

DEPARTMENT OF FOOD AND AGRICULTURE
PROPOSED CHANGES IN THE REGULATIONS

Title 3, California Code of Regulations

Section 3591.27, Subsections (a), (b) and (c)

Bactrocera tau Eradication Area

INITIAL STATEMENT OF REASONS/

POLICY STATEMENT OVERVIEW

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 of Food and Agriculture (Department) to protect the agricultural industry from the movement and spread of injurious plant pests within California.

Specific Purpose and Factual Basis

The specific purpose of Section 3591.27 is to provide authority to the Department to perform eradication activities against *Bactrocera tau*.

The factual basis for the determination by the Department that the adoption of this regulation is necessary is as follows:

If the fly were allowed to spread and become established in host fruit production areas, California's agricultural industry would suffer losses due to decreased production of marketable fruit, increased pesticide use, and loss of markets if other states or countries enacted quarantines against California products. This in turn would negatively impact the State's economic recovery which in turn would impact the general welfare of the State.

The entire counties of San Bernardino, Riverside, and Los Angeles are being proposed as eradication areas because the utilization of these political boundaries will avoid frequent amendments to the regulation if *Bactrocera tau* is detected elsewhere within these counties, and there are no associated impacts with the regulation if no flies are found. The detection of one *Bactrocera tau* is the trigger for eradication delimitation trapping to confirm either there are no other flies present and no further actions are necessary, or treatment activities begin upon the detection of more flies. If delimitation trapping is not implemented, then one fly is the trigger for a

quarantine and by default this would include the entire counties of San Bernardino, Los Angeles, and Riverside. This would have a significant impact on many of California exports of *Bactrocera tau* host material. Many trading partners do not accept host material produced or transiting through a quarantine area.

If two or more flies are found, not only does it trigger a treatment program, but it also triggers a quarantine. A quarantine would include that area encompassed by a 4.5 mile radius surrounding the epicenter of the incipient infestation.

In addition to trapping, host fruit on a property where a fly has been trapped and adjacent properties may be inspected for possible larval infestation. Small circular oviposition scars are occasionally visible, indicating an infested fruit. In the absence of visible clues, 100 or more of the fruit on preferred hosts (if available) may be cut open at random and examined for larvae.

This regulation will avoid harm to the public's general welfare by providing authority for the State to perform detection, control and eradication activities against *Bactrocera tau* in San Bernardino, Riverside, and Los Angeles counties. To prevent spread of the fly to noninfested areas to protect California's agricultural industry, it is necessary to immediately begin delimitation activities.

Therefore, it was necessary to adopt Section 3591.27 on an emergency basis.

Subsection 3591.27(a) established the target pest, *Bactrocera tau* and the eradication areas, San Bernardino, Riverside, and Los Angeles counties. Subsection 3591.27(b) established the hosts. Subsection 3591.27(c) established the means and methods which can be utilized to eradicate *Bactrocera tau*.

Background

Bactrocera tau is an insect pest which attacks the fruit of various plants including:

Common Name	Botanical Name
<i>Artocarpus heterophyllus</i> Lam.	Jackfruit

<i>Artocarpus integer</i> (Thunb.) Merr.	Chempedak
<i>Averrhoa carambola</i> L.	Carambola
<i>Baccaurea angulata</i> Merr.	Red angle tampoi
<i>Benincasa hispida</i> (Thunb.) Cogn.	Ash gourd
<i>Borassus flabellifer</i> L.	Doub palm
<i>Carica papaya</i> L.	Papaya
<i>Citrullus colocynthis</i> (L.) Schrad.	Bitter apple
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Watermelon
<i>Citrus</i> spp.	Citrus
<i>Coccinia grandis</i> (L.) Voigt	Ivy gourd
<i>Cucumis anguria</i> L.	Pepin cimarron
<i>Cucumis melo</i> L.	Melon
<i>Cucumis sativus</i> L.	Cucumber
<i>Cucurbita maxima</i> Duchesne	Wintersquash
<i>Cucurbita moschata</i> Duchesne	Butternut squash
<i>Cucurbita pepo</i> L.	Pumpkin
<i>Dracontomelon dao</i> (Blanco) Merr. & Rolfe	Argus pheasant tree

<i>Fagraea ceilanica</i> Thunb.	Hui li
<i>Ficus racemosa</i> L.	Cluster fig
<i>Ficus tinctoria</i> G. Forst.	Liang liao rong
<i>Gomphogyne cissiformis</i> Griff.	N/A
<i>Gymnopetalum scabrum</i> (Lour.) W. J. de Wilde & Duyfjes	N/A
<i>Hodgsonia macrocarpa</i> var. <i>capniocarpa</i> (Ridl.) Tsai	N/A
<i>Hydnocarpus anthelminthicus</i> Pierre ex Laness.	Chaulmoogra tree
<i>Lagenaria siceraria</i> (Molina) Standl.	Bottle gourd
<i>Luffa acutangula</i> (L.) Roxb.	Angled loofah
<i>Luffa aegyptiaca</i> Mill.	Smooth loofah
<i>Luffa</i> sp.	Loofah
<i>Mangifera foetida</i> Lour.	Bachang mango
<i>Mangifera indica</i> L.	Mango
<i>Manilkara zapota</i> (L.) P. Royen	Sapodilla
<i>Melastoma malabathricum</i> L.	Indian rhododendron
<i>Momordica charantia</i> L.	Balsam-apple
<i>Momordica cochinchinensis</i> (Lour.)	

Spreng	Balsam-pear
<i>Morinda citrifolia</i> L.	Noni
<i>Muntingia calabura</i> L.	Calabur tree
<i>Myxopyrum smilacifolium</i> (Wall.) Blume	N/A
<i>Passiflora edulis</i> Sims	Passion fruit
<i>Phaseolus vulgaris</i> L.	Bean
<i>Prunus salicina</i> Lindl.	Asian plum
<i>Psidium guajava</i> L.	Guava
<i>Siphonodon celastrineus</i> Griff.	N/A
<i>Solanum muricatum</i> Aiton	Melon pear
<i>Strychnos nux-vomica</i> L.	Nux-vomica tree
<i>Strychnos rupicola</i> Pierre ex Dop	N/A
<i>Strychnos thorelii</i> Pierre ex Dop	N/A
<i>Syzygium jambos</i> (L.) Alston	Rose apple
<i>Syzygium malaccense</i> (L.) Merr. & L. M. Perry	Malay apple
<i>Syzygium samarangense</i> (Blume) Merr. & L. M. Perry	Java apple
<i>Tetrastigma leucostaphylum</i> (Dennst.)	

Alston ex Mabb.	Indian Chestnut Vine
<i>Trichosanthes celebica</i> Cogn.	N/A
<i>Trichosanthes cordata</i> Roxb.	N/A
<i>Trichosanthes cucumerina</i> L.	Snake gourd
<i>Trichosanthes pilosa</i> Lour.	Snake gourd
<i>Trichosanthes rubriflos</i> Thorel ex Cayla	N/A
<i>Trichosanthes</i> sp.	Gourds
<i>Trichosanthes tricuspidata</i> Lour.	N/A
<i>Trichosanthes wallichiana</i> (Ser.) Wight	N/A
<i>Zehneria wallichii</i> (C. B. Clarke) C. Jeffrey	N/A

The female punctures host fruit to lay eggs which develop into larvae. The punctures admit decay organisms that may cause tissue breakdown. Larval feeding causes breakdown of fruit tissue. Fruits with egg punctures and larval feeding are generally unfit for human consumption. Pupae may be found in fruit, but normally drop out and are found in soil.

The detection of one adult *Bactrocera tau* meets the State's, national, and international standards that mandate intensive delimitation efforts to determine if an incipient infestation of the fly exists in these areas. The Department continues to perform *Bactrocera tau* trapping in San Bernardino, Riverside, and Los Angeles counties.

California, national and international consumers of California mango, melons, cucumber, and other host crops benefit by having high quality fruit available at a lower cost. It is assumed that any increases in production costs will ultimately be passed on the consumer. The adoption of this regulation also benefits homeowners who grow their own host fruits for consumption.

Action Plan

Intensive Delimitation Trapping

Intensive trapping is triggered after a single fly is caught. Following confirmation of the specimen, trap densities will be increased over an 81-square mile area centered on the detection. Within the next 24 hours, 50 Jackson and 25 McPhail traps are placed in the square mile core around each find. In the remaining four one-mile deep buffers, Jackson traps are placed at densities of 25, 15, 10, and 5 traps per square mile respectively, going outward. Traps in the core will be checked daily during the first week. Traps in the first buffer zone will be serviced every two days; those in the remainder of the delimitation area are checked at least once during the first week. All traps in the delimitation zone will be checked weekly following a week of negative trap catches. Intensive trapping ends after the third complete life cycle following the last fly find, and then trap densities revert to detection trapping levels. However, if a second fly is found, additional traps are deployed around the new fly find and trap servicing in the core area will go to a twice weekly schedule and increased emphasis will be placed on servicing traps in the buffer areas in an effort to better delimit the infestation. Traps in the eight-square-miles around the core are serviced every two days, until eradication activities begin, at which time the trap inspection frequency changes to weekly. All traps are then serviced weekly for three life cycles of the fly beyond the last fly detected. Traps may be relocated to available preferred hosts as practical.

The core square mile, surrounding each detection site is 0.5 mile radius with 50 Jackson and 25 McPhail traps. The first buffer is eight square miles surrounding core with 25 Jackson traps per square mile. The second buffer is 16 square miles surrounding first buffer with 15 Jackson traps per square mile. The third buffer is 24 square miles surrounding second buffer with 10 Jackson traps per square mile. The fourth buffer is 32 square miles surrounding third buffer with five Jackson traps per square mile.

Following an eradication program, if no additional flies are trapped, intensive trapping ends after the third complete life cycle, depending on the technique used to achieve eradication, following the last fly find, as determined by a temperature-dependent developmental model run by program personnel in Sacramento.

Larval Survey

Fruit on a property where a fly has been trapped may be inspected for possible larval infestation. Small circular oviposition scars are occasionally visible, indicating an infested fruit. In the absence of visible clues, 100 or more of the fruit on preferred hosts (if available) may be cut open at random and examined for larvae. First and second instar larvae are tiny and may be feeding immediately under the surface of the skin; therefore, fruit cutting should be left to experienced personnel. Fruit on properties adjacent to a trap catch may also be inspected.

If two or more flies are trapped in proximity, fruit cutting may be extended to all properties in a 200-meter radius of the finds, concentrating on preferred hosts. Fruit must be inspected on the property; it cannot be removed from an established quarantine area.

ERADICATION ACTIVITIES

Triggers and General Approach

The Department begins an eradication project when it determines that a *Bactrocera tau* infestation exists within the state. Although there is no debate that criteria two or three below indicate the presence of a breeding *Bactrocera tau* population, criteria one below is often open to further review. The Department may take up to 10 days, after the criteria are met, to further refine the presence and location of the infestation, in order to better target eradication activities.

1. Two flies within three miles of each other and within a time period equal to one life cycle of the fly;
2. One mated female (known or suspected to have been mated to a wild male); or
3. Larvae or pupae.

Treatment will begin immediately after notification, within 24 to 72 hours after an infestation is determined to exist. Any single male or immature female fly caught within a 15-mile radius of the treatment area may be considered a satellite infestation. The decision on whether to treat will be based on when and where the flies are trapped. A single fly trapped within less than one life cycle of the original find may trigger intensive trapping only. More than one single find, or a fly

that is trapped after one or two completed life cycles of the original find, may trigger immediate treatment. The 15-mile radius for satellite infestations then expands to encircle any new treatment area.

Treatment activities may include the following methods:

1. Male Attractant Technique

The male attractant technique (MAT) makes use of small amounts of the attractant cue lure mixed with the pesticide naled (Dibrom® Concentrate), soaked into cotton wicks placed inside Jackson traps. Male flies are lured to the traps, where they are killed by the pesticide when they feed at the wicks. MAT is applied as traps placed in trees, shrubs, or other inanimate objects, placed six to eight feet above the ground and out of the reach of the public. The project boundaries will be nine-square miles around each site where flies were detected. Application is made to a targeted density of 1000 evenly distributed sites in each square mile. Traps are replaced every four weeks for two life cycles (typically four to six months). Life cycle durations are dependent on temperature.

2. Foliar Sprays

If evidence that a breeding population exists on a property (i.e., immature stages, mated female, or multiple adults are detected), the foliage of host trees and shrubs within 200 meters of each detection site will be treated with an organic formulation of spinosad bait spray (GF-120 NF Naturalyte® Fruit Fly Bait) using hand spray or hydraulic spray equipment. Following treatment, completion notices are left with the homeowners detailing precautions to take and post-harvest intervals applicable to any fruit on the property. Treatments are repeated at seven to 14 day intervals for one life cycle of the fly (typically two to three months, dependent on temperature).

3. Host Fruit Removal

If evidence that a breeding population exists on a property (i.e., immature stages, mated female, or multiple adults are detected), host removal (fruit stripping) may be used in

conjunction with the other treatment options. All host fruit will be removed from all properties within a minimum of a 100-meter radius around the detection sites. The fruit is taken to a landfill for burial using regulatory compliance protocols. Fruit removal will occur once at the beginning of the project, but may be repeated if additional flies are detected.

A temperature-dependent model of the fly's life cycle is used to time the end of treatments. Daily high and low temperatures will be taken from the soil and air in the treatment area using a thermograph (Datapod) housed in a standard weather shelter. Temperature monitoring equipment is to be located at the initial fly find site and each additional wild fly site that represents a significantly different environment or core area. Data will be relayed weekly to the PD/EP Branch in Sacramento.

California Environmental Quality Act

A Statewide Plant Pest Prevention and Management Program Environmental Impact Report (EIR) was prepared by the Department as the lead agency under the California Environmental Quality Act. The EIR addresses the potential impacts and mitigations when implementing the Statewide Plant Pest Prevention and Management Program activities related to *Bactrocera tau*.

The EIR may be accessed at the following website:

<http://www.cdfa.ca.gov/plant/peir/>

Economic Impact Analysis

The eradication and prevention of the spread of *Bactrocera tau* in California through the amendment and implementation of this regulation economically benefits:

- The general public.
- Homeowners and Community Gardens.
- Agricultural industry.
- The State's general fund.

The Department's budgeted operational program costs for the implementation of this eradication program for fiscal year 2015/2016 is \$50,000. The total budgeted cost of \$50,000 is money well spent to eliminate the long term impacts of a *Bactrocera tau* infestation.

There are no known specific benefits to worker safety or the health of California residents. The Department is not aware of any specific benefits the amendment of this regulation will have to the protection of public safety of California residents or worker safety. Based upon the economic analysis, the Department believes the amendment of this regulation benefits the general welfare of California residents (GC Section 11346.3(b)).

Potential Agricultural Industry Impacts

If the fly were allowed to spread and become established in host fruit production areas, California's agricultural industry would suffer losses due to decreased production of marketable fruit, increased pesticide use, and loss of markets if other states or countries enacted quarantines against California products.

The 2014-2015 California Agricultural Statistics Review placed the approximate gross annual value of certain hosts. These values are \$165,553,000 for cucumbers and \$33,0161,000 for melons.

Other listed hosts may be grown as specialty crops in California. These niche markets would also be negatively impacted.

Potential Impact to Homeowners and Community Gardens

Many of the host fruit attacked by the *Bactrocera tau* are favorites for the home gardener and community gardens. Therefore, if *Bactrocera tau* is not eradicated homeowners and community gardeners would be negatively impacted.

Potential Impacts to General Fund and Welfare

California's unemployment rate in March 2015 dropped to 6.5 per cent. During the preceding 12 months prior to March 2015, agricultural employment was up by 5.1 per cent. The agricultural industry is one of the economic engines which are lowering the State's unemployment rate. Additionally, any job losses in this area would likely be felt by low-skilled workers whose employment options are already limited. The loss of any agricultural jobs would likely result in an increase in the State's public assistance obligations which would also negatively impact the State's economic recovery.

Anticipated Benefits from This Regulatory Action

One of the Department's broad statutory objective is to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds (Food and Agricultural Code section 403) and that it may adopt regulations as are reasonably necessary to achieve this (FAC section 407). The Department is obligated to investigate the existence of any pest that is not generally distributed within this State and determine the probability of its spread, and the feasibility of its control or eradication (FAC section 5321) and may establish and maintain eradication regulations (FAC section 5322).

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. The adoption of this regulation benefits the mango, melon, and cucumber (nursery, fruit for domestic use and exports, packing facilities) and the environment (urban landscapes) by having an eradication program to eliminate the *Bactrocera tau* prior to its being artificially spread over short and long distances.

This adoption provides the necessary regulatory authority to eradicate this pest and preventing the spread of a serious insect pest is a mandated statutory goal.

The Department is also obligated to protect the general welfare and economy of the State and to seek to maintain the economic well-being of agriculturally dependent rural communities in this State (FAC Section 401.5). The activities authorized by this adoption of this regulation are preventing the establishment and potential spread of the *Bactrocera tau* to uninfested areas of the State; including agriculturally dependent rural communities.

With the eradication of *Bactrocera tau*, the California, national and international consumers of California mango, melon, and cucumber benefit by having high quality fruit available at lower cost. It is assumed that any increases in production costs would ultimately be passed on the consumer.

The adoption of this regulation benefits homeowners and community gardens that grow their own host fruits for consumption and host material which is planted as ornamentals in various rural and urban landscapes.

This regulation will benefit the public's general welfare by providing authority for the State to perform detection, control and eradication activities against *Bactrocera tau* in San Bernardino, Riverside, and Los Angeles counties.

The implementation of this regulation will prevent:

- Direct damage to the agricultural industry growing host fruits.
- Indirect damage to the agricultural industry growing host fruits 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 an unnecessary federal regulation of the entire State.

Assessment

Based upon the Economic Impact Analysis, the Department has made an assessment that the adoption of the regulation would not 1) create or eliminate jobs within California; 2) create new business or eliminate existing businesses with California; or 3) affect the expansion of businesses currently doing business with California. Additionally, the Department has been conducting eradication projects throughout the State for over 30 years without creating or eliminating businesses.

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

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

The Department has determined that the adoption of Section 3591.27 does not impose a mandate on local agencies or school districts and no reimbursement is required under Section 17561 of the Government Code.

The Department also has determined that no savings or increased costs to any state agency, 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, no nondiscretionary costs or savings to local agencies or school districts, and no costs or savings in federal funding to the State will result from the adoption of Section 3591.27.

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

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. The Department's determination that the action will not have a significant statewide adverse economic impact on business was based on the following:

The adoption of Section 3591.27 will provide authority for the Department to conduct eradication activities against *Bactrocera tau* in San Bernardino, Riverside, and Los Angeles counties and there are no known private sector cost impacts.

Alternatives Considered

The Department of Food and Agriculture determined that no alternative considered would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action. The Department did not consider any alternatives to the proposed adoption of the regulation because it believes the proposed regulations are the best way to achieve its statutory goals which obligate it to prevent the establishment and spread of pests.

One of the Department's statutory mandates is to prevent the spread of harmful pests. The emergency amendment of this regulation was necessary to prevent the further artificial spread

of *Bactrocera tau* as part of an existing ongoing *Bactrocera tau* eradication project. No other interested party has suggested an alternative to this existing regulation.

Information Relied Upon

The Department relied upon the following studies, reports, and documents in the proposed adoption of subsection 3591.27:

California Pest and Damage Record # 360P06381018

Word Document-“*Bactrocera tau* Eradication Host List for CDFA”

“Exotic Fruit Fly Strategic Plan,” June 19, 2006, United States Department of Agriculture.

“Action Plan for CUELURE ATTRACTED FRUIT FLIES, Including the Melon Fly, *Bactrocera cucurbitae* (Coquillett),” Revised April 2000, California Department of Food and Agriculture, Plant Health and Pest Prevention Services (ten pages).