

Table S1. List of 335 soybean accessions with phenotype values

Name	Country	Latitude (°N)	Longitude (°W)	Average of Weighted value
HF25	China	48.29	128.08	22.00
Longdadou	China	48.29	128.08	8.50
Heihehuangdou	China	48.29	128.08	7.50
Sui1	China	48.29	128.08	11.00
Sui14	China	48.29	128.08	4.00
Liaoxian1	China	40.85	122.00	1.00
DN44	China	48.29	128.08	15.50
HH18	China	48.29	128.08	9.00
BF9	China	48.29	128.08	14.00
Jiunong21	China	43.35	126.29	17.00
Jilin30	China	43.35	126.29	3.50
Qinganhei	China	48.29	128.08	10.00
Fangzhengmoshidou	China	48.29	128.08	6.50
Meng14	China	44.49	111.70	6.50
Fengdihuang	China	43.35	126.29	8.50
Dalidou	China	36.23	118.31	10.00
Liushitianhuchang	China	40.85	122.00	11.00
Jilinchalihua	China	43.35	126.29	9.00
Fengshou6	China	48.29	128.08	5.50
NF11	China	48.29	128.08	10.00
MF1	China	48.29	128.08	5.50
DN47	China	48.29	128.08	4.50
HN44	China	48.29	128.08	10.00
Meng9	China	44.49	111.70	10.50
DN42	China	48.29	128.08	5.00
HF50	China	48.29	128.08	4.00
KB1	China	48.29	128.08	6.00
Jianshanpu	China	48.29	128.08	12.00
Gongye04-141	China	43.35	126.29	7.00
HF11	China	48.29	128.08	10.50
Sui02-339	China	48.29	128.08	7.00
Shidadou	China	39.19	116.29	9.00
Maoyan	China	37.34	100.30	14.50
Kangxian2	China	48.29	128.08	10.50
NF15	China	48.29	128.08	12.00
Longpin03-11	China	48.29	128.08	11.50
Longxuan1	China	48.29	128.08	7.50
Heilongjiang401	China	48.29	128.08	22.00
Jinshanchamoshidou	China	43.35	126.29	10.00
Tiejiasili	China	43.35	126.29	5.00
Tongnong13	China	43.35	126.29	13.00

Jinzhou4	China	40.85	122.00	12.50
Heimoshi	China	43.35	126.29	13.50
Duludou	China	43.35	126.29	5.00
Jinyuan1	China	43.35	126.29	5.00
Nidinghuameidou	China	37.19	105.78	27.50
Qingrenhei	China	48.29	128.08	4.00
Jindou33	China	40.85	122.00	10.50
Tiefeng8	China	40.85	122.00	9.00
Ken23	China	48.29	128.08	4.00
Tiejiazi	China	40.85	122.00	8.50
Ji94	China	43.35	126.29	5.50
Liaodou3	China	40.85	122.00	14.50
Liaodou23	China	40.85	122.00	12.50
Liaodou2	China	40.85	122.00	2.50
Liao98072	China	40.85	122.00	20.00
Fudou310	China	25.76	117.95	4.00
Suiningfengtaijiangs				
e	China	30.11	102.76	10.50
Honghuliuyuebao	China	31.13	112.14	16.00
Sudou	China	29.28	120.00	11.50
Heikewudou	China	19.10	109.71	14.50
Huameidou	China	31.13	112.14	5.00
Yingdehe	China	22.715	113.325	10.50
Guixiadou2	China	23.385	108.165	28.00
Qianweiquanshuidou	China	30.11	102.76	8.50
Jianghuangdou	China	35.385	108.22	7.50
Shifangluosidou	China	30.11	102.76	8.00
Daimi	China	31.125	112.14	8.00
Laoshupi	China	35.39	108.22	10.00
Chahuang1	China	31.13	112.14	13.00
Lupidou	China	27.17	115.81	18.50
Luxindou7803	China	23.385	108.165	6.00
Houzimao	China	31.13	112.14	7.00
Baimaodou	China	25.76	117.95	14.00
Yizhengdalihuang	China	32.83	118.88	13.00
Tongshanqing	China	32.83	118.88	12.50
Songshanbaima	China	31.13	112.14	13.50
Dabaimaodou	China	31.13	112.14	15.00
Huichahuangdou	China	35.39	108.22	8.50
Youwudou	China	31.13	112.14	11.00
Jinghuang35	China	31.13	112.14	7.50
Duchuangwu	China	27.17	115.81	5.50
Guizao1	China	23.39	108.17	9.00
Guanyunhai	China	27.17	115.81	13.00

Tantuxiaowujia	China	32.83	118.88	20.50
Gandi5	China	27.17	115.81	9.00
Xinyuqing	China	27.17	115.81	13.00
Aishengnidou	China	27.42	111.37	1.00
Huangmao	China	27.42	111.37	15.00
Changshani	China	27.42	111.37	21.50
Shangraobayue	China	27.17	115.81	2.50
Hongzhudou	China	27.42	111.37	4.50
Jin38	China	37.39	112.24	4.50
Jin46	China	37.39	112.24	13.00
Fendou72	China	37.39	112.24	16.67
Jin78	China	37.39	112.24	15.00
Huibuzhidou	China	37.39	112.24	6.00
Yinxianheidou	China	37.39	112.24	11.00
Jiaochenghei	China	37.39	112.24	14.00
Fengwo	China	29.28	120.00	2.00
Bayuehuang	China	29.28	120.00	12.50
Heihuatiangengdou	China	29.28	120.00	11.50
Baoxuan23	China	29.28	120.00	6.00
Dacaiqing	China	29.28	120.00	6.00
Guzhihuang	China	29.28	120.00	13.50
Huabanqingdou	China	29.28	120.00	3.50
Zhong37	China	40.15	116.28	13.50
Zhong35	China	40.15	116.28	13.00
Zhong8	China	40.15	116.28	2.00
Zhong32	China	40.15	116.28	11.50
Zhong33	China	40.15	116.28	10.00
Xu12	China	32.83	118.88	12.00
Shanning7	China	36.23	118.31	16.00
Huayou446	China	39.19	116.29	5.50
Youbian30	China	40.15	116.28	11.00
Qiandou5	China	39.19	116.29	7.50
Zhong03-5355	China	40.15	116.28	9.50
Zhong13	China	40.15	116.28	8.50
Qi25	China	36.23	118.31	3.50
Zhong03-5363	China	40.15	116.28	9.00
Zhong03-5179	China	40.15	116.28	11.50
Wuyuehuang	China	27.17	115.81	17.50
Peixianyou	China	32.83	118.88	10.00
Madaiqingdou2	China	22.72	113.33	2.50
Longchuanhuangdou	China	22.72	113.33	3.00
Mashanrenfenghuan				
g	China	22.72	113.33	6.00
Gui0118-1	China	23.39	108.17	3.50

Guichun1	China	23.39	108.17	6.50
Gandou4	China	27.17	115.81	6.00
Quandou8	China	25.76	117.95	3.00
Liudou3	China	23.39	108.17	10.50
Fudou234	China	25.76	117.95	7.00
HC6	China	22.72	113.33	9.00
HX1	China	22.72	113.33	8.50
HX8	China	22.72	113.33	7.00
Hunan1	China	27.42	111.37	26.67
Xiangchun10	China	27.42	111.365	4.50
Xiangdou13	China	27.42	111.37	4.00
Xiangdou18	China	27.42	111.37	3.50
Xiangdou19	China	27.42	111.37	15.00
Xiangdou23	China	27.42	111.37	7.50
Xiangchun24	China	27.42	111.37	8.00
Zhong6	China	40.15	116.28	8.50
Boige du	Germany	52.31	13.20	6.50
	Yugoslavi			
Duomala	a	46.30	14.30	5.00
Aika166	Rumania	44.23	26.10	4.00
Heersong2	Ukraine	50.28	30.29	8.00
Yapiche	China	48.29	128.08	4.00
Dunajika	Russia	61.50	98.00	9.50
HF29	China	48.29	128.08	8.50
Changjidou1	China	37.34	84.79	10.50
Nova	Italy	41.54	12.30	4.50
Harosoy	America	35.80	78.80	9.00
Tianedan	China	37.39	112.24	10.00
century 1	America	37.15	119.52	4.00
HF37	China	48.29	128.08	4.50
DN56	China	48.29	128.08	7.00
DN07-909	China	48.29	128.08	7.00
HF45	China	48.29	128.08	6.50
HF55	China	48.29	128.08	3.50
BD16	China	48.29	128.08	7.00
Huajian1	China	48.29	128.08	9.50
HJ2	China	48.29	128.08	4.00
B1484	China	48.29	128.08	7.00
B1873	China	48.29	128.08	12.00
B4834	China	48.29	128.08	17.00
Sui28	China	48.29	128.08	12.00
Sui30	China	48.29	128.08	6.00
Ken04-8579	China	48.29	128.08	12.00
HH38	China	48.29	128.08	5.00

HH48	China	48.29	128.08	13.00
HH05-1676	China	48.29	128.08	8.00
He05-991	China	48.29	128.08	2.00
He05-31	China	48.29	128.08	3.00
Hu04-528	China	44.49	111.70	12.50
Hu423	China	44.49	111.70	10.00
Sui03-3046	China	48.29	128.08	8.00
Sui25	China	48.29	128.08	4.00
Sui03-3952	China	48.29	128.08	10.50
DY2004-5	China	43.35	126.29	12.00
Ji89	China	43.35	126.29	5.00
Sui05-7304	China	48.29	128.08	7.50
Meng21	China	44.49	111.70	10.50
V111-4	China	43.35	126.29	14.50
Hu03-286	China	44.49	111.70	3.50
Ken30	China	48.29	128.08	4.00
Zhong27	China	40.15	116.28	7.50
Ken29	China	48.29	128.08	8.00
Ken22	China	48.29	128.08	10.50
HN48	China	48.29	128.08	9.00
HN55	China	48.29	128.08	10.00
Sui29	China	48.29	128.08	5.00
Ken15	China	48.29	128.08	8.50
Ken18	China	48.29	128.08	11.00
PI486355	America	41.83	92.91	5.00
Zheng9525	China	33.73	113.30	11.50
Zheng7016	China	33.73	113.30	8.00
Zheng9805	China	33.73	113.30	5.50
Zheng7501	China	33.73	113.30	8.50
Zheng97196	China	33.73	113.30	6.50
Zheng4066	China	33.73	113.30	2.50
Zhong30	China	40.15	116.28	11.00
ZhongJ4032	China	40.15	116.28	13.00
Zhong00-683	China	40.15	116.28	7.50
Zhong05-15	China	40.15	116.28	7.00
Youchun05-4	China	31.13	112.14	12.50
Nannong30	China	32.83	118.88	8.00
Ji18	China	39.19	116.29	8.50
Zhou02-281	China	33.73	113.30	3.00
ZhongJ4033	China	40.15	116.28	12.50
Wan24	China	31.90	116.96	4.50
Wan16	China	31.90	116.96	10.50
Qi32	China	36.23	118.31	4.50
Hedou3	China	31.90	116.96	6.00

Qi30	China	36.23	118.31	11.00
Qi31	China	36.23	118.31	6.00
Meng19	China	44.49	111.70	4.50
Jidou17	China	39.19	116.285	6.33
Wuxing4	China	39.19	116.285	12.00
Ji06B7	China	39.19	116.285	5.50
Tie50	China	40.845	121.995	5.00
Qi28	China	36.225	118.31	8.50
Qi33	China	36.225	118.31	7.00
Hedou12	China	36.225	118.31	8.50
Lu4	China	36.23	118.31	12.50
Lu11	China	36.23	118.31	11.00
Yue5	China	36.23	118.31	3.50
Yu15	China	33.725	113.3	8.00
Yu16	China	33.73	113.30	7.00
Yu17	China	33.73	113.30	8.50
Yu23	China	33.73	113.30	17.50
Yu27	China	33.73	113.30	7.00
Yu28	China	33.73	113.30	3.50
Zheng92116	China	33.73	113.30	8.00
Zheng107	China	33.73	113.30	12.00
Huadou20	China	33.73	113.30	9.50
DN93-046	China	48.29	128.08	5.50
Williams82	America	41.83	92.91	6.50
DN48	China	48.29	128.08	17.00
HN37	China	48.29	128.08	5.50
HF47	China	48.29	128.08	4.50
DN46	China	48.29	128.08	9.00
Sui10	China	48.29	128.08	3.00
DN L-79	Canada	43.40	79.25	3.50
DN594	China	48.29	128.08	6.50
Charleston	America	41.83	92.91	6.00
Jiunong20	China	43.35	126.29	3.50
Tie51	China	40.85	122.00	4.00
Tie52	China	40.85	122.00	6.00
Keburi	Japan	35.41	139.44	7.00
Peking	America	40.42	74.00	7.50
Dongnong8004	China	48.29	128.08	7.00
DN1068	China	48.29	128.08	11.00
Conrad	America	41.83	92.91	7.50
DN49	China	48.29	128.08	6.50
DN50	Canada	43.40	79.25	7.50
Maple Arrow	Canada	43.40	79.25	3.50
DN L-5	Canada	43.40	79.25	12.00

Tie54	China	40.845	122.00	11.50
Tie58	China	40.845	122.00	13.50
DN43	China	48.29	128.08	9.00
Kangxian3	China	48.29	128.08	2.50
Ji100	China	43.35	126.29	22.50
Zaoshu18	China	40.145	116.28	11.50
Xiamentengzai	China	25.76	117.95	7.00
Pudou451	China	25.76	117.95	13.00
Quanbian11	China	25.76	117.95	13.00
Daqingren	China	25.76	117.95	10.00
Shaoxianqing	China	25.76	117.95	9.50
Baiqiul	China	25.76	117.95	11.50
Shaoanqiu	China	25.76	117.95	2.00
Shaxianwu	China	25.76	117.95	2.00
Quan253	China	25.76	117.95	6.00
HX3	China	22.715	113.33	6.00
Madaiheidou3	China	22.715	113.33	5.50
Yuechun0303	China	22.715	113.33	8.50
Dawudou	China	23.385	108.17	8.00
Longdou7	China	23.385	108.17	9.00
Fudou8	China	23.385	108.17	6.00
Datunxiaohei	China	39.19	116.29	6.00
Black1	China	35.385	108.22	3.50
Nanguanqingdou	China	39.19	116.29	4.50
Zheng8516	China	33.725	113.30	7.00
Xiaolimoshi	China	48.29	128.08	3.50
Yuanbaojin	China	48.29	128.08	5.00
Erdou7	China	31.125	112.14	15.00
You01-65	China	31.125	112.14	7.50
You05-8	China	31.125	112.14	8.00
Helongyoutai	China	43.35	126.29	3.50
Zhechun2	China	29.275	120.00	8.50
Zhechun3	China	29.275	120.00	17.00
Panshidou	China	29.275	120.00	6.50
Chuxiu	China	32.825	118.88	5.00
Sidou2	China	32.825	118.88	10.00
Binhaihuangkezi	China	32.825	118.88	11.50
Suininpingdinghuang	China	32.825	118.88	4.50
Taixinghong	China	32.825	118.88	11.50
Xuqiandu	China	32.825	118.88	15.00
Huaidebaihua	China	32.825	118.88	2.00
Pixiandazihua	China	32.825	118.88	4.50
Fengchengzao	China	27.165	115.81	5.00
Dahuangzhu	China	27.165	115.81	11.00

Ruijinqing	China	27.165	115.81	10.00
Shaxin	China	27.165	115.81	7.50
Baiqidou	China	40.845	122.00	6.00
Baichengmoshidou	China	43.35	126.29	9.00
Pingdinghei	China	36.225	118.31	6.00
Huipizhi	China	37.385	112.24	12.00
Huangdou2	China	37.385	112.24	7.00
Xiahei	China	37.385	112.24	6.50
Xiaoheidou252	China	35.385	108.22	2.50
Xiaoheidou270	China	35.385	108.22	11.50
Gonglaixijiangdou	China	30.11	102.76	7.50
Quxianbayuehuang	China	30.11	102.76	6.00
Changshoushiyuehua				
ng	China	30.11	102.76	5.50
Zizhongliuyuezao	China	30.11	102.76	9.50
Yanqihuangdou	China	37.34	84.79	6.50
Chamoshi	China	43.35	126.29	6.50
Chasedou	China	43.35	126.29	6.50
Huangbaodoyu	China	40.845	122.00	7.00
Silihuang	China	48.29	128.08	8.00
Nigeria5	Nigeria	9.12	7.11	3.00
Shishengchangye	Japan	35.41	139.44	4.00
Amsoy	America	41.83	92.91	8.50
Xichuanhuangdou	China	33.725	113.30	8.00
Zhongti1	China	40.145	116.28	11.00
Ji47	China	43.35	126.29	6.00
Ha04-1824	China	48.29	128.08	5.50
Sui04-6018	China	48.29	128.08	7.50
Sui04-5804	China	48.29	128.08	6.50
DN L-13	Canada	43.4	79.25	7.00
HN51	China	48.29	128.08	8.00
DN L-57	Canada	43.4	79.25	4.00
Ken14	China	48.29	128.08	4.00
DN L-100	Japan	35.41	139.44	4.50
DN L-9	Canada	43.40	79.25	12.50
DN L-10	Canada	43.40	79.25	11.50
