

Table S3: Individual ANOVA for seven seed compositions of 135 soybean genotypes evaluated under five environments of Hainan and Beijing in 2017 and 2018 and Anhui in 2017.

Traits	Environment	Mean	MSG	PFG	CV	h²
Protein	Anhui 2017	40.3	43.3	1.26e-262	0.77	0.998
	Beijing 2017	44.4	34.4	4.05e-252	0.68	0.997
	Beijing 2018	44.9	45.5	1.01e-271	0.65	0.998
	Hainan 2017	44.5	68.3	1.90e-295	0.66	0.999
	Hainan 2018	46.2	35.8	9.07e-264	0.60	0.998
Oil	Anhui 2017	20.1	15.4	3.24E-211	1.44	0.995
	Beijing 2017	19.4	13.3	1.87E-198	1.55	0.993
	Beijing 2018	18.8	15.5	3.11E-205	1.63	0.994
	Hainan 2017	20.3	15.5	3.32E-206	1.49	0.994
	Hainan 2018	18.3	12.7	4.11E-205	1.51	0.994
Palmitic acid	Anhui 2017	13	2.34	2.57E-106	2.23	0.964
	Beijing 2017	12.5	2	2.44E-100	2.26	0.960
	Beijing 2018	12.4	2.48	5.95E-94	2.71	0.955
	Hainan 2017	13.1	2.95	1.87E-117	2.24	0.971
	Hainan 2018	13.5	2.01	2.80E-101	2.09	0.961
Stearic acid	Anhui 2017	4.53	0.781	1.97E-47	6.85	0.877
	Beijing 2017	4.87	1.45	3.99E-79	6.13	0.939
	Beijing 2018	5.22	1.4	3.51E-86	5.23	0.947
	Hainan 2017	4.13	0.659	5.69E-42	7.39	0.859
	Hainan 2018	4.72	0.823	3.57E-56	6.09	0.900
Oleic acid	Anhui 2017	21.2	25.8	8.30E-253	1.23	0.997
	Beijing 2017	22.6	35.2	5.16E-260	1.26	0.998
	Beijing 2018	22.9	52.9	8.54E-278	1.31	0.998
	Hainan 2017	21.4	55.1	1.50E-292	1.26	0.999
	Hainan 2018	22.7	43.7	1.50E-264	1.35	0.998
Linoleic acid	Anhui 2017	55.9	35.9	2.72E-263	0.50	0.998
	Beijing 2017	54.6	31.9	2.72E-249	0.55	0.997
	Beijing 2018	54.8	28	5.03E-250	0.51	0.997
	Hainan 2017	57	51.5	4.01E-279	0.51	0.998
	Hainan 2018	54.9	19.5	2.21E-226	0.52	0.996
Linolenic acid	Anhui 2017	7.66	3.24	1.30E-96	3.81	0.974
	Beijing 2017	9.18	5.82	1.28E-97	3.44	0.983
	Beijing 2018	8.92	7.33	4.09E-111	3.65	0.986
	Hainan 2017	8.33	5.12	2.85E-113	3.46	0.984
	Hainan 2018	9.72	5.86	5.99E-102	2.92	0.986

MSG, mean square of genotype; **PFG**, P-values for genotype; **CV**, coefficient of variation (%) ; **h²**, broad-sense heritability.