Ditylenchus destructor Thorne 1945

Figure 1. (a) Potato infected with *Ditylenchus destructor* (right) compared with undamaged potato (left); (b) infected sweet potato; (c) damage to iris bulbs. Photo credits: (a) S. Ayoub[1]; (b) Ian Riley, SARDI/University of Adelaide; (c) Central Science Laboratory, Harpenden Archive, British Crown, Bugwood.org[2].

Common Name: Potato Rot Nematode, Potato Tuber Nematode
Classification: K: Animalia, P: Nematoda, C: Secernentea, O: Tylenchida, F: Anguinidae

***Ditylenchus destructor* does not occur in Australia.** This nematode was recorded in the late 1950's[3,4], but it is now accepted that early records arose from taxonomic confusion with other *Ditylenchus* species (e.g. *D. dipsaci, D. myceliophagous*) and are erroneous[5], or that the nematode no longer occurs in these areas. Prior to its description by Thorne as a separate species in 1945, *D. destructor* was regarded as a race of *D. dipsaci*. This led to confused information on the two species, particularly in relation to potato. Confirming or refuting validity of pest records is important in terms of maintaining market access to countries that require testing for, or area freedom from, specific pests and diseases.

Host Range:

A wide range of plants host *D. destructor*, especially root crops such as potato (Fig 1a), sweet potato (Fig 1b), carrot and some bulbs. It is an important pest of iris (Fig 1c), and can be found on tulip, gladioli, dahlia[6], peanut and garlic[7]. In the laboratory, *D. destructor* can rot most fruits and vegetables[8]. The nematode survives on a range of weed species and is able to feed on many soil fungi.

Distribution and Survival:

D. destructor is reported mainly from temperate regions. There are records from many parts of Europe, including the former USSR, Asia, localised areas of North and South America, and South Africa. Unlike *D. dipsaci*, *D. destructor* is unable to withstand excessive desiccation and survive anhydrobiotically. However, *D. destructor* can survive in stored tubers, bulbs and rhizomes.

Infection, Symptoms and Impact:

The nematode attacks only subterranean plant parts, usually with no obvious above-ground symptoms. Nematodes enter tubers through lenticels and multiply rapidly. The nematodes produce enzymes that digest starch and protein, leading to cell disintegration[9]. White pockets in the flesh contain many nematodes (Fig 1b). Severely affected tubers have sunken areas with cracked and wrinkled skin. The flesh appears dry and "mealy", coloured greyish to dark brown or black.

Damaged tissue rots mainly due to the secondary invasion by fungi, bacteria and mites. Free-living nematodes are often present, further confusing nematode identifications: *D. myceliophagous* feeds on fungi in rotted tissues.

Yield losses up to 40% have been recorded in potato, with an additional loss of 10-20% when infested tubers are stored[10]. Rotting can in fact go unnoticed until tubers are in storage. Infestation of iris and tulip begins at the base and extends into the fleshy scales, causing grey to black lesions. Roots may be blackened, and leaves poorly developed with yellow tips. Severe damage to sweet potato has been reported from China[11]. Infested peanuts have black hulls with shrunken and discoloured kernels. *D. destructor* became an established problem of peanut in South Africa, where the nematode has apparently overcome its requirement for cool, moist soil[12, 13].

Management and Control:

Nematodes are difficult to eradicate once established and chemical control is expensive. Planting material free of *D. destructor* must be used, and movement of infested tubers, bulbs and rhizomes restricted. Bulbs can be treated in hot water. Weeds should be controlled as they can act as an alternative host. Management by crop rotation is difficult due to the nematode's wide host range and its ability to feed on soil fungi. Soil must not be moved from infested areas.

References and Further Reading:

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