

# A SURVEY OF TYLENCHIDA (NEMATODA) FOUND IN HAZELNUT (*CORYLUS* SP.) ORCHARDS IN THE WEST BLACK SEA REGION OF TURKEY

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## RESUMEN

Kepenekci, I. 2002. Censo de Tylenchida (Nematoda) encontrada en huertos de avellana (*Corylus* sp.) en la Región Occidental del Mar Negro en Turquía. *Nematrópica* 32:83-85.

En este estudio, nosotros examinamos la presencia de Tylenchida en muestras de suelos y raíces procedentes de huertos de avellana (*Corylus* sp.) localizados en la Región Occidental del Mar Negro (provincias Düzce, Bartın, Zonguldak). *Filenchus afghanicus*, *Hemicyclophora punensis*, *Pratylenchoides hispaniensis*, y *Pratylenchus pratensisobrinus* se identificaron por primera vez en Turquía. Las especies encontradas con más frecuencia fueron *Coslenchus diversus*; *Helicotylenchus crenacauda* y *Merlinius* (=Scutylenchus) *lenorus*.

*Palabras claves:* Avellana, nematoda, Región Occidental del Mar Negro, Turquía.

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Turkey has a subtropical climate in the warm temperate zone. Plant damage caused by nematodes is serious, especially in sandy and arid soils (Okten *et al.*, 2000). Perennial crops are grown in irrigated areas and are often heavily attacked by nematodes (Okten *et al.*, 2000). Nematology has received only limited attention in Turkey, despite the importance of plant parasitic nematodes to agriculture in the country. Awareness of crop losses caused by plant parasitic nematodes is increasing among researchers in Turkey, but the economic significance of the damage caused by these parasites is not well-understood or recognized by growers. Basic information about plant parasitic nematodes, their host associations, and occurrence in different localities in Turkey was recently described by Okten *et al.*, (2000) who found 172 nematode species associated with 59 plants from different localities in the country.

Among the many crops cultivated in Turkey, hazelnut (*Corylus* sp.) is particularly important because it tolerates drought and poor soil conditions and is grown on more than 294 930 ha. The most important hazelnut areas in Turkey are in the Black Sea Region. Dagger, lesion, nee-

dle, pin, ring, stunt and virus-vectoring species of nematodes have been reported in association with hazelnut in some Mediterranean countries (D'Errico and Ragozzino, 1975). Among these nematodes, the pin nematode, *Gracilacus audriellus* (Brown, 1959) Raski, 1962 parasitizes hazelnut roots in Italy (Mancini *et al.*, 1975). *G. straeleni* (de Coninck, 1931) Oostenbrink, 1960 was found in soil around the roots of *Coryllus avellena* in Greece (Kyrou, 1976). However, no information is available on the nematodes associated with this crop in Turkey. This study was conducted to identify Tylenchida found in soil and root samples in West Black Sea region of Turkey.

Samples of soil and hazelnut roots were collected from hazelnut orchards of three provinces in the West Black Sea Region during July 2001. Twenty orchards, eight in Bartın, five in Duzce, and seven in Zonguldak provinces were chosen for the survey. Trees in all orchards were older than 10 years. Root samples (50 g/sample) were collected from five hazelnut trees in each orchard. Soil samples were obtained using a spade or a boring tool with a half-cylindrical blade to excavate soil to a depth of 40-60 cm. Ten samples (800-1500 cm<sup>3</sup>/sam-

ple) were taken from each hazelnut orchard. In total, 300 root or soil samples were processed. Active nematodes were extracted from soil with a combination of sieving (nested 850, 250, 150, 74, and 44- $\mu\text{m}$ -opening sieves) and Baermann funnel methods (Christie and Perry, 1951). Material collected on the two sieves with the largest openings was discarded, and material from the remaining sieves was extracted on Baermann funnels. An incubation method was used to extract the nematodes from plant roots (Young, 1954). For identification nematodes were killed at 60°C and fixed in TAF. Specimens were mounted in glycerol as described by Seinhorst (1959). The slides that would be used in making were prepared as applying was ring method Hooper (1986).

Ten species within the families Tylenchidae, Anguinidae, Hoplolaimidae, Criconematidae, Belonolaimidae and Pratylen-

chidae were identified according to the classification proposed by Maggenti *et al.* (1987) (Table 1). From our review of the literature, all of species listed in Table 1 represent new nematode-host associations. One species of root-lesion nematode (*Pratylenchus pratensisobrinus*) was detected in four hazelnut orchards (three soil samples and one root samples), but symptoms of the nematode infestation were not evident. Other nematodes found in the soil were species of *Coslenchus*, *Ditylenchus*, *Filenchus*, *Helicotylenchus*, *Hemicyclophora*, *Merlinius*, *Pratylenchus*, *Pratylenchoides* and *Tylenchorhynchus*.

Plant parasitic nematodes, such as dagger, needle, pin, ring, stunt and virus-vector nematodes that often occur in hazelnut orchards in some Mediterranean countries (D'Errico and Ragozzino, 1975) were not found in the present survey. On the other hand, *Filenchus afghanicus*, *Hemicyclophora punensis*, *Pratylenchoides hispaniensis*, and

Table 1. Tylenchida species found associated with hazelnut (*Corylus* sp.) orchards in the West Black Sea Region in Turkey.

Nematode species	Authority	Family	Feeding habit	Distribution (no. positive samples)
<i>Coslenchus diversus</i>	Lal & Khan, 1987	Tylenchidae	unknown	b(8), d(4), z(6)
<i>Ditylenchus anchilosposomus</i> (= <i>Safianema</i> )	(Tarjan, 1958) Raski & Geraert, 1987	Tylenchidae	fungivorous	d(1)
<i>Helicotylenchus crenacauda</i>	Sher, 1966	Hoplolaimidae	plant parasitic	b(5), d(1), z(6)
<i>Hemicyclophora sturhani</i>	Loof, 1984	Criconematidae	plant parasitic	z(2)
<i>Hemicyclophora punensis</i>	Darekar & Khan, 1980	Criconematidae	plant parasitic	d(1)
<i>Merlinius</i> (= <i>Scutylenchus</i> ) <i>lenorus</i>	(Brown, 1956) Siddiqi, 1970	Belonolaimidae	plant parasitic	b(6), d(2), z(4)
<i>Pratylenchus pratensisobrinus</i>	Bernard, 1984	Pratylenchidae	plant parasitic	b*(3), d(1)
<i>Pratylenchoides hispaniensis</i>	Trocconi, Volvas & Costillo, 1997	Pratylenchidae	plant parasitic	z(1)
<i>Tylenchorhynchus cylindricus</i>	Cobb, 1913	Belonolaimidae	plant parasitic	b(6)

Province: b = Bartın; d = Düzce; z = Zonguldak. \*Detected in one root sample (*Pratylenchus pratensisobrinus* was found in three soil and one root samples in Bartın province).

*Pratylenchus pratensisobrinus* were identified for the first time in Turkey. Although the survey was not exhaustive, it revealed a number of nematode species associated with hazelnut. Additional investigations are required to fully elucidate the role that nematodes play in hazelnuts production in Turkey.

#### ACKNOWLEDGMENT

Thanks are extended to Prof. Dr. M. E. Okten (Department of Plant Protection, Faculty of Agriculture of the Ankara University, Ankara, Turkey) who introduced me to plant nematology.

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*Received:*

25.VIII.2001

*Accepted for publication:*

22.XII.2001

*Recibido:*

*Aceptado para publicacion:*

