Occurrence of tomato black ring virus on grapevine in southern Ontario

L.W. Stobbs and J.G. Van Schagen [1]

This article reports on the first occurrence in Canada of tomato black ring virus, in the Niagara Peninsula, southern Ontario.

Can. Plant Dis. Surv. 64:1, 3-5, 1984.

Cet article mentionne pour la première fois au Canada la présence du virus de la tache annulaire noire de la tomate dans la péninsule du Niagara, à l'extrémité sud de l'Ontario.

Occurrences of tomato black ring virus in grapevine have been reported only in Western Germany. Recently, however, the virus was identified in a commercial planting of Pinot Chardonnay in the Niagara peninsula, Ontario. In a shipment of 2240 finished vines of Pinot Chardonnay, clone 95, 13 vines were found to be infected with tomato black ring virus. These vines were imported into Canada in 1978 as virus-free stock from a nursery in south-west France. An additional 420 vines, received from the same source in 1979, were found to be free of the tomato black ring virus, as were adjacent Pinot Chardonnay clones 96 and 128. This is the first reported introduction of this virus into North America.

In clone 95, tomato black ring virus infections were found only in single vines within rows, with no evidence of virus transmission to adjacent vines. Soil samples taken at the base of infected vines failed to demonstrate any Longidorid species but small populations of *Xiphenema americanum* were present. Cucumber and tomato, grown in soil samples for six weeks, failed to acquire virus as determined by bioassay on *Chenopodium quinoa* or when tested serologically using Enzyme-linked immunosorbent assay.

Vines infected with tomato black ring virus were generally stunted, with older leaves showing mottling, yellowing of leaf margins, vein bunching, and leaf deformation (Fig. 1). Berries were small and poorly set (Fig. 2), a characteristic of nepovirus infection. Serological tests were positive against the G strain of tomato black ring virus obtained from Dr. G. Stellmach (Biologische Bundesanstalt, West Germany) and the Beckett Strain obtained from Dr. B. Harrison (Scottish Horticultural Research Institute, Scotland). A weak reaction was present against the S strain antiserum, suggesting that the isolate was more closely related to the G strain. No serological reaction was apparent with the other viruses tested: tomato ringspot virus, tobacco ringspot virus, raspberry ringspot virus, peach rosette mosaic virus, strawberry latent ringspot virus, tomato bushy stunt virus, cherry leafroll virus, arabis mosaic virus, grapevine fanleaf virus, and grapevine Bulgarian latent virus. Ringspot symptoms which later developed into local lesions were produced in *C. quinoa* and *C. amaranticolor.* Local lesions were also produced on cowpea and tobacco with vein necrosis occurring in bean. Large chlorotic lesions were formed on *Gomphrena* sp. and systemic mottle in cucumber. These symptoms are consistent with those reported by Murant (1970).

Infected vines were removed from the vineyard and destroyed. Clone 95 will be monitored over the next two years to identify any additional infections. Since the vector is not present, we feel that the virus will be eradicated by these measures.

Literature cited

1 Murant, A.F. 1970. Tomato Black Ring Virus. *In* Descriptions of Plant Viruses, No. 38 Commonwealth Agricultural Bureaux, Farnham Royal, Slough, U.K.

[1] *Agriculture Canada, Research Station, Vineland Station, Ontario LOR 2EO*

Accepted for publication July 20, 1983

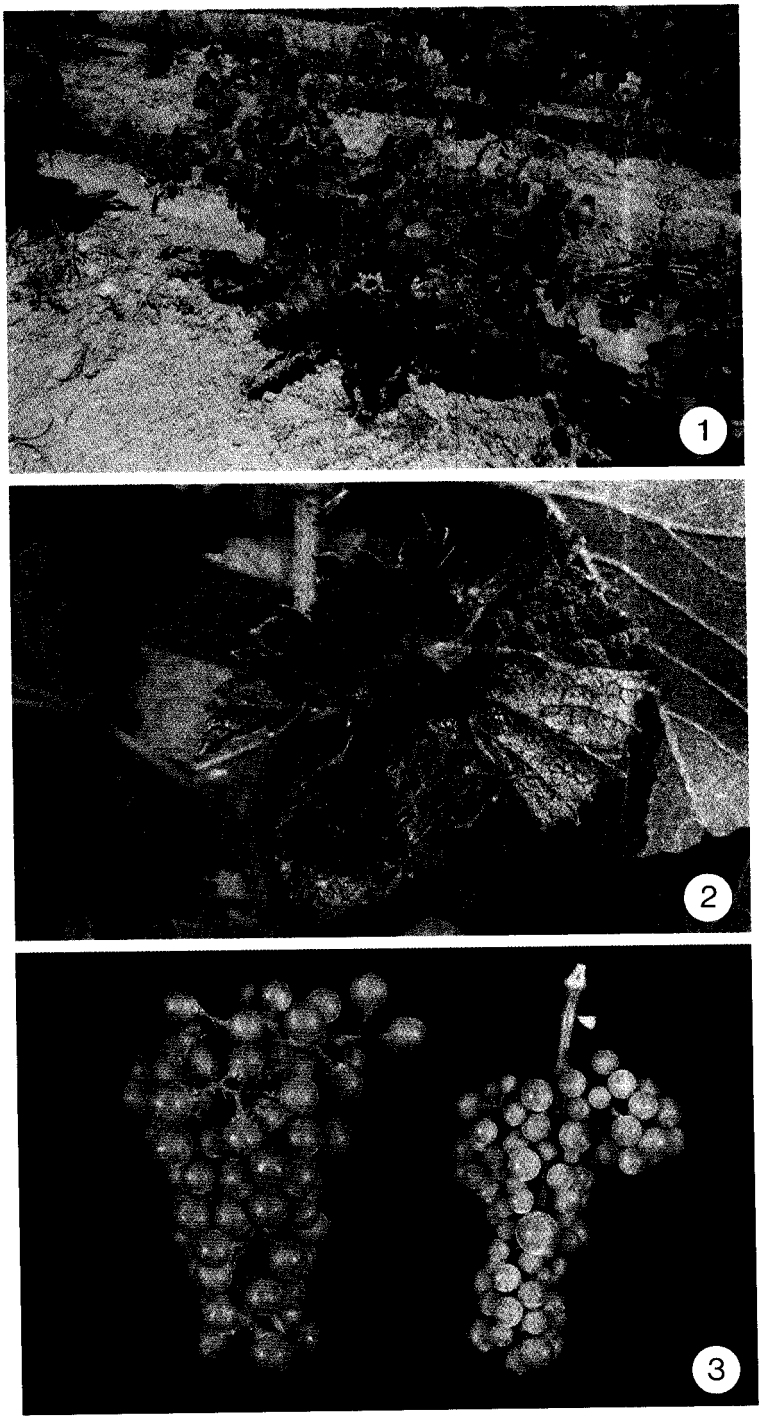

Figure 1 DeChaunac infected with tomato blackring virus, showing general stunting. **Figure 2** Vein banding and mottle on leaves of infected vines. **Figure 3** Comparison of berry set on healthy (left) and infected vines (right).