

# Differential expression of *Citrus tristeza* virus across various age groups of Assam lemon (*Citrus limon* Burm.)

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Assam lemon (*Citrus limon* Burm.), locally known as Kaji Nemu, is a widely cultivated and economically important fruit crop in the Rutaceae family. *Citrus tristeza* virus (CTV) is a global destructive pathogen that severely impacts citrus production. In this study, leaf samples from Assam lemon plants of ages 3, 5, 10, 15, 20, and 25 years were analysed for CTV infection using serological (DAS-ELISA) and molecular (RT-PCR and qPCR) techniques. Results showed that all samples tested positive for CTV. qPCR study revealed a progressive increase in CTV coat protein (CP) gene expression from 3 to 15 year-old plants, followed by a decline in older plants. The highest CTV titer in 15 year-old plants showed a weak positive correlation with reduced fruit yield, indicating a negative impact on productivity. Phylogenetic analysis showed close genetic associations between CTV isolates from Assam lemon and those from Northeast India and neighbouring regions.

**Keywords:** ELISA, RT-PCR, qPCR, *Citrus tristeza* virus, Assam lemon, differential expression