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HISTOPATHOLOGY OF ARTICHOKE ROOTS INFESTED BY *PRATYLENCHUS PENETRANS* IN GREECE

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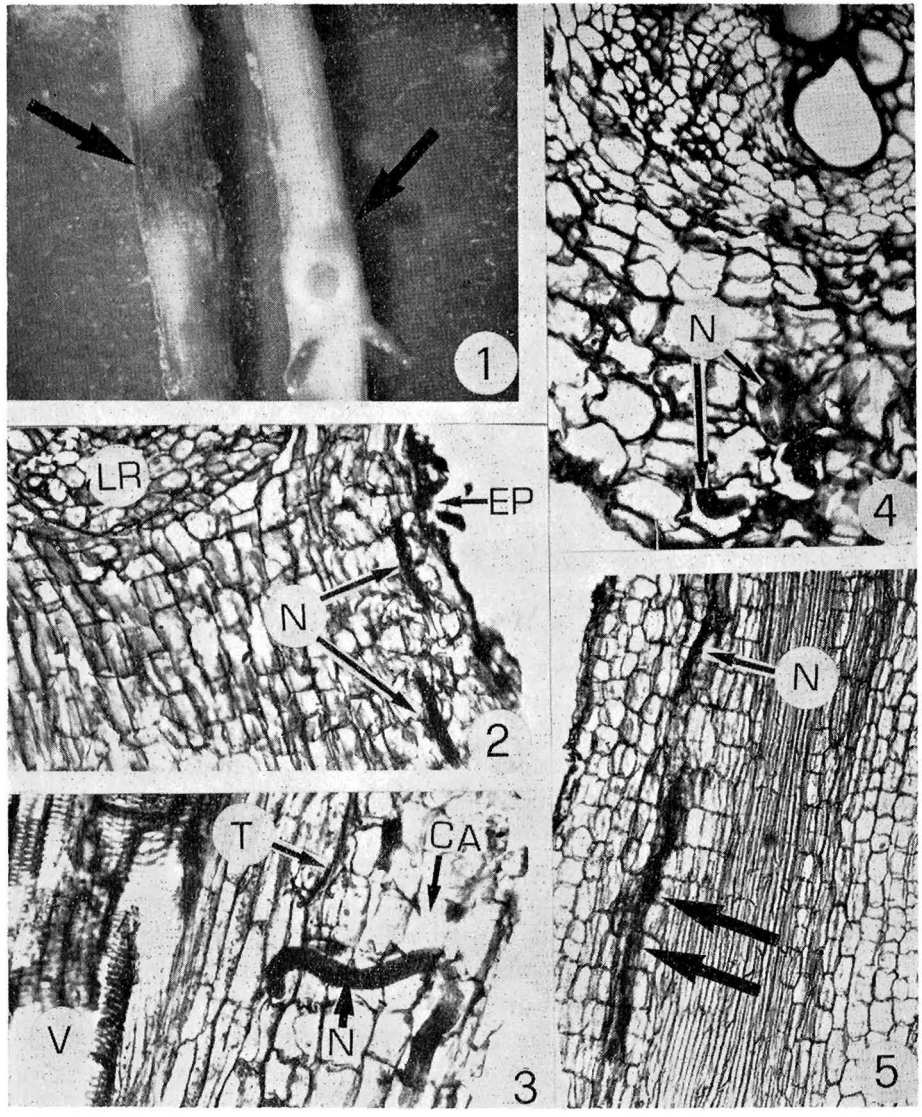
The lesion nematode *Pratylenchus penetrans* (Cobb, 1917) Filipjev *et* Schuurmans Stekhoven, 1941 is a common pathogen of several crops in the Mediterranean area (Scognamiglio, 1963; Lamberti, 1973; Corbett, 1973; Koliopanos and Vovlas, 1977; Inserra *et al.*, 1978). It is recorded from more than 350 plant hosts in temperate and subtropical areas but there is no information of its pathogenic association with artichoke (*Cynara cardunculus* v. *scolymus* L.). This note describes the anatomical changes induced by *P. penetrans* on naturally infested artichoke roots collected in heavily infested fields near Korinthos.

Lateral roots were selected from nematode-infested plants, washed free of soil and fixed in chrome-acetic-formalin solution dehytrated in tertiary butyl alcohol, and embedded in paraffin. Roots were sectioned at 15 μm transversely and longitudinally with a rotary microtome. Sections were mounted on glass slides and stained with safranin and fast-green for microscopic examination (Johansen, 1940).

The nematode densities ranged from 150 to 560 specimens per gram of roots. Necrotic lesions and discoloured areas on the feeder roots contained from a single to numerous specimens and eggs (Fig. 1). The histopathological observations showed that the nematode invaded the epidermis and several cell layers of the cortical parenchyma (Fig. 3). Occasionally specimens were folded within a single cell (Fig. 4). Cells with ruptured, necrotic (darkly stained) walls and collapsed tissues were common around the nematode body (Figs. 4, 5). Large necrotic areas/lesions and cavities formed in the cortex as a result



Figs. 1-5 - Histology of artichoke (*Cynara cardunculus* v. *scolymus* L.) roots infested by *Pratylenchus penetrans*. 1) Necrotic lesions on the surface of lateral roots. 2) Longitudinal section with epidermis (EP) disrupted by the nematode (N) penetration near a lateral root (LR). 3) Longitudinal section showing cavities (CA) in the cortical parenchyma near the nematode body (N). (T) = thickened cell wall; (V) = vascular cylinder. 4) Cross section showing necrotic tissues surrounding sectioned nematodes (N), one of them folded in a single cell. 5) Single layer of destroyed cells in the cortex (N) = nematode.

of the complete breakdown of several layers of cells, which absorbed the safranin stain (Fig. 4).

Nematodes were frequently detected in tissues near the lateral roots, generally longitudinally orientated (Fig. 2). The pathway of the nematode was revealed by a single cell layer row of collapsed cells. This confirms that the nematode migrates longitudinally and intracellularly in the root tissues (Fig. 5). The pathogenicity of *P. penetrans* on artichoke appears similar to that of other lesion nematodes such as *P. coffeae* (Radewald *et al.*, 1971), *P. vulnus* (Inserra and Vovlas, 1977), *P. loosi* (Inserra *et al.*, 1980), *P. scribneri*, *P. alleni* (Acosta and Malek, 1981). As with these species the feeding of *P. penetrans* seems to be confined only to the epidermal and cortical tissues. The number of specimens of *P. penetrans* which can cause stunting of plant varies with the host species, soil type and climate, but is in the range 50 to 2,000 specimens/l of soil (Corbett, 1973). In artichoke fields, in southern Greece, *P. penetrans* was found in large numbers (2,500 to 3,000 specimens/l soil), indicating that artichoke is a good host for the nematode in the Mediterranean area.

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