CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Proposal for

Pratylenchus pratensis (de Man) Filipjev, 1936

Meadow nematode

Current Pest Rating: none

Proposed Pest Rating: A

Kingdom: Animalia, Phylum: Nematoda,
Class: Chromadorea, Order: Rhabditida,
Family: Pratylenchidae

Comment Period: 04/16/2026 through 05/31/2026

Initiating Event:

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

History & Status:

Background:

The root lesion nematodes of the genus *Pratylenchus* Filipjev, 1936 are migratory endoparasites that feed on plant roots. They are considered among the most important, widespread, and destructive genera of phytopathogenic nematodes of crops (Sasser and Freckman, 1987; Jones et al., 2013). As migratory endoparasites, these nematodes can enter plant roots, feed, reproduce, and move freely within the tissue while spending their entire life cycle there. The species can also be found in the soil around roots. Within the roots, feeding is confined to the root cortex.

Like other *Pratylenchus* species, *P. pratensis* has six life stages: egg, four juvenile stages, and adult. Reproduction requires both females and males, and males are common. First-stage juveniles develop within the egg, followed by a first molt to the second-stage juvenile, which hatches from the egg. Each stage develops into the next via a molt of its cuticle (outer body covering). All juvenile and adult stages are worm-shaped (vermiform). All post-hatch stages are motile and can infect plants. Generally, root lesion nematodes have a life cycle of 45-65 days, but the duration is affected by temperature and

moisture. *Pratylenchus* spp. survive the winter in infected roots or soil as eggs, juveniles, or adults. During spring, when plants are growing, eggs hatch to commence the life cycle within roots or in the rhizosphere soil. Within the root, nematodes feed on cortical tissue, causing necrosis of cortical cells, cell breakdown, and formation of cavities. Necrosis is apparent as lesions that expand as the nematodes move lengthwise within the infected roots. Some nematodes may leave the root, enter the soil, and re-enter the root at a different site, causing a new infection (Chitambar et al., 2018).

The first described root-lesion nematode was this one with the name *Tylenchus pratensis* (de Man, 1880). The genus name *Pratylenchus* was established by Filipjev in 1936 with *P. pratensis* (de Man) as the type species. This species can be differentiated from closely related species by stylet length, the position of the vulva, shape of the spermatheca, shape of the tail, tail annuli, tail tip, and the presence of males.

There are no records of this nematode's presence in California. A recent article by Alvarez-Ortega et al. (2026) describes nematological surveys conducted in natural and agricultural ecosystems in California specifically to study *Pratylenchus* spp. They found many known species and described two new species, but there were no detections of *P. pratensis*. A COI DNA barcoding survey of the *Pratylenchus* species in the Great Plains region of North America also failed to find this species (Ozbayrak et al., 2019).

Hosts: This nematode has a very large host range, including many agricultural crops. Some susceptible plants that are grown widely in California include alfalfa, almond, apple, avocado, cotton, celery, beet, blackberry, broccoli, citrus, fig, grape, lettuce, olive, pear, potato, rice, spinach, stone fruit (cherry and plum), strawberry, sweet potato, tomato, and walnut. The host range extends beyond agricultural crops to include many ornamentals, grasses, and trees (Nemaplex, 2010).

Symptoms: *Pratylenchus* spp. do not cause specific above-ground symptoms on plants and can easily be overlooked or mistaken for damage from other soil pathogens or abiotic problems. Their feeding activity results in reduced root growth, cortical lesions, necrosis, tissue browning, and ultimately cell death (Castillo and Vovlas, 2007). The mechanical and physiological damage caused by these nematodes also predisposes plants to secondary infections by soil-borne pathogens, including fungi and bacteria, which can be very damaging to plant health (Chitambar et al., 2018)

Transmission: On its own, *Pratylenchus* species can move in soil 1-2 m per season from an infected root. The main mode of long and short distance spread is artificial. Infected roots, bare root propagative plant materials, soil debris, cultivation tools, equipment, and human activity that can move soils from infested to non-infested sites. It can also be spread by drainage, irrigation, or floodwater (Castillo and Vovlas, 2007).

Damage Potential: The common name of "root lesion nematode" is based on the often-conspicuous necrotic lesions they cause on host roots. Most of the damage reports for this species of nematode have been made from cereals, grasses, ornamentals, and strawberries. Being migratory endoparasites, they cause severe root damage while feeding primarily in the cortical parenchyma. This is accomplished by a combination of stylet thrusting and enzymatic softening of host cell walls. They can destroy tissues of the root systems, causing surface cracking and internal rotting, while predisposing

tissues to secondary infections by fungi and bacteria. Loss of feeder roots leads to a loss in vigor and yield (Castillo and Vovlas, 2007).

Worldwide Distribution: The geographic distribution of *P. pratensis* includes Europe, South Africa, and India. There is disagreement regarding the presence of this species in the United States. It is considered absent by Norton (1984), yet it is listed as present in 18 U.S. states by the Society of Nematology Widely Prevalent Plant Pathogen Nematode Committee (https://www.prevalentnematodes.org/subject.cfm?id=57585).

Official Control*: Pratylenchus pratensis* is on the EPPO's A1 list for Brazil and a quarantine pest in Mexico (EPPO, 2026). It is also on the USDA PCIT Harmful organisms list for Canada, Colombia, Ecuador, Egypt, Honduras, Mexico, Syrian Arab Republic, and Taiwan (USDA PCIT, 2026). It is on the USDA's Regulated Plant Pest List.

California Distribution: none (CDFA PDR Database, 2026).

California Interceptions: none

The risk that *Pratylenchus pratensis* would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Pratylenchus pratensis* is likely to be found wherever its hosts can grow.

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

   Score: **2**
   - Low (1) Not likely to be established 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 of this nematode is very broad, including annuals, perennials, trees, and grasses.

   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:** Long and short distance spread is mainly infected roots, bare root propagative plant materials, soil debris, run-off and irrigation water, cultivation tools, equipment, and human activity that can move soils from infested to non-infested sites.

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:** Economic effects can be direct through root damage, through quarantines, and because new areas can easily be infested by planting material and movement of soil and water.

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

Economic Impact: A, C, 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:** Ornamental plantings can be negatively impacted by this species.

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 *Pratylenchus pratensis:* High

Add up the total score and include it here. **13**
-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 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 consequence 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* ***= 13***

Uncertainty:

The historical reliance on morphology alone has likely contributed to under-recognition, misidentification, and incomplete documentation of *Pratylenchus* diversity.

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for ***Pratylenchus pratensis*** **is A.**

References:

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USDA Phytosanitary Certificate Issuance and Tracking System, Phytosanitary Export Database (PExD) Harmful Organisms Database Report. *Pratylenchus pratensis*. Accessed 3/18/2026.

Responsible Party:

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***Comment Period: 04/16/2026 through 05/31/2026**

***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.

Proposed Pest Rating: A