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## Diseases Caused by Viruses

### First Report of African Eggplant Yellowing Virus on Tomato Exhibiting Necrotic Yellowing Symptoms in Northern Côte d'Ivoire

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In February 2019, virus-like symptoms of necrotic yellowing were observed on tomato plants in a field plot in the locality of Odiénné in the Denguélé region of the north of Côte d'Ivoire (8°14.157'N; 6°26.772'W), together with high disease incidence and dense whitefly populations. The observed symptoms were similar to those associated with the poleroviruses (family *Solemoviridae*) recently described on pepper (*Capsicum* spp.) in Benin and on African eggplant (*Solanum aethiopicum*) in Mali (Afouda et al. 2017). To identify the potential agent(s) causing these symptoms, five samples from symptomatic plants and five samples from asymptomatic plants were collected, dehydrated, and subjected to total RNA extraction using the RNeasy Plant Extraction kit (Qiagen, Courtaboeuf, France). The presence of poleroviruses in the samples was tested by RT-PCR using the universal primers PoconF and PococpR (1.4-kb fragment) designed by Xiang et al. (2008) and modified by Knierim et al. (2010) for the detection of poleroviruses. Two symptomatic samples (CI370 and CI371) tested positive. The RT-PCR product amplified from sample CI371 was directly sequenced

in a single direction. BLASTn analysis showed that its nucleotide sequence shared 83.2% identity with that of an isolate of African eggplant yellowing virus from Benin (AeYV; KX856975). Based on this reference sequence, specific primers AeYV-F3249 (5'-GTCTAGGTTTCAAAGTCGAGG-3') and AeYV-RD4339 (5'-CTACCTATTTKGGRTTGTGCAG-3') were designed for the amplification of a 1,091-bp product covering part of AeYV ORFs 2 and 3 and used in RT-PCR experiments on total RNA extracted from the 10 tomato leaf samples collected in Odiénné. Amplicons of the expected size were obtained from three symptomatic samples (CI367, CI370, and CI371) and subjected to direct sequencing in both directions. BLASTn analysis showed that all three assembled nucleotide sequences (GenBank accession nos. ON228068, ON228069, and ON228070) were identical and shared 98.4 and 93.7% similarity with sequences of the Beninese (KX856975) and Malian (KX856972) isolates of AeYV, respectively. To our knowledge, this is the first report of AeYV both on tomato and in Côte d'Ivoire. The detection of AeYV on pepper, eggplant, and tomato in several West African countries raises the question of whether this virus is emerging elsewhere in West Africa and on other solanaceous crops. Furthermore, while the majority of poleroviruses are transmitted by aphids (Dombrowsky et al. 2010), recent studies have characterized new whitefly-transmitted poleroviruses in Israel (Ghosh et al. 2019) and Brazil (Costa et al. 2020). The high density of whiteflies observed on diseased plants in Côte d'Ivoire raises the question of whether whiteflies also are a vector of AeYV. The distribution, incidence, transmission, and impacts of AeYV on vegetables in West Africa is still unknown and needs to be further investigated to develop accurate control strategies.

#### References:

- Afouda, L., et al. 2017. *Arch. Virol.* 162:1599.  
Costa, T. M., et al. 2020. *Plant Pathol.* 69:1042.  
Dombrowsky, A., et al. 2010. *Phytoparasitica* 38:477.  
Ghosh, S., et al. 2019. *J. Virol.* 93:e00488.  
Knierim, D., et al. 2010. *Plant Pathol.* 59:991.  
Xiang, H.-Y., et al. 2008. *Arch. Virol.* 153:1155.

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#### e-Xtra

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