

## Research Article

## Detection of Airborne Inoculum of Grapevine Mildews Using Spore Trap and LAMP Assay

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### Abstract

Grapevine is cultivated worldwide predominantly for the production of fresh fruits, wines and raisins and has an important role in economy of many countries. The production of grapevine is hindered by many fungal plant pathogens. Among them, powdery mildew and downy mildew caused by *Erysiphe necator* and *Plasmopara viticola* are the most devastating diseases worldwide resulting in significant loss of yield and quality of grapes. In this study, the suction spore trap was capable of sampling by running DC cooling fan at a speed of 10.07 m/s and the spore trap was installed at height of 1.2 m above ground level. Further, the air samples were subjected to rapid, highly specific and sensitive Loop mediated isothermal amplification (LAMP) assay to detect the airborne inoculum of *P.viticola* and *E. necator* using six sets of LAMP primers targeting Ces A4 gene and *rDNA* region encoding the *ITS* and *5S ribosomal RNA* gene respectively. LAMP assay was efficiently detected the airborne inoculum of *P.viticola* in all air samples collected from 3<sup>rd</sup> to 18<sup>th</sup> standard weeks. The presence of airborne inoculum of *E. necator* was detected from 3<sup>rd</sup> to 7<sup>th</sup> and 10<sup>th</sup> to 18<sup>th</sup> standard weeks.

**Key words:** *Erysiphe necator*, LAMP, *Plasmopara viticola*, suction spore trap

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