

RESEARCH NOTES

Development of *Meloidogyne incognita* in Stored Potato Tubers

PARVIZ JATALA, R. H. BOOTH, AND S. G. WIERSEMA¹

Journal of Nematology 14(1):142-143. 1982.

The root-knot nematode *Meloidogyne incognita* (Kofoid & White, 1919) Chitwood, 1949 is the most widely distributed species of the genus *Meloidogyne* in the world (3,4). The two most important *Meloidogyne* species which attack potatoes in the tropics (*M. incognita* and *M. javanica*) have relatively high temperature requirements for optimum reproduction. Since potatoes are primarily cultivated in temperate areas of the world, root-knot nematodes are economically important only to specific geographic areas. However, attempts to extend the range of potato culture into tropical climates where *Meloidogyne* species are prevalent increase the potential for serious damage by this pest.

Recent studies revealed that the resistance to *M. incognita* in roots and tubers are independent of one another (2). Apparently there are two types of infected tuber symptom expression. The most common type is the presence of tuber galling or deformation. In the other type, although developing and egg-laying females may be within the tubers, surface galling is not expressed at harvest; however, symptoms may develop internally. When these internally infected tubers are stored for 2 months or more the majority exhibit external symptoms (2).

Seed tubers can be stored in diffused-light stores in the tropics for 5-6 months, depending on the cultivars and providing diseases and pests such as the tuber moth and aphids and diseases are controlled.

During storage dormancy is broken and sprout growth commences. Under diffused-light conditions the sprout elongation is limited and sprouts show a high number of root initials. These tubers and the growing sprouts provide a suitable medium for nematode development. During 5-6 months of storage, up to five generations of *Meloidogyne* may develop if temperature conditions are favorable.

Infection of the tropic adapted potato (*Solanum tuberosum* × [*S. phureja* × *S. tuberosum*] clone DTO 33) by *M. incognita* typically results in the production of many externally symptomless tubers. We stored 4,100 such seed tubers harvested from *M. incognita* infested plots in a diffused-light store at 17-30 C for 5 months. After the storage period the average number of sprouts per tuber varied from 1.5 to 5.5, depending on tuber size. Up to 90% of these tubers exhibited surface galling and deformation, primarily on the base of sprouts (Table 1, Fig. 1). A large number of mature, egg-laying females were recovered from these galls. Similarly, up to 90% of the sprouts harbored the developing and egg-laying females (Fig. 1). These observations emphasize that seed tubers, symptomless at the

Received for publication 15 April 1981.

¹Head, Department of Nematology and Entomology, Storage Specialist-Pathologist, and Seed Physiologist, International Potato Center, Apartado 5969, Lima, Peru.

Table 1. Development of *Meloidogyne incognita* symptoms on potatoes* in diffused-light stores after 5 months.

No tubers stored	Tuber diameter (mm)	Average no. sprouts/tuber	% infected tubers	% infected sprouts per tuber
2,000	28-35	1.5	50	90
2,000	35-45	3.0	65	80
100	55	5.5	90	70

*Clone DTO 33 *Solanum tuberosum* × (*S. phureja* × *S. tuberosum*).

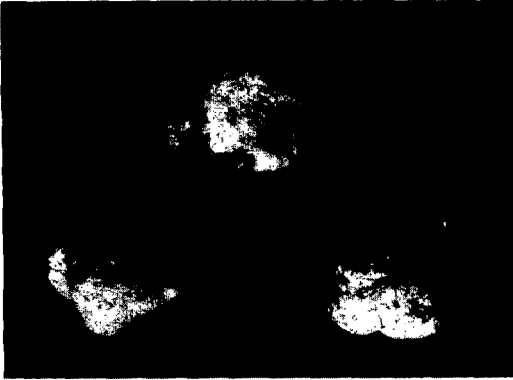


Fig. 1. Root-knot nematode (*Meloidogyne incognita*) symptoms developed on seed potatoes (clone DTO 33 *Solanum Tuberosum* × [*S. phureja* × *S. tuberosum*]) after 5-month storage.

start of storage, may be potential carriers of the nematodes.

Recent studies indicate that chemical

dip of seed tubers in phenamiphos eliminated *M. hapla* (1); additional studies on the use of nematicides for potato seed tuber treatment are needed.

LITERATURE CITED

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