

**Table S1. Primers used in this study**

Primer	Sequence (5'-3')	Position <sup>a</sup>	Product size
TGE-ORF3-F1	CTGCTATTTTGCTGTTGT	24583-24600	1602
TGE-ORF3-F2	ATCAGACGCTGTGCTATT	26167-26184	
TGE-ORF3-F1n	ATATGCAGTAGAAGACAAT	24652-24670	1417
TGE-ORF3-F2n	TTAGTTCAAACAAGGAGT	26051-26068	
TGEV-d-F1:	ATATGCAGTAGAAGACAAT	24652-24670	420
TGEV-d-F2:	CAGTTTTTCTATAATCTCTCT	25051-25071	

<sup>a</sup>All of the positions are related to the published TGEV H16 sequence

**Table S2. Virus sequences used in the experiment**

Strains	Accession no.	Origin	Release	Reference
TGEV 96-1933	AF104420	England	2001	Jones and Paton, 1996
TGEV SC-Y	DQ443743	China	2006	Song and Guo, 2008
TGEV TS	DQ201447	China	2006	Li et al., 2010
TGEV TFI	Z35758	Taiwan	2006	Chen et al., 1995
PRCV ISU-1	DQ811787	America	2009	Zhang et al., 2007
TGEV Miller M6	DQ811785	America	2009	Zhang et al., 2007
TGEV Purdue P115	DQ811788	America	2009	Zhang et al., 2007
TGEV TGEV H16	FJ755618	China	2010	Wang et al., 2010
TGEV attenuated H	EU074218	China	2010	Wang et al., 2010
TGEV virulent Purdue	DQ811789	America	2011	Zhang et al., 2007
TGEV Miller M60	DQ811786	America	2011	Zhang et al., 2007
TGEV WH-1	HQ462571	China	2011	Direct Submission
PRCV OH7269	KR270796	America	2015	Wang and Zhang, 2015
TGEV SHXB	KP202848	China	2015	Weiwei et al., 2014
TGEV-HX	KC962433	China	2015	Hu et al., 2015

**Table S3. Positive samples collection in the experiment.**

Strains	Accession no.	Province
CH-BJ	KX532151	Beijing
CH-NM2	KX532153	Neimenggu
CH-SDRZ	KX532154	Shandong
CH-SH	KX532155	Shanghai
CH-SY	KX532156	Shenyang
CH-ZB	KX532157	Shandong
CH-MZL	KX532158	Heilongjiang
CH-LNCT	KX527917	Shenyang