

DEPARTMENT OF FOOD AND AGRICULTURE  
PROPOSED CHANGES IN THE REGULATIONS

Title 3, California Code of Regulations

Section 3591.20, Subsection (a)

Light Brown Apple Moth Fly 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 to protect the agricultural industry from the movement and spread of injurious plant pests within California.

Specific Purpose and Factual Basis

The light brown apple moth (*Epiphyas postvittana*) was first detected in California on February 27, 2007, in Alameda County and on March 7, 2007, the light brown apple moth (LBAM) was first detected in Contra Costa County. Through the deployment of delimiting detection traps, numerous additional adult male moths were trapped in both counties. As a result, the Department adopted an emergency regulation, Section 3591.20, which became effective on March 21, 2007. The Department continued to deploy detection traps in additional counties. As a result of multiple detections of LBAM, the Department amended Section 3591.20 to add the counties of Marin and San Francisco (effective April 3, 2007); Santa Clara County (effective April 20, 2007); Monterey, San Mateo and Santa Cruz counties (effective April 23, 2007); San Benito County (effective April 30, 2008) Napa County (effective June 5, 2007); Los Angeles and Solano counties (effective July 13, 2007); Santa Barbara County (effective February 8, 2008), Sonoma County (effective March 3, 2008), Ventura County (effective March 5, 2009) and Yolo County (April 9, 2009). The Department also adopted Section 3434, Light Brown Apple Moth Interior Quarantine (effective April 20, 2007).

In late October 2007, the USDA established a new regulatory protocol which was distributed to county agricultural commissioners as “Phytosanitary Advisory No. 31-2007.” This regulatory protocol was adopted based upon the recommendations of the LBAM Technical Working Group (TWG). The purpose of the protocol is to determine when it is appropriate to initiate or remove interstate regulatory restrictions pertaining to LBAM in response to new detections or the elimination of incipient LBAM populations. A key component of this regulatory protocol is the revision of the triggers for initiating a regulated area. Under the recommendations of the TWG, a single detection (trapping) of a male LBAM more than three miles from another male LBAM, no longer warrants a quarantine response. This is contingent upon the deployment of LBAM traps at the appropriate delimitation levels in buffer areas surrounding the single detection. Prior to this regulatory protocol, the detection of a single LBAM was the agreed upon trigger for initiating a quarantine area. The Department reviewed and concurs with this new protocol and is applying the same criteria contained in it to initiate or remove LBAM regulatory restrictions pertaining to the intrastate movement of regulated articles and commodities.

On June 8, 2009 (California Department of Food and Agriculture Pest and Damage Record #1560054), an adult male LBAM was trapped in the Manteca area of San Joaquin County. It was officially identified as LBAM on June 11, 2009. The regulatory authority under Section 3591.20 includes, “The searching for all stages of light brown apple moth by visual inspection, the use of traps, or any other means anywhere within the said area.” Therefore, this emergency amendment to Section 3591.20 is necessary to ensure the Department has the best chance to conduct a successful eradication project in the smallest possible area of San Joaquin County. Additionally, the Department is still conducting a regional delimitation surveys for LBAM. This activity is also specifically authorized under Section 3591.20.

An emergency eradication response was necessary to ensure the LBAM does not continue to multiply and spread to other uninfested areas of the State. The adult LBAMs may continue to emerge and are not known to be a long distance flyer. These types of moths generally only fly up to 100 meters to find suitable host material during

release studies. The real threat of long distance spread is through the human assisted movement of infested plants and plant parts, including greenwaste, and other possible carriers such as equipment or appliances contaminated with host material.

LBAM is a highly polyphagous pest that attacks a wide number of fruits and other plants. Hosts occurring in California that are of significant agricultural or environmental concern include, but are not limited to: alder, alfalfa, apple, apricot, avocado, blackberry, blueberry, broccoli, cabbage, camellia, cauliflower, ceanothus, chrysanthemum, citrus, clematis, clover, columbine, cottonwood, currant, cypress, dahlia, ferns, fir, geranium, grape, hawthorn, honeysuckle, kiwi, lupine, madrone, mint, oak, peach, pear, peppers, persimmon, poplar, potato, raspberry, rhododendron, rose, sage, spruce, strawberry, walnut and willow. Prior to this infestation, this species has a relatively restricted geographic distribution, being found only in portions of Europe, Oceania and Hawaii. The pest is native to Australia but has successfully invaded other countries. The likelihood and consequences of establishment by LBAM have been evaluated in pathway initiated risk assessments. LBAM was considered highly likely of becoming established in the United States and the consequences of its establishment for United States agricultural and natural ecosystems were judged to be severe. The United States Department of Agriculture, Animal Plant and Health Inspection Service (USDA, APHIS) estimated that approximately 80 percent of the continental United States may be climatically suitable for LBAM.

In its native habitat of Australia, LBAM generally completes three generations annually. More than three generations can be completed if temperatures and host plants are favorable. In southeastern Australia where it is warmer, four generations can be completed. In contrast, two generations occur in Tasmania, New Zealand and in Great Britain. In Australia, generations do not overlap, but they do in Great Britain. As the population builds, LBAM is more abundant during the second generation. Therefore, the second generation causes the most economic damage as larvae move from foliage to fruit. The size of the third generation is typically smaller than the previous two due to leaf fall (including attached larvae) as temperatures decline in autumn. LBAM does not diapause and its continued development is slowed under cold winter temperatures. In

cold climates the pest overwinters as larvae. Because LBAM causes damage in a wide range of climate types in Australia, pest status is not dictated by climate.

LBAM causes economic damage from feeding by caterpillars, which may:

- destroy, stunt or deform young seedlings;
- spoil the appearance of ornamental and native plants; and
- injure deciduous fruit-tree crops, citrus and grapes.

Additionally, LBAM, if not eradicated, will cause economic damage to California's export markets due to the implementation of quarantines by foreign and state governments. The USDA, APHIS, is also contemplating the need for a federal domestic quarantine restricting the interstate movement of possible hosts and carriers.

Where it occurs, LBAM is difficult to control with sprays because of its leaf-rolling ability, and because there is evidence of resistance due to overuse of the same insecticides. Conifers are damaged by needle-tying and chewing. Larvae have been found feeding near apices of Bishop Pine seedlings where they spin needles down against the stem and bore into the main stem from the terminal bud. LBAM constructs typical leaf rolls (nests) by webbing together leaves, a bud and one or more leaves, leaves to a fruit, or by folding and webbing individual mature leaves. During the fruiting season, they also make nests among clusters of fruits, damaging the surface and sometimes tunneling into the fruits. During severe outbreaks, damage to fruit may be as high as 85 percent.

Egg masses are most likely to be found on leaves. The larvae are most likely to be found near the calyx or in the endocarp; larvae may also create "irregular brown areas, rounds pits, or scars" on the surface of a fruit. Larvae may also be found inside furled leaves, and adults may occasionally be found on the lower leaf surface.

LBAM is an actionable pest for the USDA, APHIS and requires the Australian Quarantine and Inspection Service to take corrective actions to prevent this pest from being associated with apple, citrus, pear fruits and other host commodities being exported to the United States. Host fruit exported from New Zealand faces similar

restrictions by USDA, APHIS and the New Zealand Ministry of Forestry and Fisheries is responsible for any corrective actions at origin. Any host commodity arriving in the United States that is infested with or contaminated by LBAM is issued a federal Emergency Action Notice and must be either destroyed, reexported or undergo an appropriate quarantine treatment prior to its release into the United States commerce. Canada and Japan also treat LBAM as a quarantine action pest. The People's Republic of China requires all host fruit imported to originate from orchards that are free-from LBAM.

Wherever LBAM occurs in association with vineyards, it is considered to be a very important agricultural pest. Unless properly managed, LBAM causes substantial risk to crop yield and quality by causing both direct and indirect damage. Emerging larvae in the spring may feed upon both the flowers and newly set fruitlets causing a direct loss in yield. Later in the year, LBAM larvae feeding on maturing fruit can cause indirect loss by introducing botrytis infections into the grape bunches. As an example, in 1992 in Australia, 70,000 larvae per hectare were documented and caused a loss of 4.7 tons of Chardonnay fruit. Damage in the 1992-93 Chardonnay season at Coonawarra, southern Australia, cost \$2,000 per hectare.

In South Australia, LBAM is also a significant pest of apricots and can attack other stone fruit. Peaches are also damaged by feeding that occurs on the shoots and fruit.

The first generation (in spring) causes the most damage to apples while the second generation damages fruit harvested later in the season. Some varieties of apples such as 'Sturmer Pippin' (an early variety), 'Granny Smith' and 'Fuji' (late varieties) can have up to 20 percent damage while severe attacks can damage up to 75 percent of a crop.

In Australia, when insecticides are not applied, typically between 5 percent to 20 percent of fruit is damaged, but this can exceed 30 percent. In New Zealand, damage to unsprayed crops commonly reaches 50 percent (Wearing et al., 1991). More information regarding potential economic impact in California may be found in the environmental assessment prepared by USDA at

[www.aphis.usda.gov/plant\\_health/ea/downloads/lbam\\_ea\\_sc.pdf](http://www.aphis.usda.gov/plant_health/ea/downloads/lbam_ea_sc.pdf). In 10 of California's affected counties, it is estimated that LBAM could cause \$160 to \$640 million in losses. These estimates were derived from the agricultural impacts in Australia and New Zealand. This estimate does not include economic costs to the nursery industry nor to other significant host crops in California such as apricots, avocados, kiwifruit, peaches, etc., grown in other counties.

Exact economic impacts on international and domestic exports are uncertain at this time. California is the nation's leader in agricultural exports and in 2003 shipped more than \$7.2 billion in both food and agricultural commodities around the world. Some countries have specific regulations against this pest, and many others consider it a regulated pest that would not be knowingly allowed to enter. Additional measures, such as preharvest treatments and postharvest disinfestation, would likely have to be taken to ensure that shipments to these countries are free from LBAM. In addition, LBAM is an exotic pest, i.e., it is not established in the continental United States, and therefore other states within the United States would likely impose restrictions on the movement of potentially infested fruits, vegetables and nursery stock. These restrictions could severely impact the domestic marketing of California agricultural products.

The majority of California does have a climate which would favor the LBAM. Given the known economic damages occurring in LBAM's present range, its potential damage to California's environment and agricultural industry could be devastating; especially without adequate control measures.

The Department has also determined that to ensure it conducts the most efficient and effective eradication project with the greatest chances of success, eradication activities will need to begin as soon as possible. This includes, "The searching for all stages of light brown apple moth by visual inspection, the use of traps, or any other means anywhere within the said area." Additionally, the Department will continue to work with the USDA LBAM Technical Working Group to develop its comprehensive eradication strategy. If necessary, the Department will also propose appropriate emergency amendments Section 3434, Light Brown Apple Moth Interior Quarantine.

The amendment of Section 3591.20(a) established San Joaquin County as an additional eradication area for LBAM. The entire county is being proposed as an eradication area as ongoing delimitation surveys may result in finds of additional small LBAM infestations outside the current known infested areas. To enable rapid treatment of newly discovered small infestations without frequent amendment of the regulation, the entire county should be established as an eradication area.

The effect of the amendment of this regulation will be to implement the State's authority to perform control and eradication activities against LBAM in San Joaquin County. Any eradication or control actions undertaken by the Department will be in cooperation and coordination with federal, city, county and other state agencies as deemed necessary by the Department to ensure no long-term significant public health or environmental impacts. To prevent the spread of the LBAM to non-infested areas in order to protect California's agricultural industry and environment, it was necessary to begin eradication activities against the LBAM immediately.

Therefore, it was necessary to amend this regulation as an emergency action.

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

The Department of Food and Agriculture has determined that the amendment of Section 3591.20 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 3591.20.

The cost impact of the changes in the regulations on private persons and businesses are expected to be insignificant.

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 emergency adoption of Section 3591.20 provides authority for the Department to conduct eradication activities against light brown apple moth within San Joaquin County and there are no known private sector cost impacts.

#### Assessment

The Department has made an assessment that the repeal 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.

#### 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 and less burdensome to affected private persons than the proposed action.

#### Information Relied Upon

The Department relied upon the following studies, reports, and documents in the proposed adoption and subsequent amendment of Section 3591.20:

Email dated June 11, 2009, from Marc Epstein, subject "LBAM New for San Joaquin Co. Manteca."

"Pest and Damage Record #1560054," dated June 8, 2009, California Department of Food and Agriculture, Plant Health and Pest Prevention Services.



“Phytopsanitary Advisory No. 31-2007,” dated October 31, 2007, California Department of Food and Agriculture.

Federal Domestic Quarantine Order, *Epiphyas postvittana*, (Light Brown Apple Moth), DA-2008-17.

Federal Domestic Quarantine Order, *Epiphyas postvittana*, (Light Brown Apple Moth), DA-2007-42.

For Information/Action, DA-2008-02, dated January 11, 2008, to State and Territory Agricultural Regulatory Officials, from Rebecca Bech and its attachments.

“Pest Profile,” updated March 16, 2007, Kevin Hoffman, California Department of Food and Agriculture.

“Lightbrown apple moth, Exotic host plants-common,” printed March 13, 2007, <http://www.hortnet.co.nz/key/stone/info/hostplnt/iba-exo2.htm>.

“Lightbrown Apple Moth Life Cycle,” printed March 12, 2007, HortFACT.

“Light Brown Apple Moth, *Epiphyas postvittana*,” printed March 12, 2007, Government of South Australia.

“Light brown apple moth development calculator,” printed March 12, 2007, NSW Department of Primary Industries.

“Light brown apple moth in citrus,” June 2006, Primefact Number: 216.

“Botrytis and the Light Brown Apple Moth,” undated, Bayer CropScience.

“Light Brown Apple Moth Procedures for USA Citrus Export Program,” updated June 2006.

“China Export Quarantine IPM Guide,” January 2006, Steven Falivene, NSW, DPI.

“Mini Risk Assessment, Light Brown Apple Moth, *Epiphyas postvittana* (Walker), [Lepidoptera: Tortricidae], September 21, 2003, Department of Entomology, University of Minnesota.

“Pests and Pest Management, Impact on Climate Change,” February 2000, Dr. Robert W. Sutherst, CSIRO Entomology.

Letter dated April 28, 2008, from Lisa Correia to A.G. Kawamura.

Letter dated March 17, 2008, from William D. Gillette to A.G. Kawamura.

Letter dated July 12, 2007, from Kurt E. Floren to A.G. Kawamura.

Letter dated July 11, 2007, from Jearl D. Howard to A.G. Kawamura.

Letter dated June 1, 2007, from David R. Whitmer to A.G. Kawamura.

Letter dated May 25, 2007, from Ken Corbishley to A.G. Kawamura.

Letter dated May 24, 2007, from Paul J. Matulich to A.G. Kawamura.

Letter dated May 4, 2007, from Eric Lauritzen to A.G. Kawamura.

Letter dated May 4, 2007, from Gail M. Raabe to A.G. Kawamura.

Letter dated April 11, 2007, from Greg Van Wassenhove to A.G. Kawamura.

Letter dated April 4, 2007, from Scott T. Paulsen to A.G. Kawamura.

Letter dated April 3, 2007, from Edward P. Myer to A.G. Kawamura.

Letter dated April 2, 2007, from Dennis F. Bray to A.G. Kawamura.

Letter dated March 30, 2007, from Stacy Carlsen to A.G. Kawamura.