Supplementary Information

Figure S1

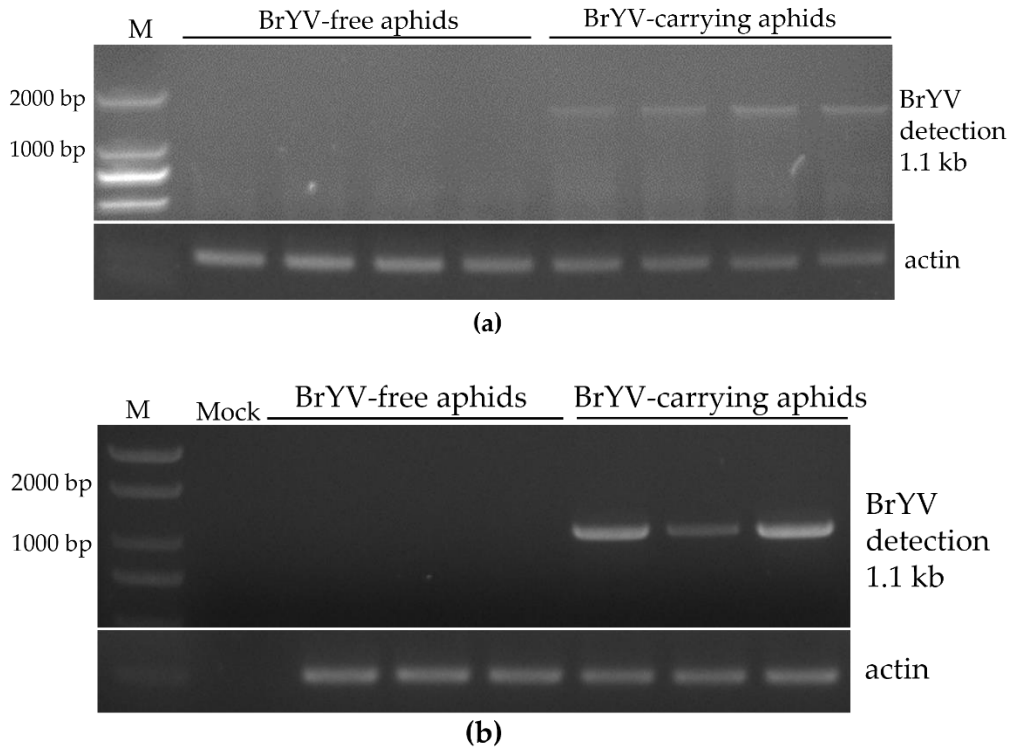


Figure S1. Confirmation of virus presence in BrYV-free and BrYV-carrying aphids using Reverse transcription-polymerase chain reaction (RT-PCR). (a) RT-PCR detection for treatment 1. **(b)** RT-PCR detection for treatment 2**.** M: DNA ladder. The specific primers BrC 2674F/ BrC3778R were used to detect the presence of BrYV. The quality of aphid samples was verified by amplifying actin (accession:XM_022309797) using primers actin F and actin R.

Figure S2

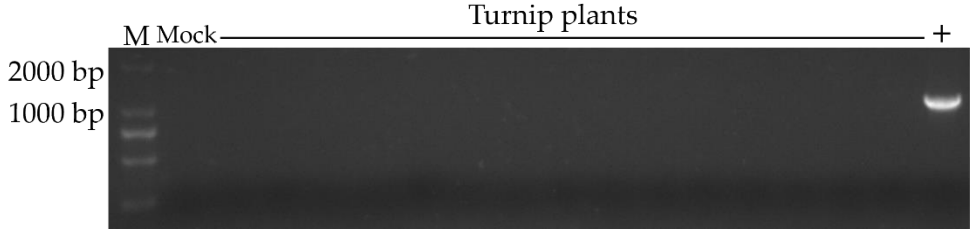


Figure S2. Turnip is verified as a nonhost of BrYV-C. Six aphids fed on the transgenic *A. thaliana* line 412 were transferred to turnip plants for 3 days, then aphids were eliminated using an insecticide. At 14 days after inoculation, systemic leaves were detected by RT-PCR. The result showed viruliferous aphids could not successfully transmit BrYV to turnip plants.

Figure S3

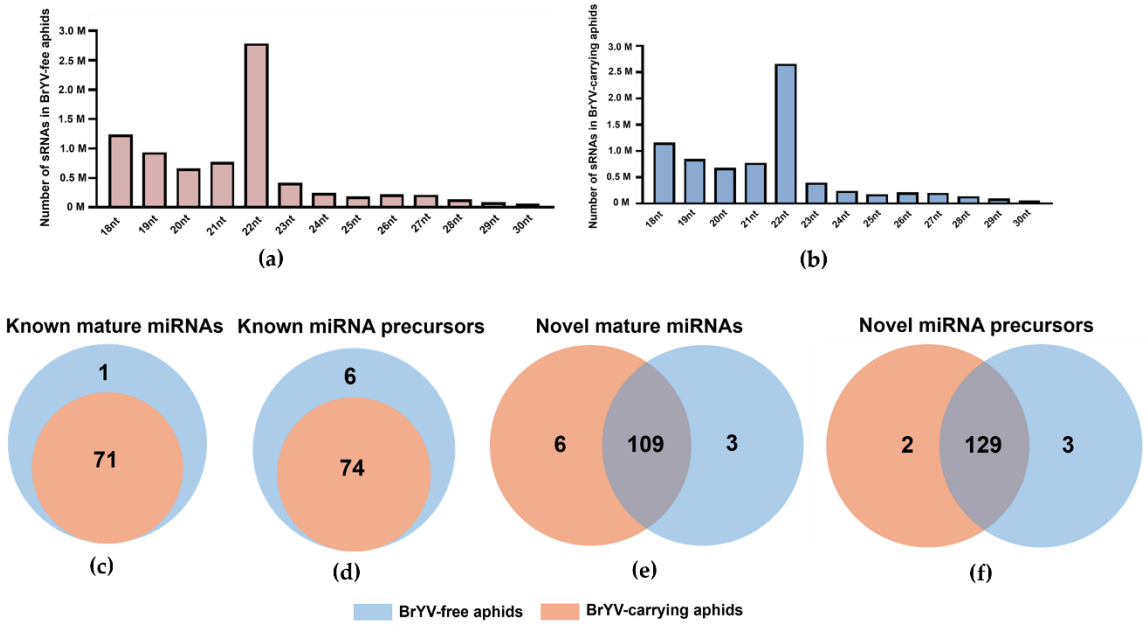


Figure S3. Host-derived sRNAs in BrYV-free and BrYV-carrying aphids under treatment 2. Size distribution of small RNA reads generated in BrYV-free aphids **(a)** and BrYV-carrying aphids **(b)**. **(a, b)** The X-axis represents the length of sRNAs and "M" means million. Venn diagram indicated the number of known **(c, d)** and novel **(e, f)** mature miRNAs **(c, e)** or precursors **(d, f)** that were specific or common to non-viruliferous and viruliferous aphids .

Table S1. Primers used for BrYV detection and RT-qPCR validation.

Gene name	Sequence	Amplicon size (bp)
actin	F: CGGTTCAAAAACCCAAACCAG R: TGGTGATGATTCCGTGTTC	260
BrC2674 BrC3778	F: GATTGTTCTGGTTTTGACTGG R: TTATACTCATGGTAGGCCTTGAG	1126
qPCR-actin qPCR-actin	F: GGTGTCTCACACACAGTGCC R: CGGCGGTGGTGGTGAAGCTG	142
novel_7	F: CGAAGGTAACTAGATCACTATGGGA	
mpe-miR-10	F: ACCCTGTAGATCCGAATTTGT	
mpe-miR-276	F: TAGGAACTTCATACCGTGCTCT	
mpe-miR-137	F: CGTATTGCTTGAGAATACACGTAG	
mpe-miR-100	F: GACCCGTAGATCCGAACTTGTG	
novel_199	F: GCGTCCACTGTAGAATTTTGC	
novel_65	F: GCAAGGTAACTTTTTCAATGTGT	
novel_44	F: TGTGATGTGCATGTGGGCTTCT	
novel_136	F: AAACGATTGATTGTTTGACCTATT	

Table S2. Summary of small RNA sequencing results under treatment 2.

Items	Non-viruliferous Aphids	Viruliferous Aphids
Raw reads number	16,670,135	16,932,611
Q30 of raw reads（%）	92.10	94.85
GC content（%）	48.63	49.46
Clean reads number	16,191,644	16,481,704
Total reads[a]	7,688,479	7,135,038

[a] The number of clean reads in length of 18-nt to 25-nt.

Table S3. The known mature miRNAs identified in our data and *M. persicae nicotianae.*

Common miRNAs	Unique miRNAs in our data	Unique miRNAs in *M. persicae nicotianae.*
mpe-bantam, mpe-let-7, mpe-miR-1	mpe-miR-219	mpe-miR-3030
mpe-miR-10, mpe-miR-100	mpe-miR-3029	mpe-miR-3053
mpe-miR-1000, mpe-miR-124	mpe-miR-3042	
mpe-miR-137, mpe-miR-13a	mpe-miR-3047	
mpe-miR-14, mpe-miR-184a	mpe-miR-307	
mpe-miR-184b, mpe-miR-190	mpe-miR-316	
mpe-miR-210, mpe-miR-252a	mpe-miR-971	
mpe-miR-252b, mpe-miR-263a	mpe-miR-981	
mpe-miR-263b, mpe-miR-275		
mpe-miR-276, mpe-miR-2765		
mpe-miR-277, mpe-miR-278		
mpe-miR-2796, mpe-miR-279a		
mpe-miR-279b, mpe-miR-281		
mpe-miR-29, mpe-miR-2a		
mpe-miR-2b, mpe-miR-2c		
mpe-miR-3016, mpe-miR-3024		
mpe-miR-3027, mpe-miR-3031		
mpe-miR-3032, mpe-miR-3037		
mpe-miR-3038, mpe-miR-3039		
mpe-miR-3040, mpe-miR-3041		
mpe-miR-3049, mpe-miR-3050		
mpe-miR-3051, mpe-miR-306		
mpe-miR-315,mpe-miR-317		
mpe-miR-34, mpe-miR-7		
mpe-miR-71, mpe-miR-8		
mpe-miR-87a, mpe-miR-87b		
mpe-miR-927, mpe-miR-929		
mpe-miR-92a, mpe-miR-92b		
mpe-miR-965, mpe-miR-993		
mpe-miR-996, mpe-miR-998		
mpe-miR-9a, mpe-miR-9b		
mpe-miR-iab-4		