

Comments on Public and Environmental Perspective on California Department of Food & Agriculture (CDFA) Light Brown Apple Moth (LBAM) Eradication Program

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Summary

The general public and environmental perception is that the State has not proven that the Light Brown Apple Moth (LBAM) eradication program is safe, effective, or necessary. In the absence of solid science from the State, the burden of research and proof has been shifted to the public.

Background

Aerial spraying is the most controversial element of the LBAM eradication program. Pesticides are sprayed from planes flying at 500-800 feet through the night, typically for three nights per month. Spraying is planned to take place approximately 3 nights per month, 9 months per year. CDFA plans to spray for 3-5 years or indefinitely until the moth is eradicated. The 2008 CDFA spray zone map (http://www.cdfa.ca.gov/phpps/PDEP/lbam/lbam_main.html) covers a number of counties and urban areas with a total population of about 7 million people. Ground treatments are also planned for 2008. The public is concerned about the chemicals and methods to be employed in this part of the program, particularly the entry of CDFA representatives to private property.

Safety

Concerns about the safety of the aerial spray program revolve around the lack of testing of key ingredients in the pesticides being used, known dangers of other components of the pesticide, health complaints reported by residents of the Monterey and Santa Cruz areas after spraying there last year, and the potential that CDFA may use a different and untested chemical in the 2008 spray program.

Pesticide used in 2007

The active ingredient in the pesticide products that CDFA used in 2007 is a synthetic moth pheromone. The two pesticides used in fall 2007, Checkmate OLR-F and Checkmate LBAM-F, also contain a number of toxic, potentially carcinogenic, mutagenic so-called "inert"¹ ingredients, one of which is a reproductive effector associated with birth defects, and several of which should not be inhaled. This information is readily available on the Material Safety Data Sheets for the ingredients and in the National Institute of Occupational Safety and Health database.

The pesticide mixture is packaged in minute plastic capsules that are inhaled by anyone exposed to the spray. These capsules are as small as 10 microns in size, according to a U.C. Davis study released last year (Werner et al. 2007). The American Lung Association, among other sources, notes that particles of 10 microns and smaller can be inhaled into the deep lung, from which they cannot be expelled. The plastic capsules in which the pesticide is sprayed break down over approximately 30 days, releasing the pesticides. Recent information from OEHHA indicates that the spray particles may remain suspended in the environment for up to 12 months.

The only ingredients in the pesticide that have been thoroughly tested are the inerts. The active ingredient, the synthetic pheromone, has not undergone any long-term human toxicity testing, as noted in court testimony and analysis by independent toxicologist Dr. Richard Philp. Moreover, the State's Consensus document on the health risk of the spray, prepared by the Department of Pesticide Regulation (DPR) and the Office of Environmental Health and Hazard Assessment (OEHHA), contains the explicit disclaimer that the conclusion that the spray is safe for human exposure is based studies of the active ingredient only, and that these studies assume "aerial application over agricultural areas rather than aerial application over

¹ Inert ingredients are so named because they do not actively work to kill the target pest. In most cases, the U.S. Environmental Protection Agency tests only the active ingredient of a pesticide, not the complete formula including inerts, and the inerts are usually considered proprietary business information and are not disclosed. For Checkmate LBAM-F only, the inert ingredients disclosed after the first round of LBAM spraying in 2007.

populated areas (such as in the present situation)."

CDFA obtained an exemption from U.S. EPA to use the products in this manner and warns people and pets to stay inside during the spraying. Checkmate had not been sprayed over urban areas until CDFA used it over Monterey and Santa Cruz last fall; it had previously been sprayed aerially only over agricultural areas.

Health Complaints

Following the spraying in Monterey and Santa Cruz in 2007, there were more than 600 reports of health problems, including asthma-like attacks and difficulty breathing, chest pains, headaches, blurred vision, swollen glands, skins rashes, and feelings of chronic fatigue. These symptoms are consistent with the health impacts of the ingredients of the pesticide formula whose effects are known. The State's Consensus document on Health Risks says that "it is not possible to confirm the symptoms are or are not due to the application of Checkmate," and "because not all health effects can be predicted and because the general population includes susceptible populations, such as children, the elderly, and those with chronic diseases, we cannot provide a definitive cause for their symptoms." These health complaints were reported despite the absence of an infrastructure to collect them and the failure to notify and train physicians regarding the spray and the symptoms of pesticide exposure. These complaints have not been formally and thoroughly investigated by the State, and CDFA's Robert Dowell has publicly dismissed the complaints, stating that they are likely imaginary.

There is public concern that CDFA is exploring using a new pesticide that is currently being investigated but not tested for human health and environmental safety. Given the risks of the pesticide used last fall and the health problems reported, the potential that another unknown and untested product will be used over large populated areas is disturbing at best.

Are Pheromone Controls Environmentally Preferable?

CDFA stresses that pheromone-based products are one of the safest eradication tools available and that environmentalists "want" pheromone pest controls. While many environmental and organic agriculture groups have advocated the use of pheromones, the formulation and encapsulation in plastic of the products being used in this case, the lack of testing of human exposure, and their aerial application differentiate them from environmentally preferable pheromone products such as stationary bait traps. The recent position statement released by California Certified Organic Farmers (CCOF) expresses concisely the view of many environmental and health groups: "CCOF supports the use of pheromones in ground applications and other ecologically sound organic integrated pest management (IPM) approaches as far preferable to the use of dangerous organophosphates. However, CCOF does not endorse further aerial applications of pheromones in LBAM eradication efforts due to potential human health and environmental concerns."

Effectiveness

Aerial pheromone spraying has never been used to and cannot successfully eradicate a pest because the spray only confuses mating behavior and does not kill pests.

In addition, the conditions necessary for successful use of a pheromone cannot be met by the varied terrain, plantings, and moth concentration in the large area CDFA proposes to spray. According to a report recently released by botanist and Executive Director of the UC Santa Cruz arboretum Dr. Daniel Harder on integrated pest management (IPM) for LBAM in New Zealand, pheromone coverage is only effective under the following conditions:

- Extensive, even, and complete coverage of the pheromone
- Uniform blocks of a single crop (single canopy height)
- Uniform topography (no slopes, hills or valleys)
- Low population density of target pest (not too concentrated)

There is also the larger question of what is meant by "eradication." According to a list provided by CDFA, the agency undertaken 274 separate emergency eradication projects against 9 pests since 1982, with projects repeating annually for the same pests. In every case, CDFA has failed to eradicate the

target pest, and emergency eradication programs for 6 of these pests have been in process since 1982. This cycle of continual pesticide use is the basis for positions like the Sierra Club's opposing the LBAM eradication. The Sierra Club resolution, passed in January 2008, specifically calls on the state to take the "precautionary approach of an alternatives assessment to determine control strategies that do not compromise human and environmental health and that is sufficiently effective to manage the pest to the acceptable thresholds is completed. The assessment must be based on a realistic assessment of the feasibility of eradication." It is increasingly clear to environmental and health organizations that, in this era of global trade and global warming, the arrival exotic pests is inevitable and likely to increase. We cannot blanket spray for each new pest that is introduced or re-introduced.

Necessity

CDFA has stated that there has been no damage to crops in California attributable to LBAM. Independent scientists, including Dr. James Carey, UC Davis entomologist and invasive species specialist, say that, based on the range over which it has been found, LBAM has likely been in the state for up to 30-50 years, which is certainly long enough for us to have seen crop damage. A report recently released by Dr. Daniel Harder, botanist and Executive Director of the UC Santa Cruz arboretum, finds that, in New Zealand, LBAM is effectively controlled by native predators of the same types that are present in California.

Native Predators

A Dr. Harder's report finds that, in New Zealand, which has climate and crops like those of California's coastal areas and where LBAM has been an established exotic pest for more than 100 years, there is no evidence of biological or environmental threat from LBAM. LBAM does not do significant economic or biological damage to crops or native flora there. The report also notes that 80-90% of LBAM larvae are parasitized by native predators in New Zealand. The same "generalist" native predators, including birds, spiders, specific types of wasps, and others, are found in California, which is currently home to more than 85 native and localized species of Tortricid moths similar to LBAM (none of which is the subject of an eradication program).

Potential Crop Damage

With regard to potential crop damage, CDFA's list of 2,000 potential host species for LBAM is speculative and exaggerated. The list includes species that LBAM, which is a leaf-roller moth (i.e., it requires leaves to wrap around the larvae to protect them), would not likely inhabit, such as redwoods and pines. And the list includes any plant on which LBAM has ever been seen, whether or not it fed on that plant. CDFA says that the criterion for LBAM's inclusion on the list is that it is "capable of being eaten by LBAM," according to Steve Lyle.

In hearing reports of LBAM crop damage from Australia and New Zealand, it is important to note when the damage occurred. LBAM has been a problem past in the past when broad-spectrum organophosphate pesticides were in wide use and had destroyed the populations of beneficial predator insects that attack LBAM. A frequently cited report of LBAM-damaged grapes was a single incident in the early 1990s when organophosphates were heavily used. Since 2001, when organophosphate use was abandoned in New Zealand and beneficial insect populations have rebounded, LBAM is no longer a problem pest there, according to Dr. Harder's report.

Risk to Central Valley

Some have expressed the concern that LBAM will be very destructive if it reaches California's Central Valley. However, LBAM does not reproduce well below 7.1 degrees C (45 degrees F) and or above 30.7 degrees C (87 degrees F) (Venette et al. 2003), so it is unlikely to establish in the Central valley or in "80 percent of the U.S." as CDFA staff predicts.

Risk of Increased Pesticide Use if Aerial Spray is Not Employed

The argument presented by CDFA that, in the absence of spraying, California residents will irresponsibly begin a "never ending" cycle of pesticide use is highly unlikely.

First, LBAM does not do serious damage. While some photos have been shown by CDFA and the press of LBAM damage that may look frightening, there is no information about the source of the damaged fruit; how old are the photos and where do they come from? how widespread was the damage? were the

growers using best management practices? were the plants inoculated with LBAM as part of study, or is the damage a result of LBAM's natural presence and behavior? were organophosphate pesticides being used and what was the state of the population of natural LBAM predators? New Zealand scientists report that LBAM is a superficial feeder that does primarily cosmetic damage to the surface of fruit and only nibbles at leaves. It would not be in LBAM's interest to defoliate a tree or completely consume the leaves that protect it.

Second, as part of the preparation of Albany's Integrated Pest Management ordinance, our Task Force last year surveyed residents' pesticide use and found that 60% use only organic pest control methods (California Certified Organic Farmers earlier this week came out in opposition to the aerial spray program). It seems unlikely that residents of environmentally conscious California would suddenly begin freely using pesticides to combat a moth that does little or no damage.

Trade and Quarantines

Finally, with regard to economics and trade, the numerical values of *potential* crop damage from LBAM that CDFA cites appear inflated based on information regarding costs to meet the U.S. Department of Agriculture's zero-tolerance LBAM quarantine, not on values of crops damaged in Australia or New Zealand. The concern that Mexico and Canada will reject produce if LBAM is not eradicated seems overblown given that Canada adopted its LBAM restrictions following the U.S.'s lead, and Mexico's LBAM quarantine advisory of May 2007 notes "the present phytosanitary conditions may be modified or harmonized whenever we have more technical and scientific information regarding *E. postvittana*, as well as we receive more information about the evolution status of this pest in the United States."

What Should We Do?

If LBAM has indeed been in California for decades and there is no evidence of damage, the likely conclusion is that it is being kept in check by natural predation. Sound integrated pest management (IPM) practices dictate that the first step in responding to any potential pest is to monitor to determine the degree of damage and assess whether any action is needed and what a reasonable threshold for action should be. There certainly appear to be no grounds for emergency action against LBAM.

As Dr. Harder's report suggests, no intervention for LBAM may be necessary. We should suspend the LBAM eradication program and monitor to determine the extent of natural parasitization of LBAM. If monitoring data show that some LBAM control is necessary, we should follow the IPM best practices New Zealand has found to be effective, using insect growth regulators (IGRs), which are least-toxic chemical controls, at specific problem sites.

Consistent with IPM best practices, we should stop use of organophosphate pesticides for LBAM in nurseries to protect the beneficial predators of LBAM and other pests as well as workers, consumers, and the environment.

We should ensure that this and other invasive species eradication programs are subject to a broad range independent scientific review, and that no population, urban or rural, is subjected to pesticide spray without consent.

In view of the background research Dr. Harder has performed, we should request that the U.S. Department of Agriculture re-evaluate the classification of LBAM based on up-to-date science.

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