

## Supplementary Materials

### QTL mapping of lodging tolerance in soybean

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**Table S1. Primer design of candidate gene and internal reference gene**

Gene	Sense primer	Anti-sense primer
Glyma.17G048100	ATTGCTACCACGAAACCG	AACGCTGACCTCAACACCTA
Glyma.17G048200	AGGTATTCTTTCGTTCCATC	CCCAGGCTTCGCAGTA
Glyma.09G238900	AGTCAATTCATTCCGAGTC	CAGAAACAGCATCACCC
Glyma.09G239000	TCGCAAGCGGCATAGT	CTCCGTAGGCTCGGTTTA
Glyma.09G239100	CATTCAGGGTCTACAAGGAT	GTCGCTCGCTCAAGTCA
Actin 4	GATCTACCATGTTCCCAAGT	ATAGAGCCACCAATCCAGAC

**Table S2. Position of maturity-related genes and collapse-related QTL**

Locus	Chr	Start	Stop
E1 (Glyma.06G207800)	6	20207077	20207940
E2 (Glyma.10G221500)	10	45294735	45316121
E3 (Glyma.19G224200)	19	47633059	47641958
E4 (Glyma.20G090000)	20	33236018	33241692
E9 (Glyma.16G150700)	16	31109999	31114963
E10 (Glyma.08G363100)	8	47458142	47459829
J (Glyma.04G050200)	4	4075901	4081260
qldg-1	17	3644824	3649431
qldg-2	9	46135072	46169871

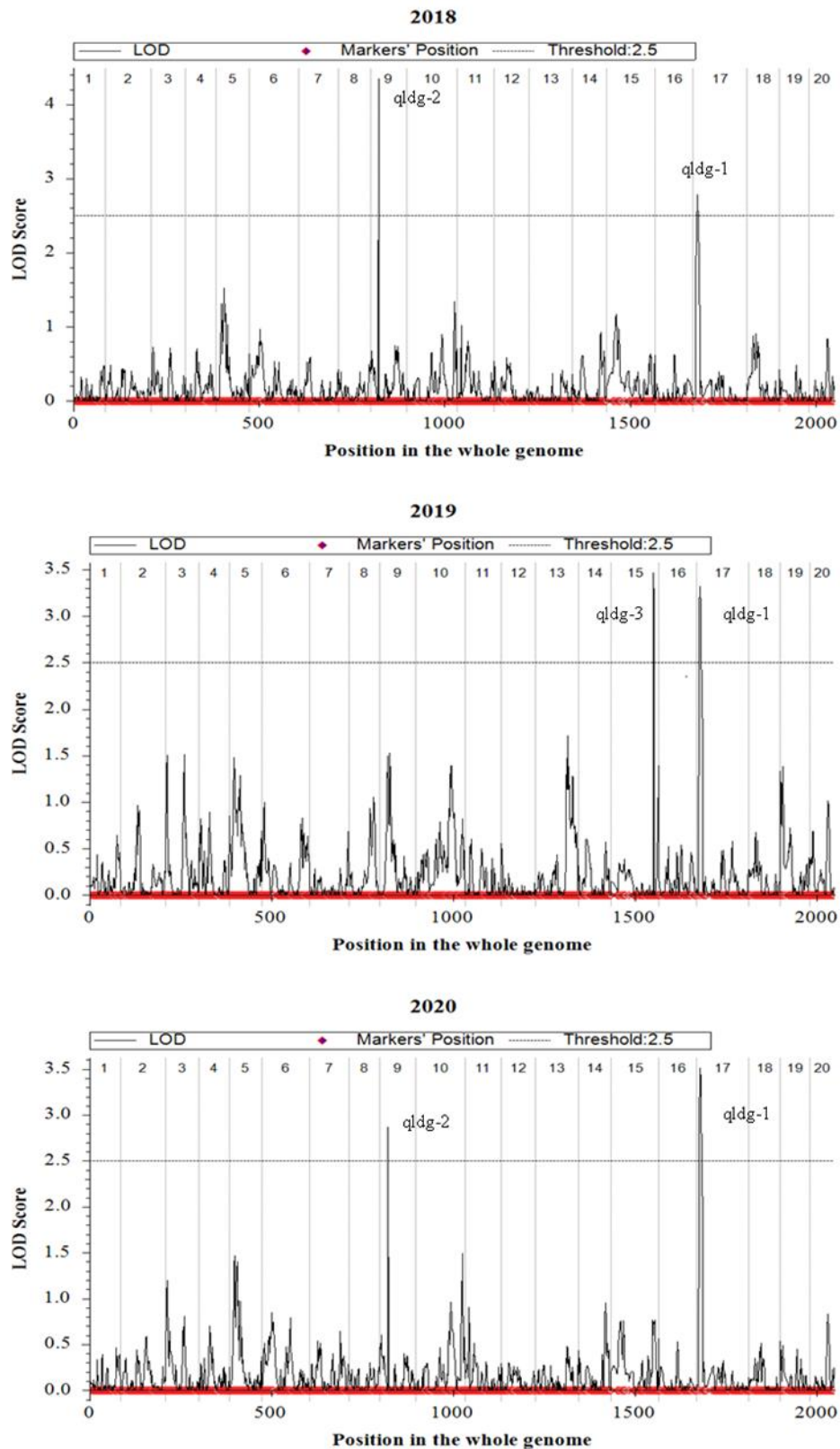


Figure S1. Major QTL of lodging detected in soybean.

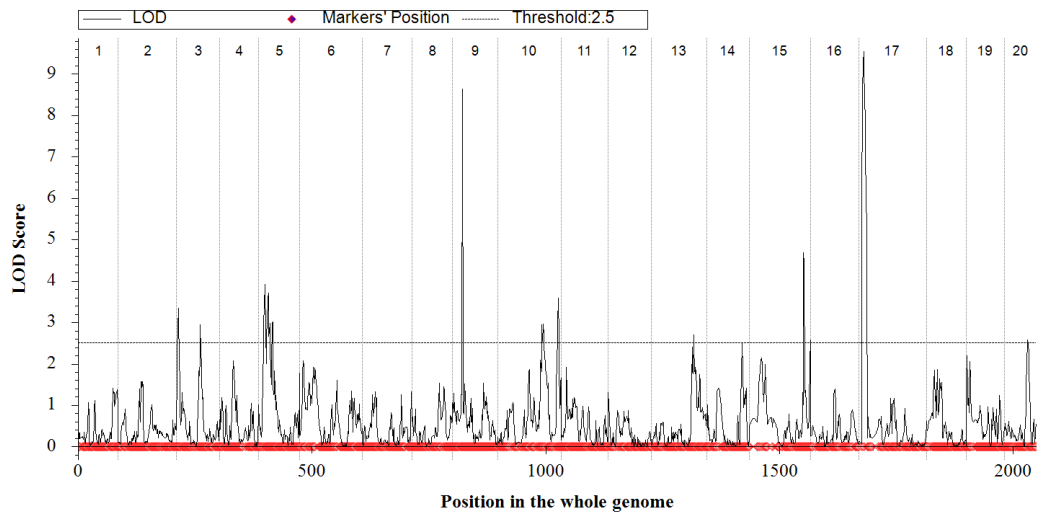


Figure S2. QTL of lodging detected by QEI mapping in soybean.