

**Supplementary Table 1.** The list of malting barley varieties used in this study.

No.	Variety name	Accession No.	Year	Pedigree	Remark
1	Sacheon6	IT 144032	1979	Harupin nijo/Hokudai2	
2	Doosan8	IT 146531	1981	Daijung nijo1/Deba abed	
3	Doosan29	IT 140463	1988	Sacheon1/Jigukei1537	
4	Jinkwangbori	IT 146280	1989	Doosan8/Sachon6	
5	Jejubori	IT 183382	1992	77460-B-180/Suwon212	
6	Samdobori	IT 188469	1993	Hayagaze/Suwon212//Doosan8	
7	Jinyangbori	IT 183378	1993	Sachon6//Daijung nijo1/Deba abed	WGR <sup>z</sup>
8	Namhyangbori	IT 188740	1995	Doosan12/Doosan22	
9	Danwonbori	IT 268882	1998	P9/Milyang42	
10	Iljinbori	IT 214260	1999	Doosan22/Kanto nijo20	
11	Sinhobori	IT 213047	1999	Azuma golden/Misato golden	
12	Daeyoungbori	IT 213449	2000	Milyang45/Azuma golden	
13	Daeabori	IT 213226	2001	Jingkwangbori/Milyang46//Miho golden	
14	Hopum	IT 213230	2003	Sachon6/Misato golden	WGR
15	Hojin	IT 218534	2004	Milyang69/Misato golden	
16	Dajin	IT 218543	2005	Misato golden <sup>2</sup> /Suwon295	
17	Oreum	IT 218549	2006	Kinuyutaka/Samdobori	
18	Daho	IT 218551	2007	Milyang85/Suwon335	
19	Baegho	-	2008	Azuma golden/Nishinochikara	WGR
20	Kwangmaeg	IT 266646	2011	Suwon334/Milyang108	WGR
21	Ieemac	IT 316458	2013	Milyang85/Suwon335//Milyang127	
22	Dian	IT 301318	2014	Milyang85/Suwon335//Milyang122	
23	Heugho	IT 301319	2014	Black barley/Hopum//Hopum	WGR
24	Dapum	IT 266661	2015	Hopum/Gob96DH	
25	Nurimaeg	IT 326864	2016	Iksan127/Miharu gold	WGR
26	Baeglog	IT 326865	2016	Milyang130/Myogi nijo	
27	Hodan	IT 333624	2019	Danwonbori/Myogi nijo//Danwonbori	
28	Scarlett	-	-	Amazone/Breun St 2730//Kym	
29	Commander	IT 306876	2008	Keel/Sloop//Galaxy	
30	Baudin	IT 302512	2002	Stirling/Franklin	
31	Stirling	IT 140176	1981	Dampier/Prior/Ymer/3/Piroline	

<sup>z</sup>WGR: Variety used in whole genome re-sequencing.