

Table 1 The genes within 50 kb genomic region of the top 28 significant SBR-associated SNPs with functional annotations (Adopted from Xiong et al., 2023)

SNP	GWAS model (Ranking)	LOD	Allele Type	Gene name	Functional annotations
Gm02_7235181	SUPER(1), FarmCPU,7.91	7.61	T/C	Glyma.02G083500	LRR; RCC1; response to
Gm02_7234594	CMLM(5), MLMM(10)		C/T	Glyma.02G083300	bacterial origin; defense
Gm02_7315227	SUPER(2), MLMM(11)	7.52	G/A	Glyma.02G084100	response; structural constituent
Gm03_38913029	GLM, MLM, Blink (2),6.85		T/C	Glyma.02G084900	of cell wall
Gm04_45884688	FarmCPU, CMLM(3), MLMM(7), GLM	6.23	T/C	Glyma.03G175800	RCC1 repeat; Ankyrin repeat
Gm04_46003059	MLM, Blink(7), SUPER(15),6.23		G/A	Glyma.03G177400	family protein/domain
Gm04_46295839	MLMM(16), FarmCPU, CMLM(26)	6.03	C/T	Glyma.03G175300	Response to aluminum ion; cell
Gm04_46389651	SUPER(20), MLMM(24)		T/C	Glyma.04g188000	wall; ABC transporter
Gm04_47132429	SUPER(16), MLMM(18)	5.94	C/T	Glyma.04G189300,	LRR
Gm06_36808946	SUPER(22), MLMM(27)		G/A	Glyma.04g189500	Membrane; Cytochrome P450
Gm08_43955878	MLMM(4), FarmCPU,5.78	5.77	C/T	Glyma.04G192300	Cell wall organization; cellular
Gm09_1944730	CMLM(6), GLM, MLM, Blink(13), SUPER(25)		C/T	Glyma.04G211100,	membrane fusion;
Gm09_1943831	SUPER(6), GLM, MLM, Blink(9), FarmCPU, CMLM(34)	5.73	T/C	Glyma.04G212000	NAC domain
Gm09_1951644	FarmCPU, CMLM(19),5.61		G/A	Glyma.06G232500	Response to molecule of
Gm10_5573877	SUPER(32), MLMM(33)	5.60	A/C	Glyma.06G232500	bacterial origin
Gm10_5573007	MLMM(2), SUPER(27)		C/A	Glyma.08g319300,	Response to molecule of
Gm10_5559592	MLMM(3), SUPER(28)	5.60	G/A	Glyma.08G321700	Response to molecule of
Gm10_5541691	FarmCPU, CMLM, MLMM(1),10.07		T/G	Glyma.09G024700	Response to molecule of
Gm10_5578693	GLM, MLM, Blink(4), SUPER(18)	5.60	C/T	Glyma.09G024700	Response to molecule of
Gm10_39142024	SUPER(5), MLMM(12), GLM,6.73		C/T	Glyma.10G060100,	Response to molecule of
Gm12_28136735	MLM, Blink(14)	6.58	C/T	Glyma.10G060200,	Response to molecule of
Gm13_16350701	SUPER(7), MLMM(15)		C/T	Glyma.10G060600	Response to molecule of
Gm14_2492139	SUPER(9), MLMM(20)	6.48	C/A	Glyma.10g157500	Response to molecule of
Gm14_6185611	SUPER(33), MLMM(44)		C/T	Glyma.12G160100,	Response to molecule of
Gm16_4935328	SUPER(23), MLMM(32)	5.93	G/A	Glyma.12G160400	Response to molecule of
Gm19_44734953	GLM, MLM, Blink(1),7.12		C/T	Glyma.13G064500	Response to molecule of
Gm20_36724867	MLMM(8), SUPER(10), FarmCPU, CMLM(14)	6.02	T/G	Glyma.14G034200,	Response to molecule of
	MLMM(9), SUPER(21)		G/A	Glyma.14G040000	Response to molecule of
	SUPER(4), GLM, MLM, Blink(8), MLMM(39)	7.03	T/C	Glyma.16G051800,	Response to molecule of
	FarmCPU, CMLM(16), GLM,5.63		T/G	Glyma.16G052200	Response to molecule of
	MLM, Blink(23), SUPER(29)	6.26	A/C	Glyma.19G189900,	Response to molecule of
	GLM, MLM, Blink(6),6.26		C/T	Glyma.19G190200,	Response to molecule of
	SUPER(13), FarmCPU, CMLM(25), MLMM(26)	5.51	C/T	Glyma.19G190800	Response to molecule of
	MLMM(28), SUPER(36),5.51		T/G	Glyma.20G124700	Response to molecule of
	GLM, MLM, Blink(46)	5.61	T/G		Response to molecule of
	GLM, MLM, Blink(10),5.61		G/A		Response to molecule of
	MLMM(22), SUPER(31), FarmCPU, CMLM(32)	6.02	G/A		Response to molecule of
	GLM, MLM, Blink(3),6.02		C/T		Response to molecule of
	FarmCPU, CMLM(4), MLMM(25)	6.54	C/T		Response to molecule of
	FarmCPU, CMLM(2)		C/T		Response to molecule of