

2008 – 2009 Light Brown Apple Moth Action Plan Updated April 29, 2008

This action plan has been developed by the California Department of Food and Agriculture (Department) and the United States Department of Agriculture (USDA) in consultation with representatives of the Light Brown Apple Moth Technical Working Group. This action plan is a guide to the major elements and strategies of the eradication program. Specific program actions will be modified based on the circumstances of new local infestations and operational constraints.

The following treatment plan will be implemented by the Department and the USDA in cooperation with the county agricultural commissioners. These actions will apply to all infested counties within California.

1. Eradication strategy:

Overall strategy: Eradication is the goal.

- 1.1. Eradication of the light brown apple moth (LBAM) populations will likely take several years to accomplish using several treatment tools. Some of the tools that may be used are currently under development.
- 1.2. Eradication of LBAM will require an integrated systems approach using multiple tools, including applications of pheromone for mating disruption, use of insecticide treatments, male moth attractant treatment technology (ground treatment), and implementation of biological control and releases of sterile insects (if needed and when available).
- 1.3. The primary tool for eradication will be the aerial application of pheromone for mating disruption.
- 1.4. Decisions regarding eradication activities will be based on the geographic size and population densities as follows:
 - 1.4.1. Treating the outlier infestations;
 - 1.4.2. Treating the small and isolated infestations; and,
 - 1.4.3. Treating the heaviest populations beginning with Monterey and Santa Cruz counties, then moving to the San Francisco Bay Area.
- 1.5. The Department will consult with the California Department of Pesticide Regulation (DPR) concerning pesticide use in the LBAM eradication program.
- 1.6. Buffer areas will continue to be used to protect any threatened or endangered species or other environmentally sensitive areas.

2. Ground treatments:

A focused ground treatment component for small and isolated areas (5 miles from another infested area) as described below will be used as a stand alone treatment and/or to complement mating disruption treatments against the heaviest populations.

2.1. Pheromone twist tie placement for mating disruption:

2.1.1. Twist Tie deployment is on-going.

2.1.2. Areas designated for twist tie placement:

- Isolated sites;
- Areas that are further than 5 miles from a generally infested area; and,
- Areas with low level populations.

2.1.3. Twist ties are placed at the rate of 250 twist ties per acre in a 200 meter radius around each infested site.

2.1.4. Twist ties remain in place for two life cycles and are replaced every three to six months as needed to maintain pheromone at disruption levels.

2.1.5. Trap density for small isolated outlier sites will be 100 traps in the core and 25 traps per square mile in the surrounding eight square miles.

2.1.6. After two life cycles without any LBAM detections, the twist ties are removed. Delimitation traps will remain in place for one additional life cycle. If no additional LBAM are detected, this area will be declared free from LBAM and trapping levels will return to detection levels.

2.2. Pheromone male moth attractant treatment:

2.2.1. Anticipated start date is summer 2008, targeting the following areas:

- Areas that cannot be treated aerially (such as proximity to environmentally sensitive areas, buffer zones);
- Contiguous areas with a low level of LBAM detections;
- Contiguous areas with heavy populations (more than 50 LBAM detections) conducted in advance of the aerial mating disruption to enhance the efficacy of the aerial mating disruption pheromone applications.

2.2.2. The treatment area consists of a 1.5 mile radius around any detection site.

- 2.2.3. Treatments may occur on trees and utility poles on public and private property. Male attractant treatment sites will be out of reach of the general public.
 - 2.2.4. Treatments will occur at 30 to 60 day intervals.
 - 2.2.5. Treatments will be applied at a target rate of 3,000 male attractant treatment sites per square mile.
 - 2.2.6. Trap density will be nine traps per square mile throughout the treatment area.
 - 2.2.7. After two life cycles of treatment without any LBAM detections, treatments will cease. Delimitation traps will be deployed and they will remain in place for one additional life cycle. If no additional LBAM are detected, this area will be declared free from LBAM and trapping levels will return to detection levels.
- 2.3. Inundative *Trichogramma* species stingless parasite wasp releases:
- 2.3.1. Anticipated start date is summer 2008.
 - 2.3.2. These releases may be made in advance of aerial mating disruption pheromone applications in the following areas (more than 50 LBAM detections):
 - Santa Cruz County (Santa Cruz, Soquel);
 - San Francisco County (Golden Gate Park);
 - Monterey County (Carmel, Seaside/Marina).
 - 2.3.3. Estimated number to be released is 1,000,000 per square mile (based on previous history with these or other species).
- 2.4. Foliar ground treatments with Spinosad or *Bacillus thuringiensis kurstaki* may be made where heavier larval populations are detected.

3. Aerial Applications:

Aerial applications of pheromone for mating disruption will be used to treat denser populations ([2008 LBAM Plan PDF Map](#)).

- 3.1. New formulations of the mating disruption pheromone are now available. These formulations will be tested to determine which formulation is the most efficacious at eradicating LBAM. The California Office of Environmental Health Hazards Assessment (OEHHA) will evaluate the anticipated human health impacts of the formulation used over urban areas and transmit these to physicians in the treatment areas. The area for aerial applications is a 1.5 mile radius around each location where a LBAM is detected. Application

areas may be adjusted to include LBAM detections in proximity to the 1.5 mile radius and to provide the public with identifiable treatment boundaries.

- 3.2. Anticipated start date for aerial application of pheromone for mating disruption over all of the heavier infested areas of Monterey and Santa Cruz Counties including: Aptos, Aromas, Ben Lomond, Boulder Creek, Castroville, Corralitos, Del Rey Oaks, Felton, Freedom, Live Oak, Los Lomas, Marina, Monterey, Pacific Grove, Pajaro, Pebble Beach, Prunedale, Rio Del Mar, Salinas, Santa Cruz, Soquel, Scotts Valley, Seaside and Watsonville (currently 282,699 acres) is August 17, 2008, with a 30 to 90 day spray interval, depending on the formulation used, and will continue through the reproductive flight periods of the LBAM (approximately nine months) as pheromone is available.
- 3.3. Applications targeting the following areas (currently not prioritized) are anticipated to begin starting about October 2008:
 - San Francisco County (54,610 acres);
 - San Mateo County areas including: Broadmoor, Brisbane, Colma, Daly City, Pacifica, San Bruno, and South San Francisco (included San Francisco County acreage above);
 - Alameda County areas including: Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont (90,430 acres);
 - Contra Costa County areas including: El Cerrito, El Sobrante, Hercules, Kensington, Pinole, Richmond, and San Pablo (included in Alameda County acreage above); and,
 - Marin County areas including: Belvedere, Corte Madera, Larkspur, Sausalito, and Tiburon (16,420 acres).
- 3.4. After two life cycles of mating disruption applications without any LBAM detections, these applications will cease. Once the pheromone has dropped to levels that will not interfere with trap efficacy, post-treatment monitoring traps will remain in place for one additional life cycle. If no additional LBAM are detected, this area will be declared free from LBAM and trapping levels will return to detection levels.

4. Trapping Actions:

The following trapping plan will be implemented by the Department and the USDA. The county agricultural commissioners will be informed of trapping actions in their respective counties.

- 4.1. Extension of detection trapping at a density of five traps per square mile into previously untrapped areas inside the regulated counties, such as rural and

industrial areas, will be implemented as needed.

- 4.2. Delimitation trapping arrays will be put in place where LBAM has been detected for those sites that are three miles from other detection sites at 100 traps per square mile in the core square mile and 25 traps per square mile in the adjacent eight square miles.
- 4.3. An additional detection within any delimitation area and within three miles and one life cycle will trigger an eradication project.
- 4.4. Traps in eradication areas will be stationary, placed at nine traps per square mile, inspected weekly, and baited with 3 milligram lure.
- 4.5. Mass trapping will be discontinued per the recommendation of the technical working group.

5. Environmental Monitoring:

Aerial pheromone applications will be monitored for quality control. The program will consult with DPR.

6. Environmental Consultations:

- 6.1. The program will provide OEHHA with information concerning the pesticides to be used in the eradication of LBAM for their use in any public outreach activities, educating physicians and tracking/evaluating illness complaints in the eradication areas.
- 6.3. The program will consult with any other appropriate governmental agencies concerning threatened and endangered species and sensitive environmental sites and it will obtain all of the required permits.

7. Public Health Concerns:

- 7.1 Prior to treatments, OEHHA will work with local health officers to ensure that physicians and other health care providers are provided with information on the application; what, if any, symptoms are likely to be seen; reporting requirements and direction on other concerns. In general, the physicians and health care providers will be informed of the illness reporting requirements and will receive training on pesticide poisoning recognition and management.
- 7.2 OEHHA will team with other public health organizations to develop and oversee a program for the reporting, tracking and scientific evaluation of reported illness incidents.

8. Regulatory Activities:

All federal and state quarantine orders and regulations will remain in place for the duration of this program.

9. Communications:

- 9.1. The program, county agricultural commissioners and, as appropriate, OEHHA, will conduct outreach to elected officials and other interested parties prior to the start of treatment activities.
- 9.2. Informational open houses and/or public meetings will be held in each county where eradication activities occur, as needed. Residents whose property will be treated will receive written notification prior to treatment.
- 9.3. Residents may sign up for an e-mail notification for updates on the treatment schedules and areas scheduled to be treated or call an informational phone line to have questions answered.
- 9.4. The Department's website will be updated with any pertinent information following each male moth attractant treatment and aerial mating disruption application.
- 9.5. Additional project information will be available on the website. Press releases will be issued for new events.