

	OL855975-Beijing	OQ079703-Beijing	OQ079694-Shanxi	OQ079695-Shanxi	OL404964-Jilin	OQ079705-Beijing	OQ079713-Jiangsu	OQ079712-Jiangsu	OQ079710-Jiangsu	OQ079709-Jiangsu	OQ079714-Jiangsu	OM145986-Henan	OQ079699-Anhui	OQ079697-Anhui	OQ079698-Anhui	MZ505080-1-Beijing	OQ079708-Henan	OQ079696-Anhui	OQ079700-Anhui	OQ079702-Beijing	OQ079704-Beijing	OQ079706-Beijing	MT221447-1-Jiangsu	OM914609-Henan	OQ079707-Anhui	OQ079715-Jiangsu
OL855975-Beijing	100.0	99.7	99.1	99.1	93.2	93.2	93.3	93.2	93.3	93.3	93.5	93.3	93.6	93.6	93.7	93.9	93.8	94.3	94.0	94.1	94.2	94.2	93.7	93.5	93.8	93.9
OQ079703-Beijing	99.7	100.0	99.2	99.2	93.3	93.3	93.2	93.2	93.2	93.3	93.5	93.3	93.5	93.6	93.7	93.8	93.8	94.2	94.0	94.1	94.2	94.2	93.7	93.5	93.8	93.8
OQ079694-Shanxi	99.1	99.2	100.0	99.4	93.1	93.1	93.1	93.0	93.1	93.1	93.4	93.2	93.4	93.5	93.6	93.8	93.8	94.2	94.0	94.0	94.1	94.2	93.6	93.5	93.7	93.8
OQ079695-Shanxi	99.1	99.2	99.4	100.0	93.2	93.2	93.2	93.1	93.2	93.2	93.5	93.3	93.5	93.6	93.7	93.9	93.9	94.3	94.1	94.1	94.2	94.3	93.7	93.6	93.8	93.9
OL404964-Jilin	93.2	93.3	93.1	93.2	100.0	99.9	94.9	94.9	94.9	94.9	95.0	95.0	94.8	95.2	95.3	95.4	95.6	95.5	95.8	95.7	95.8	95.8	95.3	95.3	95.7	95.6
OQ079705-Beijing	93.2	93.3	93.1	93.2	99.9	100.0	94.9	94.9	94.9	94.9	95.0	95.0	94.8	95.2	95.3	95.4	95.6	95.5	95.8	95.7	95.8	95.8	95.3	95.3	95.7	95.6
OQ079713-Jiangsu	93.3	93.2	93.1	93.2	94.9	94.9	100.0	99.8	99.8	99.8	99.8	98.6	98.5	98.3	98.4	97.5	97.8	97.6	97.9	97.9	97.9	98.0	97.2	97.0	97.4	97.5
OQ079712-Jiangsu	93.2	93.2	93.0	93.1	94.9	94.9	99.8	100.0	99.9	99.9	99.9	98.5	98.5	98.3	98.4	97.4	97.8	97.6	97.8	97.9	97.9	97.9	97.2	97.0	97.4	97.5
OQ079710-Jiangsu	93.3	93.2	93.1	93.2	94.9	94.9	99.8	99.9	100.0	99.9	100.0	98.6	98.5	98.3	98.4	97.5	97.8	97.6	97.9	97.9	97.9	98.0	97.2	97.0	97.4	97.5
OQ079709-Jiangsu	93.3	93.2	93.1	93.2	94.9	94.9	99.8	99.9	99.9	100.0	100.0	98.6	98.5	98.3	98.4	97.5	97.8	97.6	97.9	97.9	97.9	98.0	97.2	97.0	97.4	97.5
OQ079714-Jiangsu	93.3	93.3	93.1	93.2	95.0	95.0	99.8	99.9	100.0	100.0	100.0	98.6	98.6	98.4	98.4	97.5	97.9	97.6	97.9	98.0	98.0	98.0	97.3	97.1	97.5	97.5
OM145986-Henan	93.5	93.5	93.4	93.5	95.0	95.0	98.6	98.5	98.6	98.6	98.6	100.0	99.0	98.6	98.7	97.9	98.2	97.9	98.0	97.9	97.9	97.9	97.5	97.3	97.7	97.8
OQ079699-Anhui	93.3	93.3	93.2	93.3	94.8	94.8	98.5	98.5	98.5	98.5	98.6	99.0	100.0	98.8	98.9	97.7	98.0	97.9	97.8	97.6	97.6	97.6	97.7	97.3	97.2	97.7
OQ079697-Anhui	93.6	93.5	93.4	93.5	95.2	95.2	98.3	98.3	98.3	98.3	98.4	98.6	98.8	100.0	99.9	98.2	98.3	98.3	98.2	97.9	98.0	98.0	98.0	97.7	97.6	98.0
OQ079698-Anhui	93.6	93.6	93.5	93.6	95.3	95.3	98.4	98.4	98.4	98.4	98.4	98.7	98.9	99.9	100.0	98.2	98.4	98.4	98.3	98.0	98.0	98.0	98.1	97.8	97.7	98.1
OQ079701-Beijing	93.7	93.7	93.6	93.7	95.4	95.4	97.5	97.4	97.5	97.5	97.9	97.7	98.2	98.2	100.0	99.0	99.0	98.9	98.4	98.4	98.4	98.5	98.4	98.3	98.6	98.6
MZ505080-Henan	93.9	93.8	93.8	93.9	95.6	95.6	97.8	97.8	97.8	97.8	97.9	98.2	98.0	98.3	98.4	99.0	100.0	99.1	99.1	98.8	98.8	98.8	98.8	98.7	98.5	98.9
OQ079708-Anhui	93.8	93.8	93.8	93.9	95.5	95.5	97.6	97.6	97.6	97.6	97.6	97.9	97.9	98.3	98.4	99.0	99.1	100.0	99.0	98.5	98.6	98.6	98.6	98.4	98.3	98.7
OQ079696-Anhui	94.3	94.2	94.2	94.3	95.8	95.8	97.9	97.8	97.9	97.9	98.0	97.8	98.2	98.3	98.9	99.1	99.0	100.0	98.9	99.0	99.1	99.1	98.4	98.3	98.7	98.7
OQ079700-Anhui	94.0	94.0	94.0	94.1	95.7	95.7	97.9	97.9	97.9	97.9	98.0	97.9	97.6	97.9	98.0	98.4	98.8	98.5	98.9	100.0	99.1	99.1	99.2	98.1	98.0	98.4
OQ079702-Beijing	94.1	94.1	94.0	94.1	95.8	95.8	97.9	97.9	97.9	97.9	98.0	97.9	97.6	98.0	98.0	98.4	98.8	98.6	99.0	99.1	100.0	99.7	99.7	98.2	98.1	98.5
OQ079704-Beijing	94.2	94.2	94.1	94.2	95.8	95.8	97.9	97.9	97.9	97.9	98.0	97.9	97.6	98.0	98.0	98.4	98.8	98.6	99.1	99.1	99.7	100.0	100.0	98.2	98.1	98.5
OQ079706-Beijing	94.2	94.2	94.2	94.3	95.8	95.8	98.0	97.9	98.0	98.0	98.0	97.9	97.7	98.0	98.1	98.5	98.8	98.6	99.1	99.2	99.7	100.0	100.0	98.3	98.2	98.5
OQ079711-Jiangsu	93.7	93.7	93.6	93.7	95.3	95.3	97.2	97.2	97.2	97.2	97.3	97.5	97.3	97.7	97.8	98.4	98.7	98.4	98.4	98.1	98.2	98.2	98.3	100.0	98.4	98.7
MT221447-Anhui	93.5	93.5	93.5	93.6	95.3	95.3	97.0	97.0	97.0	97.0	97.1	97.3	97.2	97.6	97.7	98.3	98.5	98.3	98.3	98.0	98.1	98.1	98.2	98.4	100.0	99.2
OM914609-Henan	93.8	93.8	93.7	93.8	95.7	95.7	97.4	97.4	97.4	97.4	97.5	97.7	97.7	98.0	98.1	98.6	98.9	98.7	98.7	98.4	98.5	98.5	98.5	98.7	99.2	100.0
OQ079707-Anhui	93.9	93.8	93.8	93.9	95.6	95.6	97.5	97.5	97.5	97.5	97.5	97.8	97.7	98.0	98.1	98.6	98.9	98.7	98.7	98.4	98.6	98.6	98.6	98.7	99.4	99.6
OQ079715-Jiangsu	93.9	93.8	93.8	93.9	95.7	95.7	97.4	97.4	97.4	97.4	97.5	97.8	97.6	98.0	98.0	98.6	98.9	98.7	98.7	98.4	98.5	98.5	98.5	98.7	99.3	99.5

Figure S1 The percent identity matrix of aligned SoSGV genomes. The genome sequences of different SoSGV isolates were used to calculate the identity between each pair of the SoSGV isolates. The calculated percent identity matrix is shown

a

>seq55
GAATATTACCGGATGGCCGCGAAAAATTTTATAGGGCA
CGTGTCGAAACTTAGTGGCCAAGCTAGTATTGCGATG
TGGACCCCCCAGGCGCTGTATTATAACAAACAAGAT
TCAAATTAACATGTAAAGAAGTCATGTATACTTTTAAT
ACTGCTACTAATTTAGAATCCTTTTTATAAGGAAAATA
AAAAAAATAATATAGTTTAGACTATTAAATTAAC
TTTCTCTAATTGAATTCACAAAGATTTTATTTC
CACACATGACAGTCATAATACATAATTTCCCCC
ACATGATTGGTTTCTGACAGATCGCGCAGCGGC
ATCCTTGACGTTCTCTGACATCCATTCTCAAG
TTCG
grey: LIR dark red: C1 underline: sequence hit *Vigna unguiculata*

b

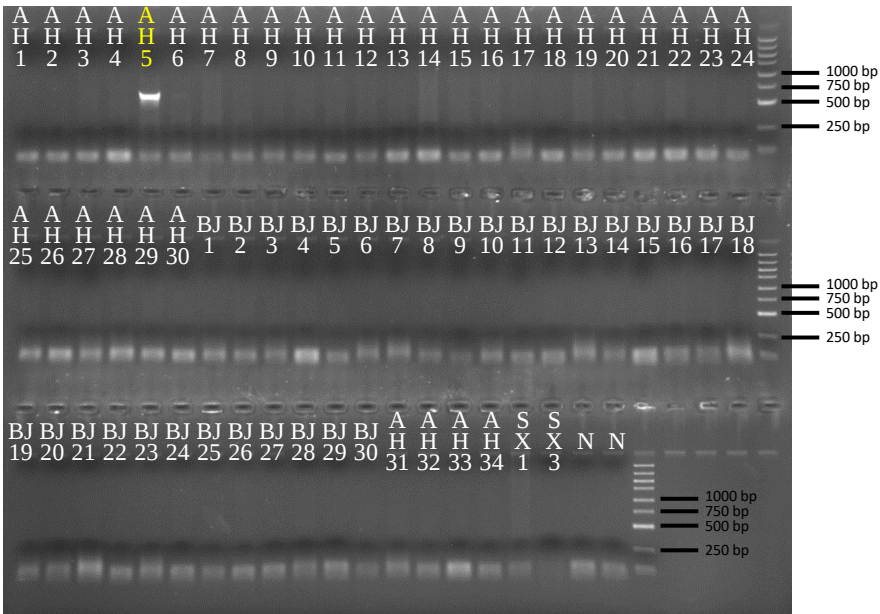


Figure S2 PCR amplification of the SoSGV defective DNA containing sequences from cowpea *Vigna unguiculata*. **a** A fragment of sequence showing highest identity to the cowpea sequence (accession #CP039347.1) inserted in the SoSGV defective DNA clone seq55. **b** PCR amplification of the cowpea sequence from soybean samples showing SGS symptoms using primers #3240 and #2907. Water was used as negative control (N). Sample #5 collected from Anhui Province (AH5) is detected as positive. Locations of each sample are listed in Additional file 1: Table S2

a

>seq62

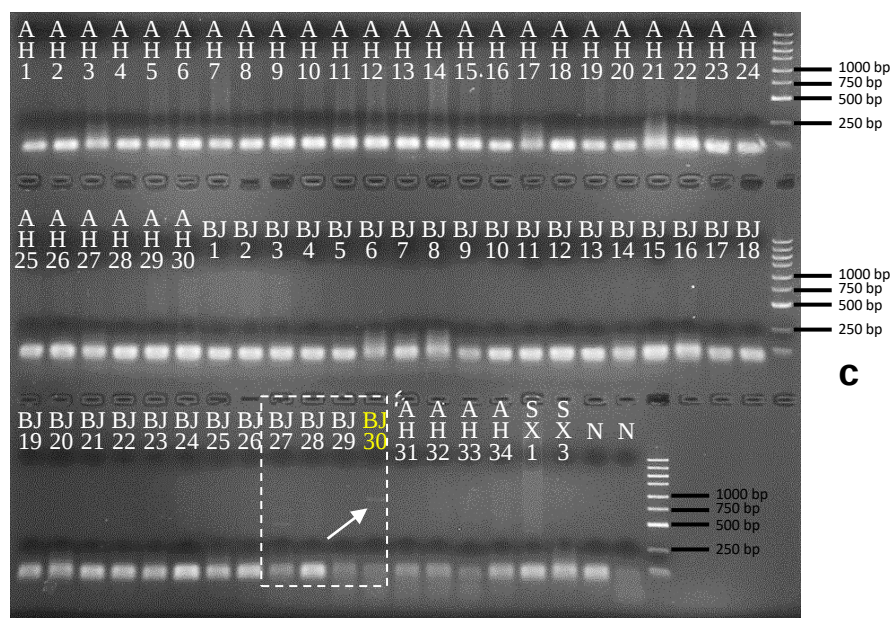
```

CAATATTACCGGATGGCCGCGAAAAATTTTATAGGGCA
CGTGTCCAAACTTAGTGGCCAAGCTAGTAGTGCGTTG
TGGACCCCCCAGGCGCGTATAGGATATGAGATTTGAT
TTCACCTTCTTTTTTTTTTTGTATAGGTTGATCATACTGTA
GAAACAGAATATAATACTCTTGTACAAAGACGTACAC
ATACGGAGGATACAAATTGTATCTCTTAACACTCAATT
GAAGTTTTGAAATTCTTTTTTTCCCATGAAAGGTTTAG
ATTTGAGACACACGGACTTGCAATTCACAAATTCAGA
AATTACAATAGAAGAAAATGTCGGCCGCGCAGCGGCA
TCCTTGACGTTCTCTGACATCCATTCTCAAGTTCG

```

grey: LIR dark red: C1 underline: sequence hit *Glycine soja*

b



c

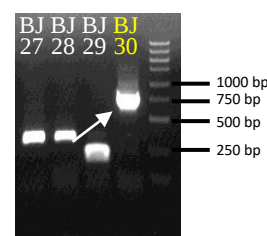


Figure S3 PCR amplification of the SoSGV defective DNA containing the sequence from wild soybean *Glycine soja*. **a** A fragment of sequence showing highest identity to the *G. soja* sequence (accession #XM_028360077.1) inserted in the SoSGV defective DNA clone seq62. **b** PCR amplification of the *G. soja* sequence from soybean samples showing SGS symptoms using primers #3241 and #2907. Water was used as negative control (N). Sample #30 collected from Beijing (BJ30) is detected as weak positive (pointed by an arrow). **c** A nested PCR assay confirmed the presence of the *Glycine soja* sequence in sample BJ30 by using the PCR products #27 – #30 shown in panel B as templates and another primer pair set (#3241 and #3134). The positive band from BJ30 is pointed by an arrow. Locations of each sample are listed in Additional file 1: Table S2

a

>seq71
GAATGGGAAGCAACAGCAAACCTCCAAAGCATCTTCAT
GTCTACCCAACTGCAACGAAATAACATTAATATAATGG
GTTTTAAACTAATGGCAGGTTCTACTATCAAAGGGTA
TGCTTGACACAAACAAATAGCATCAAATGAAGTCAA
AAAGATCCATAAAAGTCCCTCCACTCAAAACAAAATA
ACTGAT**TCTCCACGGCCGCGCAGCGGCATCCCTGACG**
TTCTCTGACATCCATTCTCAAGTTCG
dark red: C1 underline: sequence hit *Vigna unguiculata*

b

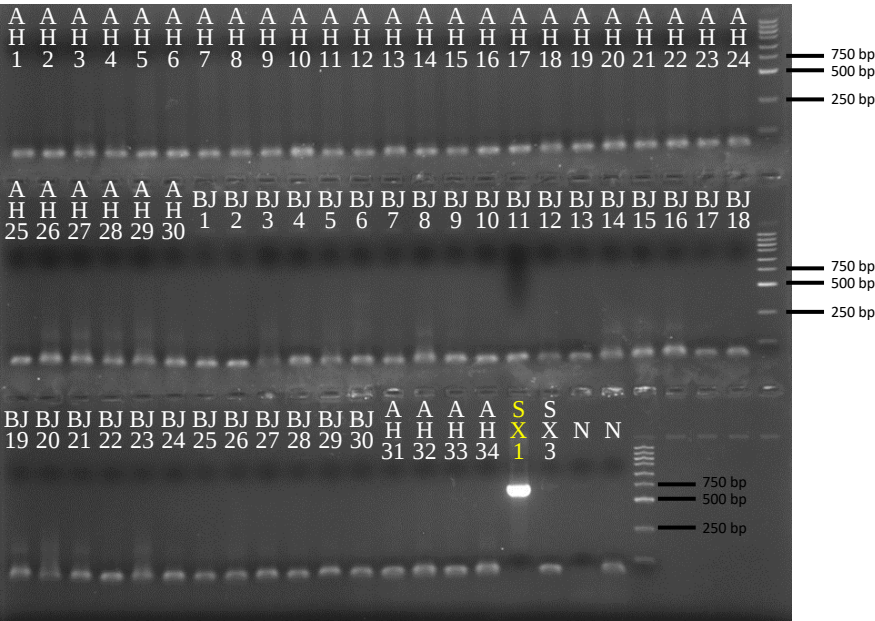


Figure S4 PCR amplification of the SoSGV defective DNA containing the sequence from cowpea *Vigna unguiculata*. **a** A sequence fragment showing highest identity to the *Vigna unguiculata* sequence (accession #CP039355.1) was inserted in the SoSGV defective DNA clone seq71. **b** PCR amplification of the *Vigna unguiculata* sequence from soybean samples showing SGS symptoms using primers #3242 and #2907. Water was used as negative control (N). Sample #1 collected from Shanxi Province (SX1) is detected as positive. Locations of each sample are listed in Additional file 1: Table S2