

Solanum nigrum, a New Host of Tomato Yellow Leaf Curl Virus

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ABSTRACT

Wilson, K. I., Al-Beldawi, A. S., Amin, M., and Nema, H. A. 1981. *Solanum nigrum*, a new host of tomato yellow leaf curl virus. *Plant Disease* 65:979.

Solanum nigrum plants artificially inoculated with tomato yellow leaf curl virus developed a yellow vein mosaic on the leaves. Naturally infected *S. nigrum* plants were observed in and around tomato fields in Iraq. *Bemisia tabaci* transmitted the virus from infected tomato plants to *S. nigrum*.

Tomato (*Lycopersicon esculentum* Mill.) is an important vegetable crop in Iraq and is cultivated on about 50,000 ha of land. Yellow leaf curl is the most serious virus disease affecting tomato in the country (3). Tomato yellow leaf curl virus (TYLCV) also infects *L. hirsutum* and *Datura stramonium*. *Lens esculenta*, *L. peruvianum*, *L. pimpinellifolium*, *Malva nicaensis*, *Nicotiana glutinosa*, *N. tabacum*, and *Phaseolus vulgaris* are symptomless carriers (1).

Solanum nigrum L., popularly known as black nightshade, is a common weed in cultivated fields and wastelands in Iraq (2). While studying the role of weeds in the perpetuation and spread of TYLCV, we found that the virus could infect *S. nigrum* by artificial inoculation. Naturally infected *S. nigrum* plants were later observed in and around tomato fields.

Healthy *S. nigrum* plants grafted with tissues of TYLCV-infected tomato developed a yellow vein mosaic on the leaves (Fig. 1). Vein clearing became evident in the newly emerging leaves within 20–25 days of grafting. The yellow chlorosis of the veins later diffused into the adjacent mesophyll tissues, giving a rather mottled appearance to the leaves. In older leaves, the vein clearing symptoms tended to fade and become much less conspicuous, except that such leaves appeared pale and slightly chlorotic compared with leaves of healthy

plants. Typical leaf curl symptoms developed on healthy tomato plants grafted with branches of infected *S. nigrum*.

Transmission trials were conducted with whiteflies, *Bemisia tabaci* (Genn.). Healthy insects were confined on leaf curl-affected tomato plants in glass chimneys with tops covered with muslin. After a 24-hr acquisition feeding, the insects were transferred to 2-wk-old healthy *S. nigrum* seedlings and allowed to feed for 24 hr; 10–15 viruliferous insects were confined on each seedling. After the infection feeding, the insects were killed with 0.1% methidathion (Supracide) sprays, and the test plants

were placed on glasshouse benches. Yellow vein symptoms appeared on the young leaves within 15–20 days of inoculation. Back transmissions resulted in typical leaf curl symptoms on tomato seedlings.

Because the yellow vein mosaic symptoms on *S. nigrum* are rather transient and tend to fade in older leaves, the infected plants are likely to escape attention in the field. However, because infected *S. nigrum* plants are a potential source of inoculum for infection on tomato, proper weeding and destruction of *S. nigrum* must be included in tomato yellow leaf curl disease control programs.

LITERATURE CITED

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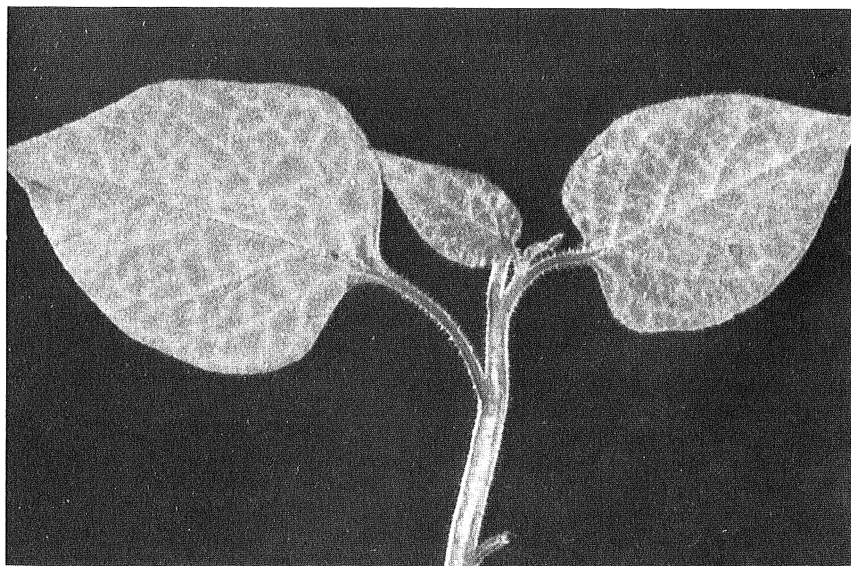


Fig. 1. Yellow vein mosaic of *Solanum nigrum*, caused by tomato yellow leaf curl virus.

Accepted for publication 21 February 1981.

0191-2917/81/12097901/\$03.00/0
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