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MORPHOLOGICAL CHARACTERISTICS  
OF *CRICONEMELLA YOSSIFOVICH* (KRNJAIC, 1968)  
LUC ET RASKI FROM ITALIAN VINEYARDS

by  
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In 1973 Loof and De Grisse re-diagnosed the genus *Discocriconemella* and discussed its morphological relationships. They removed *Discocriconemella yossifovichi* Krnjaic 1968 from the genus and transferred the species to *Macroposthonia*. Luc and Raski (1981), in a taxonomic study of the genus *Macroposthonia* and related genera, listed new combinations of *Criconemella* species and their synonyms. *C. yossifovichi* is a little known species described on the basis of two females only found in Yugoslavian vineyards; it has not been reported elsewhere since it was originally described.

This article extends the known morphometrical characteristics of this species and describes some additional characters, as seen by light (LM) and scanning electron microscopy (SEM), from populations collected in vineyards in the Pordenone province (northern Italy).

The head morphology of this species is also compared with other species of the genus *Criconemella* which have large submedian lobes.

*Materials and Methods*

Specimens were heat killed, fixed in TAF and processed to glycerine, following Seinhorst's method (1959). Individuals for scanning electron microscopy (SEM) observations were infiltrated with Spurr's low-viscosity resin (De Grisse, 1973), coated with gold in a sputter coater and examined in the SEM operating at an accelerating voltage of 10 Kv.

## Results and Discussion

Description of Italian specimens of *Criconemella yossifovichi* (Krnjaic 1968) Luc et Raski 1981 (Figs 1A-G; 2D-F; 3D-F).

Females (n = 20) L = 557  $\mu$ m (488-602); a = 13 (12-15); b = 4.5 (4.1-4.9); c = 21 (18-24); V% = 93 (92-94); stylet = 64  $\mu$ m (61-74); VL = (vulva terminus distance) 39  $\mu$ m (32-44); VL/VB = 1.5 (1.4-1.6).

Rst = 16 (15-17); Roes = 25 (21-28); Rex (n = 8) = 27 (25-29); RV (from terminus) = 9 (9-10); Ran (from terminus) = 7 (7-8); R = 103 (95-108).

Body cylindrical, large and curved ventrally to varying degrees when relaxed, slightly flattened at both ends. Body annules 5  $\mu$ m wide at mid-body with smooth posterior margins. Annular anastomoses rare (from 0-4) and when present localized at the anterior part of the body or in tail region.

A disc-like quadrilobate labial structure (10-13  $\mu$ m wide) formed by the greatly enlarged and fused dorsal and ventral submedian lobes, is clearly visible also in lateral view. In face view inside this disc-like structure is the labial disc with oral and amphidial apertures.

The stylet with well developed knobs 8-11  $\mu$ m wide, is 11% (10-12%) of body length and 52% (53-55%) of oesophageal length. The excretory pore is always situated at level of the oesophageal-intestinal junction 110-128  $\mu$ m from anterior end. The vulva is of the « open type » with smooth anterior lip. The body annule immediately anterior to the vulva opening usually has a slight ventral protrusion (Fig. 1 F). The anus opening is located at the level of second annule posterior to the vulva 7-8 annules from tail terminus. Tail terminus rounded-conical with one to three terminal lobes (Figs 1 F, G).

The reproductive apparatus is 255  $\mu$ m (214-328) long, occupies 36-56% of the body length and does not extend to the oesophagus. Male unknown.

*Remarks.* The species of the genus *Criconemella*, which have large submedian lobes are: *C. antipolitana* (De Guiran, 1963) Luc et Raski 1981; *C. caballeroi* (Cid del Prado, 1978) Luc et Raski 1981; *C. vadensis* (Loof, 1964) Luc et Raski, 1981; *C. rustica* (Micoletzky, 1915) Luc et Raski, 1981; *C. surinamensis* (De Grisse et Maas, 1970) Luc et Raski, 1981 and *C. yossifovichi* (Krnjaic, 1968) Luc et Raski, 1981. Although having similarities with other species and overlappings in some morphometrical characters, *C. yossifovichi* essen-

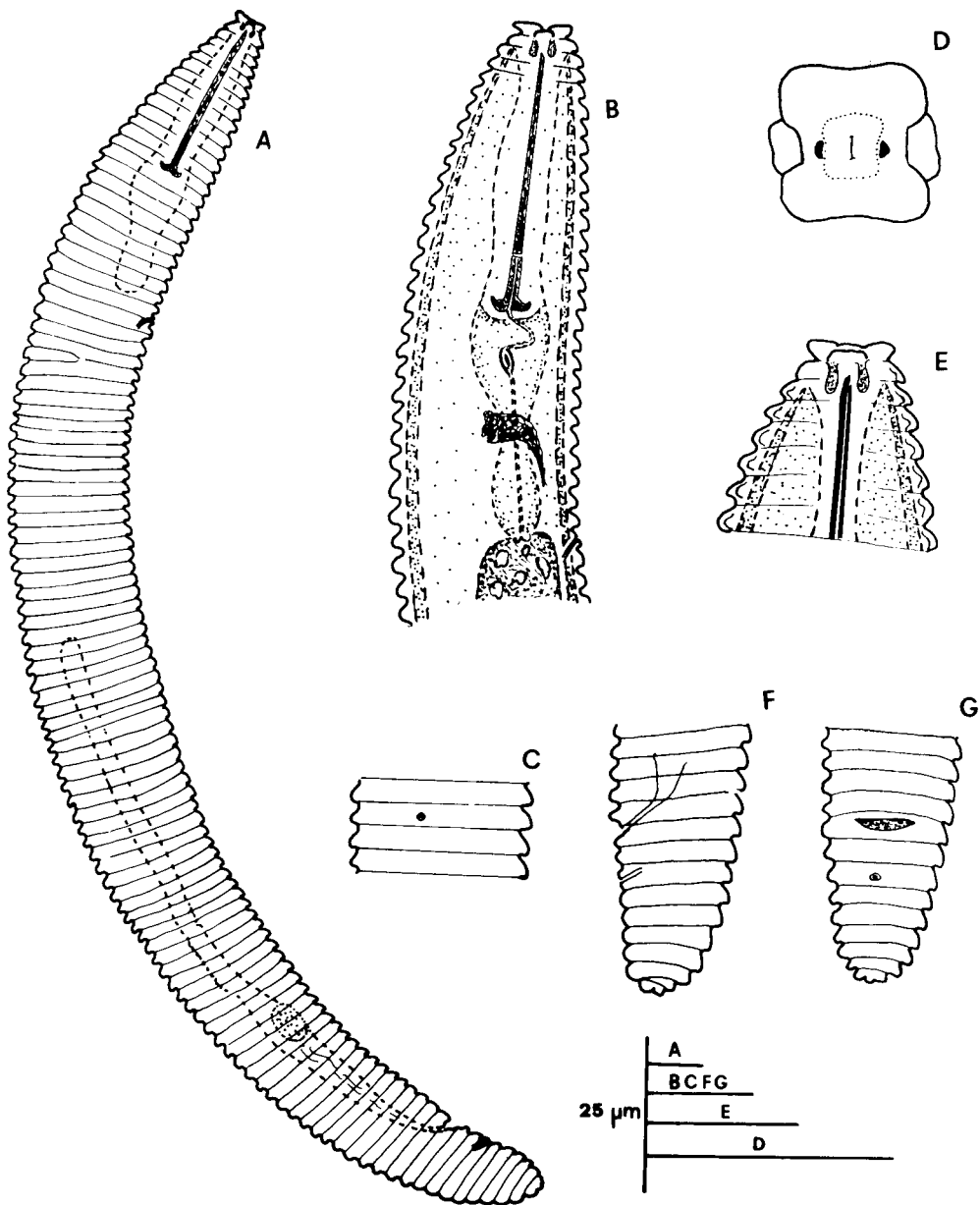


Fig. 1 - *Criconemella yossifovichi*: A) Lateral view of entire female body. B) Oesophageal region. C) Excretory pore area. D) En face view. E) Head end. F, G) Female tail in lateral and ventral view respectively.

tially differs from all other species in body size, body annules, stylet, shape and size of submedian lobes.

Except for the various types of development of the submedian lobes, the heads of *Criconemella* species studied, including *C. yossifovichi*, show a simple pattern in face view with a distinct labial disc bearing centrally an I-like oral opening and ovoidal amphid apertures at its sides (Figs 2 and 3).

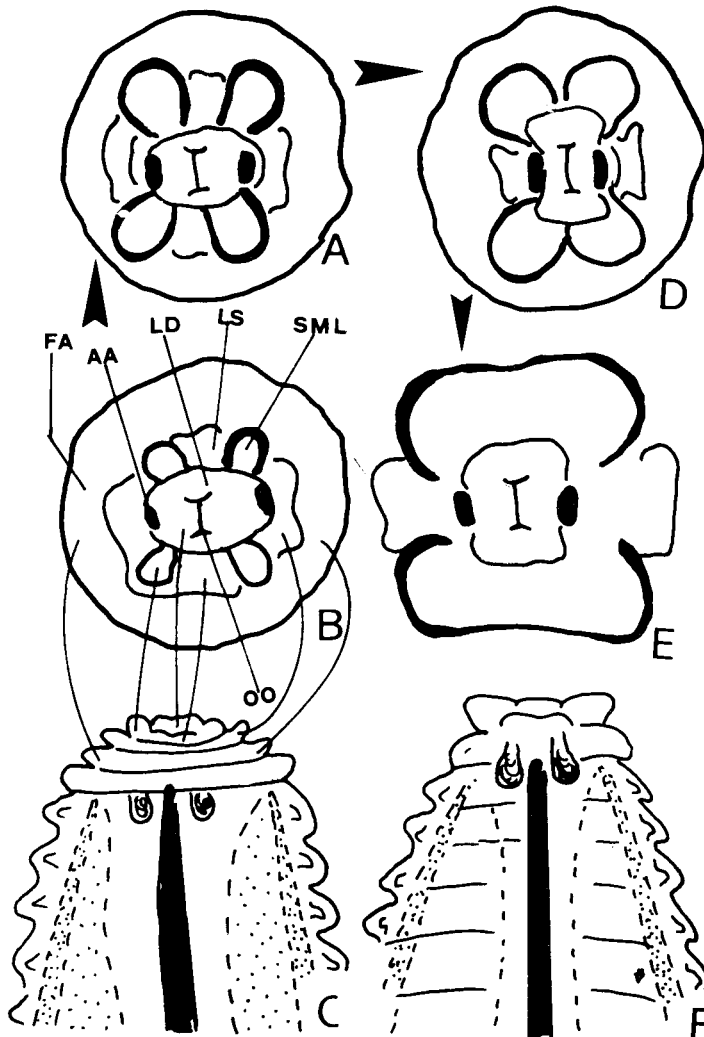


Fig. 2 - Schematic « head end patterns » of *Criconemella* species: A) *C. rustica*. B, C) *C. xenoplax*. D) *C. vadensis*. E, F) *C. yossifovichi* (FA=first annule, AA = amphid aperture, LD = labial disc, SML = submedian lobes, OO = oral opening, LS = lateral sector).

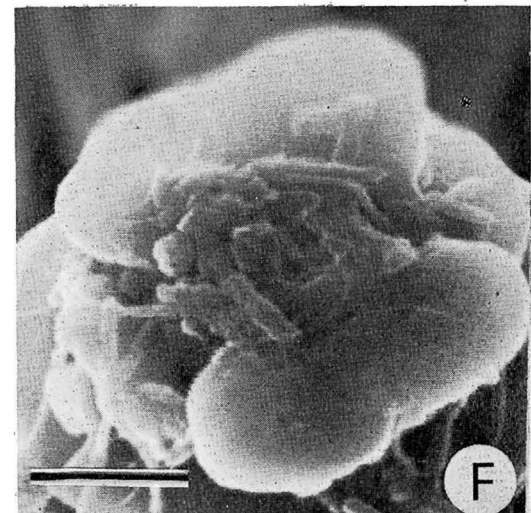
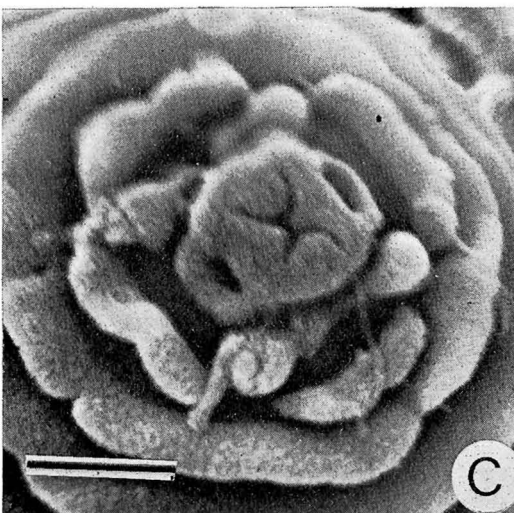
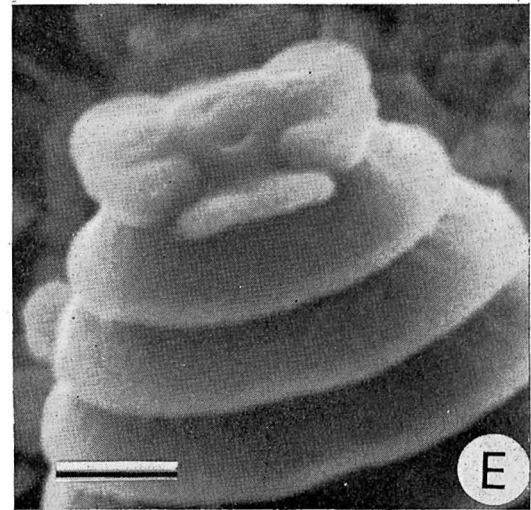
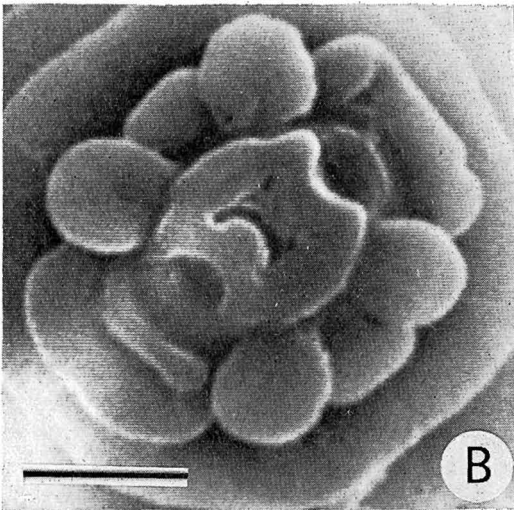
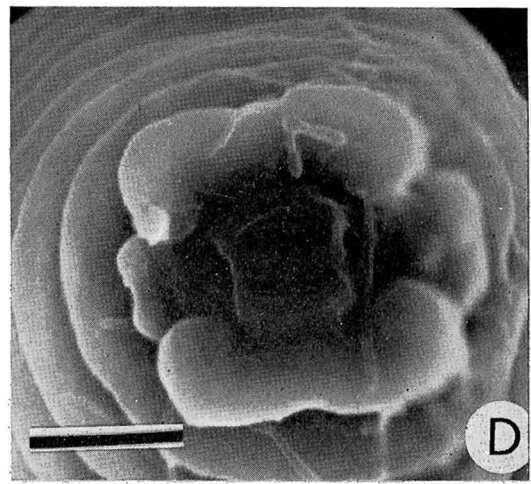
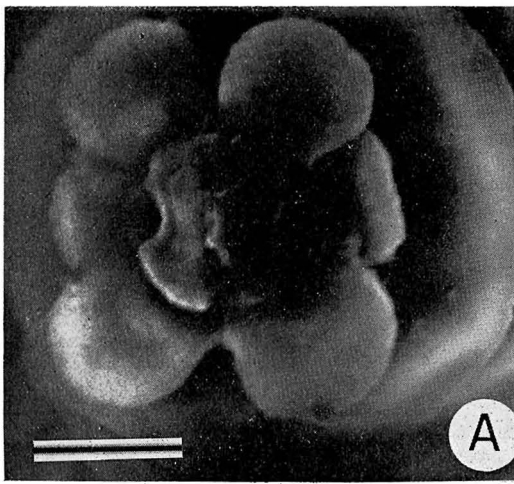


Fig. 3 - SEM photomicrograph of head ends of *Criconemella* species. A) *C. rustica*. B) *C. vadensis*. C) *C. xenoplax*. D-F) *C. yossifovichi*. (Scale bar = 5  $\mu$ m).

Among the species of the genus *Criconemella* with large submedian lobes, *C. rustica* and *C. vadensis* are the most representative having well developed lobes which are enlarged and often flattened anteriorly (Figs 3A, 3B). In *C. xenoplax* the submedian lobes are distinct but smaller than these species (Fig. 3C).

The SEM observations indicate that the submedian lobes are in a series of increasing size: *C. xenoplax*, *C. vadensis*, *C. rustica*, to *C. yossifovichi*, which show a disc-like head end with four enlarged lobes fused dorsally and ventrally and illustrate the diversity of the « head end pattern » among the species of the genus *Criconemella*.

#### S U M M A R Y

Supplementary descriptive data, which extend the known range of variability of *Criconemella yossifovichi* (Krnjaic 1968) Luc et Raski, 1981 supported by scanning electron microscopy (SEM) observations are given. The head morphology of this species is also compared with other members of the genus *Criconemella*, which have large submedian lobes. The disc-like head end formed by the enlarged submedian lobes fused dorsally and ventrally and without lateral connections confirms the great variability of the « head end pattern » in *Criconemella* species.

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