

Golden Nematode of Potatoes

Globodera rostochiensis

EPMS 011

Quick Facts

- The scientific name for the golden nematode is *Globodera rostochiensis*.
- Golden nematodes are cyst forming nematodes.
- Golden nematodes are only found in New York, within the USA.
- Potato and tomato are the primary hosts of the golden nematode, but they can also infect many other solanaceous plants.
- Cysts produced by the golden nematode can remain viable in the soil for 10 years.
- Complete control of golden nematodes in infested soils is unlikely, but significant population suppression can be achieved.

is restricted to New York in the United States where it has caused isignificant crop losses. Export of potatoes from counties with verified golden nematode populations is restricted, therefore causing additional economic impact beyond crop losses. Strict adherence to the quarantine placed on the golden nematode has limited its population to New York, but many states within the US, including Utah, grow susceptible crops. Because of the obvious economic impact the golden nematode would have on Utah potato and tomato growers, it has been included as an exotic pest. In addition to the economic impact, the cysts formed by the golden nematode have been known to remain viable in the absence of a susceptible host for at least 10 years.

Symptoms:

The golden nematode attacks the roots of host plants and infected plants show symptoms consistent with root rots or vascular disruption. Aerial portions of the plant are stunted with a weak appearance and may show chlorosis and wilting. A golden nematode infection can be differentiated from other potential root or vascular problems by the presence of cysts on the root surface (Figure 1). Cysts appear as cream to gold during the growing season, and at time of harvest will be golden to black in color. Tuber infections are rare since the golden nematode prefers to feed immediately behind the root tip of actively lengthening roots.

The golden nematode is primarily an issue on potatoes, and tomatoes, but is able to infect numerous other solanaceous crops. The golden nematode's scientific name is *Globodera rostochiensis*. Currently, the golden nematode



Photograph Courtesy: Grace O'Keefe

Figure 1. Arrows indicate *Globodera rostochiensis* cysts during the later part of the growing season. Early season cysts will be cream to golden in color.

distinct with *Heterodera* cysts being lemon shaped and *Globodera* cysts being spherical. Second-stage juveniles of both nematodes are infective, but, following the second stage, females attach to root tissue and become sessile whereas males seek out females to reproduce. *Globodera rostochiensis* hatch from the cyst at soil temperatures near 15°C (59°F).

Control:

Within the United States, control of the golden nematode is legislated by the restriction of seed production on infested land and growing of resistant cultivars. Since the golden nematode is restricted to New York currently, neither fumigant nor non-fumigant nematicides are registered for its control. The most effective way of reducing golden nematode populations in infested soil is to plant resistant potato cultivars for two years, plant a non-solanaceous crop the third year, and a susceptible potato cultivar the fourth year.

Causal Agent:

Globodera rostochiensis is classified in the family Heteroderidae. Nematodes in this family are considered cyst nematodes. Females become sessile following their juvenile stage and, once impregnated, their body stores eggs. It is the egg storing female nematodes that are referred to as cysts. There are two genera included in the family Heteroderidae; *Heterodera* and *Globodera*. The cyst morphology between the two genera are

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Information to obtain for Golden Nematode samples.

Grower Information

Name:

Address:

Farm Location:

Crop Information:

Seed Source:

Plant and Variety:

Source of irrigation water

Irrigation type and frequency:

Soil type:

Crop rotation history (current and previous 10 years):

Miscellaneous:

Pesticides applied:

Fertilizers applied:

Neighboring fields with potatoes : yes/no

Are neighboring fields experiencing same disease: yes/no