

Potato cyst nematodes

(*Globodera pallida* (Stone) Behrens and *Globodera rostochiensis* (Wollenweber) Behrens)

EC listed pests



Potato crop showing patchy growth and stunted plants.



Swollen females and brown cysts of the white potato cyst nematode (*G. pallida*) on potato roots (x10).



Swollen females and brown cyst of the yellow potato cyst nematode (*G. rostochiensis*) on potato roots (x10).

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HOSTS: Potato is the most important host for both *Globodera pallida* (the white potato cyst nematode) and *G. rostochiensis* (the yellow potato cyst nematode). However, potato cyst nematodes (PCN) also attack other solanaceous plants, e.g. tomato, aubergine and, occasionally, weeds such as bitterweet (*Solanum dulcamara*). Each species of PCN has several pathotypes; these differ in their ability to multiply on different potato cultivars.

DISTRIBUTION: Widespread in Europe, including the UK; also South America, where they originated. Present to a more limited extent in all other continents. The number and range of pathotypes vary from country to country.

SOURCES: Mainly introduced by cysts of the nematode in soil attached to potato tubers, farm machinery or footwear; they are only rarely introduced by infested tubers. Cysts are also spread locally by wind and flood water.

DESCRIPTION AND LIFE CYCLE: The juveniles and adult male nematodes are worm-like, less than 1 mm long and transparent. They feed within the roots and are not easily seen. As each female matures it swells and becomes almost spherical, bursting through the root wall. Only the head of the female remains embedded in the root. The swollen female is shiny, spherical, less than 1 mm in diameter and initially white or cream-coloured. The female of *G. rostochiensis* passes through a prolonged golden-yellow phase as it matures. When the female of either species dies, its body forms a dark, reddish-brown cyst with a hard skin. Each cyst usually contains 200–600 eggs. If infested plants

are lifted carefully, the swollen females or the cysts appear as small bead-like objects attached to the roots. With severe infestations, cysts may occasionally be seen on the surface of tubers.

At harvest, most cysts become detached from the roots and remain in the soil as a source of infestation for future potato crops. In the absence of host plants, most eggs hatch within 7 years, and the population declines. However, some eggs remain viable in the soil for 10 or more years.

A related species, *Globodera achilleae*, attacks yarrow (*Achillea millefolium*), which is found in meadows, hedgerows and field margins. Therefore, care is needed in the laboratory diagnosis of cysts.

DAMAGE: The nematodes damage the roots and reduce yield, even when infestations produce no obvious symptoms in the haulm. With severe infestations, roots are more seriously damaged and may be killed. Severely infested plants are stunted, often chlorotic and typically occur in patches. Rhizoctonia and other fungal diseases associated with nematode feeding may also contribute to the yield loss.

PEST STATUS: Potato cyst nematodes (*Globodera pallida* and *G. rostochiensis*) are serious pests and are listed in EC plant health legislation. Inform your local Plant Health Inspector if you: are planning to grow seed potatoes; are registered to issue plant passports for bulbs, nursery stock or other transplants; or are planning to export ware potatoes or any of the above products to a non-EU country.

Text prepared by CSL