

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 specific purpose of Section 3591.20 is to provide authority to the State to eradicate or control infestations of light brown apple moth (LBAM), *Epiphyas postvittana*, from within the declared eradication areas by the established means and methods.

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

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 April 29 (PDR #1490390) and May 14 (PDR #1490395), 2010, adult male LBAM were trapped in the Ryer Island area of Solano County. These LBAM were trapped within three miles of each other and within one life cycle. These detections meet the regulatory protocol for expanding the quarantine area in this area of Solano and Sacramento counties as this is evidence of an incipient infestation. Although the LBAM were trapped in Solano County, the quarantine buffer area extends into Sacramento County. This is also the recognized trigger for establishing an eradication area. The Department must also establishing delimitation LBAM trapping grids in Sacramento County.

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 Sacramento County. Additionally, the Department is still conducting

regional delimitation surveys for LBAM. This activity is also specifically authorized under Section 3591.20.

The adult LBAMs will continue to emerge and are not known to be a long distance flyer. These types of moths generally only fly up to approximately one half mile and the current traps will attract a male moth within 100 meters. The real threat of long distance spread is through the human assisted movement of infested plants and plant parts, including green waste, and other possible carriers such as contaminated equipment or appliances.

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, blueberry, blackberry, 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. It is an insect species that feeds upon over 250 species of native and ornamental plants. The general area of infestation contains numerous sensitive plants species and habitats. There is an imminent threat for adverse consequences and ultimate extinction to some of these sensitive species if LBAM becomes permanently established in California.

Currently, this species has a relatively restricted geographic distribution, being found only in portions of Europe and Oceania. 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 the 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.

Based upon losses in Australia, annual losses in California are expected to be much higher as the agricultural sector is larger and more variable. 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.

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, such as grapes, 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, round 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.

Where ever 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.

There is no comprehensive estimate of the total economic losses that could be caused by the LBAM to the environment and the agricultural industry in California. The impact on production costs for LBAM hosts could top \$100 million. It was estimated for Australia that LBAM causes AU\$21.1 million annually in lost production and control costs, or about 1.3 percent of gross fruit value, for apples, pears, oranges and grapes. Applying this percentage to the 2005 gross value of these same crops in California of \$5.4 billion (USDA 2006), the estimated annual production costs would be \$70.2 million. 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 and strawberries. If the same level of costs were incurred by these as for the previous four crops, the additional costs would be \$63.1 million, based on their 2005 gross value of \$4.8 billion. Therefore, the total lost production and control costs in California could be \$133 million for all of the crops mentioned above.

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. Additionally, LBAM may have seven or more generations under some California climatic conditions. If unchecked, this would enable LBAM to build higher population levels in California. Given the known economic damages occurring in LBAMs 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 be working with the USDA LBAM Technical Working Group to develop its comprehensive eradication strategy.

The amendment of Section 3591.20(a) established Sacramento County as an additional eradication area for LBAM. The entire two counties were proposed as eradication areas 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 two counties should be established as eradication areas.

The effect of the amendment of subsection 3591.20(a) is to implement the State’s authority to perform control and eradication activities against LBAM in Sacramento 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 Sacramento 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:

Phytopathology 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.



“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.

“Pest and Damage Record #s 1490390 (March 9, 2010) and 1490395 (May 14, 2010), California Department of Food and Agriculture, Plant Health and Pest Prevention Services.