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OCCURANCE OF YELLOW MOSAIC VIRUS ON SIRATRO (*MACROPTILIUM ATROPURPUREUM*) FODDER CROP

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SIRATRO, *Macroptilium atropurpureum* is being introduced widely as a fodder crop in many parts of North Arcot district, Tamil Nadu. During April–June 1984 the incidence of yellow mosaic virus was noticed in severe form at the University Research Station, Virinjipuram. The leaves of Siratro plants showed yellow patches alternating with green areas which also turned yellow (figure 1). The pods collected from the affected plants were deformed and contained shrivelled under sized seeds.

The white flies *Bemisia tabaci* Genn collected from Siratro fodder field were allowed to feed on the infected plants for one day to acquire virus. Then the white flies were allowed to feed on the healthy plants of



Figure 1. A typical yellow mosaic symptom on Siratro Fodder leaves.

Phaseolus mungo var *radiatus* L, *Phaseolus aureus* Roxb and *Glycine max* (L) Merrill. Within a fortnight typical yellow mosaic symptoms were produced. Seeds collected from the infected Siratro plants were raised in earthen pots and none of the plants exhibited yellow mosaic symptom.

The yellow mosaic symptoms produced on *Phaseolus mungo* var *radiatus* L, *Phaseolus aureus* Roxb and *Glycine max* (L) Merrill resembled to those of symptom produced on *M. atropurpureum*. The pathogenicity is further confirmed by cross-inoculation of virus by white flies on these crops. This yellow mosaic virus is considered as the most destructive disease of Khariff legumes viz blackgram, greengram and soybean in India¹. In addition, this virus has a large host range which includes *Brachiaria ramosa*, *Cosmos bipinnatus*, *Cajanus Cajan*, *Dolichos biflorus*, *Eclipta alba*, *Phaseolus acutifolius*, *P. aconitifolius*, *P. lathyroides*, *P. Vugaris* and *Xanthium strumarium*². The occurrence of yellow mosaic virus on *M. atropurpureum* is observed for the first time in India and points out the potential danger of Siratro fodder crop serves as reservoir of this virus and source of primary inoculum from where the vector transmits the virus to the main crop.

The authors express their grateful thanks to Dr R. Jayarajan, Professor of Plant Virology, Tamil Nadu Agricultural University, Coimbatore for identification of the pathogen, guidance and encouragement.

10 September 1984

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A NEW TOXIN RESPONSIBLE FOR THE EARLY SYMPTOM IN *FUSARIUM* WILT DISEASE OF COTTON

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In the *Fusarium* wilt a disease of cotton, vein clearing is the typical early symptom^{1,2}. This symptom ap-

peared on the cotyledonary leaves even when the pathogen was found only in the root and hypocotyl regions of the susceptible host³, indicating the involvement of a toxin. However, the known toxins, fusaric acid, lycomarasmin and vasinfuscarin did not appear to be responsible for this symptom^{4, 5}. In this note, we report a new toxin which produces 'vein clearing' symptom in *Fusarium* infected cotton plants.

A virulent strain (I 5) of *Fusarium vasinfectum* Atk., isolated from wilt sick soils of Udumalpet, Coimbatore, Tamil Nadu was grown in Richard's medium amended with yeast extract for more than 15 days. A toxin isolated from the culture filtrate induced the typical vein clearing symptom in cut shoots of *Gossypium arboreum* L. The toxic principle was non-dialysable since dialysed (against glass distilled water, pH 6.3) culture filtrate also induced vein clearing. The toxin was not detected when the fungus was grown in unammended Richard's medium or ammended or unammended Czapeck's Dox medium. This indicates the requirement of a specific sugar and cations and optimal C/N ratio for toxin production. Requirement of specific cations has also been shown for fusaric acid⁶ and naphthazarines⁷.

The concentration of the toxic principle increased with increase in age of the culture up to 50 days. The time course of toxin production indicated that the toxin was either a secondary product formed after the death of the hyphae or a compound in the hyphae that is released after its death. Forced rupture of 6-day old cells of the fungus by ultrasonication and assay of intra-cellular components on cut shoots of cotton indicated the presence of the toxic principle inside the cells as early as six days in concentrations that could incite the symptom. Hence, it appears that the toxin is an endotoxin. Replacement culture filtrates also showed phytotoxicity. The toxin appeared to be host-specific. It induced vein clearing in *G. arboreum* and *G. barbadense* cut shoots only. *G. barbadense* plants when infected with the fungus also developed vein clearing as the early symptom.

The toxic principle could withstand lyophilization and remained stable on storage at -15°C for 20 days. However, there was considerable loss of toxicity during prolonged storage but after 80 days, no toxic effect could be detected. The toxin was stable up to 60 min at temperatures below 90°C . Exposure to temperatures above 100°C resulted in the loss of ability to produce vein clearing. Fifty percent loss of toxicity was recorded when treated at 121°C for 15 min (autoclaving). Dialysis of the autoclaved toxin resulted in almost complete loss of toxicity. These

observations indicate a cleavage of the large toxin molecule into smaller units during high temperature treatment and the loss of these smaller units during dialysis. The smaller units, however, seemed to possess reduced ability to cause vein clearing.

Further work on purification of the toxin is in progress. This appears to be the first report on the involvement of a toxin responsible for the vein-clearing symptom in the *Fusarium* wilt disease of cotton.

The authors thank the Director, CAS in Botany, University of Madras for facilities. One of us (vs) is thankful to the UGC, New Delhi for a fellowship.

29 November 1984

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FERTILE PINNULES OF *MARATTIOPSIS* SCHIMPER FROM THE SIVAGANGA BEDS OF RAMANATHAPURAM DISTRICT, TAMIL NADU

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THE southernmost exposures of the East Coast Gondwana sediments occur in and around the town of Sivaganga in Ramanathapuram district, Tamil Nadu¹. Gopal *et al*² described a small collection of fossil plants from this area for the first time. They reported two species of *Cladophlebis*; three species of *Taeniopteris*; *Ptilophyllum cutchense*; *Ginkgoites cassipes*; *Elatocladus plana*; *Brachyphyllum expansum*; *Podozamites lanceolatus* and a few other fragmentary remains tentatively identified as *Sphenopteris* and *Thinnfeldia*. During a recent collection trip to the locality, the present authors collected, among other