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OCCURRENCE OF *XIPHINEMA* SPECIES IN THE FORMER YUGOSLAVIA¹ SUPPLEMENT TO THE "ATLAS OF PLANT PARASITIC NEMATODES OF JUGOSLAVIA"

by
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Summary. In the "Atlas of Plant Parasitic Nematodes of Yugoslavia" (Ivezić, 1985) the distribution of *Xiphinema brevicolle*, *X. diversicaudatum*, *X. index*, *X. italiae*, *X. pachtaicum* and *X. vuittenezi* were presented in maps based on 10 km square of the Universal Transverse Mercator grid. In the period 1985-1994 further data on presence and distribution of these and other species viz. *X. dentatum*, *X. globosum*, *X. incertum*, *X. simile* and *X. taylori* have been accumulated. The localities and host plants for each *Xiphinema* species found in the territory of the former Yugoslavia in the period 1985-1994 are presented in this paper.

The Atlas of Plant Parasitic Nematodes of Jugoslavia (Ivezić, 1985) lists the occurrence and distribution of plant parasitic and free living nematodes known at that time. The distribution of *X. brevicolle* Lordello *et* Da Costa, 1961, *X. diversicaudatum* (Micoletzky, 1927) Thorne, 1939, *X. index* Thorne *et* Allen, 1950, *X. italiae* Meyl, 1953, *X. pachtaicum* (Tulaganov, 1938) Kirjanova, 1951 and *X. vuittenezi* Luc, Lima, Weischer *et* Flegg, 1964 was presented on maps based on 10 km square of the Universal Transverse Mercator grid. Further investigations of longidorid nematodes in the territory of the former Yugoslavia revealed the presence of *X. dentatum* Sturhan, 1978, *X. incertum* Lamberti, Choleva *et* Agostinelli, 1983 (Barsi, 1989), *X. globosum* Sturhan, 1978 (Barsi, 1992a), *X. simile* Lamberti, Choleva *et* Agostinelli, 1983 and *X. taylori* Lamberti, Ciancio, Agostinelli *et* Coiro, 1991 (Barsi, 1994). In the period 1985-1994 new data on the presence and distribution of *Xiphinema* spp. have accumulated; they are reported here as a supplement to the Atlas.

Materials and methods

The lists of localities and host plants for each *Xiphinema* species found in the territory of the former Yugoslavia were compiled from the published (Barsi, 1989, 1992a, 1992b, 1993, 1994; Barsi and Horvatović, 1986; Barsi and Radišić, 1992) and some unpublished data. Apart from a small, intensive survey in a restricted area (Barsi and Horvatović, 1986; Barsi and Radišić, 1992), the data have been acquired in a more or less haphazard way during research and collecting trips in some parts of the former Yugoslavia. Samples came partly from cultivated lands and partly from natural, uncultivated habitats. Occurrence of each species is listed as a UTM grid reference.

Distribution of *Xiphinema* species

Xiphinema dentatum

Locality and host: XJ98; Poriče (*Carpinus betulus* L.); CQ50: Drinjača (*Corylus avellana*)

¹ Former Yugoslavia: as a whole geographical territory.

L.); EP77: mountain Malinik (*Syringa vulgaris* L.), canyon of the Lazar's river at the village Zlot (*Carpinus orientalis* Lam.); DR00: Novi Ledinci (*Vitis* sp.), Ledinci (*Picea* sp., *C. avellana*).

Xiphinema diversicaudatum

Locality and host: DS11: Horgoš (grapevine); DS20: Kanjiža (*Amorpha fruticosa* L.); CR36: Apatin (*Fraxinus* sp., *Rubus caesius* L., *Salix* sp.); CR37: Bački Monoštor (*Populus* sp.); CR61: Mladenovo - bank of the Dunavac (*Populus* sp., *Fraxinus* sp., *Salix alba* L.); CR71: Bačka Palanka (*A. fruticosa*); DR00: Novi Sad (*A. fruticosa*); DR20: Kovilj meadow (*Acer negundo* L., *R. caesius*, *Urtica dioica* L.); DR21: Kovilj meadow (*Fraxinus* sp., *U. dioica*); DR28: Senta (grapevine); DR29: Nadrljan (*A. fruticosa*), Senta-Nadrljan (*A. fruticosa*); DR32: bank of the river Tisa (*A. fruticosa*); DR50: Perlez (*R. caesius*); DR71: bank of the river Tamiš at Tomaševac (*A. fruticosa*); DQ24: Kupinovo (*A. fruticosa*); CN10: Stoliv (grapevine); EN99: Ostrovica - bank of the river Nišava (*Populus tremula* L.)

Xiphinema globosum

Locality and host: VM42: Podbrezje (*Picea excelsa* (Lam) Lk.); VL29: Idrija (*Pteridium aquilinum* (L.) Kuhn).

Xiphinema incertum

Locality and host: UL91: Gedići (grapevine); VL01: Ferenci (grapevine).

Xiphinema index

Locality and host: UL91: Kaštelir (grapevine); VL14: Kubed (grapevine); YH04: Zarodež (grapevine); VK79: Polje - island Krk (grapevine); YH34; Slano (grapevine).

Xiphinema italiae

Locality and host: DS10: Bački Vinogradi (grassland); Male Pijace-Horgoš (grapevine);

CR95: Lovćenac (*Linum austriacum* L., *Vitis* sp.); EL99: Negotino (grapevine); DR01: Novi Sad (*Populus* sp.); DR38: Čoka (grapevine); EQ06: Deliblatska peščara (*Prunus mahaleb* L., *Sambucus nigra* L., *Crataegus* sp.).

Xiphinema pachtaicum

Locality and host: CS90: Subotica (grapevine); DS10: Male Pijace (grassland); Male Pijace-Horgoš (grapevine); DS20: Kanjiža (ornamental shrubbery); CR41: Mikluševci (pea, onion); CR55: Doroslovo (grapevine); CR57: Sombor (ornamental shrubbery, grapevine); CR87: Orešković (*Theucrium chamaedrys* L., *Salvia* sp.), Bajša (*Verbascum phoeniceum* L.); CR90: Čerević (grapevine); CR91: Begeč (*Populus* sp.); CR95: Lovćenac (grassland); DR00: Ledinci (grapevine, peach, *Picea* sp., walnut), Novi Ledinci (*Acer campestre* L., *Vitis* sp., *Cornus sanguinea* L.), Liparija (*Tilia argentea* Desf., *C. avellana*, *Vitis* sp.), Rakovac (peach); DR01: Novi Sad (*Abies concolor* Lin. et Gor., *Thuja orientalis* L., *Buxus sempervirens* L., *Mahonia aquifolia* (Pursh.) Nutt., *P. excelsa*, *Populus nigra* L., *Sequoiadendron giganteum* (Lindl.) Buchh., *Sophora japonica* L., *Taxus baccata* L., *Tilia tomentosa* Mch.), Rimski Šančevi (maize, wheat); DR04: Srbobran (ornamental shrubbery); DR11: Petrovaradin (grapevine); DR18: Bogaraš (*T. orientalis*); DR22: Žabalj (*Euphorbia* sp., maize); DR25: Bečej (fig); DR28: Senta (grapevine, maize); DR29: Senta-Nadrljan (grassland); DR30: Titel (*Trifolium* sp.); DR38: Čoka (grapevine); DR52: Zrenjanin (ornamental shrubbery, *Populus* sp.); DR53: Jankov Most (*Euphorbia cyparissias* L.); CQ99: Bešenovo (peach); DQ68: Glogonj (grapevine); DQ69: Debeljača (apricot); EQ06: Deliblato sand (*Robinia pseudoacacia* L.); EL99: Negotino (grapevine); EN89: Sićevo (grapevine); UL91: Gedići (grapevine), Kaštelir (grapevine); VL01: Ferenci (grapevine); VL14: Kubed (grapevine); VL38: Hotedršica (*P. aquilinum*); WL37: Prekropa (grassland); YH04: Zarodež (grapevine); BN83: Trebinje (grapevine); CM44: Valdanos (grassland); CM54: Ulcinj (*P. aquilinum*).

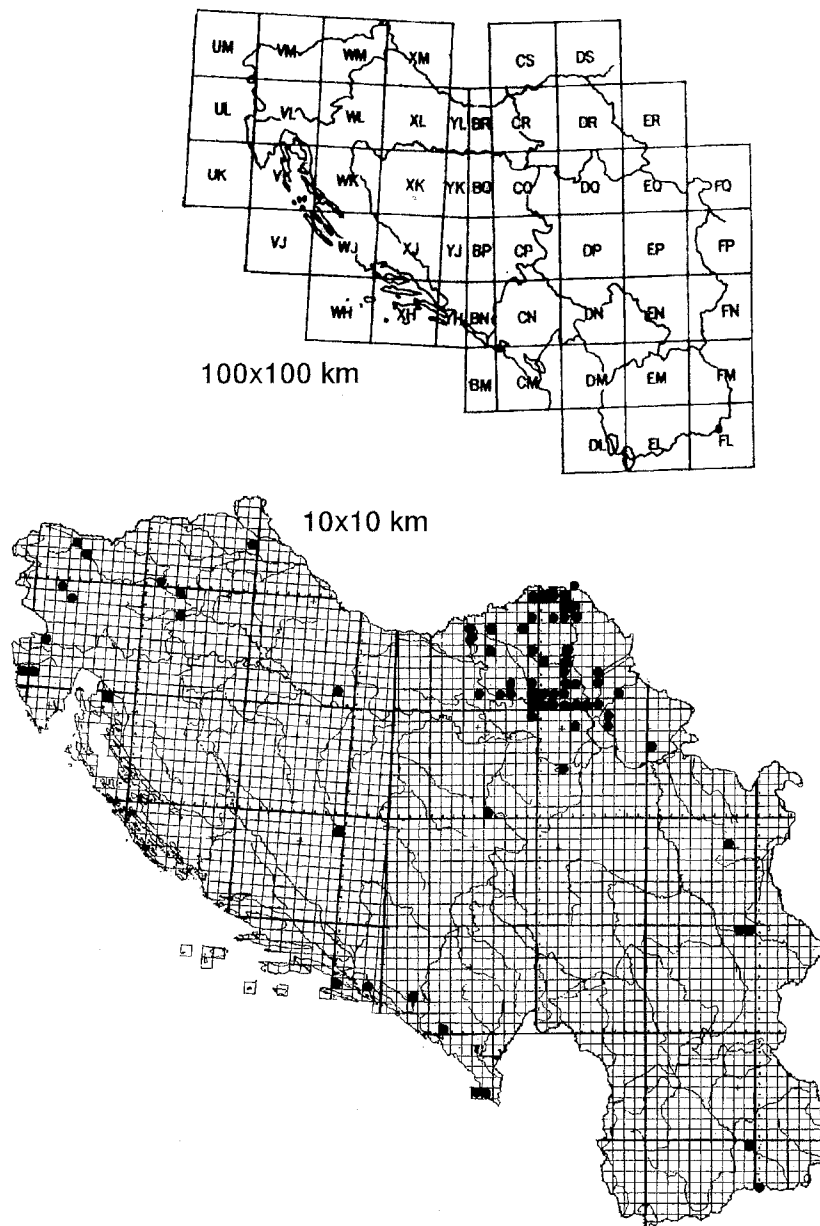


Fig. 1 - Universal Transverse Mercator projection map of the former Yugoslavia with UTM grid reference letters (top); sampling stations which proved positive for *Xiphinema* (bottom).

Xiphinema simile

Locality and host CM54: Ulcinj (*P. aquilinum*); DR22, DR32: Žabalj (*E. cyparissias*, *Euphorbia* sp., *Carduus nutans* L.); DR39: Sanad (*Trifolium campestre* Schreb.); DS10: Male Pijace (saliferous grassland); EN89: Niš (grapevine); FL15: Konsko (*Platanus orientalis* L.).

Xiphinema taylori

Locality and host: DR00: Novi Ledinci (*Picea* sp.); EQ06: Deliblatska peščara (*P. mahaleb*, *Crataegus* sp., *S. nigra*); VM33: Lipnica (grassland); WL39: Rožno (grassland); WM10: Zidani Most (*Rubus* sp.); XL81: Bačin Dol (*Doricnium* sp.).

Xiphinema vuittenezi

Locality and host CS90: Subotica (grapevine, ornamental shrubbery); DS00: Palić (*Festuca* sp.); DS10: Male Pijace-Horgoš (grapevine); DS20: Kanjiža (*A. fruticosa*); DS31: Djala (grapevine); CR55: Doroslovo (grapevine); CR57: Sombor (cauliflower, grapevine); CR72: Silbaš (hop); CR87: Bajša (grapevine); CR90: Čerević (grapevine), Beočin-Crveni Čot (*Rubus* sp., *Rosa* sp.); CR91: Begeč (*Populus* sp.); CR92: Bački Petrovac (hop); CR95: Lovćenac (*Prunus avium* L., *Vitis* sp., *L. austriacum*); CR98: Žednik (*E. cyparissias*); DR00: Beočin (rose); Ledinci (grapevine, *Picea* sp.); Rakovac (*Crataegus* sp., grapevine, peach); Ledinci (grapevine, *Picea* sp.); Stari Ledinci (*Rubus* sp.); Crveni Čot-Iriški venac (*Rubus* sp.); DR01: Novi Sad (*A. concolor*, *M. aquifolia*, *P. excelsa*, *Pinus strobus* L., *Platanus acerifolia* Ait., *S. giganteum*, *S. japonica*, *T. baccata*, *Thuja occidentalis* L.); Rimski Šančevi (maize, sugar beet, wheat); DR04: Srbobran (ornamental shrubbery); DR10: Sremski Karlovci (grapevine, *P. avium*); DR11: Petrovaradin (grapevine); DR18: Bogaraš (*T. orientalis*); DR23: Čurug (mud from the bank of Tisa backwater); DR24: Bačko Gradište (onion); DR25: Bečej (grapevine); DR28: Senta (grapevine, pear, raspberry, *T. orientalis*, *P. excelsa*); DR29:

Senta-Nadrljan (grassland); DR38: Čoka (grapevine); DR40: Titel (wheat); DR52: Zrenjanin (*Populus* sp.); CQ99: Bešenovo (peach); DQ38: Stara Pazova (rose); DQ68: Glogonj (grapevine); DQ69: Debeljača (apricot, plum, walnut); WM94: Jeruzalem (grapevine); WL37: Prekropa (grassland); EN89: Niš (grapevine).

Comments

Xiphinema americanum group is represented by four species such as *X. incertum*, *X. pachtaicum*, *X. simile* and *X. taylori*. Earlier records of *X. brevicolle* (Ivezić, 1985; Barsi, 1989) refer to *X. taylori*.

X. pachtaicum is one of the most widespread species and was found associated with a wide range of cultivated and wild plants. Together with *X. vuittenezi*, it is the most frequent *Xiphinema* species in vineyards.

X. incertum was found twice exclusively in Istria in the rhizosphere of grapevine. *X. simile* and *X. taylori* were more frequently found in uncultivated soils in the north – and south-east and in the north of the territory respectively.

Species which are vectors of plant viruses are represented by *X. diversicaudatum*, *X. index* and *X. italiae*.

X. diversicaudatum was predominantly found in the north-east of the territory, mostly in natural habitats along various rivers.

X. index was found exclusively in vineyards of the Adriatic coast.

X. italiae was found in both cultivated and uncultivated soil.

X. vuittenezi and *X. pachtaicum* were the most widespread *Xiphinema* species in the territory of the former Yugoslavia. The former species was found in vineyards in the continental part and it was found in the rhizosphere of a wide range of cultivated or uncultivated plants.

X. dentatum and *X. globosum*, two closely related species, were found in uncultivated

soils. *X. dentatum* was found at several localities in the north-east of the territory, while *X. globosum* was found only twice in the north-west.

Acknowledgement. I thank "fermin" Co. (Senta, Yugoslavia) for financial support which enabled me to participate in the Russian Society of Nematologists – First English Language International Symposium held in St. Petersburg, Russia from 23rd to 30th September 1995, where the first version of this paper was presented.

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