

**Council Meeting: April 29, 2008****SUBJECT: California Department of Food and Agriculture Actions in Response to Light Brown Apple Moth – INFORMATION ONLY****REPORT IN BRIEF**

The California Department of Food and Agriculture (CDFA) has identified a serious exotic insect pest species (light brown apple moth, or LBAM) in the Bay Area, and specifically in several locations in Sunnyvale and surrounding cities. This pest is not native to North America, and California is the first known location it has appeared. CDFA has determined that the pest must be eradicated for protection of many plant species, and potential damaging impact on the state economy. The issue is of state-wide significance, is not directly related to City services, and therefore is not considered City business as defined by Council Policy 7.3.2. CDFA will be using the least invasive methods (pheromone-infused twist-tie deployment) available in its efforts to eradicate LBAM, consistent with City integrated pest management, if it were a City issue. If this technique does not successfully accomplish its goal, other options may be used by the CDFA to deal with this potential infestation.

BACKGROUND

Beginning in 2007, CDFA has conducted, and continues to conduct detection efforts for the presence of LBAM (Attachments A, B) in California. LBAM has been found in the San Francisco Bay Area, including within the city limits of Sunnyvale. In response to the presence of LBAM in California, CDFA has stated a need to take steps to eradicate LBAM in California.

LBAM meets the criteria of CDFA of a serious exotic insect pest, which could have a significant impact on plant life in California and the rest of North America. LBAM is originally from Australia, and has become established in New Zealand, New Caledonia, Hawaii, and the British Isles. They are light brown, yellowish moths with varying amounts of darker brown, and a wingspan of 16-25 mm (about one inch). LBAM lays pale white eggs in groups of 20 to 50, and one female is capable of laying from 100 to 1500 eggs in a lifetime. Larvae from the eggs feed on fruits and leaves, and utilize leaves, buds and fruit in creating nests of silken webbing. LBAM typically has three (3) generations per year in Australia, and over winters, as larva. Projections are that four (4) or five (5) generations may be possible annually in California.

According to literature referenced by CDFA, LBAM has been associated with over 2,000 species of plants, and has been associated with damage to plants such as fruit and crop trees (apple, pear, peach, apricot, nectarine, citrus, persimmon, cherry, almond, avocado), other trees (oak, willow, walnut, poplar, cottonwood, coast redwood, Monterey pine, eucalyptus), and herbaceous vegetables, flowers and other plants (grape, kiwifruit, strawberry, blackberry, blueberry, boysenberry, raspberry, corn, pepper, tomato, pumpkin, beans, cabbage, carrot, alfalfa, rose, camellia, pittosporum, jasmine, chrysanthemum, clover, lupine and plantain).

The impact of LBAM on crop production in California has been estimated by CDFA in excess of \$130 million per year. In addition, loss of trees and plants in private yards, along rights of way and throughout the community can result in millions of dollars worth of other plant life being lost. There is the risk that crops from California could be delayed or prevented from being shipped to other states or countries, resulting in further economic impact.

CDFA has announced intended efforts, including specific techniques that will be used to eradicate LBAM in California. In the Sunnyvale area, CDFA has announced their intention of using traps (primarily to determine the extent of the current intrusion), ground applications in the form of pheromone-infused “twist-ties,” post-treatment monitoring to determine the effectiveness of the twist-ties, quarantine to control the spread of LBAM during eradication efforts, and public outreach to announce these steps and any changes that may be required.

The City has also been approached by individuals and one organization to protest intended aerial spraying of pheromone to assist in the eradication of LBAM. Concern has been expressed by these individuals, and the one group, that the pheromone and other chemicals connected to the aerial application may be health risks, and the opinion that some respiratory ailments in Monterey County may be linked to aerial spraying in that area. No objection has been received to the use of pheromone-infused twist-ties.

In response to objections by the public, and by various local governments, CDFA has released a number of fact sheets and responses to questions and issues that have been raised (Attachment C.)

The Undersecretary of the CDFA issued a proclamation on April 14, 2008, announcing an eradication project regarding LBAM, including the steps mentioned above to be used in Santa Clara County (Attachments D, E, F, G and H)

EXISTING POLICY

Council Policy 7.3.2 – *Legislative Advocacy Positions* - “*City business is defined as all matters directly related to service delivery, or otherwise contributing to the City’s operational success.*”

Administrative Policy Manual Chapter 6, Article 12, titled “*Integrated Pest Management Policy for City-owned Facilities.*”

Legislative Advocacy Positions, 3. Environmental Management, (4) “*Encourage reasonable regulations on all types of pollutants with known health risks to humans (e.g. cancer, birth defects, etc.).*”

Legislative Advocacy Positions, 3. Environmental Management, 3.7 Air Quality, (8) “*Support efforts to manage and reduce risks from air toxins.*”

DISCUSSION

In light of the proclamation by the CDFA of the seriousness of the current incidence of LBAM in Santa Clara County, and the intent to pursue methods to eradicate the LBAM in the County, and the State, the responsibility for the program, the techniques to be used, and the results to be pursued, rest with the State. This matter is therefore a State level issue, and not a local issue. Based upon Council Policy 7.3.2 – *Legislative Advocacy Positions*, the matter is therefore not one requiring City Council action. However, due to the public interest and some voiced objection to the issue and some techniques that may, or may not be employed within Sunnyvale in the effort to eradicate LBAM, this report presents information released by the CDFA regarding the matter.

CDFA has identified two areas within the limits of Sunnyvale where LBAM has been identified. In these areas, as well as in areas of the City of Cupertino and the City of San Jose, CDFA will introduce pheromone-infused twist-ties into the neighborhoods, as well as monitoring traps, in order to prevent the spread of the LBAM. The intent is to confuse male LBAM looking for female LBAM that will prevent mating. The expectation is that eradication within two (2) or three (3) generations of LBAM is possible in the treatment areas. See Attachment I for the two areas referenced.

The twist-tie technique to be used in the Sunnyvale, Cupertino, San Jose area does not include aerial spraying, or the use of pesticides of any kind. The Legislative Advocacy Positions listed are Council policy regarding proposed legislation, which is not involved with this issue. They are listed to indicate the concerns the Council has with any pollutants, or chemicals of any kind, which could prove to be hazardous to health, and particularly if air borne. Those items are not involved with the use of the twist-ties.

This could change if the proposed technique is not successful in eradication of the LBAM, but at this time, only the pheromone-infused twist-tie method is

scheduled for use in Sunnyvale. If air borne response becomes necessary, this is still outside of the normal purview of Council due to the nature of the matter being State determined. Studies that have been conducted indicate there are no known or expected negative health risks from air borne treatment, even if that becomes necessary.

The city policy regarding “integrated pest management” deals only with City-owned facilities but is referenced above to indicate the care that the City takes on such issues with any pest control matters dealt with. The method of approach by the CDFA to respond to the LBAM situation is consistent with techniques that the City would pursue in the case of a City-involved issue.

FISCAL IMPACT

This is an Information only report and will have no fiscal impact.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City’s official-notice bulletin board outside City Hall, in the Council Chambers lobby, in the Office of the City Clerk, at the Library, Senior Center, Community Center, and Department of Public Safety; posting the agenda and report on the City’s Web site; and making the report available at the Library and the Office of the City Clerk.

RECOMMENDATION

This item is for information only.

Reviewed by:

Marvin Rose, Director, Public Works
Prepared by: James G. Craig, Field Services Superintendent

Approved by:

Amy Chan
City Manager

ATTACHMENT

- A. LBAM Pest Profile - CDFA
- B. LBAM Fact Sheet - CDFA
- C. LBAM “Claims and Responses” – CDFA
- D. Proclamation of an Eradication Project Regarding the Light Brown Apple Moth – CDFA
- E. Light Brown Apple Moth Eradication Project Work Plan
- F. Pheromone-infused Twist Tie Questions and Answers
- G. Picture of Twist Tie
- H. LBAM Known Host List
- I. Map of Twist Tie Eradication Zone Cupertino, Sunnyvale & San Jose, Santa Clara County

Light Brown Apple Moth Pest Profile



Figure 1. LBAM adults, female (left) and male (right).

View [high-resolution image of an LBAM adult male](#) and/or right-click on this CDFA image of a pinned specimen to save it to your computer.

COMMON NAME:

Light Brown Apple Moth (LBAM)

SCIENTIFIC NAME:

Epiphyas postvittana (Walker)

ORDER AND FAMILY:

Lepidoptera, Tortricidae

DISTRIBUTION IN CALIFORNIA COUNTIES:

The following ten counties are considered to have one or more infested areas and are therefore under quarantine: Alameda, Contra Costa, Marin, Monterey, San Francisco, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, and Solano. Single detections have occurred in the following four counties during 2007-2008, but LBAM is not known to be established and these counties are not under quarantine: Los Angeles, Napa, San Luis Obispo, and Sonoma.

BACKGROUND:

This moth is originally from Australia, and has become established in New Zealand, New Caledonia, Hawaii and the British Isles. Its discovery in California is a new record for the Americas.

DESCRIPTION:

Adults are light brown, yellowish moths with varying amounts of darker brown, with a wingspan of 16-25 mm ([Fig. 1](#)). Females are larger than males, and usually have less distinct markings, but often have a distinct spot in the middle when the wings are closed. Eggs are pale white and deposited slightly overlapping each other in groups of 20-50. Larvae are green, about 18 mm long at maturity. They are superficially similar to other native tortricid larvae and DNA analysis is necessary to confirm their identity. Pupae are brown, about 11 mm long.

HOSTS:

LBAM has been associated with many plants representing 290 genera (USDA 2008). These genera contain over 2000 species, and many of these species that are not already known to be hosts could prove to be hosts as LBAM becomes exposed to them. Some notable trees recorded as hosts are apple, pear, peach, apricot, nectarine, citrus, persimmon, cherry, almond, avocado, oak, willow, walnut, poplar, cottonwood, coast redwood, Monterey pine, and eucalyptus. Some common shrub and herbaceous hosts are grape, kiwifruit, strawberry, berries (blackberry, blueberry, boysenberry, and raspberry), corn, pepper, tomato, pumpkin, beans, cabbage, carrot, alfalfa, rose, camellia, pittosporum, jasmine, chrysanthemum, clover, lupine, and plantain.

LIFE CYCLE AND DAMAGE:

Development is continuous, with no true dormancy (Venette et al. 2003). In Australia, this moth typically has 3 generations per year and over-winters as a larva. Life cycle projections for the areas of California where it has been found indicate that 4 to 5 generations are possible. Females deposit egg masses containing 20-50 eggs on the upper leaf surface or on fruit. Fecundity varies considerably, and females are capable of laying up to 1496 eggs in their lifetime, but the average has been recorded variously as 118 to 462. Larvae disperse and construct silken shelters on the underside of leaves, usually near a midrib or large vein. Older larvae roll together leaves and buds or fruit with webbing. Damage to fruit occurs as surface feeding by the larvae. Larvae will occasionally enter the fruit to feed. Pupation takes place within the larval nests.

SURVEY METHODS:

There is a pheromone lure for the males, namely a 95:5 mixture of (E)-11-Tetradecenyl acetate: (E,E)-9,11-Tetradecadienyl acetate, that can be used in sticky traps.

MANAGEMENT:

Mating disruption, parasitoids and various insecticides have been used to control LBAM elsewhere.

ECONOMIC IMPACT:

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% of gross fruit value, for apples, pears, oranges and grapes (Sutherst 2000). Applying this percentage to the 2005 gross value of these same crops in California of \$5.4 billion (USDA NASS 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 (CASS 2004). 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 U.S. 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.

ENVIRONMENTAL IMPACT:

Establishment of this moth could cause direct environmental damage via increased pesticide use statewide by commercial and residential growers and via adverse feeding impacts on native plants. Populations of threatened and endangered plant species could be severely threatened or extirpated should this moth adapt to feeding on them.

METHODS OF ARTIFICIAL SPREAD:

The most significant route of artificial spread is likely to be on plants sold through nurseries and destined for commercial, ornamental and garden plantings. Other methods of spread are on fresh produce, green waste, and conveyances.

LITERATURE CITED:

- CASS. 2004. California Agricultural Statistics 2003. California Agricultural Statistics Service, Sacramento, California. 92 pp.
- Sutherst, R. W. 2000. Pests and Pest Management – Impact of Climate Change. Rural Industries Research and Development Corporation. Publication No. 00/16, Project No. CSE-76A. 34 pp.
- USDA. 2008. Treatment program for light brown apple moth in California. Environmental Assessment, February 2008. 46 pp.
- USDA NASS. 2006. California County Agricultural Commissioners' Data, 2005. United States Department of Agriculture, National Agricultural Statistics Service, California Field Office, Sacramento, California. 80 pp.
- Venette, R. C., E. E. Davis, M. DaCosta, H. Heisler, and M. Larson. 2003. Mini Risk Assessment. Light brown apple moth, *Epiphyas postvittana* (Walker) [Lepidoptera: Tortricidae]. USDA CAPS PRA. 38 pp.

Prepared By: Kevin Hoffman, Primary State Entomologist, 4/03/2008

SUMMARY/BACKGROUND

- The Light Brown Apple Moth (LBAM) is an invasive pest that attacks over 250 crops (examples: citrus, grapes and fruit tree crops) and 2,000 host and ornamental plants (examples: roses, jasmine and mums).
- In early 2007, LBAM's presence was first confirmed by California Department of Food and Agriculture (CDFA) and United States Department of Agriculture (USDA), and an emergency was declared.
 - This is the first infestation of LBAM in the contiguous 48 states.
 - The state legislature passed legislation stating that the infestation presented a "clear and present danger."
- LBAM is currently infested (and quarantines are in place) in ten Bay Area and Central Coast counties (Monterey, Santa Cruz, Santa Clara, San Mateo, Contra Costa, Marin, San Francisco, Alameda, Solano, and Santa Barbara).
 - Isolated detections last year in Los Angeles and Napa counties have already been eradicated (using twist ties that emit moth pheromone), and in Sonoma County, where a single moth has been detected, intensive trapping is underway to determine if there are more.

ERADICATION PROGRAM

- Protecting California's environment from invasive species is the goal, and eradication (via mating disruption) is the strategy.
- Mating disruption using synthetic moth pheromones is the anticipated, primary tool for eradication. This material confuses the male moths and prevents them from finding females, thereby stopping the mating and reproduction process.
- The eradication program was designed by the Technical Working Group (TWG) and is under constant scientific review. The TWG is a group of global scientific experts appointed by the USDA to advise and evaluate California's LBAM infestation. Their eradication program is based on published and peer-reviewed research, as well as TWG's career and academic experiences.
- Anticipated methods are based on levels of infestation and include:
 - Pheromone-infused twist ties (applied by hand) to treat the "outlier infestations" (few moths in isolated areas).
 - Currently being used in Alameda, Marin, San Mateo and Solano counties.
 - Planned for Treasure Island (San Francisco County) and Carpinteria (Santa Barbara County) in late March and April.
 - A "male attractant technique" that combines the pheromone with a pesticide in a mixture applied in small splotches on utility poles and trees for "intermediate infestations" (a limited number of moths spread over a fairly large area).
 - Aerial spraying with a TBD pheromone product to treat the heaviest infestations (many moths in a large area).
 - Additional methods include the release of tiny, stingless parasitic wasps that feed on the moths' eggs and organic-approved biopesticides Bt or Spinosad to treat concentrations of LBAM larvae.

COMMUNITY OUTREACH

- CDFA is reaching out to affected communities – including hearings, briefings, meetings, mailings, and earned media – to educate and explain the eradication program.
- CDFA will continue to encourage citizens to subscribe to the email notification service, utilize the hotline and visit the website for current information.

MORE INFORMATION IS AVAILABLE

CDFA - www.cdfa.ca.gov/lbam,
 CDFA Pest Hotline: 800-491-1899
 APHIS/USDA - www.aphis.usda.gov





Light Brown Apple Moth "Claims and Responses"

CLAIM: There's been *"no demonstrated damage by the apple moth. This is the green age but they're still doing things in the old toxic way."* (Dona Spring, Berkeley City Councilmember, *The Daily Californian*, 2/25/08)

RESPONSE:

- **The Light Brown Apple Moth (LBAM) treatment with moth pheromone is the most environmentally friendly pest eradication program in the history of the California Department of Food and Agriculture (CDFA).** Moth pheromone treatment is progressive and dramatically different from treatments with conventional pesticides.
- **The pheromone doesn't kill or even hurt the moth.** Instead, it creates mating confusion and disruption, which prevents moths from multiplying and results in the population dying out naturally.
- **If not eradicated, LBAM can cause damage to the environment and the food supply like it does in Australia, where it is native, and in New Zealand, where it has been for more than 100 years.** In California, damage to date has been minimal because the pest was detected early, before significant damage occurred.
- **The pheromone eradication technique was designed by a Technical Working Group (TWG) of international scientific experts.** The TWG believes the moth is a serious environmental and agricultural threat to California. (Source: [APHIS/USDA](#))

CLAIM: No one *"outside the state of California has said the [aerial] spraying is safe."*
(Jane Brunner, Oakland City Councilmember, *Tri-Valley Herald*, 2/25/08)

RESPONSE:

- **Aerial treatments with moth pheromones have been ongoing around the world for more than a decade.**
- **Illinois, Indiana, Ohio, Virginia and Wisconsin have sprayed the pheromone in residential areas.** (Source: USDA)
- **More than 3 million acres in the U.S. have been treated aurally with moth pheromone for mating disruption of the gypsy moth.** All of these treatments, like that in California, have been with a product consisting of moth pheromone formulated with other ingredients.
- **There is no indication that these treatments have harmed people, pets or plants.** (For more information see [page 14 of the USDA's February 2008 environmental assessment](#))

CLAIM: Aerial spraying *"doesn't work."* Instead CDFA should be using *"ground treatments"* and a *"natural enemy, like a non-stinging wasp."*

(Jared Blumenthal, Director of San Francisco's Department of the Environment, *San Diego Union Tribune*, 2/13/08)

RESPONSE:

- **CDFA and the U.S. Department of Agriculture (USDA) are already utilizing ground treatments as part of the varied approach suggested by the TWG.** Ground treatments with pheromone-infused twist ties are occurring in isolated areas with small infestations.
- **Other ground-based approaches, such as the release of stingless parasitic wasps, are anticipated.**
- **Aerial pheromone treatment should be the approach for heavy infestations spread over large geographic areas, according to the TWG report.** (Source: [APHIS/USDA](#))

Light Brown Apple Moth “Claims and Responses”

CLAIM: Aerial spraying should be stopped until a “*reliable outside independent source verifies that there are no health effects.*” (Oakland City Council resolution, *Bay City News*, 3/6/08)

RESPONSE:

- **The USDA is working with New Zealand agricultural officials.** Together, they are testing aerial pheromone products for use in 2008.
- **A complete battery of scientific tests is being conducted at the request of the federal and state EPAs and by a private laboratory in Texas.** These tests, known as the “six-pack,” are for oral toxicity, dermal toxicity, skin irritation, inhalation toxicity, eye irritation and dermal sensitization.
- **Before any spraying occurs, the U.S. EPA, the state Office of Environmental Health Hazard Assessment (OEHHA), Department of Public Health (DPH) and the state Department of Pesticide Regulation (DPR) all must review the test results to accept the treatment as low-toxicity.**

CLAIM: *The CDFFA is spraying for “political reasons” and “demonstrates a full out press to keep [the] USDA from slapping a quarantine on [California].”*

(Steven Scholl-Buckwald, Pesticide Action Network, *ABC7News.com*, 2/13/08)

RESPONSE:

- **We must eradicate LBAM to prevent significant environmental and economic damage to California.**
- **The pest threatens more than 2,000 plants and more than 250 crops.**
- **If it is not eradicated, a statewide quarantine would be established.** In order to meet the quarantine requirements, California food producers could face delays and increased costs, which could trickle down to consumers. The impacts could be felt from restaurants, to grocery stores, to farmers’ markets.
- **The USDA estimates that, should the pest become established statewide, it could cause billions of dollars worth of economic damage.** (For more information, [see page 19 of the USDA’s February 2008 environmental assessment](#))

CLAIM: LBAM can’t be that devastating to thousands of species of plants, otherwise “*both Australia and New Zealand would be very barren countries, plantwise, and that isn’t the case.*”

(Richard Fagerlund, *San Francisco Chronicle*, 2/23/08)

RESPONSE:

- **Natural predators in Australia keep LBAM manageable there,** along with other pest-control practices.
- **New Zealand has imported natural predators from Australia for LBAM.**
- **Those natural predators don’t exist in California,** according to California’s Primary State Entomologist, Dr. Kevin Hoffman. There is no guarantee that natural predators will evolve in California, which, in any case, has a goal of eradication rather than pest control. (Source: [CDFFA](#))

Light Brown Apple Moth “Claims and Responses”

CLAIM: After the 2007 aerial sprayings in Santa Cruz and Monterey counties, over “600 reports of health problems emerged.” (Traci Sheehan, Planning and Conservation League, *California Progress Report*, 3/7/08)

RESPONSE:

- **OEHHA, DPR and DPH are reviewing the claims of illness.** They will have a conclusive report completed by early April 2008.
- **It is unlikely the pheromone was used at exposure levels that would be expected to result in health effects.** Previously, a consensus statement by OEHHA and DPR, in consultation with DPH, concluded that there was an extremely low application rate of the pheromone product used last year – about a teaspoon per acre. (Source: [Consensus Statement](#))

CLAIM: *The classification of LBAM “as an actionable quarantine pest” is based on outdated classifications by the United States Department of Agriculture (USDA) and “should be reviewed and revised based on current, relevant, science-based information.”*

(Integrated Pest Management Practices for the Light Brown Apple Moth in New Zealand: Implications for California, [Report](#), 3/6/08)

RESPONSE:

- **A USDA review in 2003 determined that LBAM is “considered highly likely of becoming established in the U.S.; the consequences of its establishment for U.S. agricultural and natural ecosystems were judged to be high.” This is current and relevant science.** (Source: USDA [“Mini Risk Assessment,”](#) September 2003)

CLAIM: The spray contains ingredients that are highly toxic to aquatic species. As well as surfactants, that might have contributed to algae bloom (red tide) and the death of hundreds of waterfowl. (A flyer at: http://www.lbamspray.com/00_Flyers/MarinFlyer.pdf)

RESPONSE:

- **A UC Davis study that found the Checkmate pheromone product used last year was not harmful to marine life.** The study was completed in fall 2007, at the request of the Monterey Bay National Marine Sanctuary. (Source: [Marine Life Study](#))
- **A California Department of Fish and Game (DFG) study showed no traces of Checkmate in dead waterfowl found last year in the central coast area.** That study was completed in March 2008. (Source: [Fish and Game Study](#))

CLAIM: CDFA’s aerial program “*doesn't smell right. If the problems are out there, why are they just spraying (the urban areas)?*” (Jane Brunner, Oakland City Councilmember Source: [Tri-Valley Herald](#), 2/25/08)

RESPONSE:

- **CDFA is treating infested areas.**
- **Most CDFA eradication programs, historically, have been in urban areas due to higher population concentrations and a propensity for people to bring invasive species into metropolitan areas.**
- **Urban areas are common locations for invasive species introductions.**



CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

**OFFICIAL NOTICE
FOR THE CITIES OF CUPERTINO, SUNNYVALE AND
SAN JOSE****PLEASE READ IMMEDIATELY****PROCLAMATION OF AN ERADICATION PROJECT AGAINST THE
LIGHT BROWN APPLE MOTH**

The light brown apple moth (LBAM), a serious exotic insect pest, was detected in Cupertino, Sunnyvale and San Jose in the county of Santa Clara, between June 19, 2007 and April 4, 2008. The LBAM is not known to occur in California. Its presence in the Bay Area is the first detection of LBAM in North America. This pest attacks over 250 different hosts, many of which are grown in Santa Clara County. Emergency eradication action is needed to protect California from the negative economic and environmental impacts the establishment of this pest would cause.

The California Department of Food and Agriculture's eradication protocol is based upon input from professional staff and recommendations from expert scientists on a LBAM Technical Working Group.

A biological control technique, called mating disruption, will be used to eradicate the LBAM in Cupertino, Sunnyvale and San Jose. This technique requires the deployment of pheromone-infused "twist ties" by ground. The twist ties are placed on trees, shrubs and objects such as fence posts in infested areas. The twist tie dispensers contain an odorless, synthetic insect pheromone (sexual attractant) that confuses male moths, impairing their ability to find mates. Once the breeding cycle of the moth is broken, the light brown apple moth population is reduced and ultimately eradicated from the area. Twist tie applications target the adult male moth and preclude pesticide spraying, unless immature (larval) life stages are detected. Residents in the affected area will be invited to participate in an informational public meeting one week prior to deployment and notified in writing at least 24 hours prior to any deployment of twist ties on their property.

In Cupertino, Sunnyvale and San Jose, 30 moths were captured in close proximity to each other over several generations. This is a strong indication that a breeding population exists in the area. If additional LBAM or other life stages of the LBAM are detected, additional eradication measures will occur within a 200-meter radius of the find sites. Following any eradication activity, completion notices are left with the homeowners detailing precautions to take. Mating disruption technique will be repeated every 90 days for two life cycles.

Enclosed are the Proclamation of an Eradication Project, the maps of the eradication area, the work plan, the pest profile and the host list.

PROCLAMATION OF AN ERADICATION PROJECT
REGARDING THE LIGHT BROWN APPLE MOTH

On February 6, 2007, the California Department of Food and Agriculture (Department) was informed that two light brown apple moths (LBAM) were detected in a light trap located in Berkeley. This trap is maintained by a retired entomologist. The samples were sent to an Australian entomologist who confirmed that the specimens were *Epiphyas postvittana* (Walker), the light brown apple moth. These were the first detections of LBAM in the continental United States. In response to these detections, additional traps were placed throughout the state in spring 2007. Upon inspection of the LBAM traps, LBAM was detected in Cupertino, Sunnyvale and San Jose in the county of Santa Clara.

Based on trapping data, the LBAM having a continuous life cycle with no true dormancy, the ability of LBAM larvae to disperse via the wind on silken threads, recommendations from the LBAM Technical Working Group and information provided to me by my staff, I have determined that an established infestation of this pest exists.

The light brown apple moth is a pest to ornamental plants and agricultural crops. It is native to Australia, and has become established in New Zealand, New Caledonia, Hawaii, and the British Isles. It was estimated for Australia that LBAM causes AU\$21.1 million annually in lost production and control costs. If the LBAM becomes established in California, this pest will devastate residential landscapes and agriculture. The LBAM attacks over 250 hosts. It attacks nearly all types of fruit crops, ornamentals, vegetables and nursery stock. Hosts occurring in California that are of significant concern include: apple, apricot, avocado, broccoli, camellia, chrysanthemum, citrus, cottonwood, cypress, dahlia, ferns, geranium, grape, honeysuckle, kiwi, oak, peach, rose, spruce, strawberry and willow. LBAM causes economic damage from feeding by the larvae. The pest destroys, stunts or deforms young seedlings; spoils the appearance of ornamental plants; and injures deciduous fruit tree crops. During severe outbreaks, damage to fruit may be as high as 85 percent of the crop. Losses in crop production and the cost to control the LBAM are estimated to be \$160-\$640 million in the current infested area. Based upon the known climatic zones of infested origins, and the distribution of similar climatic zones in California, it is likely that the pest will successfully adapt to the climate of this state if the infestation is not eradicated.

Establishment of the LBAM could cause direct environmental damage via increased pesticide use statewide by commercial and residential growers and via adverse feeding impacts on native plants. Populations of threatened and endangered plant species could be severely threatened or extirpated should this moth adapt to feeding on them.

As Undersecretary of the California Department of Food and Agriculture, I have decided based upon the possible economic and environmental damage that could be inflicted by an established infestation of the LBAM, that under my statutory authority, it is incumbent on me to attempt to eradicate the LBAM and its life stages in California.

This decision to proceed with an eradication program is based upon a realistic evaluation. It may be possible to prevent the establishment and the spread of the LBAM using currently available technology in a manner that is recommended by the LBAM Technical Working Group.

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My duty to act, and this decision, is based upon authority set forth in Section 3591.20 of Title 3 of the California Code of Regulations, Sections 403, 5000 et seq., and specifically 5761-5763 of the Food and Agricultural Code.

The following is a list of options that I have considered for the eradication of the LBAM in Cupertino, Sunnyvale and San Jose: 1) foliar application of an organic pesticide by ground; 2) foliar application of an organic pesticide or a pheromone by air; 3) mating disruption using pheromone-infused plastic twist ties; 4) mass trapping; 5) release of stingless parasitic wasps; 6) use of male moth attractant treatments and 7) quarantine measures.

Based upon input from my professional staff and recommendations from experts familiar with the LBAM, I am ordering the deployment of pheromone-infused plastic twist ties be applied by ground to LBAM hosts within a 200-meter radius around all detection sites. A description of the options chosen is contained in the attached work plan. In issuing this decision, I have considered pesticidal and non-pesticidal options. The option selected is a biological control measure that involves the use of a synthetic insect pheromone (sexual attractant) that confuses male moths, impairing their ability to find mates.

I have determined that these actions are necessary to prevent or mitigate an emergency under the California Environmental Quality Act (CEQA), Public Resources Code Section 21080(b)(4). Emergency actions are exempt from CEQA. Consequently, I have determined that it is not necessary to prepare environmental documents for these emergency actions.

Sensitive Areas

The eradication zone has been examined and the Department is aware of the sensitive areas that are surrounding the treatment area. Mitigation measures will be implemented to guard against contamination of the environment. The Department will not apply pesticides to water bodies, riparian habitat areas or areas lacking host plants.

Eradication Plan

The proposed eradication area encompasses those portions of Santa Clara County which fall within approximately 27.12 square miles in the boundaries of Cupertino, Sunnyvale and San Jose. If additional LBAM are detected outside of the eradication zone, the area will expand as necessary. The maps of the find sites with the eradication boundary are attached. In summary form, the eradication plan consists of the following elements:

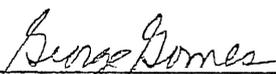
1. Trapping – Jackson traps baited with the LBAM pheromone lure will be placed in the treatment area at the density of 100 traps per square mile where LBAM has been detected; and 25 traps per square mile in the square miles adjacent to the find sites. Additional traps may be added to further delimit the infestation and to determine the efficacy of treatments. All monitoring traps will be serviced on a regular schedule for a period of time equal to three generations beyond the date of the last LBAM detection.

Light Brown Apple Moth
April 10, 2008
Page 3

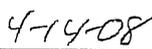
2. Treatment – Ground applications with pheromone-infused “twist ties” placed on trees, shrubs and objects such as fence posts on designated residential properties. The twist tie dispensers contain an odorless, synthetic insect pheromone (sexual attractant) that confuses male moths, impairing their ability to find mates. Once the breeding cycle of the moth is broken, the light brown apple moth population is reduced and ultimately eradicated from the area. Residents in the affected area will be notified in writing at least 24 hours prior the deployment of the twist ties.
3. Post-Treatment Monitoring – Light brown apple moth traps will be inspected for one life cycle following the last deployment of the twist ties.
4. Quarantine – The official detection of any life stage of LBAM will trigger a quarantine or expansion of an existing quarantine boundary. The quarantine boundaries will be developed in association with local regulatory authorities.

All regulated entities, such as nurseries, landscapers, packing houses and green waste handlers will be identified, informed of the quarantine restrictions and placed under compliance agreement. Quarantine compliance inspections will be conducted as necessary in all quarantine areas to ensure ongoing compliance with quarantine restrictions.

5. Public Outreach – Public information concerning the LBAM project will consist of press releases to the general public. Press releases are prepared by the Department and United States Department of Agriculture's information officer and the county agricultural commissioner, in close coordination with the project leader responsible for treatment. A public meeting will be held in Santa Clara County prior to the initiation of the deployment of the pheromone twist ties. Any resident, whose property is impacted by the discovery of a LBAM, will be notified in writing prior to any eradication activities that must occur on their property.



George Gomes, Undersecretary



Date

If you have specific questions related to this program, please contact Robert V. Dowell, Branch Chief at (916) 654-0768.

Attachments

LIGHT BROWN APPLE MOTH ERADICATION PROJECT WORK PLAN

DETECTION

1. Detection Trapping

The Department maintains a cooperative state/county trapping program for the various exotic insects to provide early detection of any infestation in the State. Traps are serviced by county and/or state personnel funded by the California Department of Food and Agriculture (Department). The light brown apple moth program uses Jackson traps baited with (E)-11-Tetradecenyl acetate: (E:E)-9, 11-Tetradecadienyl acetate, a pheromone lure that attracts male moths to the trap. Traps are hung from branches of host trees at specified densities in susceptible areas of California. County or state employees inspect these traps bi-weekly throughout the year in southern California, and from March through November in northern California.

2. Intensive Trapping

Placement of a delimitation trapping array is triggered after a single LBAM is caught in an area not currently infested with LBAM. Following confirmation of the specimen, trap densities in the core square mile(s) are increased within 24 hours. Light brown apple moth traps will be increased to 100 traps around the epicenter (core) of the LBAM detection and 25 traps per square mile in the eight square miles surrounding the core square mile. Traps in the core mile(s) and the eight square miles around each core are serviced once the first week following the detection of an LBAM, then bi-weekly thereafter. Traps may be relocated to available preferred hosts as practical. All delimitation traps will be serviced on a regular schedule for a period of time equal to three generations beyond the date of the last LBAM detection. This time period is determined by a temperature-dependent developmental model run by Pest Detection/Emergency Projects Branch personnel in Sacramento.

3. Post-Treatment Monitoring

The success of the eradication program is monitored by delimitation trapping levels for one life cycle of the LBAM after the cessation of eradication activities. If no LBAM are caught during that time, trap densities return to detection levels.

TREATMENT OPTIONS

1. Aerial Treatment

Multiple aerial applications with pheromone may be applied over the infested areas to disrupt the LBAM mating cycle. When the pheromone is applied over a large area, male LBAM have great difficulty locating females, eventually dying without mating with a female moth. Treatments will occur as specified by the label.

Light Brown Apple Moth Work Plan
Page 2

2. Ground application of pheromone disruption twist ties (also called ropes)

Pheromone disruption twist ties will be placed at the rate of 250 dispensers per acre in infested areas. Dispensers will be applied uniformly throughout the treatment area. Dispensers will be replaced every 90 days for two life cycles.

3. Ground Bait Spray

At least six applications of a naturally occurring bacteria, *Bacillus thuringiensis*, may be applied. The bacteria derived insecticide Spinosad may also be used with a maximum of six treatments applied per year to any specific site. Treatments of both materials are repeated at ten to 14 day intervals, unless significant rainfall justifies re-treatment. Any resident whose property will be treated with foliar sprays will be notified, in writing, prior to treatment.

4. Release of Stingless *Trichogramma* Wasps

Stingless *Trichogramma* wasps are mass released at a rate of approximately 1 million per square mile throughout the designated treatment area. These wasps seek out and lay their eggs within the eggs of the LBAM. The resulting wasp larvae eat the LBAM egg from the inside and an adult *Trichogramma* wasp eventually emerges. One or more *Trichogramma* releases may be used in conjunction with other tools.

5. Use of Male Moth Attractant Treatments

A mixture of a clay-based carrier, mineral oil, LBAM pheromone and the insecticide permethrin is applied to utility poles and trees on public and private property throughout the treatment area. The male LBAM are attracted to the mixture where they crawl over it looking for the female moth. The male LBAM will die after physical contact with the mixture. The mixture will be applied in 5 ml doses at a minimal height of eight feet to reduce citizen contact with the mixture. Applications will occur at 60 to 90 day intervals in conjunction with other tools.

QUARANTINE ACTION

The official detection of any life stage of LBAM will trigger a quarantine or expansion of an existing quarantine boundary. The quarantine boundaries will be developed in association with local regulatory authorities.

All regulated entities, such as nurseries, landscapers, fruit harvesters, packing houses and green waste handlers will be identified, informed of the quarantine restrictions and placed under compliance agreement. Quarantine compliance inspections will be conducted as necessary in all quarantine areas to ensure ongoing compliance with quarantine restrictions.

Light Brown Apple Moth Work Plan
Page 3

Inspections of nurseries will be conducted inside the regulated areas in order to assess the status of LBAM on nursery stock. Traceforward and/or traceback investigations and inspections will also be conducted to determine potential sources of infestation.

Quarantine certification protocols will be developed and/or amended in association with industry representatives, researchers, and local regulatory authorities.

Training and public outreach materials will be provided to affected industries on quarantine compliance issues.

PUBLIC INFORMATION

Public information concerning the LBAM project will minimally consist of press releases to the media to inform the general public, and direct notification of project developments to concerned local and state political representatives and authorities. Press releases are prepared by the Department's information officer and the county agricultural commissioner, in close coordination with the project management. Either the county agricultural commissioner or the public information officer serves as the primary contact to the media.

What Are “Isomate LBAM Plus” Pheromone Twist Ties

Questions and Answers

What is Isomate LBAM Plus?

Isomate LBAM Plus is a synthetic formulation of the sex pheromone of the Light Brown Apple Moth infused into twist ties. This pheromone confuses the male LBAM, impairing his ability to find a mate. Once the breeding cycle of the moth population is disrupted, the infestation will eventually be eradicated from the area.

How does Isomate-LBAM Plus work?

The Isomate LBAM Plus twist tie, also called pheromone ropes, releases pheromone equivalent to thousands of female moths. When applied over a large area, male moths have great difficulty locating females thereby causing mating disruption. The ropes are twisted loosely around branches, utility poles and other objects at a rate of approximately 40 ties per property where they would potentially draw a male LBAM. After approximately 90 days, depending on whether traps in the area detect any additional moths, the twist ties will either be removed or replaced.

Are there any known side effects?

There are no known side effects. The pheromone has been approved and registered for use after an extensive review of the formulated product. There have been no reported adverse health effects on people or pets from the product. Because the pheromone is specific to LBAM it will not affect humans, other beneficial insects, animals, plants or vegetable gardens.

Will it kill other animals or insects?

Because the pheromone is specific to LBAM it will not affect or kill animals or other beneficial insects. Pheromones only disrupt the communication between adult male and female moths. They do not have a toxic effect on the target species or any other species including animals, birds or other insect species and does not even kill LBAM.

Why use Isomate-LBAM Plus Twist Ties?

Mating disruption has shown to be an effective way to control LBAM elsewhere.

Who do I call for questions?

Contact the Plant Pest Hotline, Toll-Free at 1-800-491-1899, Ext 0 or email lbam@cdfa.ca.gov.



ATTACHMENT G



Twist Tie with Hanger and Flag

LBAM Host List - Horticulture

Aaron's Beard	<i>Hypericum calycinum</i>
Acacias	<i>Acacia spp</i>
African Daisy	<i>Arctotis stoechadifolia</i>
Amaranths	<i>Amaranthus spp.</i>
Angel's Trumpet, Jimson Weed, Thorn Apple	<i>Datura spp.</i>
Arrow Grass	<i>Triglochin spp.</i>
Arrowwoods	<i>Viburnum spp.</i>
Astartea	<i>Astartea spp.</i>
Asters	<i>Aster spp.</i>
Australian Bluebells, Bluebell Creeper	<i>Sollya spp.</i>
Australian Fuchsia	<i>Correa spp.</i>
Baby's Breath	<i>Gypsophila paniculata</i>
Banana Passionflower, Passionfruit, Poka	<i>Passiflora mollissima</i>
Black Alder/European Alder	<i>Alnus glutinosa</i>
Black Locust	<i>Robinia pseudoacacia</i>
Black Thorns	<i>Bursaria spp.</i>
Bleeding Heart Vine, Bowers, Tubeflower, and Turk's Turban	<i>Clerodendron spp.</i>
Boronias	<i>Boronia spp.</i>
Bottle Brush	<i>Callistemon spp.</i>
Brake, Dish Fern, Table Fern	<i>Pteris spp.</i>
Broadleaf Dock	<i>Rumex obtusifolius</i>
Broomheaths	<i>Monotoca spp.</i>
Brooms	<i>Genista spp.</i>
Buck Brush, Wild Lilac	<i>Ceanothus spp.</i>
Bull Thistle	<i>Cirsium vulgare</i>
Buttercups, Crowfoot	<i>Ranunculus spp.</i>
Butterfly Bush	<i>Buddleia spp.</i>
Cabbage Tree	<i>Cordyline australis</i>
Calendula	<i>Calendula spp.</i>
Camellia	<i>Camellia japonica</i>
Canada Goldenrod	<i>Solidago canadensis</i>
Canada Thistle	<i>Cirsium arvense</i>
Capeweeds, Cape Dandelion	<i>Arctotheca spp.</i>
Carolina Jessamine	<i>Gelsemium spp.</i>
Cedar	<i>Cedrus spp.</i>
Chrysanthemums	<i>Chrysanthemum spp.</i>
Clematis, Virgin's Bower, Lather Flower, Vase Vine	<i>Clematis spp.</i>
Columbines	<i>Aquilegia spp.</i>
Common Sheep Sorrel	<i>Rumex acetosella</i>
Common Sowthistle	<i>Sonchus oleraceus</i>
Common Yarrow	<i>Achillea millefolium</i>
Cotoneaster	<i>Cotoneaster spp.</i>
Cottonwood, Poplar	<i>Populus spp.</i>

Coyote Brush, Desert Broom
Curled Dock
Curry plant, Licorice Plant, Straw Flower
Cypress
Dahlia
Douglas fir
Dusty-miller, Groundsels
Escallonias
Eucalyptus, Gum trees
Euonymus
Fat-hen
Fiddle Dock
Fire Thorn
Flax
Fleabane
Fleece Flower, Knotweed, Smartweed
Florist's Geraniums
Forsythias
Fox's Brush, Heliotrope, Valerian
Garden Sorrel, Spinach Dock
Geebung
Golden Shower, Pink Shower, Rainbow Shower
and Gold Medallion Tree
Gorse
Grand Fir
Greenbrier, Jacob's Ladder, Wild Sarsaparilla
Hawthorn
Hebe
Hedge Mustard
Holly
Honey Myrtle, Bottlebrush
Honeysuckles
Hop Bush, Hopseed Bush
Hummingbird Bush, Grevilleas
Ice Plant
Ivy
Japanese Douglas Fir
Japanese Pieris or Andromeda
Japanese Zelkova
Jasmine
Jerusalem Artichoke
Kamahi
Lady's Sorrel, Redwood Sorrel, Wood Sorrel
Lancewood
Lavenders
Lawson's Cypress
Lilac Vine

Baccharis spp.
Rumex crispus
Helichrysum spp.
Cupressus sp.
Dahlia spp.
Pseudotsuga menziesii
Senecio spp.
Escallonia spp.
Eucalyptus spp.
Euonymus spp.
Chenopodium album
Rumex pulcher
Pyracantha spp.
Linum spp.
Conyza bilbaoana
Polygonum spp.
Pelargonium spp.
Forsythia spp.
Centranthus spp.
Rumex acetosa
Persoonia spp.

Cassia spp.
Ulex europaeus
Abies grandis
Smilax spp.
Crataegus spp.
Hebe spp.
Sisymbrium spp.
Ilex sp.
Melaleuca spp.
Lonicera spp.
Dodonaea spp.
Grevillea spp.
Mesembryanthemum spp.
Hedera spp.
Pseudotsuga japonica
Pieris japonica
Zelkova serrata
Jasminum spp.
Helianthus tuberosus
Weinmannia racemosa
Oxalis spp.
Pseudopanax sp.
Lavendula spp.
Chamaecyparis lawsoniana
Hardenbergia spp.

Lupines
Madrone, Strawberry Tree
Maidenhair Ferns
Mexican Orange
Mexican Palo Verde
Mexican sunflower

Michelia
Mignonette
Milkworts
Mock Orange
Montbretia
Mugwort, Sage brush, Tarragon, Worm Wood,
etc.

Mums
Musk Thistle
Myoporum
Native Parsnip
Nettles
New Zealand Christmas tree
New Zealand Flax
Norfolk Island Hibiscus
Oak
Periwinkles
Photinia
Pines
Pittosporums
Plucaria

Privet
Redwood
Rhododendron
Roses
Sages
Scotch Broom
Shore Sowthistle
Silver Tree
Snow Bush
Spanish Heath
Spiny Sowthistle
Spruce
Sugi
Sweet-amber
Tea Trees
Trailing St. John's Wort
Transvaal Daisy

Lupinus spp.
Arbutus spp.
Adiantum spp.
Choisya spp.
Parkinsonia aculeata
Tithonia spp.
Trema spp.
Michelia spp.
Reseda spp.
Polygala spp.
Philadelphus spp.
Crocoshia spp.

Artemesia spp.
Chrysanthemum x morifolium
Cardus nutans
Myoporum spp.
Platysace spp.
Urtica spp.
Metrosideros excelsa
Phormium tenax
Lagunaria patersonii
Quercus spp.
Vinca spp.
Photinia spp.
Pinus spp.
Pittosporum spp.
Pulcaria spp.
Pyllanthus spp.
Ligustrum spp.
Sequoia sp.
Rhododendron spp.
Rosa spp.
Salvia spp.
Cytisus scoparius
Sonchus kirkii
Leucodendron spp.
Breynia spp.
Erica lustranica
Sonchus asper
Picea spp.
Cryptomeria japonica
Hypericum androsaemum
Leptospermum spp.
Hypericum humifusum
Gerbera spp.

Tree Tomato
Trumpet Creeper, Trumpet Vine
Velvet Ash
Virginia Mallow
Wax Flower
Western Red Cedar
White Tea Tree
Willow
Wintersweet
Woodbine, Virginia Creeper

Cyphomandra betacea
Campsis spp.
Fraxinus velutina
Sida spp.
Eriostemon spp.
Thuja plicata
Kunzea ericoides
Salix spp.
Chimonanthus sp.
Parthenocissus spp.

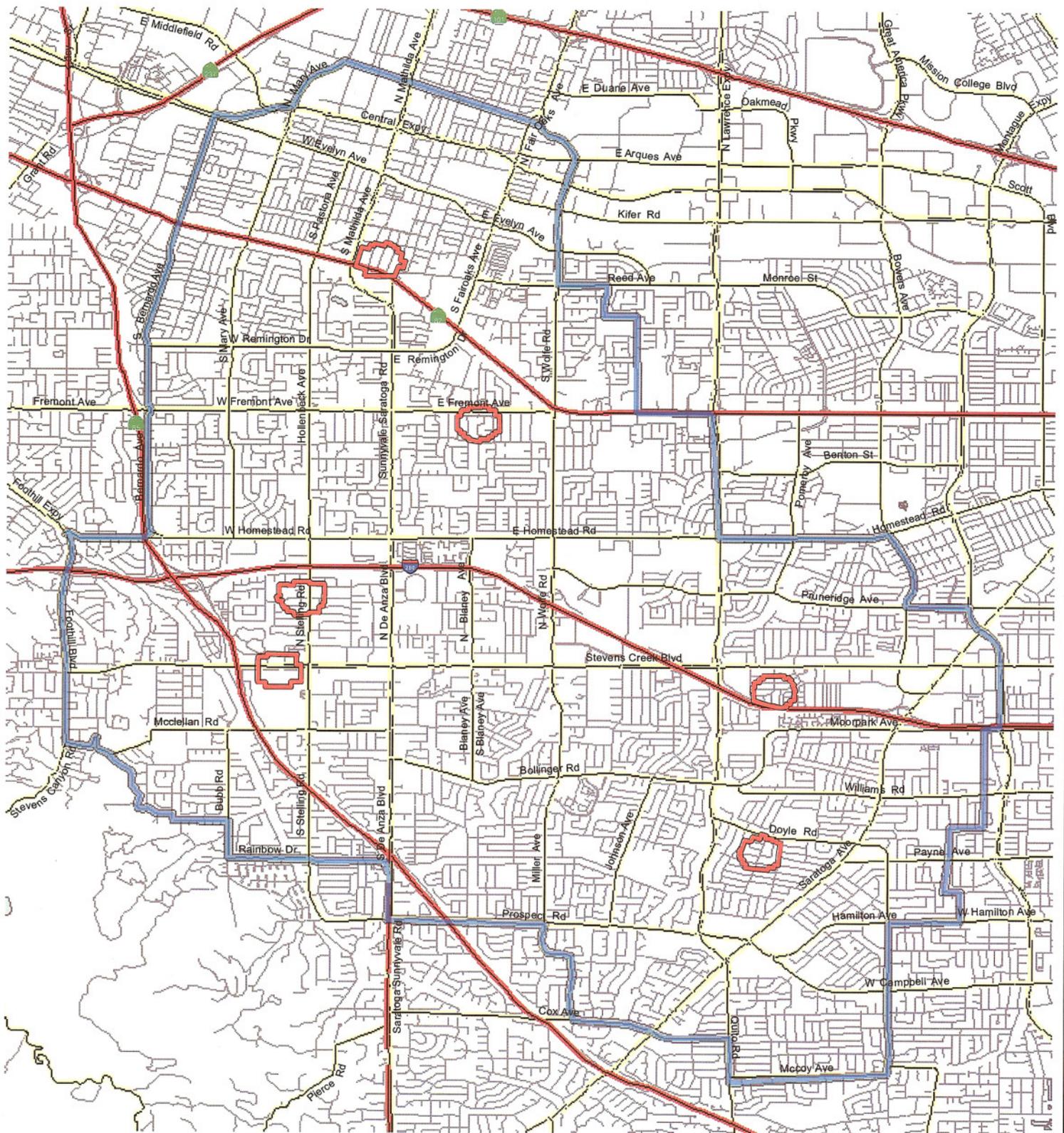
LBAM Host List - Agriculture

Alfalfa	<i>Medicago sativa</i>
Almond	<i>Prunus amygdalus</i>
Apple	<i>Malus</i> spp.
Apricot	<i>Prunus armeniaca</i>
Avocado	<i>Persea americana</i>
Blackberry, Boysenberry, Raspberry	<i>Rubus</i> spp.
Blueberry	<i>Vaccinium</i> sp.
Broad Bean	<i>Vicia faba</i>
Broccoli, Cabbage, Cress, Mustard, Radish, and Turnip, ect.	<i>Brassica</i> spp.
California Black Walnut, Butternut	<i>Juglans</i> spp.
Carrot, Queen Anne's Lace	<i>Daucus</i> spp.
Celery	<i>Apium graveolens</i>
Chile Pepper	<i>Capsicum frutescens</i>
Chinese Gooseberry	<i>Actinidia chinensis</i>
Citrus	<i>Citrus</i> spp.
Clover	<i>Trifolium</i> spp.
Common Bean	<i>Phaseolus vulgaris</i>
Common Plantain	<i>Plantago major</i>
Corn	<i>Zea mays</i>
Cucumber	<i>Cucumis sativus</i>
Currant	<i>Ribes</i> spp.
Feijoa, Pineapple Guava	<i>Feijoa sellowiana</i>
Grape	<i>Vitis</i> spp.
Hops	<i>Humulus lupulus</i>
Kiwifruit	<i>Actinidia deliciosa</i>
Kumquats	<i>Fortunella</i> spp.
Litchi	<i>Litchi chinensis</i>
Loquat	<i>Eriobotrya</i> spp.
Macadamia	<i>Macadamia</i> spp.
Mango	<i>Mangifera</i> spp.
Mint	<i>Mentha</i> spp.
Narrowleaf Plantain	<i>Plantago lanceolata</i>
Nectarine	<i>Prunus persica</i> var <i>nectarina</i>
Olive	<i>Olea europaea</i>
Parsley	<i>Petroselinum</i> spp.
Passionfruit	<i>Passiflora edulis</i>
Pea	<i>Pisum sativum</i>
Peach	<i>Prunus persica</i>
Pear	<i>Pyrus</i> spp.
Persimmon	<i>Diospyros</i> spp.
Plum	<i>Prunus domestica</i>
Potato	<i>Solanum tuberosum</i>
Pumpkin	<i>Cucurbita</i> spp.
Quince	<i>Cydonia</i> spp.

St. John's Wort
Strawberry
Sweet Cherry
Sweet Pea
Tomatoes
Wild Radish

Hypericum perforatum
Fragaria spp.
Prunus avium
Lathyrus spp.
Lycopersicum spp.
Raphanus spp.

2008 - Light Brown Apple Moth
1.5 Mile Twist Tie Eradication Zone
Cupertino, Sunnyvale & San Jose, Santa Clara County



-  200 Meter Twist Tie Boundary
-  1.5 Mile Eradication Zone

