



**Fig. 1** Cereal plant growth and root symptoms associated with patchiness caused by *Radopholus nativus* (a); Mature female *R. nativus* (b); Affected crops are patchy, with plants that are stunted and tiller poorly (c); These severely affected roots contained 176,600 *R. nativus* per gram dry root early in the cropping season (d). Photo Credits: Vivien Vanstone and Sean Kelly, DAFWA

**Pest:** Burrowing nematode

**Classification:** K: Animalia, P: Nematoda, C: Secernentea, SC: Diplogasteria, O: Tylenchida, F: Pratylenchidae.

More than 20 species of *Radopholus* (Burrowing Nematode) are recognised, but only two are considered to cause economic crop loss. *R. similis* is well-known from banana-growing regions, including Australia, and *R. citrophilus* causes severe damage to citrus in the US. Twenty-two species are recorded only in the Pacific region, including 18 from Australia (1), where they are usually associated with native vegetation and are not known to cause economic damage to crops. *R. nativus* has been reported only from Australia (3) and New Zealand (2). *R. nativus* has been recorded on native vegetation in South Australia (4) and New Zealand (5, 6). However, the potential for this nematode to reach high population density and cause economic damage to cereal crops in Western Australia was recognised in 1998 (3).

### *Radopholus nativus* populations in Western Australia

Since 1998, *R. nativus* (Fig. 1b) has been identified in diagnostic samples submitted from geographically diverse locations from the Western Australian cropping zone: from the Northern Agricultural Region, throughout the Central Wheat Belt, to the Southern Agricultural Region. However, for reasons that are not entirely clear, damaging *R. nativus* populations are not observed in every cropping season.

Affected wheat and barley plants can contain high numbers of *R. nativus* adult and juvenile nematodes (up to 176,000 nematodes/g dry root).

*R. nativus* can be the predominant nematode species detected in the root systems of symptomatic plants, although concurrent infection with Root Lesion Nematode (RLN, *Pratylenchus* spp.) can occur. If both *R. nativus* and RLN are present, the RLN will usually dominate the population.

### Hosts

The crops most affected by *R. nativus* are wheat and barley, although the nematode can also survive on crops that are grown in cereal rotations (canola, triticale, oat, field pea, faba bean, durum wheat, narrow-leafed lupin and chickpea).

### Symptoms

Wheat and barley crops show areas of poor growth, stunting and chlorosis (Fig. 1c). Root damage consists of shortened seminal roots, poor development of crown roots, reduction in length and number of lateral roots, and browning of the root system. In severe cases, roots are devoid of laterals and crown roots, the entire root system is dark brown, and roots may have a thickened appearance (Fig 1d). Less severe root symptoms are not dissimilar to those associated with RLN. Dramatic differences have been observed in the density of *R. nativus* in soil and plant samples taken from patch areas (Fig. 1a).

Density of <i>R. nativus</i>	In Patch	Edge of Patch	Outside of Patch
/g dry root	153,428	15,834	1,002
/g dry soil	45.4	32.9	3.8

### References:

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