



**DETECTION OF CYMBIDIUM MOSAIC VIRUS (CYMV) ON PHALAEOPSIS PLANTS IMPORTED FROM TAIWAN**

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**ARTICLE INFO**

**Article History:**

Received 6<sup>th</sup> May, 2020

Received in revised form 15<sup>th</sup>

June, 2020

Accepted 12<sup>th</sup> July, 2020

Published online 28<sup>th</sup> August, 2020

**ABSTRACT**

Orchid is one of the high valued in commercial floriculture. Cymbidium mosaic virus was intercepted on *Phalaenopsis* plants imported from Taiwan. CYMV is a regulated pest and notified in the Plant Quarantine (Regulation of import in to India) Order, 2003 to safeguard the introduction of this economically important virus. This is the first interception of this pathogen on imported *Phalaenopsis* plants.

**Key words:**

*Phalaenopsis*, Cymbidium Mosaic Virus (CYMV), interception, plant quarantine.

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**INTRODUCTION**

Orchid is one of the high valued in commercial floriculture. *Phalaenopsis* is one of the orchids, commonly known as the moth orchid and it has approximately 60 species. Orchids have been reported to be infected with at least 25 types of viruses. Of these, Cymbidium Mosaic Virus is a member of the potato virus X group. CYMV has been reported to be the most prevalent virus (Zettler *et al.*, 1990). At least one plant of each genus was found to also be infected with either OFV or ORSV; two viruses previously reported in Paraguay (González-Segnana, 1989; Ramos-González *et al.*, 2016). Orchid cultivars infected with CYMV often show reduced flower quality, necrosis and flower disfigurement as well as foliage symptoms resulting in great economic loss and serve as a dangerous virus reservoir that may serve to contaminate other orchid plants and seedlings, if introduced in the region where it was not report to occur i.e. India.

**MATERIALS AND METHODS**

A consignment of 10,000 numbers of *Phalaenopsis* plants were imported from Taiwan as air cargo through Chennai port, the notified entry point for import of seeds / plant propagative materials of southern India. The import of Orchids plants inclusive of *Phalaenopsis* plants from any country is regulated under Schedule VI of Plant Quarantine (Regulation of Import into India)

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Order, 2003 under The Destructive Insects and Pests Act, 1914, with additional declaration for freedom from fungus, bacteria and viruses inclusive of cymbidium mosaic virus and required to be grown under Post Entry Quarantine (PEQ) (Confinement area) for a period of 45- 60days.

During the inspection, chlorotic and mosaic symptoms were observed on *Phalaenopsis* plants and by referring the Guide for Identification of Plant Quarantine Pathogens (Shiv Sagar Verma *et.al.* 2010) it was suspected to be infected with cymbidium mosaic virus (Fig 1 & Fig. 2). Hence, symptomatic *Phalaenopsis* leaf samples (27 Nos) were screened against Cymbidium Mosaic Virus (CYMV) antisera (ATCC No. PVAS 355) by DAC-ELISA technique (Sudarshana and Reddy (1989). Healthy *Phalaenopsis* plants used as negative control and CYMV infected *Dendrobium* leaf as positive control. The absorbance value of each well was measured at 405 nm with an ELISA micro plate reader (Biorad 550). Presence of CYMV was confirmed by the change of colour to yellow only on four leaf samples (Fig.3). Subsequently, leaf samples were sent to Division of Plant Pathology, Advance Centre for Plant Virology, Indian Agricultural Research Institute (IARI), PUSA, New Delhi which is a referral centre for plant virus testing and it was reconfirmed that the leaf samples were infected with CYMV vide Test Report No. 207. (Jain, 2010). This is similar to the interception made on Vanda plants (Reddy and Muthaiyan, 1985) and *Dendrobium* plants (Sathyanarayana *et al.*, 2003). It appears to be the first report of interception of CYMV on *Phalaenopsis* plants in quarantine.



Fig 1 & 2 Mosaic symptoms on *Phalaenopsis* plants

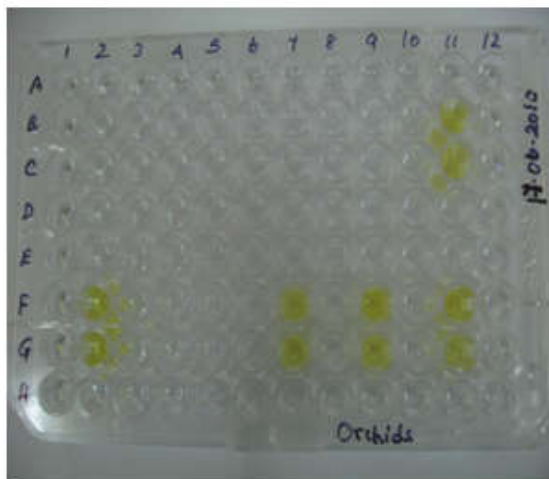


Fig 3 DAC-ELISA microplate showing positive reaction in 4 samples (yellow colour) & 1 known positive control

## RESULTS AND DISCUSSION

CYMV is known to infect 26 species of orchids apart from non-orchidaceous plants and known to occur throughout the world wherever orchids are grown. CYMV is the most prevalent and economically important virus infecting orchids worldwide. Sherpa et.al (2003) recorded for the first time of CYMV on orchids in India. The virus infected plants become stunted and result in poor quality flowers. With a proven 15 per cent rate of increase per year in linear fashion with time in cultivation for plants of 4 to 7 years old and in a span of 9 years 100% infection is possible (Sathyanarayana, et.al. 2003).

Control of CYMV is difficult as they are transmitted by mechanical means and contact of plants. CYMV is highly contagious in nature and can spread from plant to plant by contaminated tools, hands, rubbing of leaves; hence care must be taken to use disease free planting materials, sterilized tools and avoidance of contact with infected plants. CYMV is not transmitted by seeds, hence import of seed propagated cultivars is suggested as an alternative. Similarly, tissue culture materials obtained from virus indexed mother plants can be imported as a phyto-sanitary safeguard.

On confirmation of CYMV on imported *Phalaenopsis* plants, a joint team of officials of Inspection Authority, UAS, Bangalore and Regional Plant Quarantine Station, Chennai undertaken PEQ inspection at PEQ site. Out of 10,000 numbers of *Phalaenopsis* plants, a total of 83 plants showing symptoms of CYMV were culled out & incinerated and non-conformity reported to the competent authority.

## Acknowledgement

The authors are grateful to Dr. R.K. Jain, IARI, New Delhi for confirmation of the virus. Also thanks are due to the Plant Protection Adviser to the Government of India, and the Joint Director (Plant Quarantine), Directorate of Plant Protection, Quarantine and Storage, Faridabad, Haryana (India) for providing necessary facilities and constant encouragement.

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