DISEASE NOTE

FIRST REPORT OF *TURNIP MOSAIC VIRUS* IN LILY

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In the Lazio region (southern Italy) some lilies (*Lilium* spp.) of a pink cultivar showing flower breaking were found to be infected by *Turnip mosaic virus* (TuMV) (genus *Potyvirus*). The virus, which was not sap transmitted to herbaceous hosts, was abundantly observed in leaf-dip preparations of symptomatic flowers. Particles 750-760 nm in length were mixed with others of 630-660 nm, typical of *Lily symptomless virus* (LSV) (genus *Carlavirus*). TuMV was identified by immonosorbent electron microscopy (ISEM) and gold-labelling antibody decoration (GLAD) using antisera to several potyviruses (the TuMV antiserum was obtained from the Istituto di Fitovirologia Applicata, CNR, Turin, Italy). Our isolate of TuMV from lily flowers did not react in ISEM and GLAD with antisera obtained from the Bulb Research Centre, Lisse, The Netherlands, to the potyviruses *Tulip breaking virus* (TBV) and *Lily mottle virus* (LiMV). The literature on potyviruses that cause flower breaking in tulip (*Tulipa* spp.) and lily, reports that *Tulip top-breaking virus* (TTBV) is a strain of TuMV and does not cross-react with TVB and LiMV (Dekker *et al.*, 1993), which tallies with our serological results. The occurrence of TuMV in lily shows the need of further investigation on the serological relationships among the potyviruses causing colour breaking in lily and tulip.

Dekker E.L., Derks A.F.L.M., Asjes C.J., Lemmers M.E.C, Bol J.F., Laneveld A., 1993. Chararacterization of potyviruses from tulip and lily which cause flower breaking. *Journal of General Virology* **74**: 881-887.

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EFFECT OF *CUCUMBER MOSAIC VIRUS* INFECTION ON THE QUALITY OF *ECHINACEA PURPUREA* ROOT EXTRACTS

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Extracts of different parts of *Echinacea purpurea* L. are widely used in pharmaceutical preparations for their immunostimulating properties. Since *Cucumber mosaic virus* (CMV) infection is very common in this crop, mother tincture (MT) preparations from roots of healthy and CMV-infected plants were compared. Root samples from symptomatic (leaf mosaic, flower-breaking) and asymptomatic *E. purpurea* plants were tested by PAS-ELISA using an antiserum to CMV (PVAS 242a) to verify the presence of the virus. MTs from healthy and CMV-infected plants were obtained by root maceration in an ethanol solution for 21 days at room temperature. After liquid-liquid extraction procedure, the MT samples were subjected to gas chromatography-mass spectrometry (GC-MS) analysis on a fused silica capillary column (5% diphenol, 95% dimethyl polysiloxane). About 14 components were separated from both healthy and infected samples, some of which were identified. The concentration of germacrene D, a typical component of both essential oil and ethanol extracts of *S. purpurea* roots (Schulthess *et al.*, 1991) was reduced by almost 50% in infected samples. Significant reductions were also seen in the concentration of some alkylamide components. From this preliminary study it is evident that CMV can modify the concentration in ethanol root extracts of some principal components, probably responsible for the immunostimulatory properties of *E. purpurea*.

Schulthess B.H., Giger E., Baumann T.W., 1991. *Echinacea*: anatomy, phytochemical pattern, and germination of the achene. *Planta Medica* **57**: 384-388.

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THREE SORGHUM CULTIVARS DIFFERENTIATING SORGHUM YELLOW BANDING VIRUS IN VENEZUELA

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In Venezuela, sorghum (*Sorghum bicolor*) is infected by the potyviruses *Maize dwarf mosaic virus* (MDMV), *Sugarcane mosaic virus* (SCMV), *Johnsongrass mosaic virus* (JGMV), the tenuivirus *Maize stripe virus* (MStpV), and Sorghum yellow banding virus (SrYBV) (Garrido *et al*., 2000). The objective of this work was to determine if three sorghum cultivars would distinguish SrYBV from other sorghum-infecting viruses occurring in Venezuela. To this aim, the following virus strains and isolates were used: MDMV-A, MDMV-V, SCMV-D, SCMV-MB, JGMV-O, and SrYBV. Inocula of each virus, prepared by homogenizing tissues from infected leaves, were inoculated mechanically to at least 50 three to four leaf stage sorghum seedlings of cvs 'QL-3', 'QL-11', and 'BTx-3197', grown under glasshouse conditions (27°C and 70% RH). Symptoms were observed at weekly intervals for four weeks after inoculation. Experiments were repeated five times. 'QL-3' and 'QL-11' were infected only by SrYBV, showing chlorotic stripes and bands, severe mosaic and necrosis. SrYBV induced mosaic in 'BTx-3197', whereas potyviruses caused local necrosis (SCMV-MB), local and systemic necrosis (MDMV-V), mosaic and systemic necrosis (JGMV-O), and local and systemic necrosis accompanied by mosaic (MDMV-A and SCMV-D). In conclusion, 'QL-3', 'QL-11', and 'BTx-3197' developed distinctive symptoms, which qualify them as differential hosts to distinguish SrYBV from potyviruses infecting sorghum in Venezuela.

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TRANSMISSION OF SORGHUM YELLOW BANDING VIRUS BY VASCULAR PUNCTURE OF MAIZE SEEDS

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Sorghum yellow banding virus (SrYBV), a small isometric virus 22-26 nm in diameter, is mechanically transmissible with difficulty (3-12%) and symptoms develop 15-20 days after inoculation (Garrido *et al.,* 2000). The use of a vascular puncture method (Louie, 1995) improved the rate of SrYBV transmission to 60-85%. This result was achieved by using a hand-held inoculator with three pins No 0 mounted on a wooden dowel. Seeds of maize (*Zea mays*) cv. 'Bonanza' were first given a preinoculation soaking in water at 21°C for 24 h, then 10 µl of inoculum (infected crud sap) were placed at the inoculation site. The pins were held at 45°C to the surface of the seeds adjacent to the embryo and pushed through the inoculum and the pericarp covering the scutellum to a depth of 0.5-1.0 mm. The seeds were inoculated on both sides midway along the embryo and were incubated at 30°C for 24 h on moistened towels prior to planting in autoclaved soil. Symptoms usually occurred on the first or second emerging leaf. SrYBV transmission was confirmed by symptomatology and serology (immunodiffusion in agar plates). This is the first report of SrYBV transmission by vascular puncture inoculation.

Garrido M.J., Trujillo G.E., Cuello de Uzcátegui R., 2000. Ocurrencia del virus del bandeado amarillo del sorgo en Venezuela. *Interciencia* **25**: 321-327.

Louie R., 1995. Vascular puncture of maize kernels for the mechanical transmission of maize white line mosaic virus and other viruses of maize. *Phytopathology* **85**: 139-143.

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