Spread of the tomato yellow leaf curl virus Sar from the Mediterranean Basin : Presence in the Canary Islands and Morocco

by

F. Monci, J. Navas-Castillo and E.Moriones: CSIC, 29750 - A1garro.bo-Costa, Mâ.laga. Spain;
J.L. Cenjs and A. Lacasa, CIDA, 30150 - La Alberca, Murcia. Spain;
A .Benazoun, Institut agronomique et Vétérinaire Hassan II . Complexe Horticole d'Agadir

Severe outbreaks of the tomato yellow leaf curl disease occurred during the summer/autumn of 1999 in tomato (*Lycopersicon esculentum* Mill.) crops of the Vecindario region in Gran Canaria (Canary Islands, Spain), and Agadir (southwestern Atlantic coast of Morocco). Symptoms of the disease consisted in upward curling of leaflet margins, reduction of leaflet area and yellowing in young leaves as well as stunting and flower abortion. High populations of the whitefly *Bemisia tabaci* Gen. were present on tomatoes in Agadir, and analysis of adult individuals by RAPD-PCR showed them to be of the Q biotype. Samples from symptomatic tomato plants were collected: 5 plants were sampled in Gran Canaria and 22 in Agadir, the latter in three areas (7 in Agadir/1, 12 in Agadir/2 and 3 in Agadir/3) of the Koudya region. Samples were analyzed for tomato yellow leaf curl virus (TYLCV)-Sar or TYLCV-Is infection by squash blot hybridization at high stringency conditions using digoxigenin-labeled DNA probes specific to TYLCV-Sar or TYLCV-Is as described previously (1, 3). The 5 samples from Gran Canaria hybridized with the TYLCV-Sar probe and all the samples collected in Agadir, with the TYLCV-Is probe. Moreover, the 3 samples from Agadir/3 also hybridized with the TYLCV-Sar probe. The primer pairs MA-14/MA-15 and MA-30/MA-31, designed for the specific PCR amplification of the intergenic region (IR) of TYLCV-Sar or TYLCV-Is reported from Spain, respectively (1), were used for PCR

reactions with 1 sample from Gran Canaria, 1 from Agadir/1, and 1 from Agadir/3. A fragment of the expected size was obtained from the samples of Gran Canaria and Agadir/3 with MA14/MA15, and from the 2 samples of Agadir with MA30/MA31. The PCR products were directly sequenced (GenBank accession nos. AF215819 to AF215822). The nucleotide sequences of the IR fragments amplified from the sample of Gran Canaria and Agadir/3 with MA-14/MA-15 showed their closest relationship (99.0% and 96.7% identity, respectively) to the corresponding region of a TYLCV-Sar isolate reported from Spain (GenBank no. L27708). The nucleotide sequences of the IR fragments amplified from the sample of Agadir/1 and Agadir/3 with MA-30/MA-31 showed their closest relationship (98.1% identity) to the corresponding region of the TYLCV-Is isolate reported from Spain (GenBank no. AF071228). Then, based on the hybridization and sequence data, we conclude that the symptomatic tomato plants collected in Gran Canaria were infected by TYLCV-Sar, those collected in Agadir/1 and Agadir/2 were infected by TYLCV-Is, and those from Agadir/3 were mixed infected with TYLCV-Is and TYLCV-Sar. The presence of TYLCV-Is causing epidemics in Morocco has recently been described (2). However, this is the first report of TYLCV-Sar in the Canary Island and Morocco and of its presence out from the Iberian Peninsula and Italy.

References: (1) J. Navas-Castillo et al. Plant Dis. 83:29, 1999. (2) M. Peterschmitt et al. Plant Dis. 83:1074, 1999. (3) S. Sánchez-Campos et al. Phytopathology 89:1038, 1999.