Table 1S. A full list of maize inbreds for SNP analysis.

The Iodent germplasm		The BSSS germplasm		The Iodent/BSSS breeding group	
1	DK257MV	40	DK1212	68	DK978
2	DK2525SVZM	41	DK3129	69	DK1630
3	DK3643SVZM	42	DK3301	70	DK2832SVZM
4	DK4436SVZM	43	DK3931MV	71	DK3773SVZM
5	DK4464SVZM	44	DKS953	72	DK3775SVZM
6	DK4498SVZM	45	IM_131	73	DK4117
7	DK5401	46	IM_137	74	DK4118SVZM
8	DK5501SVZM	47	MS44SV	75	DK4401SVZM
9	DK7436SVZM	48	MSST24A	76	DK4411SVZM
10	DK7441SVZM	49	MSST33	77	DK4445SVZM
11	DK7460SVZM	50	MSST37	78	DK4455
12	DK7575SVZM	51	MSST45A	79	DK4465
13	DK7718	52	MSST48	80	DK4513
14	DK7719	53	MSST56	81	DK4516
15	DK7720	54	MSST57B	82	DK5005SVZM
16	DK7736SVZM	55	MSST67	83	DK5170SVZM
17	MSS7516-1	56	MSST68	84	DK5174SVZM
18	MSST016	57	MSST69	85	DK6469SVZM
19	MSST0B17	58	MSST69A	86	DK6869SVZM
20	MSST4A15	59	MSST89-1	87	DK7270
21	MSST5B15	60	MSST92A	88	DK7440
22	MSST5B17	61	MSST95	89	DK7466SVZM
23	MSST17	62	MSST146	90	DK9175
24	MSST18	63	MSST261	91	DKD1943
25	MSST31	64	MSSTA26	92	DKD3976SVZM
26	MSST32	65	MSSTV-16	93	DKS30
27	MSST36	66	MSSTV-20	94	DKS41
28	MSST42	67	MSSTV-50	95	DKS42
29	MSST46			96	DKS46
30	MSST47			97	DKS55
31	MSST49			98	DKS102
32	MSST57			99	MSS7274-1
33	MSST60			100	MSST29
34	MSST62			101	VIK69
35	MSST63			102	VIK71
36	MSST64			103	VIK72
37	MSST73			104	VIK79
38	MSST77			105	VIK80
39	MSST90			106	VIK81
				107	VIK95

Table 2S. Numeration of SNP markers in BDI-III panel. A4-AE11 - numbers of SNP markers in BDI-III panel. This scheme represents 368 markers out of 384 of the whole panel, *i.e.*, only those markers for which a signal of sufficient strength in this investigation has been obtained. The resolution capacity of the panel is 2^{368}.

BDI-III	1	2	3	4	5	6	7	8	9	10	11	12
A				001C2	002	003	004	005	006	007	008C2	009C2
B	010C2	011	012C2	013	015	016	017C2	018	019C2	020	021	022
C	023	024	025	026C2	027	028C2	029C2	030	032	033C2	034	035
D	036	037	039	040	041	042	043	044a	045aC2	046	047	048
E	049C2	051	052aC2	053	054	055C2	056	057	058	059	060	061
F	062	063	064	065	066	067	068	069	071	072a	073	074
G	075C2	076	077	078	079	080	081	082	083	084C2	085C2	086
H	087	088C2	089C2	090	091	092	093	094C2	095C2	096	097	098
I	099	100	101C2	102	103	104	105	106	107	108	109	110
J	111	112	113C2	114	115C2	116	117C2	118a	119	120	121	122
K	123	124	125	126	127	128	129	130	131C2	132	133C2	134
L	135	136	137aC2	138	139	140	141	142	143a	144	145	146C2
M	147	148	149	150	151	152	153	154	155C2	156C2	157C2	158
N	159C2	160	162	163	164	165	166	167C2	168	169	170	171
O	172	173	174	175	176	177	178	179	180	181	182C2	183C2
P	184C2	185	186	187	188	189	190	191	192	193C2	194C2	195
Q	196C2	197	198	199C2	200C2	201	202	203	204	205	206	207
R	208	209	210	213	215	216	217C2	218	219	220a	221	222C2
S	223	224	225C2	226	227	228aC2	229C2	230	231C2	232	233	235
T	236a	237	238	239	240	241C2	242C2	243a	244C2	245	247C2	248
U	249	250	251	252C2	254	255	256	257	258	259	260	261a
V	262	263	264	265	266	267	268	269C2	270	271	272	273
W	274	275	276C2	278	279	280	281C2	282	283	284	285	286
X	287C2	288	289C2	290	291	292	293	294	295	296aC2	297	298
Y	299	300	301	303C2	304	305	306	308	309	310C2	311	312
Z	313	314	315	316	317C2	318	319	320	321	322aC2	323	324
AA	325	326aC2	327	328C2	329	330	331	332	333	334	335	336
AB	337C2	338	339C2	340	341	342	343	344	345	346C2	347	348
AC	349	350	351	352	353	354C2	355	356	357	358	359	360
AD	361	362	363aC2	364	365	366	367	368	370	371	372	373C2
AE	374C2	375	376	377a	378	379	380	381	382aC2	383	384	

Table 3S. Definition of main maize SNP characteristics (Botstein *et al.* 1980, Lu *et al.* 2009 with modifications).

Main characteristics	Definition
Homozygosity [%]	ratio of a number of markers in homozygous allelic state to a total number of markers analysed for individual line *k*. It ranges from 0 to 100%.
Frequencies of monomorphic markers in a set of lines [%]	ratio of a number of biallelic markers that showed a monomorphic state in a set of lines to a total number of biallelic markers analysed for this set of lines. Its value ranges within 0-100%.
Major allele frequency of a marker *i* in a set of lines [fractions of a unit]	ratio of a number of lines in which the major allelic state by the marker *i* is detected to the total number of lines analysed by the marker *i*. It ranges from 0.5 to 1.0.
Genetic diversity of an individual line [fractions of a unit]	it is calculated by the formula (nA · nA – 1 + nT · nT – 1 + nG · nG – 1 + nC · nC – 1) / 2N · N – 1, where nA is a number of marker sites which contain adenine, nT – a number of marker sites which contain thymine, nG – a number of marker sites which contain guanine, nC – a number of marker sites which contain cytosine, N – a total number of markers investigated for the line *k*. This index indicates the probability that in a line two randomly selected alleles will be different. Its values range from 0 to 0.5 and increase with the enlargement of genetic diversity of a line.
D [fractions of a unit]	difference between a frequency of a major allele of a marker *i* in the original set of lines and a frequency of the same allele of the same marker *i* in a derivative set of lines. It ranges from -5 to +1.
Genetic SNP distance between two lines (pairwise genetic distance, GD) [fractions of a unit]	ratio of a number of SNP markers whose allelic state differs in two lines to the total number of markers analysed for these two lines. It ranges from 0 to 1.0.

Table 4S. SNP passport of maize line DK7736SVZM (the Iodent germplasm; homozygosity 99.18%, genetic diversity 0.1733). The numbers of SNP markers of BDI-III panel are indicated according to Table 2S; alleles of markers are noticed as bases: A - adenine, T - thymine, G - guanine, C – cytosine, -- - a signal was of insufficient strength or absent.

BDI-III	1	2	3	4	5	6	7	8	9	10	11	12
A				001C2TT	002AA	003AA	004AA	005GG	006AA	007AA	008C2AA	009C2AA
B	010C2GG	011GG	012C2CC	013GG	015GG	016GG	017C2AA	018AA	019C2AA	020AA	021GG	022GG
C	023AA	024GG	025GG	026C2AA	027AA	028C2AA	029C2GG	030GG	032GG	033C2AA	034AA	035GG
D	036AA	037GG	039AA	040AA	041CC	042CC	043AA	044aAA	045aC2TT	046AA	047GG	048AA
E	049C2AA	051AA	052aC2CC	053GG	054CC	055C2CC	056TT	057CC	058CC	059AA	060AA	061AA
F	062TT	063AA	064GG	065TT	066CC	067AA	068TT	069GG	071AA	072aGG	073CC	074CC
G	075C2GG	076AA	077AA	078AA	079AA	080AA	081GG	082GG	083CC	084C2GG	085C2GG	086GG
H	087AA	088C2CC	089C2CC	090CC	091GG	092GG	093GG	094C2AA	095C2AA	096GG	097TT	098GG
I	099GG	100GG	101C2AA	102GG	103AA	104CC	105AA	106AA	107AG	108GG	109AA	110AA
J	111AA	112GG	113C2CC	114CC	115C2AA	116AA	117C2AA	118aAA	119GG	120AA	121CC	122GG
K	123GG	124CC	125GG	126GG	127GG	128GG	129GG	130AA	131C2CC	132AA	133C2CC	134GG
L	135CC	136CC	137aC2GG	138GG	139GG	140GG	141GG	142GG	143aCC	144AA	145AA	146C2GG
M	147AA	148AA	149AA	150GG	151GG	152GG	153AA	154AA	155C2GG	156C2GG	157C2AA	158AT
N	159C2AA	160GG	162AA	163AA	164CC	165AA	166AA	167C2GG	168GG	169AA	170AA	171CC
O	172AA	173GG	174AA	175AA	176AA	177GG	178GG	179CC	180GG	181AA	182C2GG	183C2GG
P	184C2AA	185AA	186GG	187AA	188GG	189AA	190TT	191AA	192AA	193C2AA	194C2AA	195AA
Q	196C2GG	197AA	198AA	199C2AA	200C2AA	201AA	202CC	203CC	204CC	205GG	206TT	207AA
R	208GG	209GG	210GG	213GG	215CC	216CC	217C2GG	218GG	219AA	220aAA	221GG	222C2CC
S	223TT	224GG	225C2AA	226GG	227AA	228aC2CC	229C2AA	230AA	231C2TT	232AA	233AA	235CC
T	236aAA	237GG	238AA	239AA	240GG	241C2AA	242C2AA	243a--	244C2AA	245AA	247C2GG	248AA
U	249AA	250GG	251AA	252C2AA	254AA	255AA	256GG	257GG	258AA	259GG	260CC	261aAA
V	262GG	263CC	264AA	265GG	266GG	267AA	268AA	269C2AA	270CC	271CC	272AA	273CC
W	274AA	275GG	276C2AA	278AA	279GG	280GG	281C2GG	282GG	283AA	284CC	285AG	286AG
X	287C2GG	288CC	289C2GG	290CC	291AA	292AA	293CC	294GG	295AA	296aC2AA	297GG	298GG
Y	299AA	300GG	301GG	303C2AA	304GG	305AA	306AA	308GG	309AA	310C2GG	311AA	312GG
Z	313GG	314AA	315GG	316CC	317C2CC	318GG	319AA	320GG	321GG	322aC2GG	323GG	324GG
AA	325AA	326aC2AA	327CC	328C2TT	329AA	330CC	331AA	332AA	333AA	334GG	335AA	336AA
AB	337C2AA	338GG	339C2AA	340AA	341AA	342CC	343GG	344GG	345GG	346C2TT	347GG	348GG
AC	349AA	350AA	351AA	352--	353AA	354C2CC	355CC	356GG	357AA	358--	359AA	360AA
AD	361CC	362GG	363aC2CC	364GG	365GG	366GG	367AA	368AG	370CC	371GG	372GG	373C2AA
AE	374C2GG	375GG	376CC	377aGG	378GG	379AA	380AA	381--	382aC2GG	383GG	384GG	

Table 5S. SNP passport of maize line DK3931MV (the BSSS germplasm; homozygosity 99.45%, genetic diversity 0.1724). The numbers of SNP markers of BDI-III panel are indicated according to Table 2S; alleles of markers are noticed as bases: A - adenine, T - thymine, G - guanine, C – cytosine, -- - a signal was of insufficient strength or absent.

BDI-III	1	2	3	4	5	6	7	8	9	10	11	12
A				001C2TT	002CC	003AA	004AA	005AA	006GG	007AA	008C2AA	009C2AA
B	010C2GG	011GG	012C2CC	013GG	015GG	016GG	017C2AA	018AA	019C2GG	020GG	021GG	022CC
C	023AA	024GG	025CC	026C2AA	027AA	028C2AA	029C2GG	030AA	032GG	033C2AA	034TT	035GG
D	036AA	037GG	039GG	040CC	041CC	042CC	043GG	044aCC	045aC2AA	046AA	047GG	048AA
E	049C2AA	051AA	052aC2CC	053GG	054CC	055C2AA	056AA	057GG	058GG	059AA	060AA	061AA
F	062TT	063AA	064AA	065TT	066CC	067GG	068AA	069GG	071AA	072aGG	073CC	074CC
G	075C2GG	076AA	077AA	078AA	079AA	080CC	081AA	082AA	083CC	084C2GG	085C2GG	086GG
H	087AA	088C2CC	089C2CC	090CC	091GG	092GG	093AA	094C2CC	095C2CC	096AA	097AA	098GG
I	099AA	100GG	101C2AA	102GG	103TT	104CC	105GG	106AA	107AA	108GG	109AA	110AA
J	111AA	112AA	113C2TT	114AA	115C2AA	116GG	117C2AG	118aAA	119GG	120GG	121AA	122GG
K	123GG	124CC	125GG	126GG	127AA	128AA	129AA	130GG	131C2GG	132CC	133C2GG	134GG
L	135GG	136AA	137aC2GG	138CC	139CC	140AA	141GG	142AA	143aAA	144TT	145AA	146C2GG
M	147AA	148AA	149AA	150GG	151AA	152GG	153GG	154CC	155C2AA	156C2AA	157C2CC	158AA
N	159C2CC	160AA	162GG	163GG	164GG	165AA	166AA	167C2CC	168AA	169GG	170AA	171AA
O	172CC	173GG	174AA	175AA	176AA	177GG	178GG	179CC	180GG	181CC	182C2GG	183C2GG
P	184C2AA	185CC	186GG	187--	188AA	189AA	190TT	191GG	192GG	193C2AA	194C2AA	195GG
Q	196C2AA	197AA	198AA	199C2AA	200C2AA	201AA	202CC	203CC	204CC	205AA	206TT	207AA
R	208GG	209GG	210GG	213GG	215CC	216CC	217C2AA	218GG	219AA	220aGG	221AA	222C2CC
S	223AA	224GG	225C2AA	226GG	227AA	228aC2CC	229C2AA	230GG	231C2TT	232GG	233TT	235AA
T	236aAA	237GG	238AA	239TT	240GG	241C2AA	242C2AA	243a--	244C2AA	245AA	247C2AA	248AA
U	249AA	250GG	251AA	252C2AA	254GG	255AA	256GG	257GG	258AA	259GG	260CC	261aGG
V	262GG	263CC	264AA	265CC	266GG	267AA	268AA	269C2GG	270CC	271AA	272GG	273CC
W	274AA	275AA	276C2AA	278GG	279GG	280AA	281C2AA	282AA	283GG	284CC	285AA	286GG
X	287C2AA	288AA	289C2GG	290CC	291AA	292GG	293CC	294GG	295AA	296aC2AA	297AA	298GG
Y	299AA	300GG	301GG	303C2AA	304GG	305GG	306GG	308GG	309AA	310C2AA	311AA	312GG
Z	313GG	314GG	315GG	316CC	317C2CC	318GG	319GG	320GG	321AA	322aC2GG	323AA	324GG
AA	325GG	326aC2GG	327CC	328C2TT	329GG	330CC	331AA	332AA	333AA	334GG	335AA	336CC
AB	337C2AA	338AA	339C2GG	340AA	341AA	342CG	343GG	344AA	345AA	346C2TT	347GG	348GG
AC	349AA	350AA	351GG	352--	353AA	354C2CC	355CC	356GG	357GG	358GG	359GG	360GG
AD	361CC	362GG	363aC2CC	364CC	365GG	366GG	367GG	368AA	370CC	371AA	372GG	373C2GG
AE	374C2AA	375AA	376CC	377aGG	378--	379AA	380AA	381AA	382aC2GG	383GG	384GG	

Table 6S. SNP passport of maize line DK6469SVZM (the Iodent/BSSS breeding group; homozygosity 99.45%, genetic diversity 0.1761). The numbers of SNP markers of BDI-III panel are indicated according to Table 2S; alleles of markers are noticed as bases: A - adenine, T - thymine, G - guanine, C – cytosine, -- - a signal was of insufficient strength or absent.

BDI-III	1	2	3	4	5	6	7	8	9	10	11	12
A				001C2TT	002AA	003AA	004AA	005GG	006 AA	007GG	008C2GG	009C2GG
B	010C2GG	011GG	012C2TT	013GG	015GG	016GG	017C2AA	018AA	019C2GG	020AA	021AA	022GG
C	023AA	024GG	025GG	026C2AA	027AA	028C2AA	029C2 GG	030 GG	032 GG	033C2AA	034AA	035 GG
D	036AA	037 GG	039AA	040CC	041 GG	042 GG	043AA	044aCC	045aC2TT	046AA	047 GG	048 GG
E	049C2GG	051CC	052aC2CC	053AA	054AA	055C2CC	056AA	057 GG	058 GG	059AA	060CC	061CC
F	062TT	063GG	064 GG	065TT	066CC	067AA	068TT	069GG	071AA	072a--	073AA	074GG
G	075C2	076GG	077AA	078AA	079AA	080CC	081AA	082AA	083CC	084C2GG	085C2GG	086GG
H	087AA	088C2CC	089C2CC	090CC	091AA	092AA	093GG	094C2AA	095C2CC	096GG	097TT	098GG
I	099GG	100GG	101C2AA	102GG	103AA	104CC	105GG	106AA	107AA	108GG	109AA	110CC
J	111CC	112AA	113C2TT	114AA	115C2AA	116GG	117C2AG	118aAA	119GG	120GG	121AA	122GG
K	123GG	124GG	125AA	126AA	127AA	128GG	129GG	130AA	131C2GG	132AA	133C2GG	134GG
L	135CC	136CC	137aC2GG	138GG	139GG	140GG	141GG	142GG	143aCC	144AA	145AA	146C2GG
M	147AA	148AA	149AA	150GG	151GG	152GG	153AA	154AA	155C2GG	156C2GG	157C2AA	158AT
N	159C2AA	160GG	162AA	163AA	164CC	165AA	166AA	167C2GG	168GG	169AA	170GG	171CC
O	172AA	173GG	174AA	175AA	176AA	177GG	178GG	179CC	180GG	181AA	182C2GG	183C2GG
P	184C2TT	185AA	186GG	187AA	188AA	189AA	190TT	191GG	192AA	193C2AA	194C2AA	195GG
Q	196C2GG	197GG	198GG	199C2AA	200C2AA	201AA	202CC	203CC	204CC	205GG	206TT	207AA
R	208GG	209GG	210GG	213GG	215CC	216CC	217C2GG	218GG	219AA	220aAA	221GG	222C2CC
S	223TT	224GG	225C2AA	226GG	227AA	228aC2CC	229C2AA	230AA	231C2TT	232GG	233TT	235AA
T	236aAA	237AA	238GG	239TT	240GG	241C2AA	242C2GG	243a--	244C2AA	245AA	247C2GG	248AA
U	249GG	250GG	251GG	252C2AA	254GG	255AA	256GG	257AA	258GG	259AA	260CC	261aAA
V	262GG	263GG	264AA	265CC	266GG	267AA	268AA	269C2AA	270AA	271CC	272GG	273CC
W	274GG	275AA	276C2AA	278GG	279GG	280GG	281C2GG	282GG	283AA	284CC	285AA	286GG
X	287C2GG	288CC	289C2AA	290CC	291AA	292GG	293CC	294AA	295GG	296aC2GG	297GG	298AA
Y	299AA	300GG	301GG	303C2AA	304GG	305AA	306AA	308GG	309AA	310C2GG	311AA	312GG
Z	313GG	314AA	315GG	316CC	317C2CC	318GG	319AA	320GG	321GG	322aC2GG	323AA	324AA
AA	325GG	326aC2AA	327AA	328C2TT	329AA	330CC	331AA	332AA	333AA	334AA	335CC	336CC
AB	337C2AA	338GG	339C2AA	340AA	341AA	342CC	343GG	344GG	345GG	346C2TT	347CC	348GG
AC	349AA	350GG	351AA	352AA	353AA	354C2GG	355CC	356AA	357AA	358AA	359AA	360AA
AD	361CC	362GG	363aC2CC	364GG	365AA	366AA	367AA	368AA	370CC	371GG	372GG	373C2GG
AE	374C2GG	375GG	376CC	377aGG	378AA	379GG	380AA	381AA	382aC2GG	383GG	384GG	

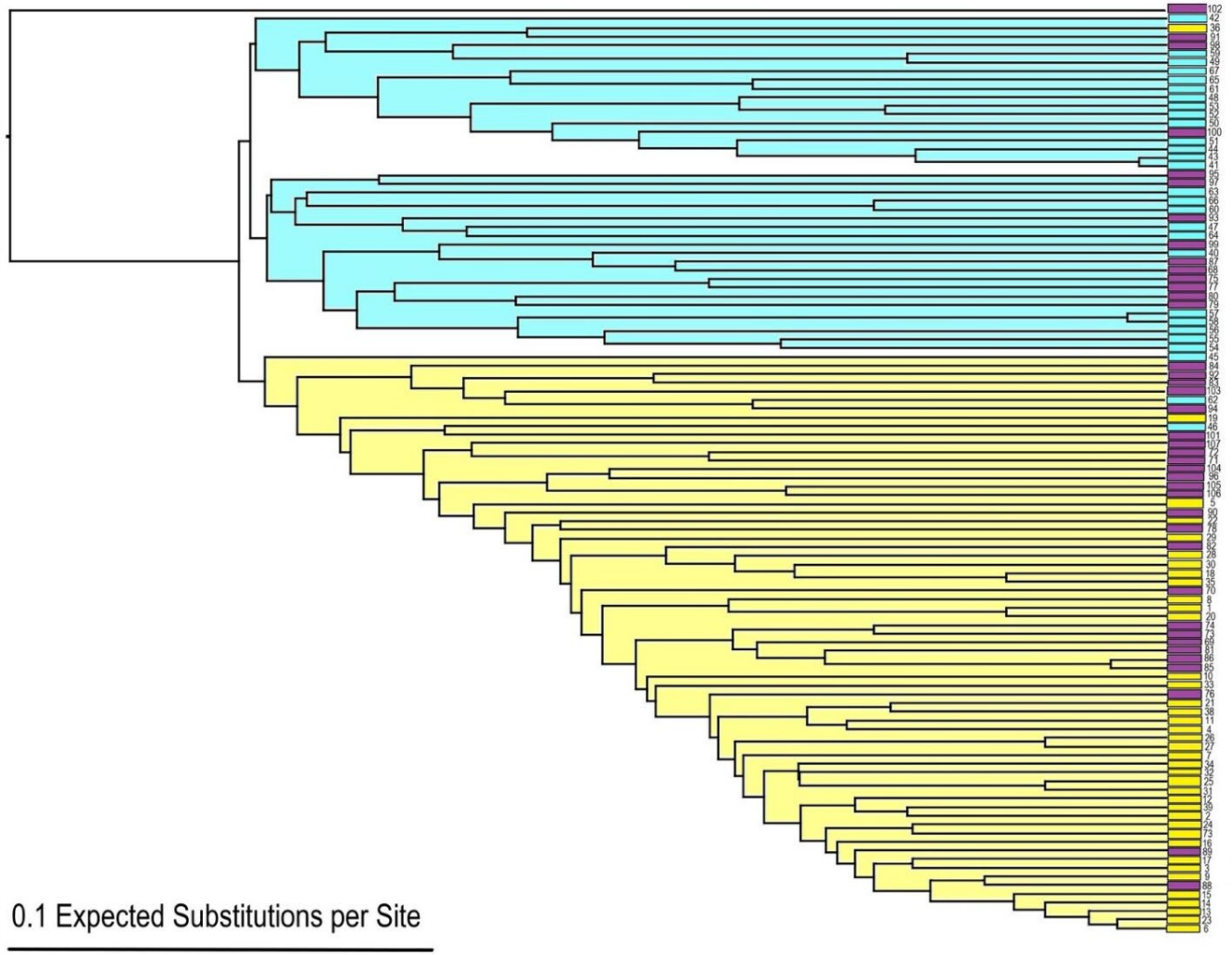

Fig. 1S. Dendrogram of relationships of 107 maize lines on genetic SNP distances by the method of UGMA. The lines are numbered on the right from 1 to 107 in accordance with the line numbers and titles in Table 1S. Iodent lines are denoted with *yellow*, BSSS lines with *sea-green*, and Iodent/BSSS lines with *purple* colours.