1	39.09
66	Dongdan60	Unknown	G3	31.31
67	T1002	(T75×78599)×(249+...)	G3	39.14
68	T1003	4S×S4	G3	26.86
69	XianfengX	Recycled line from hybrid Xianyu335	G3	31.67
70	T1004	4S×Zheng58	G3	30.75
71	T1005	Qi319×X7	G3	37.08
72	T1006	Recycled line from hybrid 78599	G3	35.02
73	T1007	Shen137×4S	G3	32.03
74	T2001	Recycled line from hybrid Xianyu335	G1	31.21
75	T1008	E28×CML×Dan340	G3	34.20
76	T1009	E28×CML×4S	G3	27.55
77	T1010	K12×CML×Dan340	G3	27.45
78	T1011	K12×CML×4S	G3	24.05
79	T1012	(5U×P6C1)×4S	G3	37.54
80	T1013	(568G×S3)×568G	G3	31.26
81	T1014	Zong3×T877	G3	36.41
82	T1015	T249×78599	G3	34.20
83	T1016	(T75×78599)×Chang7-2	G3	33.68

84	YL1F	Unknown	G1	33.89
85	A2M	Unknown	G3	31.16
86	5812	(Zheng58×Mo17)×Zheng58	G2	32.08
87	C42M	Unknown	G2	32.03
88	D805	D805-4-4	G2	33.22
89	Ji35	Derived from Huangzaosi	G2	30.23
90	Ji53	Jiqun2Co-2	G3	30.75
91	R1	Derived from tropical population S4	G2	34.40
92	R2	Derived from tropical population S187	G2	34.25
93	R3	Derived from tropical population S2	G2	37.54
94	R4	Derived from tropical population S5	G2	34.35
95	R5	Derived from tropical population S6	G2	39.30
96	R6	Derived from tropical population S7	G2	35.48
97	R7	Derived from tropical population S8	G2	38.63
98	R9	Derived from tropical population Pob501	G2	32.24
99	R10	Derived from tropical population Pob502	G2	34.76
100	R11	Derived from tropical population Suwan	G2	38.47
101	N1	Maize inbred line of N1 from U.S.	G2	33.42
102	N9	Maize inbred line of N9 from U.S.	G1	33.37
103	N10	Maize inbred line of N10 from U.S.	G2	32.81
104	N11	Maize inbred line of N11 from U.S.	G2	32.34
105	N16	Maize inbred line of N16 from U.S.	G2	35.64
106	N23	Maize inbred line of N23 from U.S.	G2	32.86
107	N24	Maize inbred line of N24 from U.S.	G2	37.65
108	N25	Maize inbred line of N25 from U.S.	G2	37.34
109	N26	Maize inbred line of N26 from U.S.	G1	31.88
110	A489	Recycled line from hybrid Xianyu335	G1	27.71
111	LS335M	Recycled line from hybrid Xianyu335	G1	33.42
112	T1020	Y85×Cang7-2	G2	36.36
113	T1021	T75×T178	G3	37.18
114	T1022	E77×9045	G3	38.94
115	T1023	Zong3×Su951	G3	38.78
116	T1024	4S×Chang7-2	G3	30.33
117	T1025	4S×Dan598	G3	33.37
118	Ji853	Huangzaosi×Zi330	G2	34.56
119	YG478	Derived from of Ye478	G3	38.63
120	LZF	Unknown	G2	39.61
121	Xun9058	6JKxuanxi×8085	G3	37.85
122	A19	Unknown	G2	32.65
123	CM	Unknown	G3	36.21
124	JS045-1	Recycled line from hybrid 78599	G3	38.16
125	JS06730	Recycled line from hybrid 78599	G3	26.11
126	T3001	BSSS(R)C7	G1	31.26
127	T3002	BS13(S)C5	G1	34.92

128	T3003	(PA91 ×LH98) ×GA	G2	34.66
129	T3004	PA91 ×LH98A	G2	30.69
130	T3005	A619 ×L120	G2	32.75
131	T3006	Oh43 ×L120	G2	32.55
132	T3007	LH19 ×LH39	G2	30.39
133	T3008	778	G1	29.25
134	T3009	Funks	G1	30.28
135	T3010	(B37 ×644) ×B37	G1	37.39
136	T3011	B73(2) ×H93	G1	32.86
137	T3012	Va85 ×Pa91	G2	38.73
138	T3013	Mo17 backcross 5 recovery	G2	33.58
139	T3014	Mo17(3) ×610	G2	23.38
140	T3015	(Mo17 ×H99) ×LH53	G2	31.11
141	T3016	LH55 ×LH47	G2	31.62
142	T3017	(Mo17 ×ASA) ×Mo17	G2	29.87
143	T3018	PH814 ×PH207	G1	31.93
144	T3019	PH814 ×PH848	G1	28.79

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**Supplemental Table 2.** SNPs were detected for kernel moisture content at harvest stage in Nantong and Sanya

SNP	Bin	Position	Alleles	Nantong		Sanya	
				$-\log_{10}(P)$	$R^2$ (%)	$-\log_{10}(P)$	$R^2$ (%)
1_PZE-101194927	1.07	241912518	A/C			3.10	8.25
5_PZE-105042539	5.03	29708107	A/C	3.30	10.38	3.18	7.34
5_PZE-105093385	5.04	135189300	A/G	3.35	9.76	3.47	6.61
5_PZE-105093414	5.04	135233554	A/G	3.26	9.44	3.00	6.06
5_PZE-105093430	5.04	135278708	A/G	3.34	9.69	3.52	6.95
5_PZE-105093464	5.04	135302345	A/G	3.18	9.15		
8_PZE-108064150	8.04	114429371	A/G	3.55	8.16		
8_PZE-108103951	8.06	159388825	A/G			3.55	10.18
9_PZE-109105795	9.06	147893495	A/G	3.37	9.83	3.14	5.46

$R^2$ : percentage of phenotypic variance explained

**Supplemental Table 3.** The detailed information for eight maize inbred lines with low kernel moisture content

SNP	PZE-101194927	PZE-105042539	PZE-105093430	PZE-108064150	PZE-109105795
Allele	C	A	G	A	G
T75	+	-	+	+	+
4A	+	-	+	+	-
Zong3	-	+	+	+	+
Luyuan92	-	-	+	+	+
T1003	+	+	+	+	-
T1011	-	-	+	-	-
JS06730	+	-	-	-	+
T3014	-	+	+	-	+

+: the resistant allele is existent in this line; -: the resistant allele is non-existent in this line