Genotypes and phenotypes of grain copper concentrations in 2023WJ_RHL

Primers name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
KASP-4-145.2	A	A	A	A	A	A	B	A	B	A	A	H	H	B	H	H	H	B	B	A	B	B	B	H	B	A	B
KASP-10-96.2	A	B	A	A	A	A	H	B	B	A	A	B	H	B	B	B	B	B	B	A	B	B	B	B	B	A	B
KASP-11-142.5	A	A	A	A	A	A	B	A	B	A	A	B	B	B	B	B	B	B	B	A	B	B	B	B	B	A	B
KASP-13-49.69	A	B	A	A	A	A	B	B	B	-	A	B	B	B	B	B	B	B	B	A	B	B	B	B	B	A	B
KASP-14-57.0	A	B	A	A	A	A	B	B	B	A	A	B	B	H	B	B	B	B	B	A	B	B	B	B	B	A	B
KASP-16-80.5	A	B	A	A	A	A	B	B	B	H	A	B	B	B	B	B	B	B	B	A	B	B	B	B	B	A	B
KASP-22-37.39	A	B	A	A	A	A	B	B	B	-	A	B	B	B	B	B	B	B	B	A	B	B	B	B	B	A	B
KASP-24-52.32	A	B	A	-	H	A	B	B	B	H	A	B	B	B	B	B	B	B	B	A	B	B	B	B	B	A	B
KASP-26-25.1	A	A	A	-	B	A	A	A	A	A	A	A	A	B	A	A	A	H	H	B	H	B	B	A	A	A	H
KASP-29-25.5	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	H	H	A	H	A	B	A	A	A	H
KASP-34-56.576	A	B	H	-	-	A	B	B	B	A	A	B	B	B	B	B	B	B	B	A	B	B	B	B	B	A	B
Grain_Cu_concentration	6.16924941	5.77450908	10.6230449	6.42904187	6.06547813	6.16705187	4.55600976	5.13003304	5.93292276	-100	7.79164896	-100	4.99459114	6.64649614	5.34235191	4.24972822	4.8529689	4.82368985	4.40894438	6.06261397	5.21570305	6.5326988	6.0467714	5.34071307	5.44145555	7.26866098	5.66196213

Primers name	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	57	58	59	60
KASP-4-145.2	H	B	B	B	H	B	H	B	B	A	B	A	B	H	A	B	B	A	A	A	A	B	H	B	B	A	A	B	A	B	H	B
KASP-10-96.2	H	H	H	B	B	B	B	B	B	A	B	A	B	B	A	B	B	B	A	A	A	B	B	-	-	B	A	B	A	H	-	H
KASP-11-142.5	A	B	B	B	B	B	B	B	B	A	B	A	B	B	A	B	B	A	A	A	A	B	B	B	B	B	A	B	A	H	A	B
KASP-13-49.69	A	B	B	B	B	B	B	B	B	A	B	A	B	B	A	B	B	B	A	A	A	B	B	B	B	B	A	-	A	H	H	B
KASP-14-57.0	A	B	B	B	B	B	B	B	B	A	B	A	B	B	A	B	B	H	A	A	A	B	B	B	B	B	A	B	A	A	H	B
KASP-16-80.5	A	B	B	B	B	B	B	B	B	A	B	A	B	B	A	B	B	B	A	A	A	B	B	B	B	B	A	B	A	A	A	B
KASP-22-37.39	A	B	B	B	B	B	A	B	B	A	B	A	B	B	A	B	B	B	A	A	A	B	B	B	B	B	A	B	A	A	A	B
KASP-24-52.32	A	B	B	B	B	B	B	B	B	A	B	A	B	B	A	B	B	B	A	A	A	B	B	H	B	B	A	B	A	A	B	B
KASP-26-25.1	A	A	B	B	A	B	A	B	B	A	B	A	B	A	A	A	A	A	A	B	A	B	A	B	H	A	A	H	A	A	A	A
KASP-29-25.5	A	A	B	B	A	B	A	B	B	A	B	A	B	A	A	A	A	A	A	A	A	B	A	B	B	A	A	H	A	A	A	A
KASP-34-56.576	A	B	B	B	B	B	B	B	B	A	B	A	B	B	A	B	B	B	A	H	A	B	B	H	B	H	A	H	A	A	A	B
Grain_Cu_concentration	6.12543124	5.55449111	5.99386354	6.31110443	5.83519645	5.62591948	6.78795344	6.46080817	6.36674921	5.87021191	5.66322875	6.85517838	6.08139003	5.28867418	6.66099962	4.7288634	4.88357047	5.77574712	6.33034164	6.46595321	6.86074188	5.21413896	-100	6.17186013	5.44495841	5.27281329	6.2348614	5.4503106	6.76695093	6.53622496	5.46588576	5.27871575

Primers name	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	103
KASP-4-145.2	H	H	A	A	B	A	B	A	-	H	-	-	A	-	A	A	A	B	A	A	A	A	B	A	B	A	H	B	A	H	B	A	H	A	-	A	A	H
KASP-10-96.2	A	A	A	A	B	A	B	A	-	A	-	-	A	-	A	A	A	H	A	A	H	A	A	H	B	A	A	B	A	A	B	A	A	A	-	A	A	A
KASP-11-142.5	A	A	A	A	B	A	B	A	-	A	-	-	A	-	A	A	A	B	A	A	A	A	A	A	B	A	A	B	A	A	B	A	A	A	-	A	A	A
KASP-13-49.69	B	H	A	A	B	A	B	A	-	B	-	-	A	-	B	A	A	B	B	A	A	B	B	B	B	A	A	B	A	A	B	B	A	B	-	H	B	A
KASP-14-57.0	A	A	A	A	A	A	B	A	-	H	-	-	A	-	B	A	A	B	B	A	A	A	H	B	B	A	A	B	A	A	A	B	A	B	-	B	H	A
KASP-16-80.5	A	A	A	A	B	A	H	A	-	A	-	-	A	-	A	A	A	B	A	A	A	A	A	H	B	A	A	B	A	A	B	A	A	A	-	A	A	A
KASP-22-37.39	B	A	A	A	B	A	B	A	-	B	-	-	A	-	B	B	A	B	B	A	A	B	A	B	B	A	A	B	A	A	B	B	A	B	-	B	B	B
KASP-24-52.32	B	A	A	A	B	A	B	A	-	B	-	-	A	-	B	A	A	B	B	A	A	B	B	B	B	A	A	H	A	H	B	B	A	B	-	B	B	A
KASP-26-25.1	B	A	A	A	B	A	A	A	-	B	-	-	A	-	B	A	A	H	B	A	A	B	B	H	B	A	A	B	A	H	A	B	A	B	-	B	B	A
KASP-29-25.5	B	A	A	A	B	A	A	A	-	B	-	-	A	-	B	H	A	H	B	A	A	A	B	H	B	A	A	B	A	A	A	B	A	B	-	B	B	A
KASP-34-56.576	B	A	A	A	B	A	-	A	-	H	-	-	A	-	B	A	A	B	B	A	A	B	A	B	B	A	A	B	A	H	B	B	A	B	-	B	H	A
Grain_Cu_concentration	7.07440372	6.79665511	-100	6.05226983	-100	7.20458489	5.95826956	7.25036167	6.36945899	6.2010221	6.03684665	5.69025926	7.55564993	6.1711168	6.45855232	8.05563953	-100	5.02293834	-100	5.63841207	-100	7.04216547	6.33252659	5.27629891	4.56580655	-100	6.53350908	6.38683854	6.62147899	6.82768915	6.11017997	4.84891712	6.61530254	5.84769765	6.35112092	5.01977273	6.17111679	13.4376381

Genotypes and phenotypes of grain copper concentrations in 2024WJ_RHL

Primers name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
KASP-14-57.0	A	A	H	H	-	H	-	-	H	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A
KASP-24-52.32	A	A	A	-	A	H	A	A	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
KASP-34-56.576	A	A	A	-	-	-	-	-	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Grain_Cu_concentration	4.41631188	4.04717303	5.50956434	4.36795323	4.31180005	4.25073631	4.18232141	4.97675679	4.11217563	4.35808181	4.30263488	4.04558322	4.40862157	4.76569469	4.34169321	4.07696917	4.36682257	3.7291312	3.80149986	3.83022787	3.84887331	4.5105849	4.28699099	3.59291233	4.49768645	4.38971736	4.48434026	4.17118483	4.0047846	4.06203712	4.08089151	3.99640998

Primers name	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
KASP-14-57.0	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
KASP-24-52.32	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
KASP-34-56.576	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	A
Grain_Cu_concentration	4.00693407	4.25897189	4.00414224	4.47223533	4.02866955	3.95481343	4.20903535	4.42049373	4.60353572	4.73325154	3.99480925	4.35025319	4.78158758	4.5563343	4.45055504	4.43479945	4.34999961	4.19378565	4.15378706	4.51523498	4.6797715	-100	4.30793149	4.68682695	4.76810539	4.51083118	4.16013316	6.51052958	4.95890907	5.13440618	5.52601063	4.21491914

Primers name	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
KASP-14-57.0	A	A	A	A	A	B	B	B	A	A	-	A	A	-	-	A	A	A	A	A	B	B	B	A	A	H	H	A	A	-	A	A
KASP-24-52.32	A	A	A	A	A	B	B	B	H	A	-	A	A	-	A	A	A	A	A	A	B	B	B	A	A	H	A	-	A	-	A	A
KASP-34-56.576	A	A	A	A	A	B	B	B	A	A	-	A	A	-	A	A	A	A	A	A	B	B	B	A	A	H	A	A	-	-	-	H
Grain_Cu_concentration	4.37351493	4.24967436	3.69741882	3.97024157	3.84211518	5.8377362	5.44550712	5.49070929	4.8941393	4.85911715	4.97140929	5.39647969	4.78910579	3.9067092	5.07986175	4.89952468	7.37531201	5.36832171	4.92423887	5.25926587	6.2776869	6.63088719	5.4029865	5.80835491	5.24178754	4.94442555	5.42898583	4.64649228	6.71108958	4.55770274	5.1736617	5.01111908

Primers name	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
KASP-14-57.0	H	-	A	B	B	B	B	B	B	A	A	A	A	A	A	A	A	H	A	A	A	A	A	-	B	B	B	H	A	H	A	A
KASP-24-52.32	A	A	A	B	-	B	H	B	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	H	H	A	A	A	A	A
KASP-34-56.576	-	A	A	B	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	-	H	-	A	A	A	A
Grain_Cu_concentration	5.0410062	4.3489827	4.55411687	6.61800894	5.9503691	5.57605296	6.28136984	6.0709672	6.10685314	5.50569151	15.0958044	6.1420148	5.59219795	5.22519198	5.59484516	5.90075971	5.01754599	4.80785883	4.41638108	4.33993635	3.60355	5.31744653	5.27574571	5.59165364	6.23609626	6.2802915	5.00066196	5.8213796	4.57835308	4.63803297	5.42266887	4.84178162

Primers name	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
KASP-14-57.0	A	A	A	A	A	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A	B	B	-
KASP-24-52.32	A	A	A	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	H	B	B	A	A	A	A	A	A	B	B	B
KASP-34-56.576	A	A	A	A	H	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A	B	B	H
Grain_Cu_concentration	4.82954456	5.96369447	5.32024579	5.26022975	7.27819362	6.27010948	5.41188458	4.97798784	6.04903014	6.25899942	5.48300517	4.94366646	5.79005648	5.41906631	4.95306251	5.28660528	5.59313108	4.8496104	4.92593081	5.359097	5.56145879	5.49163175	4.58720202	5.2626302	5.01298713	4.34085221	4.14235653	5.82562726	5.15716104	5.47713944	5.72442572	4.70482735

Primers name	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192
KASP-14-57.0	A	A	A	B	B	B	A	A	A	A	A	A	B	H	B	B	B	H	B	B	B	A	A	A	B	B	B	B	B	B	B	B
KASP-24-52.32	A	A	A	B	B	B	A	A	A	A	A	A	B	A	B	-	B	H	B	-	B	A	A	A	B	B	B	B	B	B	B	B
KASP-34-56.576	A	A	A	B	B	B	A	A	A	A	A	A	B	B	B	B	B	H	B	-	B	-	A	H	-	B	B	B	B	B	B	B
Grain_Cu_concentration	4.17452978	4.09672606	5.063553	4.90917234	5.37587896	4.21549233	4.3496043	5.16120318	4.96531465	4.81174637	5.37677259	5.36847393	5.7986494	5.53695513	5.29694353	5.02731192	5.004425	4.60992041	5.3184776	6.81042258	4.39991732	4.39931577	5.54938669	6.27883125	5.16745111	5.87535983	5.6902418	4.8813423	6.13923048	4.89973588	4.9257515	5.85661998

Primers name	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
KASP-14-57.0	B	B	A	B	B	B	B	B	B	B	A	A	A	B	B	B	B	B	B	B	B	B	A	A	A	B	B	B	H	A	B	-
KASP-24-52.32	B	B	A	B	B	B	B	B	H	-	A	A	A	B	-	B	B	B	B	B	B	B	A	A	A	B	B	B	H	A	B	-
KASP-34-56.576	B	B	A	B	B	B	B	B	B	B	A	A	A	B	-	B	B	B	B	H	B	B	A	A	A	B	B	B	H	A	B	-
Grain_Cu_concentration	6.71354754	4.45020725	5.56971277	4.27573536	5.16783168	4.65456981	5.20495663	4.73094495	5.34001551	5.27255575	4.63325731	5.3097125	5.73500687	5.23899382	5.8970707	4.95270427	6.31847674	5.70481222	6.23355233	5.73831831	5.67198081	4.90145268	5.52306546	6.22010934	5.34226489	5.02344826	5.75167823	5.0587176	7.17465649	7.25848837	6.07276654	6.51694803

Primers name	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254
KASP-14-57.0	B	B	B	A	A	A	A	B	B	A	A	A	-	B	B	B	B	A	A	A	A	B	B	B	B	B	B	B	A	B
KASP-24-52.32	B	H	B	A	A	A	A	B	B	A	A	A	A	B	B	B	B	A	A	A	A	B	B	B	B	B	B	B	A	B
KASP-34-56.576	H	H	B	A	A	A	-	B	B	A	A	A	H	B	B	B	B	A	A	A	A	B	B	B	H	B	B	B	A	H
Grain_Cu_concentration	5.20949861	5.42469775	5.256828	6.28733681	5.40964363	6.05285326	5.40700597	5.43089431	4.26549782	4.6482271	5.58236933	5.62736176	5.54460677	5.7320769	5.72185173	4.63159124	4.73813684	5.040332	4.48613187	5.56203264	6.59264858	5.69615636	6.9313036	5.11070071	5.37307831	5.14522541	5.37534062	5.61454397	5.02036719	5.0300322