CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile for

Hoplolaimus seinhorsti Luc, 1958
Lance nematode

Pest Rating: A

Kingdom: Animalia, Phylum: Nematoda, Class: Secernentea, Subclass: Diplogasteria, Order: Tylenchida, Superfamily: Tylenchoidea, Family: Hoplolaimidae, Subfamily: Hoplolaiminae

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Comment Period: 11/13/2025 through 12/28/2025

Initiating Event:

This pathogen has not been through the pest rating process. The risk to California from *Hoplolaimus seinhorsti* is described herein, and a permanent rating is proposed.

History & Status:

Background: Lance nematodes (*Hoplolaimus* spp.) are considered ectoparasitic, although they can act as semi- or facultative ecto-endoparasites that feed on the roots of a wide range of plants, some of which are agronomic crops (Fortuner, 1987). There are close to 40 described species of *Hoplolaimus.* This species, *H. seinhorsti*, was previously described by morphology and morphometrics, and recently with molecular sequence data (Olajide et al., 2023, Subbotin et al., 2025).

Lance nematodes are vermiform, straight, and relatively large (1-2 mm) with a distinct cephalic region and massive, well-developed stylet with tulip-shaped knobs. They are amphimictic (reproduce sexually with males and females), and eggs are not deposited in a gelatinous matrix (Nemaplex, 2010). Lance nematodes are the second-most damaging nematode pest of turfgrass in Florida (after sting nematodes), especially on St. Augustine grass. Lance nematodes cause damage to Bermudagrass putting greens in the southeast, and they are commonly found causing damage on golf courses. While sting nematodes are easier to eliminate with pesticides, lance nematodes have a considerably greater ability to disperse and are much more difficult to control (Crow and Brammer, 2001; Zeng et al., 2012).

Hoplolaimus seinhorsti was described by Luc (1958) from the roots of cotton in Madagascar. Today, it is known in many tropical areas, with U.S. populations in the southeast. It is a polyphagous nematode with many economically important hosts, including vegetables, ornamentals, fruit, and grasses.

Hosts: Anacardium occidentale (cashew nut), *Ananas comosus* (pineapple), *Arachis hypogaea* (groundnut), *Brassica oleracea* var. *botrytis* (cauliflower), *Cajanus cajan* (pigeon pea), *Capsicum* (peppers), *Cicer arietinum* (chickpea), *Cleome aculeata, C. rutidosperma* (fringed spiderflower), *Commelina diffusa* (spreading dayflower), *Cucumis melo* (melon), *Dieffenbachia seguine* (dumb cane), *Echinochloa colona* (junglerice), *Eleusine indica* (goose grass), *Eragrostis pilosa* (India lovegrass), *Euphorbia hirta* (garden spurge), *Glycine max* (soyabean), *Gossypium* (cotton), *Hordeum vulgare* (barley), *Jasminum* (jasmine), *Leucaena leucocephala* (leucaena), *Mangifera indica* (mango), *Mimosa pudica* (sensitive plant), *Morus alba* (mora), *Musa* (banana), *Oryza sativa* (rice), *Passiflora* (passionflower), *Pennisetum glaucum* (pearl millet), *Phaseolus* (beans), *Phenax sonneratii, Pilea microphylla, Piper nigrum* (black pepper), *Rosa* (roses), *Saccharum officinarum* (sugarcane), *Setaria barbata* (East Indian bristlegrass), *Solanum lycopersicum* (tomato), *S. melongena* (eggplant), *Sorghum bicolor* (sorghum), *Theobroma cacao* (cocoa), *Vicia faba* (faba bean), *Vigna unguiculata* (cowpea), *Vitis vinifera* (grapevine), *Zea mays* (maize) (CABI, 2025).

Symptoms: Damage from root feeding may appear as yellowing, dead, or unproductive grass areas, and is similar to the damage caused by chinch bugs or some fungal pathogens. Drought or nutrient deficit can also look similar. A comprehensive examination of the roots of a lance nematode-infested lawns will typically reveal extensive root damage. Root tips look to be dead, and small feeder roots have vanished. If new roots have started to sprout, they are frequently also harmed. The yellow or dying areas of grass are caused by root system injury (Crow and Brammer, 2001; Chitambar et al., 2018).

Transmission: The main mode of long- and short-distance spread is through artificial means: movement of nematode-contaminated soil, infected transplants or nursery stock, run-off and irrigation water, cultivation tools, and equipment, and any human activity that can move soils from infested to noninfested sites (Chitambar et al., 2018).

Damage Potential: Lance nematodes are an important group of semi-endo to endo-parasitic nematodes that cause considerable damage to the host plant's cortex and vascular tissue, as well as inducing root necrosis. This species targets a broad range of host plants, mostly in dry, warm climates (Duyck et al., 2012). In cotton, stunting and drying of plants infected by *Verticillium dahliae* and *Fusarium oxysporum* were more severe and occurred earlier when inoculation included additions of *H. seinhorsti* (Shanmugam et al., 1977).

Hoplolaimus spp. attach themselves by embedding their anterior end, or sometimes their entire bodies, inside the roots. They damage the root system as they feed, causing the dead roots' outer layers to slough away. The sections of roots of infected bentgrass plants appear dark in color with fewer or no feeding rootlets (Jagdale et al., 2022). This type of damage, however, is not diagnostic of lance nematodes, and the above-ground symptoms can be confused with symptoms of fungal root rot. Infected cotton plants grown with lance nematodes under conditions of limited moisture are

susceptible to stunting, yellowing, and defoliation. In cotton, lance nematodes are primarily endoparasitic, causing considerable cortical damage during penetration (Donald et al., 2013).

Worldwide Distribution: Africa: *Egypt, Kenya, Madagascar, Morocco, Nigeria, Réunion, Sudan*; Asia: *Brunei, China, India, Indonesia, Israel, Iran, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand, Viet Nam*; North America: *Guatemala, Martinique, Trinidad and Tobago, United States* (Florida, North Carolina, South Carolina, Louisiana); Oceania: *Australia, Fiji, Papua New Guinea, Samoa*; South America: *French Guiana, Venezuela* (CABI, 2025; Subbotin et al., 2025).

Official Control*: Hoplolaimus seinhorsti* is on the USDA PCIT's harmful organisms list for Canada, Ecuador, Honduras, Nicaragua, Venezuela, and Korea (USDA-PCIT, 2025).

California Distribution: none

California Interceptions: none

The risk that *Hoplolaimus seinhorsti*would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This nematode would likely survive in California wherever its hosts can grow.

   Evaluate if the pest would have suitable hosts and climate to establish in California.

   Score: **3**
   - Low (1) Not likely to establish in California; or likely to establish in very limited areas.
   - Medium (2) may be able to be established in a larger but limited part of California.
   - High (3) likely to establish a widespread distribution in California.

2) **Known Pest Host Range:** The host range includes plants in multiple families.

   Evaluate the host range of the pest.

   Score: 3
   - Low (1) has a very limited host range.
   - Medium (2) has a moderate host range.
   - **High (3) has a wide host range.**

3) **Pest Reproductive Potential:** This nematode produces large numbers of eggs and is easily moved with plants for planting, sod, and soil.

   Evaluate the natural and artificial dispersal potential of the pest.

   Score: 3
   - Low (1) does not have high reproductive or dispersal potential.

- Medium (2) has either high reproductive or dispersal potential.
- High (3) has both high reproduction and dispersal potential.

4) **Economic Impact:** Lance nematodes can be serious pests and are very difficult to eradicate. They can move with water and soil.

Evaluate the economic impact of the pest on California using the criteria below.

Economic Impact: A, B, G

A. The pest could lower crop yield.
B. The pest could lower crop value (including increasing crop production costs).
C. The pest could trigger the loss of markets (including quarantines).
D. The pest could negatively change normal cultural practices.
E. The pest can vector, or is vectored, by another pestiferous organism.
F. The organism is injurious or poisonous to agriculturally important animals.
G. The organism can interfere with the delivery or supply of water for agricultural uses.

Economic Impact Score: **3**
- Low (1) causes 0 or 1 of these impacts.
- Medium (2) causes 2 of these impacts.
- High (3) causes 3 or more of these impacts.

5) **Environmental Impact:** It could also be a serious problem for residential and ornamental plantings, including turf.

Evaluate the environmental impact of the pest on California using the criteria below.

Environmental Impact: E

A. The pest could have a significant environmental impact, such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.
B. The pest could directly affect threatened or endangered species.
C. The pest could impact threatened or endangered species by disrupting critical habitats.
D. The pest could trigger additional official or private treatment programs.
E. The pest significantly impacts cultural practices, home/urban gardening, or ornamental plantings.

Environmental Impact Score: 2
- Low (1) causes none of the above to occur.
- Medium (2) causes one of the above to occur.
- High (3) causes two or more of the above to occur.

Consequences of Introduction to California for *Hoplolaimus seinhorsti:* HIgh

Add up the total score and include it here. **14**

-Low = 5-8 points
-Medium = 9-12 points
-High = 13-15 points

6) **Post-Entry Distribution and Survey Information**: Evaluate the known distribution in California. Only official records identified by a taxonomic expert and supported by voucher specimens deposited in natural history collections should be considered. Pest incursions that have been eradicated, are under eradication, or have been delimited with no further detections should not be included.

Evaluation is 'Not established'.

Score: 0
-Not established (0) Pest never detected in California or known only from incursions.
-Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).
-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest is established in two contiguous suitable climate/host areas.
-High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

7) **The final score is** the consequences of the introduction score minus the post-entry distribution and survey information score: (Score)

Final Score: *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey Information* ***= 14***

Uncertainty:

The only species of lance nematode known to be established in California is *H. californicus*. However, lance nematodes have not been targeted by large-scale surveys.

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for ***Hoplolaimus seinhorsti*** **is A.**

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Responsible Party:

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***Comment Period: 11/13/2025 through 12/28/2025**

***NOTE:**

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

Comment Format:

- Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

  Example Comment:

  Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to "Climate/Host Interaction" here.]

- Posted comments will not be able to be viewed immediately.
- Comments may not be posted if they:

  Contain inappropriate language which is not germane to the pest rating proposal;

  Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

  Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

  Violates agency regulations prohibiting workplace violence, including threats.

- Comments may be edited prior to posting to ensure they are entirely germane.
- Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

Pest Rating: A
