

DEPARTMENT OF FOOD AND AGRICULTURE
PROPOSED CHANGES IN THE REGULATIONS

3 CCR § 3289
Guava Root-Knot Nematode Exterior

Quarantine

INITIAL STATEMENT OF REASONS/
POLICY STATEMENT OVERVIEW

The California Department of Food and Agriculture (Department) proposes to amend Title 3 California Code of Regulations (CCR) Section 3289 Guava Root-Knot Nematode Exterior Quarantine. This amendment will allow the Department to add Puerto Rico to the guava root-knot nematode exterior quarantine which will help prevent the spread of guava root-knot nematode (*Meloidogyne enterolobii*) to California.

Description of Public Problem, Administration Requirement, or Other Condition or Circumstance the Regulation is Intended to Address

This regulation is intended to address the obligation of the Department to protect the agricultural industry from the movement and spread of injurious plant pests within California. The specific purpose of amending the Guava Root-Knot Nematode Exterior Quarantine is to provide authority to the State to establish Puerto Rico as an area under the guava root-knot nematode, *Meloidogyne enterolobii*, also known as *M. mayaguensis*, exterior quarantine.

Background

Guava root-knot nematode, *Meloidogyne enterolobii*, is considered one of the most important pathogenic nematode species because of its ability to overcome the plant genes that provide resistance to the many other *Meloidogyne* spp. in important crops, thereby causing much greater damage and a substantial reduction in crop yields.

Meloidogyne enterolobii is a root-knot nematode with a life cycle and feeding behavior similar to other root-knot nematode species. It is a sedentary endoparasite that feeds within host plant roots. Adult females, embedded in host roots, produce eggs within a gelatinous matrix either on the

surface of, or within, roots. The first stage juvenile develops within the egg and molts to develop into the second stage juveniles (J2). The J2 is the infective stage that hatch from eggs, migrate in rhizosphere soil, and infest the roots of the host plants. Within roots, J2s establish a specialized feeding site called 'giant cells,' which are responsible for the characteristic galls found on infected root systems. In the J2, the nematodes become sedentary while feeding at the giant cells, increase in size, and undergo two more molts before developing into mature adult females or males. Although males are present, reproduction is by mitotic parthenogenesis, where mating and genetic recombination do not occur. Generally, the life cycle for root-knot nematodes takes about 30 days at 25-28°C and can be longer at lower temperatures.

Major hosts, value estimates from the 2023/24 included for products that the Department considers a statistically significant crop in California: pepper (*Capsicum annuum*) (\$343M), watermelon (*Citrullus lanatus*) (\$155M), coffee (*Coffea arabica*), soybean (*Glycine max*), sweet potato (*Ipomoea batatas*) (\$304M), tobacco (*Nicotiana tabacum*), guava (*Psidium guajava*), tomato (*Solanum lycopersicum*) (\$2.01B), eggplant (*S. melongena*), cotton (*Gossypium* spp.) (\$315M), celery (*Apium graveolens*) (\$362M), cabbage (*Brassica oleracea* var. *oleracea*) (\$353M) common bean (*Phaseolus vulgaris*), garden beet (*Beta vulgaris*), squash (*Cucurbita* spp.) (\$50M), and sweet basil (*Ocimum basilicum*). Minor hosts include garden and houseplants such as *Angelonia angustifolia*, *Aquilaria malaccensis*, *Brugmansia*, *Enterolobium contortisiliquum*, *Euphorbia punicea*, *Hibiscus* spp., *Maranta arundinacea*, *Morinda citrifolia*, *Morus nigra*, *Paulownia elongata*, *Syzygium aromaticum*, *Thunbergia*, *Tibouchina*, *Solanum tuberosum* (potato) (\$231M), *Bidens pilosa*, *Lactuca sativa* (lettuce) (\$3.93B), and *Cucumis sativus* (cucumber) (\$34M)). Several weed plants have also been reported as hosts for the guava root-knot nematode. These weeds can serve as reservoirs for infection of crops and increase nematode numbers and spread in soil.

Currently, the states of Florida, Georgia, Louisiana, and North Carolina have areas under quarantine for *M. enterolobii*. It was possible that this nematode species may have already entered the state undetected, as prior to 2005, *Meloidogyne* spp. were not reliably identified at the CDFA Nematology Laboratory to species level when detected in samples that originated outside and within California. However, since 2005, *M. enterolobii* has not been detected in California-origin

regulatory samples generated through CDFA's nematode control and phytosanitary certification programs or statewide nematode surveys of host plants grown in agricultural production sites and nurseries in California. Also, *M. enterolobii* has not been reported from California by other researchers/nematologists in the gray or peer-reviewed literature. Identification to the species level through DNA analysis is now essential for accurate identification of this species. Due to the wide host range, this species could establish itself within California.

In order to demonstrate that California is currently free from *M. enterolobii*, a survey of California sweet potatoes was conducted by the Department between July 1, 2023, and June 30, 2024. A total of 375 samples from actively growing fields were collected from Merced, Kern, and Stanislaus counties. All samples were diagnosed by State nematologists at CDFA's Pest Diagnostics Center at Meadowview. This survey represented close to 15% of the State's sweet potato acreage. All samples proved negative for *M. enterolobii*. As *M. enterolobii* does not currently occur in the state, it is critical to protect California agriculture and environment from the introduction of this pest.

M. enterolobii has been historically identified within Puerto Rico. A paper in the Journal of Nematology described its existence in eggplant roots in 1988 using its previous scientific name "*Meloidogyne mayaguensis* n sp." In 2025 and 2026, there have been increasing interceptions of this pest from Puerto Rico. In 2022 and 2024, there was one interception a year. However, in 2025 there was a sharp increase with seven interceptions. As of June 2026, there have been four interceptions. These finds are from multiple shippers, sent to several counties in California, and with different host plants. There is no singular source bringing the risk into California, rather a reflection of the general infestation in Puerto Rico.

If guava root-knot nematode were allowed to be introduced into California, many agricultural industries would be severely impacted due to decreased yields. There would be rising costs associated with crop rotations and increased pesticide use. Also, if this pest were introduced, there would be a possible loss of markets if other states or counties established quarantines against California agricultural products due to this pest. Several ornamental and perennial shrub plants are known or probable hosts of the nematode species. Infestations of *M. enterolobii* may lower

biodiversity, disrupt natural plant communities, and endanger critical habitats. Home gardening and ornamental plantings may also be impacted. Therefore, it is necessary to amend CCR 3287 to include Puerto Rico in the exterior quarantine against guava root-knot nematode.

Project Descriptions

This amendment will provide authority for the State to perform specific detection and exclusion activities against the guava root-knot nematode if found within host material coming from Puerto Rico. This authority includes restricting entry and requiring certifications.

(b) Area Under Quarantine

Section (b) defines the areas that are under quarantine due to their current infestation of guava root-knot nematode. The quarantine is for states where the guava root-knot nematode is currently found and includes the states of Florida, Georgia, Louisiana, and North Carolina. This amendment adds Puerto Rico, as historically guava root-knot nematode has been found there, and, currently, infested plant material is being sent to California.

Current Laws & Regulations

Existing law, FAC Section 5301, provides that the Secretary may establish, maintain, and enforce such quarantine regulations as they deem necessary to protect the agricultural industry of this state from pests. The regulations may establish a quarantine at the boundaries of this state or elsewhere within the state.

Existing law, FAC Section 5302, provides that the Secretary may make and enforce such regulations as they deem necessary to prevent any plant or thing which is, or is liable to be, infested or infected by, or which might act as a carrier of, any pest, from passing over any quarantine line which is established and proclaimed pursuant to this division.

The Department is the only agency which can implement pest quarantines. As required by Government Code Section 11346.5(a)(3)(D), the Department has conducted an evaluation of these regulations and has determined that it is not inconsistent or incompatible with existing state

regulations.

The existing law obligates the Secretary to investigate and determine the feasibility of controlling or eradicating pests of limited distribution but establishes discretion with regard to the establishment and maintenance of regulations to achieve this goal. This amendment provides the necessary regulatory authority to prevent the artificial spread of serious plant pests, which is a mandated statutory goal.

Evaluation of Inconsistency/Incompatibility with Existing State Regulations

The Department is the only agency that can implement plant quarantine and eradication areas. As required by Gov. Code Section 11346.5(a)(3)(D), the Department has conducted an evaluation of these regulations and has determined that it is not inconsistent or incompatible with existing state regulations.

Anticipated Benefits from This Regulatory Action

The implementation of these regulations prevent the introduction of guava root-knot nematode from interstate travel and shipping. Following these regulations will help prevent the spread of pests within California, which will prevent:

- direct damage to the agricultural industry growing host material
- indirect damage to the agricultural industry growing host due to the implementation of quarantines by other countries and loss of export markets
- increased production costs to the affected agricultural industries
- increased pesticide use by the affected agricultural industries
- increased costs to the consumers of host fruits
- increased pesticide use by homeowners and others
- the need to implement a state interior quarantine
- the need to implement a federal domestic quarantine

California Environmental Quality Act

Prior to conducting any action authorized by this regulation, the Department shall comply with the

California Environmental Quality Act of 1970 (Public Resources Code Section 21000 et. seq. as amended) and the State CEQA Guidelines (Title 14 California Code of Regulations Section 15000 et. seq.).

Mandate on Local Agencies or School Districts

The Department has determined that these regulations do not impose a mandate on local agencies or school districts.

Economic Impact Analysis (Government Code 11346.3(b))

The prevention of the spread of pests in California through the amendment and implementation of this regulation prevent economic harm to:

- the general public
- homeowners and community gardens
- agricultural industry
- the State's general fund.

Without this regulation there is a higher risk the pests could spread into the local environment via the surrounding non-agricultural ecosystems. This could adversely impact private and commercial landscape plantings, local, regional, state and national parks, other recreational sites, open habitats, and wild lands. Affected plants could become less vigorous and may produce fewer seeds. Plants/trees with low propagule output can result in major changes to plant community structure.

The Creation or Elimination of Jobs within the State

The implementation of this regulation will prevent the introduction of guava root-knot nematode into California from Puerto Rico. Inspection activities are currently being performed by existing state and county staff at entry points throughout the state. The Department does not expect that additional review of compliance agreement or phytosanitary certificate would require significantly greater staff time. Therefore, the Department has determined that this regulatory proposal will not have a significant impact on the creation or elimination of jobs in California.

The Creation or Elimination of Businesses in California

The implementation of this regulation will prevent the introduction of guava root-knot nematode from Puerto Rico. Inspection activities are currently being performed by existing state and county staff at entry points throughout the state. There are no new vendors that will be formed to provide this service or current vendors may hire new staff. Therefore, the Department has determined that this regulatory proposal will not have a significant impact on the creation or elimination of new businesses in the state of California.

The Expansion of Businesses in California

The implementation of this regulation will prevent the introduction of guava root-knot nematode from Puerto Rico. Inspection activities are currently being performed by existing state and county staff at entry points throughout the state. There will be no businesses expanded to provide these services. Therefore, the Department has determined that this regulatory proposal will not have a significant impact on the expansion of businesses currently doing business in the state of California.

Worker Safety

The amendment of this regulation is not expected to have an effect on worker safety.

Estimated Cost or Savings to Public Agencies or Affected Private Individuals or Entities

The Department of Food and Agriculture has determined that Section 3289 does not impose a mandate on local agencies or school districts. Therefore, no reimbursement is required under Section 17561 of the Government Code.

The Department also has determined that no reimbursable costs or savings under Part 7 (commencing with Section 17500) of Division 4 of the Government Code to local agencies or school districts and no nondiscretionary costs or savings to local agencies or school districts will result from the amendment of Section 3289.

There are no reimbursable costs or savings under Part 7 (commencing with section 17500) of Division 4 of the Government Code to local agencies or school districts and no nondiscretionary

costs or savings to local agencies or school districts anticipated from the amendment of this amendment.

The Department has determined that the proposed actions will not have a significant adverse economic impact on housing costs or California business, including the ability of California businesses to compete with businesses in other states.

Potential Impact to Homeowners and Community Gardens

The implementation of this regulation will prevent the introduction of guava root-knot nematode into California from Puerto Rico. By implementing an exterior quarantine, the Department has a higher likelihood of keeping these pests out of California. If this pest were to become established it would impact plants that are commonly planted by homeowners and in community gardens, increasing costs of finding new unimpacted species and pesticide usage.

Potential Impacts to General Fund and Welfare

The proposed regulations do not have an immediate or definitive impact to the general fund or general welfare, however, there may be a long-term positive impact. The regulation is intended to prevent the introduction of guava root-knot nematode into California from Puerto Rico. There is a higher likelihood of keeping these pests out of California if there is an exterior quarantine that includes all currently infested areas. The agricultural industry is one of the economic engines in the state. Negative impacts to agriculture impact the state's economic recovery and the general welfare of the state. Additionally, any further job losses in this area would likely be felt by low-skilled workers whose employment options are already limited. The loss of any additional agricultural jobs would likely result in an increase in the State of California's public assistance obligations which would also negatively impact the state's economic recovery.

Significant Adverse Impact on Business

The Department has determined that the proposed action will not have a significant adverse economic impact on businesses, including the ability of California businesses to compete with businesses in other states. The Department's determination that this action will not have a significant adverse economic impact is based on the fact that this regulation does not place any

requirements or restrictions on businesses. This action only provides authority to prevent the introduction of guava root-knot nematode from Puerto Rico and does not require reporting, recordkeeping, or compliance by businesses.

Assessment

These conclusions are based upon the same analysis related to the adverse economic impact on business above. Further, the Department does not expect these actions to create jobs or businesses.

The Department has made an assessment that the amendment to these regulations would: (1) not create or eliminate jobs in the state of California, (2) not create new businesses or eliminate existing businesses in the state of California, (3) not affect the expansion of businesses currently doing business in the state of California, (4) benefit the health and welfare of California residents, (5) benefit the state's environment, and (6) not expected to benefit workers' safety.

The health and welfare of California residents: The proposed action will benefit the health and welfare of California residents by preventing the establishment of a pest that could spread into the local environment via the surrounding non-agricultural ecosystems. Infestations lead to increased costs to the consumers of host materials and increased pesticide usage.

The state's environment: The proposed action will benefit the environment as preventing the establishment of a pest lowers the risk that the pests could spread into the local environment via the surrounding non-agricultural ecosystems.

Alternatives Considered

The Department of Food and Agriculture must determine that no alternative considered would be more effective in carrying out the purpose for which the action is proposed or would be as effective as and less burdensome to affected private persons than the proposed action.

The Department has considered taking no action. If no action is taken, there would be no exterior quarantine that includes Puerto Rico, and there would be a risk that guava root-knot nematode could become established within California, causing harm to the agricultural industry. The

alternative was rejected because it would have adverse effects on the industry and could lead to the loss of value for the state of California if guava root-knot nematode becomes established.

Information Relied Upon

The Department relied upon the following documents in the proposed amendment of Section 3289:

California Department of Food and Agriculture. *County Procedural Manual*, Section III – Page 22

California Department of Food and Agriculture. *California Agricultural Statistics Review 2023-2024*. Pages 12-14

California Department of Food and Agriculture. *Meloidogyne enterolobii* PDRs - Puerto Rico

Chitambar, John, California Department of Food and Agriculture. (Updated August 22, 2024). *California Pest Rating for Meloidogyne enterolobii* Yang and Eisenback, 1983

Rammah, Abdallah and Hirschmann, Hedwig; Journal of Nematology 20(1):58-69. 1988
Meloidogyne mayaguensis n. sp. (Meloidogynidae), a Root-knot Nematode from Puerto Rico