PRATYLENCHUS SPECIES OCCURRING IN ALGERIA (NEMATODA, PRATYLENCHIDAE)

by

A. Troccoli, F. Lamberti and N. Greco

Summary. A survey carried out in Algeria revealed the occurrence of five species of Pratylenchus. The most common species were P. penetrans, often associated with date palm (Phoenix dactylifera L.), and P. thornei found in the rhizosphere of various cereal and vegetable crops. P. pratensis, P. scribneri and P. neglectus were occasionally found but always in low numbers. Brief descriptions and illustrations of the species are provided.

A survey of plant parasitic nematodes was carried out in March-April, 1973 in Algeria (Lamberti et al., 1975). The species belonging to the genus Pratylenchus Filipjev that were found are illustrated and briefly described.

Nematodes were extracted from soil either by Cobb's wet sieve technique or sugar flotation and centrifugation, and from roots by incubation in a mist chamber. Specimens were then fixed in 5% hot formalin and mounted in anhydrous glycerin. Measurements and illustrations were made with the aid of a camera lucida.

Five species were found; they are, in order of frequency: P. penetrans, P. thornei, P. pratensis, P. scribneri and P. neglectus.

Geographical distribution of the species is indicated in fig. 3.

Descriptions

PRATYLENCHUS PENETRANS (Cobb, 1917)
Filipjev et Schuurmans Stekhoven, 1941
(Fig. 1; Table I)

P. penetrans was consistently found associated with date palms (Phoenix dactylifera L.) that had discoloured and necrotic roots as described by Lamberti (1973) and Lamberti et al. (1975). It occurred at Beni Ounif, Beni Abbes, Charonine, El Golea, Ghardaia, Metlili, Sidi Yahia and Biskra. A population without males was found at the Guelma Experimental Station in the rhizosphere of broad beans (Vicia faba L.) and wheat (Triticum aestivum L.).

Measurements of four populations of P. penetrans are reported in Table I.

PRATYLENCHUS THORNEI Sher et Allen, 1953
(Fig. 2, A-E, II-J; Table II)

P. thornei occurred in eight localities: in the rhizosphere or in the roots of Olive (Olea europaea L.) at Ben Jousef (locality Boufarik), Cypress (Cupressus sp.), at Ouzera, vegetable crops (meadow near palm-grove), at Adrar and wheat at Guelma (Experimental Station).

Measurements of four populations are reported in Table II.
Females are characterized in having three to four annules on the lip region, which is heavily sclerotized and continuous with the rest of the body; stylet moderately stout, with rounded to anteriorly flattened basal knobs. Excretory pore 80 (75-85) μm posteriad from head, immediately behind the hemizonid (Fig. 2 A). Spermaphore indistinct, empty. The post-uterine branch is slightly longer than body diameter at vulva. Tail with 18-25 annules, bluntly rounded, without striations around terminus (Fig. 2, H-J). Males of this species are very rare and they were not found during our survey.

Remarks. Algerian populations of *P. thornei* are morphometrically similar to populations described previously and from other areas (Sher and Allen, 1953; Loof, 1960; D’Errico, 1970). They are also biometrically rather uniform. However, the specimens from Ouzera were larger and those from Guelma smaller than from the other populations. Such variability, which is not infrequent within this species (Loof, 1960; Singh and Khan, 1981; Corbett and Clark, 1983), could be due to the effect of the host.

**PRATYLENCHUS PRATENSIS (DE MAN, 1880)**
Filipjev, 1936
Fig. 2, B, K-M

The measurements of the only population of *P. pratensis* found in Algeria in the rhizosphere of date palm in the oases of El Golea are:

- (7 females): $L = 551 \mu m \pm 38.5 (493-607)$; $a = 25.2 \pm 3.7 (21.4-30.3)$; $b = 6.6 \pm 0.4 (5.9-7.1)$; $b' = 4.8 \pm 0.5 (4.2-5.6)$; $c = 16.5 \pm 1.5 (14.5-18.5)$; $c' = 2.6 \pm 0.3 (2.1-3)$; $V = 77.6 \pm 0.8 (76-78)$; stylet = 15.9 μm ± 0.8 (14.5-17).
- (3 males): $L = 486 \mu m (467-504)$; $a = 25.9 (23.6-28.1)$; $b = 5.4 (4.7-6.2)$; $b' = 4.4 (4.1-4.6)$; $c = 19.7 (16.8-23)$; $c' = 2.6 (2.3-5)$; $T (2) = 50.6-52.5$; stylet = 14.6 μm (14-15.3); spicules = 16.1 μm (14.6-17.3); gubernaculum = 4.6 μm (4.3-5).

**Table 1 - Morphometrics of Algerian populations of Pratylenchus penetrans**

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Mean ± S. D. (Minimum - Maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Locality</strong></td>
<td><strong>Rhizosphere of:</strong></td>
</tr>
<tr>
<td>Localities</td>
<td>Metilli (oases)</td>
</tr>
<tr>
<td>n</td>
<td>11 ♀ ♀</td>
</tr>
<tr>
<td>L (μm)</td>
<td>530 ± 29.2 (474-577)</td>
</tr>
<tr>
<td>a</td>
<td>21.1 ± 2.2 (18.9-25.7)</td>
</tr>
<tr>
<td>b</td>
<td>5.2 ± 0.8 (4.3-6.3)</td>
</tr>
<tr>
<td>b'</td>
<td>4.2 ± 0.7 (3.1-5.1)</td>
</tr>
<tr>
<td>c</td>
<td>17.8 ± 2.8 (12.8-23.6)</td>
</tr>
<tr>
<td>c'</td>
<td>2 ± 0.4 (1.4-2.7)</td>
</tr>
<tr>
<td>V</td>
<td>79 ± 1.2 (77-81.5)</td>
</tr>
<tr>
<td>stylet (μm)</td>
<td>15.2 ± 0.8 (13.3-16.5)</td>
</tr>
<tr>
<td>T</td>
<td>–</td>
</tr>
<tr>
<td>Spicules (μm)</td>
<td>–</td>
</tr>
<tr>
<td>gubernaculum (μm)</td>
<td>–</td>
</tr>
</tbody>
</table>
Fig. 1 - *Pratylenchus penetrans* (A-M). A, female oesophageal region; B, entire female; C, M, male tails; D, entire male; E, male anterior end; F, female gonad; G, female spermatheca; H-L, female tails.
Fig. 3 - Geographical distribution of species of *Pratylenchus* found in Algeria.
### Table II - Morphometrics of Algerian populations of Pratylenchus thornei

<table>
<thead>
<tr>
<th>Habitat Locality</th>
<th>Rhizosphere of:</th>
<th>Vegetable Crops, Adrar (cases)</th>
<th>Olive Bourifarik (Ben Jousef)</th>
<th>Cypress Ouzera</th>
<th>Wheat Guelma (Exp. St.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>9♀♀</td>
<td>11♀♀</td>
<td>18♀♀</td>
<td>6 ♀♀</td>
</tr>
<tr>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L (μm)</td>
<td></td>
<td>529 ± 23.5 (447-673)</td>
<td>520 ± 32 (468-615)</td>
<td>552 ± 47 (480-645)</td>
<td>513 ± 28 (467-550)</td>
</tr>
<tr>
<td>a</td>
<td></td>
<td>28.3 ± 2 (26-30)</td>
<td>26.2 ± 2.6 (22.7-29.1)</td>
<td>30.1 ± 2.9 (25.7-32.9)</td>
<td>32 ± 3.9 (26.3-35.9)</td>
</tr>
<tr>
<td>b</td>
<td></td>
<td>60 ± 0.7 (50.7-1)</td>
<td>4.7 ± 0.2 (4.5-5.7)</td>
<td>4.4 ± 0.3 (4.3-5.2)</td>
<td>4.2</td>
</tr>
<tr>
<td>b'</td>
<td></td>
<td>3.8 ± 0.7 (2.9-4.4)</td>
<td>4 ± 0.2 (3.9-4.4)</td>
<td>3.9 ± 0.6 (2.9-4.5)</td>
<td>3.6</td>
</tr>
<tr>
<td>c</td>
<td></td>
<td>19.1 ± 1.7 (17-21)</td>
<td>21.8 ± 1.5 (20-23.5)</td>
<td>20.5 ± 2.8 (18.5-25.4)</td>
<td>21.3 ± 2 (18.3-23.5)</td>
</tr>
<tr>
<td>c'</td>
<td></td>
<td>2.5 ± 0.5 (1.9-3)</td>
<td>2 ± 0.3 (1.8-2.4)</td>
<td>2.6 ± 0.2 (2.2-2.8)</td>
<td>2.4 ± 0.2 (2.3-2.8)</td>
</tr>
<tr>
<td>V</td>
<td></td>
<td>76 ± 3.3 (69-81)</td>
<td>78 ± 0.6 (76.5-79)</td>
<td>76 ± 1.9 (74-80)</td>
<td>78 ± 1 (77-79)</td>
</tr>
<tr>
<td>stylet (μm)</td>
<td></td>
<td>16.1 ± 0.6 (15.5-17)</td>
<td>15.5 ± 0.4 (15-16)</td>
<td>16.2 ± 0.5 (15.6-17)</td>
<td>15.2 ± 0.4 (14.4-15.7)</td>
</tr>
</tbody>
</table>

Female lip region composed of three annules, sometimes difficult to see; cephalic framework moderately sclerotized. Stylet stout, with basal knobs rounded or anteriorly cupped (Fig. 2 B). Excretory pore just behind the hemizonid. Spermacheca large, oval to round in shape, usually filled with sperms (Fig. 2 M). Post-uterine sac slightly longer than vulval body width. Tail coarsely annulated, bearing 21-29 annules (Fig. 2 K, L).

**Remarks.** Compared with the Dutch population (Loof, 1974), the Algerian specimens have a slightly longer stylet (14.5-16 μm vs. 13-15 μm), as observed by Frederick and Tarjan (1989) in their revision of the genus. The other morphometric characters correspond with the values given by other authors (Seinhorst, 1968; Inserra et al., 1979; Handoo and Golden, 1989); they agree also with those of *P. pratensisobrinus* (Bernard, 1984) but differ in the tail (*c* = 14.5-18.5 μm vs. 12-15; *c' = 2.1-3 vs. 2.8-3.7) and in the smaller number of tail annules (21-28 vs. 23-37).

**PRATYLENCHUS SCRIBNERI** Steiner, in Sherbakoff and Stanley, 1943 (Fig. 2, C, F, N-P)

A population of *P. scribneri* was found in the rhizosphere of date palm, in the grounds of the Experimental Station of El Arfiane. The morphometric characters are:

* (9 females): *L = 417 μm ± 34 (370-487); a = 20.1 ± 2.6 (16.2-23.7); b = 5.8 ± 0.5 (5.2-6.4); b' = 3.7 ± 0.5 (3.3-4.9); c = 19.9 ± 1.5 (17.5-22.4); c' = 1.9 ± 0.3 (1.7-2.4); V = 76 ± 1.0 (75-77.5); G = 27 ± 4.1 (22-34); stylet = 13.3 μm ± 0.5 (12.6-14).

No males were found.

Female lip region low, slightly set-off, bearing two annules of different width (Fig. 2 C). Labial sclerotization weakly marked. Stylet with round basal knobs, sometimes cupped anteriorly. Spermacheca difficult to see; post-uterine branch 13-25 μm long, 1-1.3 times the body width at vulva (Fig. 2 G). Tail conoid, with 14-21 annules on ventrally and smooth tip (Fig. 2 N, P).
Remarks. This species was found with *P. penetrans*. Morphometrically, the populations from Algeria correspond, more or less, with previous descriptions (Loof, 1985) but with minor differences such as a slightly shorter body (although Loof states that: “marked length variations exist in this species”), wider body and shorter stylet (12.6-14 μm vs. 14-16 μm after Loof, 1985).

**PRATYLENCHUS NEGLECTUS** (Rensch, 1924)
Filipjev et Schuurmans Stekhoven, 1941
(Fig. 2, D, G, Q-R)

A few specimens of *P. neglectus* were collected from the rhizosphere of apricot (*Prunus armeniaca* L.) at El Asnam, with *P. thornei*. Their measurements are:

(3 females): L = 422 μm (390-475); a (2) = 23.1-25.4; b (2) = 4.8-5.8; b’ (2) = 4.0-4.3; c (2) = 18.8-20.9; c’ (2) = 1.9-2.3; V = 83 (83); m = 48 (48-49); G (2) = 20-42; stylet = 16.7 μm (15.5-17.3).

No males were found.

Remarks. Their main morphometrical characters, such as the lip region with two annules, spear knobs anteriorly indented, short post-uterine sac and the unstriated conoid tail, are in line with those reported previously (Townshend and Anderson, 1976).

During this study other specimens of *Pratylenchus* were found but it was not possible to ascertain their identity because of their poor preservation and pauciety of adults.

In conclusion, the results of this survey indicate that the most important species of *Pratylenchus* in Algeria is *P. penetrans* which causes noticeable damage to date palms as a direct parasite and probably as an incitant of bayoud, a tracheomycotic disease caused by *Fusarium oxysporum* f. sp. *albedinis* (Lamberti, 1973). The two pathogens may act synergistically. The second most widespread species is *P. thornei*, which has a large number of hosts and causes damage to various plants when present in large numbers (Thorne, 1961). *P. pratensis*, *P. scribneri* and *P. neglectus* do not seem to be of economic importance in Algeria.

Key to the identification of the species of *Pratylenchus* occurring in Algeria.

1. Lip region with two annules ........................................ 2
   Lip region with more than two annules ................................ 3

2. Stylet short, less than 15 μm long;
   vulva at 76 (75-77.5)%; ............................................ *P. scribneri*
   Stylet more than 15 μm long; vulva at 83%; ........ *P. neglectus*

3. Lip region high, heavily sclerotized, bearing 3-4 annules;
   sperm sheath indistinct, empty; males absent .... *P. thornei*
   Lip region low, moderately sclerotized, bearing 3 annules;
   sperm sheath rounded, full of sperms; males present ... 4

4. Female tail symmetrical, having a smooth terminus;
   excretory pore 2-3 annules behind hemizonid ....................
   Female tail asymmetrical, with a coarsely annulated terminus;
   excretory pore immediately behind hemizonid ...................... *P. pratensis*.

**Literature cited**


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