

Table S1. Phenotype, genotype and material data for 57 GWAS populations

Number	Variety name	Phenotype ^a										Genotype ^b			
		TN (%)	CF (g/100g)	ANs (μg/g)	FAA (mg/g)	GNS	KNS	PH (cm)	SL (cm)	SN	TKW (g)	<i>KASP-ANs-7B</i>	<i>KASP-CF-2B</i>	<i>KASP-FAA-7B</i>	<i>KASP-TN-6B</i>
1	Luozen1	2.28	1.43	45.52	5.03	3.6	55.2	65.8	7.02	17.2	31.0	B	B	A	A
2	Ziyou5	2.20	0.77	28.55	5.31	4.0	54.6	73.0	8.40	16.6	41.2	NA	A	A	A
3	Donghei10	2.47	1.65	39.09	4.53	3.0	63.6	98.2	9.30	19.0	36.0	A	NA	A	A
4	Zhouheimai1	2.39	0.74	52.90	5.45	4.0	54.4	61.2	8.44	18.0	35.6	NA	B	A	A
5	JiziGQ-2	2.23	1.27	79.01	6.01	5.0	60.4	69.8	7.80	19.4	36.1	B	NA	A	A
6	Fenheimai1831	2.56	0.56	28.93	4.81	3.6	53.0	92.2	9.40	17.8	36.5	H	A	A	H
7	Linhei187	2.48	1.90	32.68	7.69	4.4	64.8	72.8	7.92	18.8	42.2	NA	B	NA	A
8	Caimai08	2.43	1.13	19.45	6.02	NA	NA	NA	NA	NA	NA	A	A	B	A
9	Cai9	2.34	1.48	45.85	5.29	3.8	57.0	70.4	7.50	18.0	41.1	A	A	A	A
10	Cai10	2.64	1.33	30.80	5.60	4.0	52.2	60.6	7.12	15.6	36.7	B	A	B	A
11	Dhei5	2.62	0.88	25.42	4.89	3.2	48.0	83.7	8.10	18.2	43.5	B	B	A	B
12	ShunyiL-5325	2.68	0.83	39.00	6.74	3.0	41.4	76.2	7.70	16.4	41.0	B	B	A	A
13	ShunyiL-5877	2.94	0.62	13.45	6.04	3.6	53.4	79.2	8.20	16.8	39.6	NA	A	A	B
14	ShunyiL-5779	2.63	0.90	19.93	4.53	3.8	64.8	83.0	9.10	20.2	42.0	B	A	A	A
15	ShunyiL-4889	2.61	0.62	22.82	4.75	3.8	61.8	87.4	11.3	20.0	47.3	A	A	B	A
16	GuL3923	2.55	1.45	6.83	7.85	4.0	48.4	87.4	8.96	17.8	45.6	A	B	A	A
17	Dhei19	2.81	0.96	26.09	4.96	3.0	48.6	105.4	10.1	17.6	43.3	A	B	A	B
18	Dhei7	2.36	0.80	27.52	7.18	3.8	43.2	68.2	7.10	15.4	43.6	B	B	B	A
19	Dhei45	2.43	0.93	15.46	4.54	4.0	63.2	93.4	11.64	20.4	39.7	A	A	B	B
20	Dhei122	2.66	0.98	16.83	5.79	4.0	48.0	94.2	8.64	19.2	43.6	A	B	A	B
21	Dhei14	2.81	0.78	9.26	5.62	3.0	50.2	98.8	8.50	18.8	41.9	A	B	A	B
22	Dhei23	2.81	0.60	22.69	5.11	4.0	50.6	93.2	7.02	19.0	38.5	A	B	A	B
23	ShunyiL-5925	2.65	2.47	47.61	5.69	4.0	63.0	98.0	9.96	21.2	39.0	A	B	A	B
24	ShunyiL-4169	2.57	1.62	25.42	4.55	4.6	77.2	79.6	9.32	20.8	38.4	B	A	A	A
25	ShunyiL-4717	2.43	1.73	66.20	4.94	5.0	72.4	84.8	9.74	19.0	48.9	B	B	A	A
26	ShunyiL-5400	2.49	1.63	55.59	5.32	5.0	45.2	58.8	7.92	15.6	41.9	H	NA	A	A
27	ShunyiL-4925	2.56	1.00	20.17	4.32	4.0	54.8	92.8	9.50	19.2	37.2	B	A	A	A
28	ShunyiL-5446	2.50	0.84	19.67	6.74	3.0	60.0	90.4	10.82	21.6	40.3	B	A	A	A
29	ShunyiL-5927	2.48	1.06	15.68	5.46	3.0	53.2	99.4	10.14	20.0	39.9	NA	B	H	A
30	Qinzi2	2.50	0.87	55.33	6.29	3.0	41.8	83.4	9.00	15.8	42.9	H	A	A	NA
31	Nongda3753	2.62	0.58	7.40	4.89	4.0	51.0	69.0	7.80	19.6	37.0	H	B	H	A
32	Zhouyinfazitumai	2.66	1.11	18.94	4.99	3.0	40.4	90.6	8.60	15.6	44.2	H	A	A	A
33	Zhongheimai6	2.42	1.29	92.93	7.00	4.0	51.8	73.4	7.42	17.0	43.5	B	A	B	A
34	Jiziheixiaomai1	2.29	1.77	54.39	7.31	4.8	67.2	67.8	7.50	19.2	37.1	H	A	NA	A
35	Jizimai8	2.31	1.94	34.75	6.74	4.0	46.2	65.2	7.60	16.0	38.1	A	B	A	A
36	Jizimai19	2.29	2.18	46.47	3.39	4.4	69.2	76.8	8.00	20.6	32.4	B	B	A	A
37	Jizimai26	2.38	1.27	27.36	5.24	4.6	66.6	69.8	8.44	19.6	35.3	A	NA	A	A
38	Fuximai10-6	2.53	2.06	37.55	5.74	5.0	49.2	52.9	7.86	18.4	34.2	A	B	A	A
39	Jizi439	2.33	2.13	53.46	5.26	NA	NA	NA	NA	NA	NA	B	B	A	A
40	Shannongzimai13	2.30	2.06	87.36	6.44	5.0	71.8	65.8	8.20	18.0	34.4	B	B	H	A

41	Nongda3659	2.35	1.49	51.62	5.36	3.4	46.2	69.3	7.10	16.0	44.5	B	B	B	A
42	Yushengheimai1	2.27	1.64	51.22	6.98	4.0	55.0	74.6	6.56	19.4	34.7	B	A	A	A
43	Jinuomai22	2.34	1.21	48.98	7.89	4.2	65.2	70.8	9.70	20.2	44.0	A	A	B	A
44	Caimai07	2.25	1.03	47.82	5.69	3.6	56.4	67.6	7.80	18.8	39.6	B	A	A	A
45	Cai08	2.77	0.98	6.34	5.46	3.0	56.8	60.8	8.30	19.0	43.6	A	A	A	B
46	Zhongzimai3	2.38	1.28	23.11	4.80	3.4	46.8	62.0	6.70	16.6	37.8	A	A	H	A
47	Shandongnuomai2	2.33	0.82	72.21	5.39	4.0	59.0	70.6	8.68	18.2	43.7	B	A	A	A
48	Daizimai5874	2.31	0.65	57.11	7.92	4.0	49.8	58.0	6.38	18.0	43.2	A	A	H	A
49	Shannongzimai1	2.70	0.50	63.03	6.20	5.0	76.0	76.6	8.04	20.2	42.0	A	A	A	NA
50	Dezi	2.43	1.47	56.40	6.92	NA	NA	NA	NA	NA	NA	B	A	B	A
51	Bangtaizimai1	2.29	1.02	10.39	6.10	3.0	43.8	67.0	8.04	17.8	36.7	A	A	A	A
52	Taikezimai2	2.51	0.90	40.15	5.61	4.0	66.2	69.6	7.52	18.4	38.6	NA	A	B	A
53	Lanmai11	2.44	0.82	6.93	7.46	4.0	49.4	64.8	6.96	19.2	45.9	H	A	A	A
54	Caimai20	2.45	1.39	79.46	5.59	5.0	68.0	88.2	11.86	18.4	40.1	B	B	A	A
55	Aiminlanmai1	2.44	1.14	40.63	7.04	3.0	54.0	69.2	10.14	21.0	44.0	B	A	A	A
56	Caimai16	2.40	1.29	23.52	6.54	4.0	51.2	70.8	7.90	19.8	38.8	NA	B	A	A
57	Dailanmai5711	2.52	1.49	42.32	5.72	4.0	49.8	62.2	6.82	17.0	35.5	B	A	B	A

^a TN, total nitrogen; CF, crude fat; ANs, anthocyanins; FAA, free amino acids; GNS, grain number per spikelet; KNS, kernel number per spike; PH, plant height; SL, spike length; SN, spikelet number per spike; TKW, thousand kernel weight. ^{a, b} NA indicates missing data or missing genotype.