

Data Sheets on Quarantine Pests

Euphorbia mosaic bigeminivirus

IDENTITY

Name: Euphorbia mosaic bigeminivirus

Taxonomic position: Viruses: Geminiviridae: Bigeminivirus

Common names: EuMV (acronym)

Notes on taxonomy and nomenclature: EuMV was described as a distinct virus very early (Costa & Bennett, 1950), by comparison with the majority of geminiviruses discovered and described only in the 1980s. Costa (1955) confirmed that it was distinct from and had a narrower host range (only *Euphorbia* and *Datura*) than abutilon mosaic virus (on Malvaceae and Fabaceae). This was confirmed by Costa (1965) who also indicated that euphorbia mosaic was less easily transmissible to *Phaseolus vulgaris* than abutilon mosaic. Thus, the virus was described and documented in the period before the general introduction of modern techniques of plant virology. EuMV was only fully characterized as a geminivirus by Jaramillo & Lastra (1986).

EPPO computer code: EPMXXX

EU Annex designation: I/A1

HOSTS

The natural hosts of EuMV are the wild plants *Euphorbia heterophylla* and *E. prunifolia*. It may be noted that poinsettias (*Euphorbia pulcherrima*), a very significant host of *Bemisia tabaci* (vector of EuMV), have not been recorded as a host of EuMV, despite the commercial importance of the crop. EuMV can be experimentally transmitted to *Phaseolus vulgaris* (Costa, 1965) and has been cited in a list of viruses of *Phaseolus vulgaris* in Latin America (Gamez, 1977).

GEOGRAPHICAL DISTRIBUTION

EPPO region: Absent.

North America: USA (Florida).

Central America and Caribbean: Costa Rica, Puerto Rico, United States Virgin Islands.

South America: Brazil (São Paulo), Venezuela (Debrot & Centeno, 1985).

EU: Absent.

BIOLOGY

EuMV is transmitted in a persistent manner by the whitefly *Bemisia tabaci*. Non-vector transmission is by mechanical inoculation and by grafting, but not by contact between plants. The virus is not transmitted by seed.

DETECTION AND IDENTIFICATION

Symptoms

Euphorbia heterophylla shows conspicuous mosaic leaf symptoms, and *E. prunifolia* conspicuous golden mosaic and occasional leaf distortion. Costa (1965) reported that EuMV was responsible for "crumpling" disease of artificially inoculated *Phaseolus vulgaris*. Similar symptoms were very occasionally seen on plants in the field, but without proof that EuMV was the pathogen.

Morphology

EuMV has geminate particles, 18 x 32 nm in size. It was purified and its properties studied by Jaramillo & Lastra (1985). The virus has been of interest in general research on ultrastructural effects of geminivirus infection (Kim & Fulton, 1984; Kim & Lee, 1992).

Detection and inspection methods

Preparations of EuMV are immunogenic and the virus reacts in standard gel diffusion tests. Indicator plants include *Datura metel* (chlorotic spotting of inoculated and systemically infected leaves), *D. stramonium* (chlorotic local lesions and systemic leaf chlorosis), *Euphorbia prunifolia* (conspicuous leaf chlorosis), *Nicotiana benthamiana* and *N. glutinosa* (crinkling of systemically infected leaves, stunting).

MEANS OF MOVEMENT AND DISPERSAL

In nature, EuMV is whitefly-transmitted between wild plants. The hosts of EuMV are not moved in any form in international trade. The probability of its entry into the EPPO region by any means except deliberate introduction seems remote.

PEST SIGNIFICANCE

Economic impact

EuMV is of no economic importance on its wild *Euphorbia* hosts (Costa & Bennett, 1950). EuMV does not attack poinsettias. Costa (1965), who gave the only report of transmission of EuMV to *Phaseolus vulgaris*, suggested that the virus did attack this crop in the field very occasionally, but only on the basis of a comparison between "crumple" symptoms seen in the field and the symptoms seen on artificially inoculated plants. No other reports have been found on *Phaseolus*, and Gamez (1977) was presumably just citing Costa (1965). Brown (1990), reviewing the whitefly-transmitted geminiviruses of the New World, does not mention EuMV among those infecting Fabaceae. Hall (1991), presenting virus diseases of beans generally, does not present or discuss the disease caused by EuMV and only cites the virus in a summary table. It may be concluded that EuMV, if it occurs on *Phaseolus* at all in practice, is of truly insignificant importance on this crop.

Control

No control methods have been considered or found necessary.

Phytosanitary risk

EuMV has not been classified as a quarantine pest by any regional plant protection organization. This pathogen of wild *Euphorbia* spp. has attracted the attention of virologists for two reasons: it causes very conspicuous symptoms and it was the first virus disease to be shown to be whitefly-transmitted (Costa & Bennett, 1950). It is commonly included in comparative studies on geminiviruses (Swanson *et al.*, 1992). However, it presents no phytosanitary risk to the EPPO region.

PHYTOSANITARY MEASURES

No phytosanitary measures are needed.

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