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Supplementary Table S1. Measurement of temperature and relative humidity in box filled with water during every hour in drying oven at 40℃.

No.	Measuring date	Measuring time	Temperature (℃)	Relative humidity (%)
1	2021.05.11	11:07:24	40.1	69.4
2	2021.05.11	12:07:24	42.4	84.6
3	2021.05.11	13:07:24	42.6	90.3
4	2021.05.11	14:07:24	42.6	90.3
5	2021.05.11	15:07:24	42.6	92.5
6	2021.05.11	16:07:24	42.6	93.6
7	2021.05.11	17:07:24	42.6	94.4
8	2021.05.11	18:07:24	42.6	94.9
9	2021.05.11	19:07:24	42.6	95.4
10	2021.05.11	20:07:24	42.5	96.1
11	2021.05.11	21:07:24	42.5	96.3
12	2021.05.11	22:07:24	42.5	96.5
13	2021.05.11	23:07:24	42.5	96.8
14	2021.05.12	0:07:24	42.5	96.9
15	2021.05.12	1:07:24	42.6	97.1
16	2021.05.12	2:07:24	42.6	97.3
17	2021.05.12	3:07:24	42.6	97.4
18	2021.05.12	4:07:24	42.5	97.5
19	2021.05.12	5:07:24	42.6	97.7
20	2021.05.12	6:07:24	42.5	97.8
21	2021.05.12	7:07:24	42.5	97.9
22	2021.05.12	8:07:24	42.6	98
23	2021.05.12	9:07:24	42.6	98.1
24	2021.05.12	10:07:24	42.6	98.2
25	2021.05.12	11:07:24	42.6	98.3
	Average		42.5	94.5

Supplementary Table S2. Germination and reduction rates after accelerated aging in 134 Korean soybean cultivars.

Number	Soybean cultivar name	Germination rate[z] (%)		Reduction rate[x] (%)
		Control	Accelerated aging [y]	
1	Hannam	100.0	46.7	53.3
2	Sinyu	100.0	63.3	36.7
3	Seonyu	86.7	50.0	42.3
4	Nampung	96.7	43.3	55.2
5	Saedanbaeg	66.7	63.3	5.1
6	Geomjeongkong4ho	93.3	30.0	67.8
7	Geomjeongsaeol	96.7	0.0	100.0
8	Ilpumgeomjeong2ho	86.7	13.3	84.7
9	Socheong	96.7	36.7	62.0
10	Sojeong	93.3	56.7	39.2
11	Hanol	93.3	56.7	39.2
12	Hanggeumol	90.0	80.0	11.1
13	Namhaekong	90.0	90.0	0.0
14	Sogang	93.3	60.0	35.7
15	Saebyeolkong	80.0	63.3	20.9
16	Baegunkong	86.7	40.0	53.9
17	Saealkong	56.7	56.7	0.0
18	Muhankong	90.0	30.0	66.7
19	Samnamkong	70.0	50.0	28.6
20	Mansu	73.3	10.0	86.4
21	Geomjeongkong3ho	90.0	86.7	3.7
22	Cheongdu1ho	76.7	16.7	78.2
23	Heugmi	96.7	73.3	24.2
24	Heugseong	73.3	60.0	18.1
25	Geomjeong5ho	66.7	3.3	95.1
26	Puleunkong	86.7	33.3	61.6
27	Myeongjunamulkong	100.0	36.7	63.3
28	Igsannamulkong	100.0	96.7	3.3
29	Pungsannamulkong	96.7	33.3	65.6
30	Dawonkong	76.7	66.7	13.0
31	Dolemi	93.3	33.3	64.3
32	Dagi	100.0	46.7	53.3
33	Dachae	90.0	86.7	3.7
34	Seonam	90.0	80.0	11.1
35	Boseog	90.0	36.7	59.2
36	Galchae	96.7	56.7	41.4

37	Sohwang	100.0	30.0	70.0
38	Singang	93.3	60.0	35.7
39	Wonheug	100.0	80.0	20.0
40	Haepum	83.3	90.0	-8.0
41	Taeseon	93.3	6.7	92.8
42	Socheongja	100.0	30.0	70.0
43	Jungmo3013	90.0	23.3	74.1
44	Soyeon	90.0	60.0	33.3
45	Paldalkong	93.3	36.7	60.7
46	Ham ahn	83.3	23.3	72.0
47	Daeyang	83.3	33.3	60.0
48	Sowonkong	93.3	16.7	82.1
49	Jungmo3007	53.3	33.3	37.5
50	Jungmo3010	86.7	53.3	38.5
51	Sowonkong	96.7	50.0	48.3
52	Sowon2010	96.7	46.7	51.7
53	Geomjeong3ho	80.0	56.7	29.1
54	Hwang-geumkong	90.0	66.7	25.9
55	Dangyeongkong	76.7	13.3	82.7
56	Dan-wonkong	96.7	13.3	86.2
57	Jangsukong	80.0	20.0	75.0
58	Alchankong	90.0	10.0	88.9
59	Cheonsang	83.3	43.3	48.0
60	Neulchan	86.7	6.7	92.3
61	Cheongja3ho	66.7	23.3	65.1
62	Eunhakong	96.7	33.3	65.6
63	Bugwangkong	76.7	46.7	39.1
64	Gwangankong	56.7	36.7	35.3
65	Sobaegnamulkong	86.7	0.0	100.0
66	Solog	76.7	36.7	52.2
67	Sojin	100.0	53.3	46.7
68	Nogchae	96.7	56.7	41.4
69	Pung-won	90.0	56.7	37.0
70	Sinhwa	96.7	23.3	75.9
71	Wongwang	90.0	0.0	100.0
72	Hoseo	96.7	10.0	89.7
73	Seonpung	93.3	56.7	39.2
74	Daechan	100.0	53.3	46.7
75	Haewon	96.7	13.3	86.2
76	Jungmo3012	96.7	23.3	75.9
77	Deog-yukong	96.7	3.3	96.6
78	Bangsakong	86.7	16.7	80.7

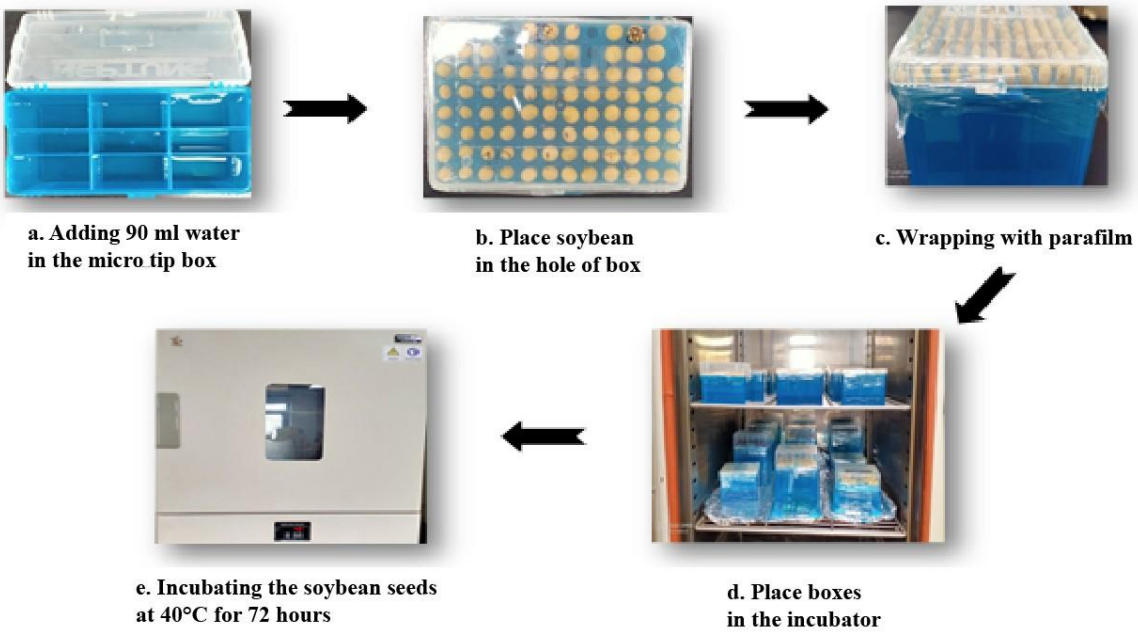
79	Chirumukong	96.7	50.0	48.3
80	Gwangdu	90.0	26.7	70.3
81	Baekchun	80.0	13.3	83.4
82	Daeha1ho	90.0	70.0	22.2
83	Saeolkong	96.7	0.0	100.0
84	Hojang	93.3	13.3	85.7
85	Jungmo3004	96.7	0.0	100.0
86	Jungmo3008	83.3	20.0	76.0
87	Somyeongkong	90.0	30.0	66.7
88	Sohokong	100.0	26.7	73.3
89	Jinyulkong	96.7	80.0	17.3
90	K132314	96.7	50.0	48.3
91	Nuliol	86.7	13.3	84.7
92	Bogwangkong	93.3	6.7	92.8
93	Manlikong	86.7	53.3	38.5
94	Taegwangkong	100.0	83.3	16.7
95	Danbaegkong	93.3	13.3	85.7
96	Jinpumkong	83.3	83.3	0.0
97	Dajangkong	70.0	56.7	19.0
98	Jinpumkong2ho	93.3	86.7	7.1
99	Daewonkong	93.3	90.0	3.5
100	Jangmikong	100.0	96.7	3.3
101	Daepung	90.0	100.0	-11.1
102	Daemang	100.0	23.3	76.7
103	Jungmo3003	60.0	13.3	77.8
104	Uram	96.7	10.0	89.7
105	Jinpung	93.3	36.7	60.7
106	Geomjeongkong1ho	76.7	70.0	8.7
107	Geomjeongkong2ho	96.7	13.3	86.2
108	Cheongja2ho	83.3	60.0	28.0
109	Janggi	96.7	16.7	82.7
110	Jonam	86.7	23.3	73.1
111	Jungmo3002	60.0	36.7	38.8
112	Joyang1ho	100.0	30.0	70.0
113	Saegeum	96.7	6.7	93.1
114	Cheongmiin	100.0	13.3	86.7
115	Daepung2ho	90.0	20.0	77.8
116	Cheongja4ho	96.7	50.0	48.3
117	Aram	93.3	40.0	57.1
118	Taecheong	83.3	70.0	16.0
119	Dan-yeobkong	96.7	10.0	89.7
120	Cheongjakong	73.3	50.0	31.8

121	Ham-an	96.7	73.3	24.2
122	Bong ui	80.0	13.3	83.4
123	Hwangkeunkong	93.3	23.3	75.0
124	Keunolkong	73.3	70.0	4.5
125	Seonheugkong	83.3	36.7	55.9
126	Songhagkong	70.0	70.0	0.0
127	Jungmo3008ho	86.7	43.3	50.1
128	Jungmo3009ho	100.0	20.0	80.0
129	Sinpaldalkong	66.7	16.7	75.0
130	Sodamkong	83.3	16.7	80.0
131	Ilmikong	86.7	43.3	50.1
132	Sangwonkong	66.7	23.3	65.1
133	Jinmi	100.0	40.0	60.0
134	Jungmo3009	100.0	10.0	90.0

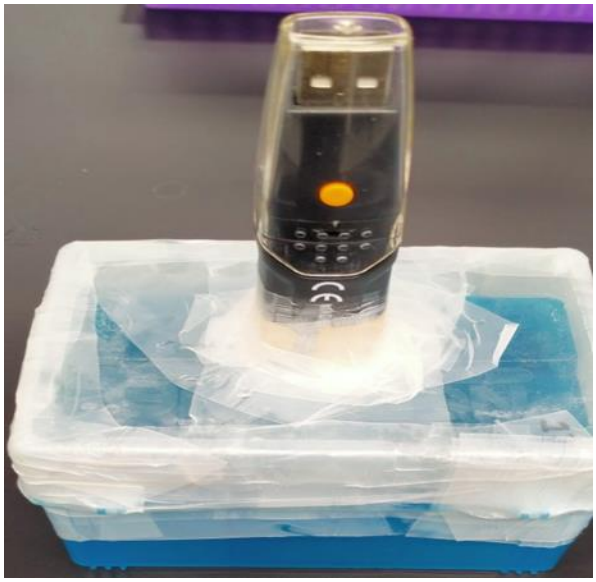
[z)] Germination was calculated at three days after putting the seeds on petri dish.

[y)] 42℃ with >90% relative humidity for three days.

[x)] Reduction rate was calculated following formula; Reduction rate (%) = 100 − [(germination rates under accele rated conditions / germination rates under control conditions) × 100]



Supplementary Fig. S1. Processes of accelerated aging test in this study.



Supplementary Fig. S2. The measurement of temperature and relative humidity with a data logger (Model number DT.171) in drying oven at 40℃.