Nematol. medit. (1990), *18*: 135-137.

Plant Protection Institute, Hungarian Academy of Sciences - Budapest, H-1525, Hungary

HOST-PLANTS OF *MELOIDOGYNE HAPLA* AND *M. INCOGNITA* IN TWO BOTANICAL GARDENS IN HUNGARY

by
K.H. DABAJ and G. JENSER

Summary. Altogether 120 plant species belonging to 85 genera in 26 families were found to be infested by *Meloidogyne hapla* and 7 plant species belonging to 6 genera in 5 families were found to be infested by *M. incognita* or in combination by both species in two Botanical Gardens near Budapest. Ninety-two species are considered to be new hosts for *M. hapla*.

About 300 soil and root samples were taken between July and October in three successive years 1986-1988. Root samples were washed in running water and examined with the help of a stereo-microscope for the presence of galls and egg-masses. Galling was assessed on a 0-5 scale (Taylor and Sasser, 1978).

For species identification, 5-10 adult females were dissected out from infested roots. Specimens were prepared to examine the perineal patterns for each of the samples. In the case of males, head shape, stylet shape and stylet length were compared. Total length, tail length and hyaline tail length of second stage juveniles were measured for most samples. (Eisenback *et al.*, 1987).

Reference was made to the publications of Faulkner and McElroy (1964), Goodey *et al.*, (1965), Carter (1985), and Saka and Carter (1987) for records of hosts for *M. hapla* Chitw. and *M. incognita* (Kofoid *et* White) Chitw., the only *Meloidogyne* species found in this survey.

In Vácrátót Botanical Garden only *M. hapla* was found. In the Soroksár Botanical Garden *M. incognita* was also found on several hosts in glasshouse and *M. hapla* on hosts growing outdoors. Both species occurred together on some plants growing near the glasshouses.

In tables I and II, 127 different plant species belonging to 91 genera are considered to be host plants for *M. hapla* and *M. incognita*. Ninetytwo plant species are recorded as new hosts for *M. hapla*.

We thank dr. Gy. Jenser (Vácrátót) and Mrs. S. Bogya and Miss E. Grusz (Soroksár) for supporting our investigation in the Vácrátót and the Soroksár Botanical Gardens.

Literature cited

CARTER C.C., 1985 — Host range of *Meloidogyne hapla*. *International Nematology Network Newsletter*, *2*: 16-24.

EISENBACK J.D., HIRSCHMANN H., SASSER J.N. and TRIANTAPHYLLOU A.C., 1981 — A Guide to the Four Most Common Species of Root-knot Nematodes (*Meloidogyne* species) with a Pictorial Key. Coop. Publ. Depts. Plant Pathol. and Genetics, North Carolina State Univ., and U.S. Agency Int. Dev., Raleigh, N.C., pp. 48

FAULKNER L.R. and MCELROY F.D., 1964 — Host range of northern root-knot nematode on irrigated crop plants and weeds in Washington. *Plant Dis. Reptr*, *48*: 190-193.

GOODEY J.B., FRANKLIN M.T. and HOOPER D.J., 1965 — The Nematode Parasites of Plants Catalogued under their Hosts. C.A.B., Farnham Royal, Bucks, England, pp. 214.

JEPSON S.B., 1987 — Identification of Root-knot Nematodes (*Meloidogyne* species). C.A.B. International, pp. 265.

SAKA V.W. and CARTER C.C., 1987 — Host and Nonhost of the Root-knot Nematode *Meloidogyne incognita*. Crop Nematode Research and Control Project, pp. 61.

TAYLOR A.L. and SASSER J.N., 1978 — Biology, Identification and Control of Root-knot Nematodes (*Meloidogyne* Species). Coop. Publ. Dep. Plant Pathol., North Carolina State Univ., and U.S. Agency Int. Dev., Raleigh, N.C. pp. 111.

Family	Plant species	Gall index
Begoniaceae	1. *Begonia fuchsifoliosa* Krauss*	5
Boraginaceae	2. *Anchusa ochroleuca* M.B.	5
Campanulaceae	3. *Campanula cordifolia* C. Kock*	5
	4. *C. cochlearifolia*Lam.*	5
	5. *C. poscharskyana Deg.**	5
Compositae	6. *Artemisia eriantha* Ten.*	5
	7. *Buphthalmum grandiflora* L.*	5
	8. *Centaurea pulcherrima* Willd.*	3
	9. *Helianthus annuus* L.	2
	10. *Lasthenia glabrata* Lindl.*	3
	11. *Lactuca sativa* L.	5
	12. *Zinnia elegans* Jacq.	2
Chenopodiaceae	13. *Spinacia oleracea* L.	3
Cruciferae	14. *Lepidium sativum* L.	5
Cucurbitaceae	15. *Lagenaria siceraria* Stanley*	5
Dipsacaceae	16. *Cephalaria alpina* (L.) R. *et* Sch.*	5
	17. *C. cretacea* R. *et* Sch.*	5
	18. *C. flava* (Sibth. *et* Sm.) Szabo*	5
	19. *C. gigantea* (Lebdeb.) Bobr.*	5
	20. *C. gracea* R. *et* Sch.*	5
	21. *C. leucantha* (L.) R. *et* Sch.*	5
	22. *C. radiata* Griseb *et* Schenk*	5
	23. *C. syriaca* (L.) R. *et* Sch.*	5
	24. *C. transilvanica* (L.) Schrad.*	5
	25. *C. uralensis* (Murr.) R. *et* Sch.*	5
	26. *Dipsacus laciniatus* L.*	5
	27. *Knautia arvensis* (L.) Coult.*	5
	28. *K. longifolia* (W. *et* K.) Koch*	5
	29. *K. sarajevensis* (G. Beck) Szabo*	5
	30. *Morina longifolia* Wall.*	5
	31. *Scabiosa graminifolia* L.*	5
	32. *S. triandra* L.*	5
	33. *S. cinerea* Lapeyr.*	5
	34. *S. lucida* Vill.*	5
	35. *Succisella inflexa* (Kluk.) Beck*	5
Fabaceae	36. *Amorpha fruticosa* L.*	2
	37. *Astragalus cicer* L.*	5
	38. *Caragana turkestanica* Kom.*	2
	39. *Cicer arietinum* L.*	5
	40. *Chamaecytisus podolicus* (Blocki) Klaskova*	5
	41. *Desmodium paniculatum* (L.) DC.*	3
	42. *Genista tinctoria* L.*	5
	43. *Glycyrrhiza pallida* Maxcim*	2
	44. *Indigofera incarnata* (Willd.) Nakai*	5
	45. *Medicago media* Pers*	5
	46. *M. sativa* L.	5
	47. *Onobrychis viciaefolia* Scop.	3
	48. *Thermopsis lupinoides* (L.) Lk.*	5
	49. *T. montana* Nutt.*	5
	50. *T. dolichocarpa* V. Nikitin*	5
	51. *Trifolium pannonicum* Jacq.*	5
	52. *Vicia faba* L.	5
Labiatae	53. *Horminum pyrenaicum* L.*	5
	54. *Lamium album* L.	5
	55. *Nepeta mussini* Spreng.*	5
	56. *Salvia nemorosa* L.*	5
	57. *S. officinalis* L.*	5
	58. *Scutellaria baicalensis* Georgi*	5
	59. *Stachys persica* S.G. Gmel.*	5
Papaveraceae	60. *Papaver somniferum* L.*	3
Polemoniaceae	61. *Polemonium caeruleum* L.*	5
Ranunculaceae	62. *Aquilegia hybrida* Sims. cv. Rosa Konigin*	5
	63. *A. hybrida* Sims. cv. Suttonis hybrid*	2
	64. *A. saximontana* Rydb.*	2
	65. *A. sibirica* Lam.*	2
Rosaceae	66. *Sanquisorba minor* Scop. ssp . *muricata* Briq.*	5
Rutaceae	67. *Ruta chalepensis* L.*	5
	68. *R. corsica* Dc.*	2
	69. *R. montana* Mill.*	5
	70. *R. macrophylla* Scland.*	5
Umbelliferae	71. *Astrantia major* L.*	3
	72. *Daucus carota* L.	5
	73. *Heracleum dissectum* Ldb.*	5
	74. *H. lanatum* Mchx.*	5
	75. *H. mantegazzianum* Somm. *et* Lev.*	5
	76. *H. palmatum* Baumg.*	5
	77. *H. persicum* Desf.*	5
	78. *H. sphondylium* L. ssp. *sibiricum* (L.) Simk.*	5
	79. *H. stevenii* Manden*	5
	80. *Ligusticum lucidum* Mill.*	5
	81. *Oenanthe pimpinelloides* L.*	2
	82. *Peucedanum aegopodioides* (Boiss.) Vandas*	5
	83. *Seseli gummiferum* Pall.*	5
	84. *S. transcaucasicum* (Schischk.) Pimen *et* Sdobn.*	5
Valerianaceae	85. *Centranthus ruber* (L.) Dc.*	5

New host for *M. hapla*.

TABLE II - *Plant species infested by* M. hapla *and* M. incognita *in Soroksár Botanical Garden.*

Family	Plant species	*Meloidogyne species*	*Gall index*
Balsaminaceae	1. *Impatiens* sp.	M.h.	5
Berberidaceae	2. *Berberis vulgaris* L.	M.h.	5
Cactaceae	3. *Opuntia* sp.	M.i.	5
Caprifoliaceae	4. *Viburnum lantana* L.*	M.h.	5
Caryophyllaceae	5. *Dianthus cariophyllus* L.	M.h.	5
Compositae	6. *Artemisia dracunculus* L.	M.h.	5
	7. *Aster amellus* L.*	M.h.	3
	8. *Caryopteris incana* (Thbg.) Miq.	M.h.	5
	9. *Chrysanthemum* sp.	M.h.	2
	10. *Cichorium intybus* L. var. *sativum* D.C.	M.h.	5
	11. *Dahlia pinnata* Cav.	M.h., M.i.	5
	12. *Gaillardia aristata* Puyrsh*	M.h.	3
	13. *Galinsoga parviflora* Cav.	M.h.	5
	14. *Lactuca sativa* L.	M.h.	5
	15. *Tagetes erecta* L.	M.h., M.i.	3
Cruciferae	16. *Armoracia rusticana* Ph. Caertn. B. Mey. *et* Schreb*	M.h.	5
Cucurbitaceae	17. *Citrullus lanatus* (Thbg) Matsum *et* Nakai*	M.h.	5
Fabaceae	18. *Acacia* sp.	M.i.	1
	19. *Arachis hypogaea* L.	M.h.	3
	20. *Pisum sativum* L.	M.h.	5
Geraniaceae	21. *Pelargonium zonale* (L.) L'Herit.	M.h.	5
Hydrangeaceae	22. *Deutzia scabra* Thbg.*	M.h.	5
Labiatae	23. *Hyssopus officinalis* L.*	M.h.	5
	24. *Lavandula angustifolia* Mill.*	M.h.	5
	25. *Marrubium vulgare* L.*	M.h.	5
	26. *Ocimum basilicum* L.	M.h.	5
	27. *Salvia officinalis* L.*	M.h.	5
	28. *S. splendens* Sello	M.h.	5
	29. *Thymus vulgaris* L.*	M.h.	5
Liliaceae	30. *Allium fistulosum* L.*	M.h.	2
Moraceae	31. *Ficus carica* L.*	M.h., M.i.	5
	32. *F. benjamina* L.*	M.h., M.i.	1
Oleaceae	33. *Forsythia suspensa* (Thbg.) Vahl.*	M.h.	2
Onagraceae	34. *Fuchsia magellanica* Lam.*	M.h.	5
Oxalidaceae	35. *Oxalis deppei* Lodd.*	M.h.	1
Pittosporaceae	36. *Pittosporum tobira* (Thbg.) Ait.	M.i.	3
Sapindaceae	37. *Koelreuteria paniculata* Laxm.*	M.h.	1
Solanaceae	38. *Capsicum annuum* L.	M.h.	5
	39. *Lycopersicon esculentum* Mill.	M.h.	5
Umbelliferae	40. *Apium graveolens* L.	M.h.	1
	41. *Carum carvi* L.*	M.h.	5
	42. *Daucus carota* L.	M.h.	5
	43. *Levistecum officinale* W.D.J. Kock	M.h.	5
	44. *Petroselinum crispum* (Mill.) Nym.	M.h.	5
	45. *P. hortense* Hoffm.	M.h.	5

* = new host for *M. hapla*; M.h. = *Meloidogyne hapla*; M.i. = *M. incognita*.

Accepted for publication on 29 May 1990.