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Disease Notes

First Report of Tomato Yellow Leaf Curl Geminivirus in Yucatán, México

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Geminiviruses are probably the most important viral pathogen affecting tomatoes and other crops in the Caribbean region. In addition to losses previously caused by native virus populations, the introduction of tomato yellow leaf curl virus (TYLCV) into the area has become a major concern for tomato growers (1). Since the detection of TYLCV in Cuba, and later in Florida (2,3), we have been monitoring the tomato- and pepper-growing areas of the Yucatán Peninsula, México, for TYLCV. We also have reanalyzed samples previously collected. Other geminiviruses (pepper huasteco virus [PHV], Texas pepper virus [TPV], and tomato mottle virus [ToMoV]) in the area can cause symptoms similar to those induced by TYLCV, which led us to refine our analysis of samples, using a polymerase chain reaction (PCR) procedure that can differentiate between monopartite and bipartite begomoviruses based on the size of the amplification product, 750 and 600 bp, respectively. One advantage of using this set of primers is that the PCR product, which includes the amino terminus of the Rep protein, intergenic region, precoat protein, and amino terminus of the coat protein, can be sequenced completely with only one sequencing reaction from each end. Using the primer set, we analyzed samples collected from tomato and pepper fields (as well as from weeds surrounding the fields) from December 1996 until March 1999. In most cases, samples were taken from plants that showed yellowing, curling, and stunting symptoms. Most of the samples that were positive for geminiviruses came from plants infected with PHV or TPV. However, three tomato samples collected during two seasons in Dzidzantun and Yobain counties (northeast of Mérida, Yucatan) produced the larger PCR amplification product (750 bp) expected for monopartite begomoviruses. PCR products were cloned and sequenced to confirm their identity. The sequence was deposited in the GenBank Database (Accession no. AF168709) and compared with all geminivirus sequences deposited in the database. Analysis showed that the amplified fragment from the TYLCV strain present in the Yucatán is 99% identical to the isolate reported in the Dominican Republic and later found in

Cuba (2). As previously noted, the isolate is almost identical to TYLCV-Isr (2). In addition to the PCR product, a full-length TYLCV clone was obtained directly from DNA extracts of an infected tomato plant. Further characterization of the full-length clone is underway. The fact that TYLCV was detected in two counties and in samples collected during two seasons confirms the presence of TYLCV in the Yucatán. Interestingly, although the first positive sample for TYLCV was collected during the winter of 1996 and 1997, current incidence is rather low—only two other positive samples have been detected in more recently collected samples. Perhaps the characteristics of the agriculture system in the Yucatán (small, disperse plots) or the presence of other geminiviruses have contributed to a slow spread of the virus. More comprehensive surveys are required to confirm the actual distribution of the pathogen in the area.

References: (1) J. E. Polston et al. Plant Dis. 81:1358, 1997. (2) J. E. Polston et al. Plant Dis. 83:984, 1999. (3) P. L. Ramos et al. Plant Dis. 80:1208, 1996.

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