

S. Table 1. The significant SNP list by GWAS analysis using GCTA GWAS analysis method

Trait	Chromosome	SNP	Physical position	Frequency	SNP effect	Standard error	p-value
BW6	14	rs109084660	31191960	0.228682	9.70173	1.71836	1.64303E-08
BW12	14	rs109080115	24656389	0.110742	16.4653	2.98926	3.62646E-08
BW12	14	rs109815800	25015640	0.112957	16.7459	2.95155	1.39828E-08
BW12	14	rs42304759	26196375	0.125138	15.6219	2.85461	4.43651E-08
BW12	14	rs42765334	26328185	0.114064	16.2173	2.97992	5.26257E-08
BW12	14	rs109073664	26651141	0.112957	16.397	2.983	3.86684E-08
BW12	14	rs132748716	27050379	0.112957	16.397	2.983	3.86684E-08
BW12	14	rs42403984	27123573	0.112957	16.397	2.983	3.86684E-08
BW12	14	rs133703938	27149618	0.113511	16.3788	2.9721	3.57076E-08
BW12	14	rs42403970	27155254	0.112957	16.397	2.983	3.86684E-08
BW12	14	rs109084660	31191960	0.228682	11.3768	2.10097	6.12699E-08
BW12	14	rs109546980	31219729	0.10299	16.8867	3.09038	4.64782E-08
BW12	14	rs41619147	31377493	0.103544	16.6997	3.08209	6.01633E-08
BW12	14	rs109169231	34148235	0.110742	16.7309	2.96417	1.65772E-08
BW12	14	rs137454864	34194915	0.110742	16.7309	2.96417	1.65772E-08
BW12	14	rs134630334	34264309	0.110742	16.7309	2.96417	1.65772E-08
BW12	14	rs110741818	35592843	0.305094	10.2217	1.89895	7.3327E-08
BW12	14	rs137334521	35599284	0.295127	10.2875	1.90164	6.3087E-08
BW18	14	rs109080115	24656389	0.110742	23.0032	3.95225	5.87469E-09
BW18	14	rs109815800	25015640	0.112957	23.5996	3.90228	1.46966E-09
BW18	14	rs42305768	26091728	0.383721	12.9465	2.36936	4.65142E-08
BW18	14	rs42304759	26196375	0.125138	21.3415	3.77563	1.58191E-08
BW18	14	rs42304742	26226856	0.116279	21.81	3.87398	1.80337E-08
BW18	14	rs42304741	26228638	0.116833	21.1051	3.87156	5.00014E-08
BW18	14	rs42303720	26264142	0.116279	21.81	3.87398	1.80337E-08
BW18	14	rs43083557	26288440	0.115725	21.6956	3.88835	2.41014E-08
BW18	14	rs43083541	26302589	0.115725	21.6956	3.88835	2.41014E-08
BW18	14	rs42765334	26328185	0.114064	22.2105	3.94048	1.73548E-08
BW18	14	rs41725166	26624399	0.119601	21.0121	3.79901	3.18493E-08
BW18	14	rs109073664	26651141	0.112957	21.9882	3.94448	2.48344E-08
BW18	14	rs132748716	27050379	0.112957	21.9882	3.94448	2.48344E-08
BW18	14	rs42403984	27123573	0.112957	21.9882	3.94448	2.48344E-08
BW18	14	rs133703938	27149618	0.113511	21.8575	3.93007	2.67301E-08
BW18	14	rs42403970	27155254	0.112957	21.9882	3.94448	2.48344E-08
BW18	14	rs109169231	34148235	0.110742	21.2477	3.91999	5.94888E-08
BW18	14	rs137454864	34194915	0.110742	21.2477	3.91999	5.94888E-08
BW18	14	rs134630334	34264309	0.110742	21.2477	3.91999	5.94888E-08
BW18	22	rs42837161	48355980	0.156146	-16.5315	3.01268	4.0809E-08
BW24	14	rs109080115	24656389	0.110742	33.952	5.08971	2.54585E-11
BW24	14	rs109815800	25015640	0.112957	33.099	5.02503	4.49306E-11
BW24	14	rs133319071	25544079	0.1866	22.0657	3.93746	2.09397E-08
BW24	14	rs42304759	26196375	0.125138	30.5687	4.8664	3.35155E-10
BW24	14	rs42304742	26226856	0.116279	31.7272	4.98999	2.04182E-10
BW24	14	rs42304741	26228638	0.116833	30.7343	4.98677	7.13018E-10
BW24	14	rs42303720	26264142	0.116279	31.7272	4.98999	2.04182E-10
BW24	14	rs43083557	26288440	0.115725	31.7633	5.00868	2.27326E-10
BW24	14	rs43083541	26302589	0.115725	31.7633	5.00868	2.27326E-10
BW24	14	rs42765334	26328185	0.114064	32.3123	5.07619	1.94691E-10
BW24	14	rs134721150	26603341	0.122924	27.4034	4.76684	8.99011E-09
BW24	14	rs41725183	26604168	0.122924	27.4034	4.76684	8.99011E-09
BW24	14	rs41725166	26624399	0.119601	30.5618	4.89234	4.18746E-10
BW24	14	rs109073664	26651141	0.112957	32.0692	5.08111	2.76405E-10
BW24	14	rs111021769	26662633	0.138427	24.4208	4.52004	6.56098E-08
BW24	14	rs41724536	26766010	0.11794	28.5482	4.94706	7.89187E-09
BW24	14	rs41724015	26794576	0.120709	27.1519	4.93392	3.73166E-08
BW24	14	rs42404027	26997876	0.138981	28.2527	4.68724	1.66434E-09
BW24	14	rs42404006	27035971	0.138981	28.2527	4.68724	1.66434E-09
BW24	14	rs132748716	27050379	0.112957	32.0692	5.08111	2.76405E-10
BW24	14	rs42403984	27123573	0.112957	32.0692	5.08111	2.76405E-10
BW24	14	rs133703938	27149618	0.113511	31.8133	5.06258	3.29975E-10
BW24	14	rs42403970	27155254	0.112957	32.0692	5.08111	2.76405E-10
BW24	14	rs42893390	27271835	0.107973	29.7253	5.15237	7.96227E-09
BW24	14	rs109084660	31191960	0.228682	20.9096	3.57123	4.76985E-09
BW24	14	rs109546980	31219729	0.10299	30.3616	5.26119	7.88646E-09
BW24	14	rs41619147	31377493	0.103544	30.1172	5.24681	9.46215E-09
BW24	14	rs109169231	34148235	0.110742	30.8979	5.05098	9.52255E-10
BW24	14	rs137454864	34194915	0.110742	30.8979	5.05098	9.52255E-10
BW24	14	rs134630334	34264309	0.110742	30.8979	5.05098	9.52255E-10
BW24	6	rs43457593	39932557	0.03433	48.6504	8.90798	4.72281E-08
BW24	6	rs133886965	42404901	0.0310078	52.8215	9.72707	5.62388E-08
BW24	14	rs109517898	46359424	0.371539	17.6028	3.13551	1.97709E-08
BW24	14	rs110705278	46392030	0.374308	17.603	3.13195	1.90467E-08

S. Table 2. The window size-based chromosome partitioning analysis in a BTA14 chromosome

Trait	BTA14 whole		Without_specific_window	
	Variance	Standard error	Variance	Standard error
BW6_heritability	0.252956	0.050387	0.207181	0.04827
BW12_heritability	0.226079	0.046968	0.199983	0.045116
BW18_heritability	0.25732	0.048191	0.225776	0.046128
BW23_heritability	0.282821	0.04945	0.248769	0.047686
BW6_V(G)	202.406644	46.202151	164.779387	42.54753
BW12_V(G)	265.824201	62.06686	235.638772	58.717011
BW18_V(G)	530.564003	114.520453	465.54937	107.198109
BW23_V(G)	989.44875	203.674133	872.117723	191.872437

S. Table 3. The proportion of variance for three type of growth traits using Bayesian mixture model (BayesR)

Trait	Chromosome	ReferenceID	Physical position	Effect size
BW6	12	rs109360887	31368562	0.017277151
BW6	14	rs109084660	31191960	0.094032164
BW12	22	rs42837161	48355980	0.039585091
BW12	22	rs42466723	48376462	0.016792892
BW18	1	rs136100553	88680006	0.011192991
BW18	3	rs109305070	7188354	0.014680347
BW18	3	rs41624536	60324610	0.019426537
BW18	3	rs110806975	60325941	0.014484642
BW18	3	rs110647998	96628948	0.211257814
BW18	14	rs109815800	25015640	0.079857982
BW18	14	rs42403984	27123573	0.014226019
BW18	14	rs133703938	27149618	0.040847078
BW18	21	rs132786958	2625626	0.068327455
BW18	22	rs42837161	48355980	0.486633282
BW18	22	rs42466723	48376462	0.013014708
BW24	3	rs109754311	7184922	0.01136204
BW24	3	rs135142468	60322269	0.016959451
BW24	4	rs134745551	5539434	0.013608531
BW24	8	rs137525627	11105358	0.027639413
BW24	14	rs109080115	24656389	0.047587789
BW24	14	rs110705278	46392030	0.013945498
BW24	22	rs42837161	48355980	0.016071794
BW24	22	rs42837153	48364982	0.018902995