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Gall nematode *Meloidogyne hapla* Chitwood, 1949 race A in Lithuania

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An abundant *M. hapla* population was detected in Lithuanian open land on carrots. Carrot as its host had not been known here.

M. hapla usually occurs in open land of the temperate climatic zone, but these nematodes can also occupy greenhouses. This species was detected in Belgium, UK, Denmark, Netherlands, France, Spain, Sweden, Poland, Germany, Turkey, Israel, North and South America, Japan, Australia (Decker, 1969).

This nematode parasitizes 350 species of plants belonging to different families.

Key words: *Meloidogyne hapla*, Nemata,open land, Lithuania

INTRODUCTION

Populations of *Meloidogyne hapla* reproduce well in peanut, pepper, NC95 tobacco and tomato, but do not spawn in cotton or watermelon. Populations of race A and race B vary in their ability to reproduce in *Tagetes patula*. Race B populations readily breed in *T. patula*, but race A population does not. *Meloidogyne hapla* is a serious pest of strawberry, peanut, potato, carrot, rose, lettuce, celery, and other cool climate crops. This species does not reproduce descendants in any of the grasses or grains, such as wheat, oats, barley, rye, and corn (Straszewicz, 1932). Gall nematodes are found sparsely in Lithuanian agrocenoses, and their populations are small. *M. hapla, M. incognita, M. arenaria* are more common in closed cenoses in tomato or cucumber roots (Белокурская, 1965; Ефременко, 1960; Кирьянова, 1960; Sakalienë, 1967; Сушинскайте, 1976а; 1976в, 1979; Шлепетене, 1986).

MATERIALS AND METHODS

Carrots were cultivated from seeds an area of 12 ares on the Curonian Lagoon coast (Ventës Ragas). They early flowered (the data were given by the owner on September 2000), and after harvest carrot roots were very branched and cleft and had no market appearance (Fig. 1). Galls were revealed on such carrots (Fig. 2). Nematode *M. hapla* Chitwood, 1949 was found inside after maceration (Fig. 3).

Mounting perineal patterns of *Meloidogyne* were made as presented in the literature (Van Bezooijen, 1993), and a described identification key (Jepson, 1987; Stanelis, 2002) was used.

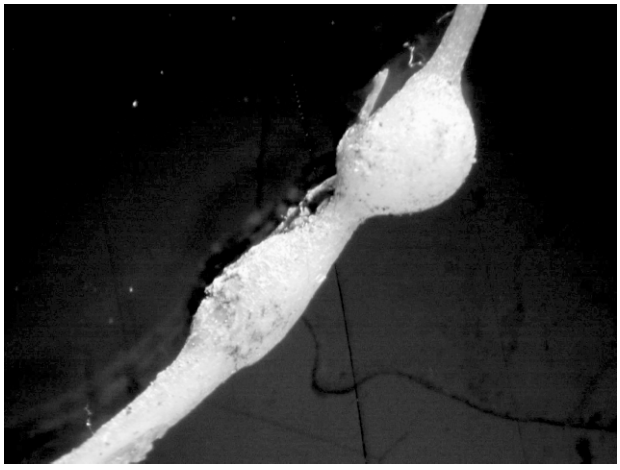

Fig. 1. Carrots damaged by *M. hapla* Photo by A. Stanelis

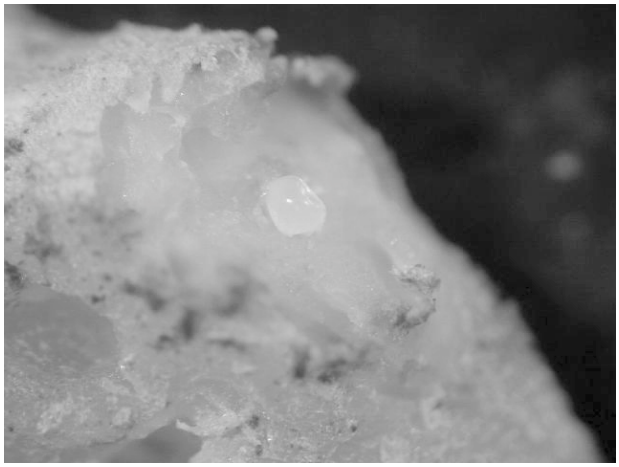

Fig. 2. Gall in carrot root. Photo by A. Stanelis

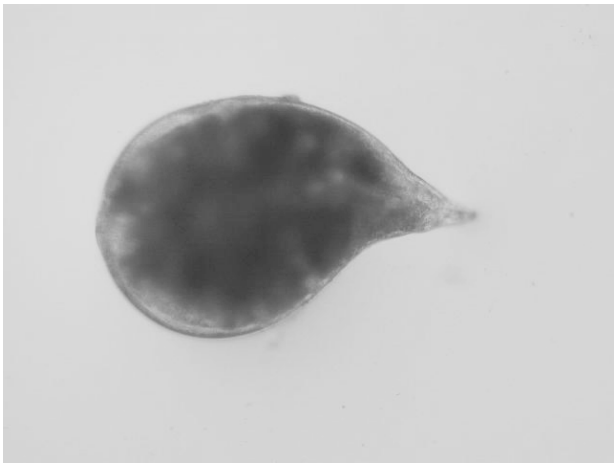

Fig. 3. *M. hapla* mature female. Photo by A. Stanelis

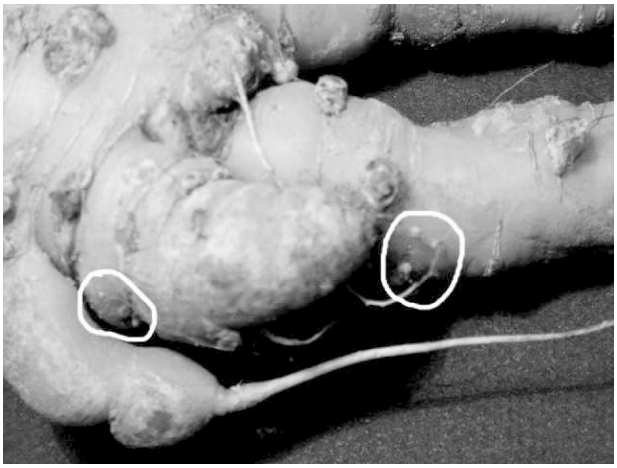

Fig. 4. The *perineal* part of gall. Photo by A. Stanelis

RESULTS

Identification was made after cutting the perineal part of galls, studying cuticula pattern and morphological measurement: stylet – 12.5–17.0 (13.2); stylet cone straight to slightly curved dorsally, knob small, rounded and set off. DGO – 2.7–5.4 (4.1). Perineal pattern rounded dorsal arch low, lateral lines weakly visible, punctuations present in tail terminus area, sometimes striae extend laterally on one side to form a 'wing' (Fig. 4, (State…, 2000)). The contamination was determined as 5 galls in 100 g carrot. Absent rotation in this field is the reason for this phenomenon. The same cultivated plants (carrots, potato) had been grown here for long a period too. A high level of contamination in Lithuanian open land was fixed for the first time.

DISCUSSION

M. hapla usually occurs in open lands of the temperate climatic zone, but these nematodes can occupy also greenhouses. This species was detected in Belgium, UK, Denmark, Netherlands, France, Spain, Sweden, Poland, Germany, Turkey, Israel, North and South America, Japan, Australia (Decker, 1969).

This nematode parasitizes 350 species of plants belonging to different families. The ornamentals among them: *Antirrhinum majus* L., *Begonia* sp., *Bellis perennis* L., *Calendula officinalis* L., *Callistephus chinensis* Nees., *Camellia sinensis* Kuntze., *Cheiranthus cheiri* L., *Chrysanthemum* sp., *Cosmos bipinnatus* Cav., *Dahlia variabilis* Desf., *Delphinium consolida* L., *Dianthus caryophillus* L., *Digitalis lanata* L., *Fuchsia* sp., *Gerbera jemesoni* Bol., *Gladiolus* sp., *Impatiens balsamina* L., *Iris germanica* L., *Lathyrus odoratus* L., *Pelargonium zonale* Ait., *Petunia hybrida* Vilm., *Phlox* sp., *Primula malacoides* Franch., *Rosa* sp., *Rudbeckia* sp., *Saintpaulia ionantha* Wendl., *Salvia splendens* Ker-Gawl., *Sansevieria* sp., *Scabiosa caucasica* Bieb., *Scilla hyancinthoides* L., *Zantedeschia* sp., *Zinnia elegans* Jacq.

Agricultural crops: *Solanum tuberosum L.*, *Beta* sp., *Trifolium repens* L., *T. pratense* L., *Melilotus* sp., *Brassica oleraceae* L., *Petroselinum sativum* Hoffm., *Helianthus annuus* L., *Fragaria* sp., *Lactuca sativa* L., *Daucus carota* L., *Lycopersicon esculentum* Mill., *Apium graveolens* L., *Allium cepa* L. *Ocimum basilicum* L., *Anethum graveolens* L., *Matricaria chamomilla* L., *Mentha* sp., *Datura stramonium* L., and others.

There are two races A and B known from different hosts. *M. hapla* race A population is a seriuos pest of strawberry, peanut, potato, carrot, rose, lettuce, celery and other cool climate crops. The host and perineal part are main diagnostic features for the identification of gall nematode. *M. hapla* A race in Lithuania is detected according to the host – carrot.

M. chitwoodii Golden et al. and *M. falax* Karsen species are recorded in Lithuanian quarantine pest list (Lietuvos…, 2000). *M. chitwoodii* perineal part is similar to *M. hapla* only the first one is without punctation in tail terminus are. This quarantine species is much more aggressive and its host list is much more wider than *M. hapla.* The *M. chitwoodii* area is North and South America, but it was found also in Europe – in Belgium, the Netherlands (Distribution…, 1998).

CONCLUSIONS

A high density *M. hapla* population on carrot as the host in Lithuania was found for the first time. The host proves the race A.

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GALINIO NEMATODO *Meloidogyne hapla* CHITWOOD, 1949 A RASË LIETUVOJE

Santrauka

Pateikiami duomenys apie nematodo *Meloidogyne hapla* Chitwood, 1949 A rasæ, rastà Kurðiø mariø pakrantëje ant kultivuojamø morkø. Nustatytas *M. hapla* gana didelis uþkrëtimas (5 galai 100 g morkø) atviro grunto cenozëje. Toks nematodo kiekis ir jo augalas ðeimininkas – morka Lietuvoje konstatuojamas pirmà kartà.

Raktaþodþiai: *Meloidogyne hapla,* Nemata, atviras gruntas, Lietuva