LBAM SIT Response to Comments

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), received seven comment letters with multiple comments within each letter. The responses to those individual comments are below. When two or more individuals had the same comment, the responses to those comments have been combined. The numbers in parenthesis following each comment refers to the number assigned to the comment letter. The following table lists which comment letter is associated with each number.

Commenter	Number Assigned
Donovan Pullen	1
Sandie Schmaier	2
California Association of Winegrape Growers	3
Isis Feral	4
Stop the Spray East Bay	5
Volker Law Office	6
D. Jacklin	7

I. General Comments on Light Brown Apple Moth (LBAM)

A. *LBAM Population and Location*

One commenter stated LBAM has been in California for decades and has done little to no damage. (7)

There is no documented evidence that LBAM has been established in California for decades. LBAM surveys over the last 10 to 20 years in the San Francisco Bay area and Monterey Bay, and review of entomological collections of California universities and hobbyists reveal no evidence of LBAM detections prior to the late 2006 detection (confirmed in early 2007) by a retired Berkeley professor (Johnson et al., 2007; Suckling and Brockerhoff, 2010).

One commenter stated APHIS assumes LBAM has not spread beyond the boundaries where monitoring traps have been placed in California; however, other entomologists believe it is likely that LBAM has become established throughout California and beyond. (5)

The currently infested sites within 18 California counties are based on survey results. The ongoing statewide survey has not detected established LBAM populations outside the 18-county area (USDA–APHIS, 2009). In a national survey for the pest, LBAM has not been detected in the continental United States outside of California (CAPS Program, 2009; Fowler et al., 2009).

One commenter stated the mild climate areas in which LBAM have been found in California are likely its preferred habitat, and the population is unlikely to grow to

significant numbers in areas where temperatures are outside the range identified (45-87 °F). (5)

Information on host distribution from its native range of Australia and pest status in New Zealand suggest that while LBAM populations are predicted to be highest in more temperate regions of the United States, it has been observed as a pest in warmer agricultural regions of Australia (van der Geest et al., 1991; Wearing et al., 1991). The possibility of LBAM infestation in other regions besides the currently infested regions of California are unknown; however, a USDA risk assessment indicates that areas in the continental United States, other than California, are at risk from infestation by LBAM (Fowler et al., 2009). The recent discovery of LBAM in several locations in the warmer Central Valley of California suggests that this area is at substantial risk of a wider infestation of LBAM (Gary Carpenter, USDA–APHIS, pers. comm., 2009).

One commenter stated LBAM has been well established in California for decades, and native insect populations and predators have adapted to their presence. (5)

LBAM surveys have been conducted over the last 10 years in 22 States, including California, and no moths were caught. A Cooperative Agricultural Pest Survey (CAPS) for LBAM was conducted in 2005 in which traps were placed in areas of California, including Santa Cruz; where LBAM populations were confirmed in 2007 (CAPS Program, 2009). If LBAM populations had existed in this area they would have been detected at the trapping densities used in the 2005 survey, but none were found until the 2007 confirmation. LBAM trap finds continue to increase. The dramatic increase in LBAM numbers suggests that the pest is not being adequately controlled by natural predators (CDFA, 2009; USDA, 2009).

B. LBAM Host Lists

One commenter felt that APHIS' statement that LBAM can damage cypress, oaks, and other California trees is unsubstantiated, and that a host list of more than 1,000 plant species is grossly exaggerated. (5)

Because LBAM is a new invasive species in the United States, its ultimate pest status is uncertain. Its potential as a pest on various host plants must, therefore, be determined by information from other parts of the world where it is a pest, as well as from observations based on the currently infested regions in California. A degree of uncertainty about possible pest status is always the case for new invasive species.

Invasive species tend to surmount geographical and environmental barriers, become quickly established, and then expand both population size and range in new habitats (Richardson et al., 2000; Mack et al., 2000). All of these traits have been observed with LBAM establishment in California. In the case of LBAM, its documented pest status in Australia and New Zealand, as well as observations of damage and spread in California suggest that it will be able to infest a wide range of crops, ornamentals, and native species.

The list, that identified over 2,000 LBAM possible hosts, is an estimate based on research conducted in Australia and New Zealand showing that LBAM has a broad host range with host records from over 500 host plants on 363 genera and 121 plant families (as reviewed by Suckling and Brockerhoff, in press). Based on this research, the number of potential hosts in the United States was estimated to include economic, ornamental, introduced, and native species that have similar plant host characteristics and are related to hosts reported in Australia and New Zealand (Danthanarayana, 1983; Rogers, 2003; Suckling and Brockerhoff, in press). Plants of economic importance were identified using the Agricultural Resource Service database, and potential nursery stock hosts were added based on trapping that occurred in nurseries.

Native trees, including pines and cypress, were added to the list as they are either confirmed LBAM hosts or they are close relatives of the LBAM hosts present in Australia and New Zealand. In Australia, LBAM is believed to have consumed native evergreens (Clark, 1970). In native forests in Australia, LBAM has not often reached high damage levels (McKay, 1991); however, it caused significant damage to forest plantings in New Zealand (McKay, 1991; Suckling and Brockerhoff, in press). In New Zealand in Monterey pine (*P. radiata*) stands, LBAM is the most common leafroller, as determined by pheromone traps (Brockerhoff et al., 2002). On forest species, LBAM can cause significant damage to buds and foliage (McKay, 1991; Johnson et al., 2007).

One commenter stated the EA exaggerates the harm from LBAM, and the potential host list used in the EA is different than the list CDFA presented to the California Legislature. Both lists fail to acknowledge preferences, and many of the plant hosts are only occasional hosts. (6)

There are differing opinions about the hosts of LBAM in California. That is because LBAM has only recently taken up residence in California and the host preferences are not yet certain. To avoid confusion, the potential host list that was considered in the EA has been appended to the EA. The host list is a compilation of known hosts reported from areas around the world where LBAM is known to be present and their close relatives in California. It differentiates between hosts that are considered occasional, common, very common, and primary hosts. The extent of damage to each of these hosts in California is not yet known because LBAM is a recent introduction. If LBAM were to become established in California, some potential hosts might drop off the list, while other hosts could be added. Regardless of minor inaccuracies (due to lack of information) in the list, LBAM is considered an economically important pest in New Zealand, Australia, and the United States (Fowler et al., 2009; Suckling and Brockerhoff, in press). In Australia, where it is a native species, damage to unsprayed crops ranges from 5 to 20 percent, and can exceed 30 percent; however, where this species has been introduced in New Zealand, damage to unsprayed crops is commonly 50 percent (Wearing et al., 1991). Even though parasites caused 30 to 40 percent mortality in LBAM, still 19 percent of the total grape crop in an Australian study was lost due to LBAM feeding (Buchanan, 1977). In addition, an opportunistic fungi caused further loss to the grapes (Buchanan, 1977). Similar results have been obtained in New Zealand where LBAM can cause up to 12 percent loss (of the fresh weight at harvest) during the summer months (Lo and

Murrell, 2000). Although LBAM is still in the early stages of establishment, it has already caused $1.1 million in damage in a berry field this past June (Gary Carpenter, USDA–APHIS, pers. comm., 2009). This information on damage in Australia and New Zealand, when coupled with the long list of potential agricultural and horticultural hosts, makes it difficult to consider LBAM as anything other than a very serious potential pest in California.

C. Damage from LBAM

Three commenters stated there is no documented evidence of damage to crops or wild land plants in California. Although there was mention of damage to a berry field, LBAM was not confirmed by DNA evidence. (5, 6, 7)

In Santa Cruz County, there is documented damage to organic blackberries from insects confirmed as LBAM. A sample of larvae was taken from the berry field; the DNA from that larvae was compared to the DNA of known LBAM from our rearing colony and related native moths, such as orange tortrix. The DNA obtained from the sample larvae from the organic blackberries matched that of known LBAM DNA and not the related native moths (Gary Carpenter, USDA–APHIS, pers. comm., May 2009).

One commenter stated that in order to adequately address the environmental and economic impacts of the no action alternative, APHIS should present a full analysis of LBAM's actual potential for damage in relation to that of other pests. (6)

A comparison of the damage potential of LBAM in relation to other pests already confirms that LBAM is economically significant and eradication action is appropriate to safeguard U.S. agriculture and the environment (Fowler et al., 2009).

D. LBAM Trap Data

One commenter stated the trap data are not accurate and the increase in LBAM finds is a result of the increase in the number of traps.(4)

The increase in the numbers of LBAM detected is not a direct function of increased trapping. The number of moths trapped in the first 6 months of 2009 exceeds the total number of moths trapped in all of 2008 by over 60 percent, but the level of effort (number of traps) has remained relatively constant at approximately 25,000 (Gary Carpenter, USDA–APHIS, pers. comm., 2009),

One commenter stated trap finds should not justify the LBAM program as the traps only determine the presence of an insect not whether the insect is doing any damage. (4)

LBAM is a known pest species capable of causing considerable economic damage to orchard crops, vineyards, horticultural crops, and forest species (Winker et al., 1991; Fowler, 2009; Sucking and Brockerhoff, in press. Two years of trapping information

shows an increase in the regional LBAM population density (APHIS, 2009). LBAM detections have increased in 2009 as compared to 2008. Traps also show whether the pest is present in an area and provide information to trigger survey efforts to determine both damage levels and whether the pest has migrated into a new, previously uninfested area. Recent surveys of cane berry fields in Santa Cruz County identified several highly infested fields that suffered crop losses as high as 50 percent (Gary Carpenter, USDA–APHIS, pers. comm., 2009). While it is still uncertain how much damage LBAM will do in its new environment, recent finds in several areas of the Central Valley and Los Angeles suggest that the distribution of the insect and the consequent risk to agricultural crops in other parts of the State is expanding.

E. LBAM DNA Sequencing

Two commenters referenced CDFA's recent LBAM report indicating that DNA sequencing for LBAM requires more research to develop an effective DNA fingerprint and identification technology for LBAM. (4, 6)

The report identified the desire for a faster, reliable method for specimen identification. This would increase the capacity of identification laboratories and reduce the backlog of specimens awaiting identification. Additional research on LBAM DNA sequencing could result in the development of a faster, reliable method for specimen identification that could be reliably used in any State, Federal, or private laboratory. This could be important in the future as an increasing number of specimens presented for identification are expected as LBAM spreads and its population increases.

One commenter was concerned that APHIS is using DNA testing which has not been found to be 100 percent conclusive rather than growing the larvae into adulthood. (6)

Adult LBAM can be identified with certainty through morphological characteristics, including genitalia, wing shape, and color (Passoa et al., 2008). Although the larvae are more difficult to identify, there are several external characteristics (including size, marking on the head, position and number of setae (small hairs) on the head, form of the jaws or mandibles, and leg or body color and markings) that can separate LBAM from other species (Gilligan and Epstein, 2009).

Polymerase chain reaction testing (PCR) is used when a conclusive identification cannot be made based on morphology. DNA is extracted and amplified (i.e., PCR) followed by sequencing. The suspected LBAM DNA sequence is then compared with DNA sequences from known adult individuals (whose identification were confirmed through expert identification) and known population variants within the species. The DNA sequence of the suspect LBAM sample is also compared to that of other species of tortricid moths (e.g., orange tortrix, garden tortrix, oblique-banded leafroller, etc.). In addition, the sample sequence is compared with all DNA sequences (>600,000 sequences) deposited in the Barcoding of Life Data System (BOLD) database (an online database of DNA sequencing that can be used for identification purposes and found at: http://www.barcodinglife.org/)(Ratnasingham and Hebert, 2007). Tests done on LBAM

DNA are just as conclusive as other methods of identification (such as raising larvae to adulthood), but are less expensive and less time consuming.

F. Classification of LBAM as an Economic Important Pest

One commenter stated that APHIS and CDFA should acknowledge that they were incorrect about LBAM and it is not a dangerous pest. (7)

USDA seeks to provide protection from invasive pests and ensure the vitality of American agriculture. USDA has proceeded with its program to eradicate LBAM in California based on credible evidence which indicates LBAM poses substantial risks to many agricultural crops (USDA, 2009).

One commenter stated LBAM should not be classified as a quarantine pest. (2)

APHIS is currently evaluating a petition to reclassify LBAM as a nonactionable pest. APHIS commissioned the The National Academy of Sciences, National Research Council (NRC) to provide a third-party technical and scientific review of APHIS's response to the petition. Their report was released on September 14, 2009. APHIS' response to that report, in the words of the APHIS Administrator—

> "APHIS sought this independent, third-party evaluation of its draft response and asked the NRC's selected committee of independent subject matter experts to provide us with an objective, technical evaluation. We greatly appreciate their careful review of the draft response, along with their analysis and critiques to strengthen it. We are pleased that the NRC's committee determined that we are within our authority to continue to classify LBAM as quarantine significant/actionable pest.
>
> APHIS has revised its draft response to incorporate the NRC recommendations and is making it available on our Web site. We will continue to review and analyze the NRC report for opportunities to further develop the economic and scientific evidence in our response to the petitions.
>
> In the coming weeks, we also plan to publish the draft response in the *Federal Register* to ensure that the public and all interested parties can formally provide their comments and feedback. We are very interested in hearing from the stakeholders, the scientific community and the public on this issue. We will review those comments before making our final decision on LBAM's quarantine status." See news release available at: http://www.aphis.usda.gov/newsroom/content/2009/09/lbamstatement.shtml.

One commenter stated APHIS and CDFA's aggressive continuation of the LBAM program and the evaluation of SIT puts into question APHIS' honest intention to consider the LBAM reclassification petition which was submitted to the agency in 2008. (4)

APHIS is evaluating a petition to reclassify LBAM in a transparent process (see previous response). APHIS believes that continuation of the evaluation of potential treatment alternatives, such as SIT, is a prudent course of action to take while the evaluation of the petition proceeds.

G. LBAM in Other Countries

One commenter expressed SIT tests in New Zealand and Australia were initiated, in part, because of concern for LBAM's status as an invasive species in New Zealand; however, according to New Zealand's agriculture officials, the only reason there is concern about LBAM is the USDA quarantine. (4, 5)

New Zealand and Australia will continue to develop SIT as a treatment option for LBAM because it is a pest that will continue to cause economically significant damage in those countries if left untreated.

II. General Questions on Sterile Insect Technology (SIT)

One commenter expressed concern with the statement that SIT has been successful in eradicating and preventing the establishment of several exotic pest fruit flies because the statement is based on lack of detection for a period of months which is not definitive evidence as small populations may persist at levels that are not detected by traps. (5)

SIT has been integrated into area-wide pest management control programs against moths. Some examples include operational programs to prevent establishment of the cotton pest pink bollworm in the San Joaquin Valley of California, the cactus moth in the Southeastern United States; suppression of the codling moth in Canada and South Africa, and false codling moth in South Africa; and for eradication of the painted apple moth in New Zealand, the Cactus moth from Mexico, and the nearly complete eradication of the pink bollworm in the Southwestern United States and northern Mexico (Bloem et al., 2005; Suckling et al., 2007; Simmons et al., 2009; Krafsur, 1998; and Klauusen, 2005).

In addition to moths, there are many successful applications of SIT to control other species of insect pests. In the United States, SIT has been used to eradicate the screwworm fly, saving several hundreds of millions of dollars of losses to dairy and cattle production. In addition, it has been used to combat several damaging infestations of exotic fruit fly species in the States of Florida, Texas, and California, saving hundreds of millions of dollars from crop losses and control costs. In all of these instances, SIT has reduced the need to broadly apply pesticides to several thousands of square miles of infested areas (Klassen and Curtis, 2005).

III. Request for Extension of Comment Period

One commenter requested an extension of the comment period along with broader public notification. (5)

APHIS acted in a manner consistent with the National Environmental Policy Act of 1969 (NEPA) implementing regulations and standard practices when providing public notice on this action and does not believe there is a need or justification to extend the comment period.

APHIS provided a notice of availability of the EA in local newspapers (*Santa Rosa Press Democrat* (6/3/09) and *Napa Register* (6/3/09)). A 30-day public comment period was provided. The document was posted on the LBAM Web site (http://www.aphis.usda.gov/plant_health/ea/lbam.shtml) on May 29, 2009. The project area is small and includes a 3-square mile area that crosses the border between Napa and Sonoma Counties in California. A meeting was held with all landowners in or near the LBAM SIT area to discuss the project. The landowners were in support of this proposed field evaluation study.

IV. General Comments on Notification of the Environmental Assessment

One commenter disapproved of the notification process used for this EA. The commenter specified that notice should have been posted in local newspapers and upon evaluation of the Santa Rosa Press Democrat, the Sacramento Bee, and the San Francisco Chronicle no notice was found. Notice should have been provided to area-wide clearinghouses, such as the CEQAnet Web site, and large interest groups, such as NCRS. In addition, APHIS failed to hold or sponsor public hearings or public meetings. (6)

APHIS provided a notice of availability of the EA in local newspapers (*Santa Rosa Press Democrat* (6/3/09) and *Napa Register* (6/3/09)). A 30-day public comment period was provided. The document was posted on the LBAM Web site (http://www.aphis.usda.gov/plant_health/ea/lbam.shtml) on May 29, 2009. The project area is small and includes a 3-square mile area that crosses the border between Napa and Sonoma Counties in California. A meeting was held with all landowners in and adjacent to the LBAM SIT area to discuss the project. The landowners were in support of this proposed field evaluation study.

Notices in the *Sacramento Bee* and the San *Francisco Chronicle* were not necessary as the action area was limited to a 3-square mile area on the border of Napa and Sonoma, and the aforementioned newspapers are located 30 miles outside of the project area. Notice to area-wide clearinghouses and large interest groups would be appropriate for larger national documents; however, such broad public notice for a small study in a 3-square mile area is generally not required.

One commenter was concerned that the posting on the APHIS LBAM Web site was hidden and located at the very bottom of the screen after numerous older documents.

The posting was made in chronological order towards the bottom of the Web site which lists site-specific EAs. We apologize that the posting was hard to find. The Web site has since been revised so that current documents are listed on the front page, with older documents on a separate link.

V. Support for the Program

One commenter provided a letter of support for the field evaluation project. The commenter felt that SIT was compatible with IPM, environmentally friendly, could reduce the need for additional pesticides, and shows great promise, based on Australian and New Zealand studies. (3)

Comment noted.

VI. IPM Strategies

One commenter expressed there is not a documented broad international consensus favoring area-wide IPM strategies, including SIT, as stated in the EA. (5)

Worldwide, SIT has been used as a key component of an area-wide IPM strategy for many species of fruit fly and screwworm, and many species of moths (Krafsur, 1998; Klauusen, 2005). For example, SIT has been used to eradicate the Mediterranean fruit fly in the United States and Chile, and to establish pest-free zones in Mexico, Argentina, Peru, Israel, South Africa, Thailand, Brazil, Portugal, Spain, and Tunisia. In Mexico and Guatemala, a SIT program has been in place for 25 years helping to prevent the Mediterranean fruit fly from moving north and becoming established in the United States. In Japan, SIT was used in the 1980s and 1990s to eradicate the melon fly. In addition, SIT has been used to eradicate New World Screwworm in North and Central America and Libya. In addition to successes with fruit flies, there have been many successful SIT programs against moths, including the codling moth in Canada, South Africa, and Argentina; the false codling moth in South Africa; the cactus moth in Mexico and the Southeastern United States; the painted apple moth in New Zealand; and the pink bollworm in the United States and Mexico (Bloem et al., 2005; Suckling et al., 2007; Simmons et al., 2009). Also see response in section II, above.

VII. Pesticide Use Under the No Action Alternative

One commenter was concerned about the assumption that private individuals will use pesticides or hire pest control companies to prevent crop damage because the moth has not demonstrated any damage, as discussed under the no action alternative. In addition, the assertions that chemically resistant pests could develop, and that there likely would

be an increase in pesticide loading of the environment seems incorrect because the only current use of pesticides is due to quarantine requirements and not crop damage. (5)

The statement that private individuals may use pesticides themselves or hire pest control companies is based on the reasonable conclusion that as LBAM increases in numbers, the damage to homeowner and commercial landscapes will increase to noticeable levels. When a homeowner starts to see damage to plants in his yard, he is likely to resort to a variety of actions including the use of pesticides. In addition, if LBAM populations reach levels that cause economic impacts to growers, as was noted in the blackberry fields in Santa Cruz recently, there is very likely to be an increased use of pesticides by commercial entities as they attempt to protect their crops.

Although the State of California has a list of approved chemicals that can be used to ship commodities outside the LBAM quarantine zone, the application of these chemicals is a decision made by the nursery owners. Other alternatives are available to nurserymen that allow them to ship outside the quarantine zone without chemical application; however, a number of pesticides are legally registered for non-quarantine purposes. The use of chemicals can be expected to expand as growers and private citizens observe damage to their plants from LBAM.

One commenter stated in order to prevent homeowner use of toxic pesticides, we should remove the chemicals from the market. (7)

APHIS does not have the authority to remove products from the market. Removal of chemicals from the marketplace will not halt damage to crops and landscapes, which is what drives the desire to use pesticides. The U.S. Environmental Protection Agency (EPA) has authority over pesticide registration through the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

VIII. Pre-decision to use SIT

One commenter stated the decision to use SIT has already been clearly made in violation of NEPA and that APHIS fully intends to use sterile moths whether at this proposed time and place or otherwise; this decision was made prior to the EA. (6)

Although it is hoped that LBAM SIT will be effective and can be used as a tool in the LBAM Program in California, this has not been predetermined. Field evaluations need to be conducted to determine if and how SIT could be used as a tool in the LBAM Program. This study is one of those evaluations. Depending on the outcome of this study, it may be necessary to conduct future studies, as well, to better determine if and how SIT could be used in the program. APHIS is assessing all information to make an informed decision regarding whether or not it is appropriate to use SIT in the LBAM Program and, if so, how.

IX. Parameters and Methodologies of Study

Two commenters stated APHIS has failed to include information regarding the field test parameters and methodologies of the SIT field evaluation. (5, 6)

The experiments planned for this project are relatively small in scope, and will be conducted in a small test area to evaluate methods for moth handling, release, and monitoring. Several basic aspects of sterile moth quality and performance will be tested, such as dispersal, longevity, and recapture rates on monitoring traps, release frequency, handling, and release methodology. The design of these experiments is based on the input and review from many international experts of SIT and LBAM. Test results will provide critical data that will provide the basis for determining if SIT can be used on a wider scope to combat LBAM infestation. The experiments will be replicated and will include appropriate controls. Results from these small scale experiments will provide the necessary data to determine if a larger scale SIT program is feasible.

One commenter was concerned with the size of the evaluation and being extrapolated to a much larger area where LBAM has been observed. (5)

Choosing the appropriate scale of study is an important consideration. Experiments are often conducted on a smaller scale to test key components of integrated area-wide control method (such as SIT), and are often used to obtain information needed to develop a larger program (Itô and Yamamura, 2005; Vreysen, 2005). Several different experiments will be conducted to examine sterile moth dispersal, recapture rates on monitoring traps, longevity, release frequency, handling, and release methodology. All of these experiments will be replicated and include appropriate controls. The data from these small scale experiments will provide the necessary information to determine if a larger scale SIT program is feasible.

X. Sterile LBAM

A. Radiation and Sterilization of Moths

One commenter requested more information about the radiation procedure and had some questions about the radiation and sterilization of the moths. (6)

To ensure that moths are sterile, standard operating procedures used for sterile insect release programs include measuring the received dose of each container of moths with a tool called a dosimeter to ensure that the correct sterilizing dose is delivered to the moths. They also include monitoring of the sterility of irradiated moths with regular quality assurance testing to detect any strain changes in radiation sensitivity.

The radiation dose selected for LBAM was based on information about effective doses used in other moth SIT programs, and on the results of testing the sterility of the mass-reared Californian LBAM strain after exposure to different doses. The radiation biology of

all pest Lepidoptera are roughly similar, with adjustments in treatment dose made to account for small variations in response to radiation based on moth size or radiation resistance. Testing to determine the correct operational dose starts with determining the irradiation level that achieves sterility without greatly impacting the quality of the moth. At present, several radiation biology experiments have determined an appropriate dose for use in the project. Continued laboratory research on rearing, handling, the effects of irradiation on moth quality, and release methods may permit the dose to be lowered to allow for improvements in the quality of the sterile moths without risking the efficacy of the treatment.

One commenter expressed concern that although the radiation and rearing process might be a categorical exclusion under APHIS' NEPA implementing regulations, an action may still need an EA if the incremental impact of the process has the potential to lead to significant impacts. (6)

The rearing and radiation process involved in this field evaluation project is small in comparison to other SIT programs in which APHIS is currently involved. The rearing and sterilization processes are standard procedures that have been conducted in many programs with minimal, if any, environmental impacts. There are no additional impacts or unusual circumstances anticipated as a result of the rearing or radiation process of LBAM SIT that would warrant the development of an EA.

One commenter was concerned about the partial sterility of moths due to radiation, and about the competitiveness of the moths once exposed to radiation. (6)

Insects can withstand a much higher dose of radiation without experiencing negative effects than most other species (Bakri et al., 2005). Flies in SIT programs are sterilized by smaller doses of radiation than most moth species; however, this higher dose does not impair the ability of males to compete for mates to a greater degree in moths than in other species. This is due to the fact that female moths typically mate with the first male to find them; therefore, minor changes in male behavior generally do not change mating competitiveness. This is more important for other insect species (e.g., fruit flies) where females actively choose whether or not to mate with a male based on a complex pre-mating ritual. In all SIT programs for flies or moths, quality of the strain and performance of the sterile release insect are continuously monitored to ensure that strain quality is not degraded by rearing or handling methods or by the effects of irradiation process.

Most moth species exhibit inherited sterility, where males that receive reduced doses of irradiation are only partially sterilized, yet their offspring are completely sterile (Knipling, 1970; Carpenter et al., 2005). If a partially sterile male moth mates with a wild female, sometimes offspring are produced; however, that number will be less than if the wild female mated with a wild male. If any of these resulting larvae are reared to adulthood, they cannot produce viable offspring.

There are no plans to use an inherited sterility strategy for the LBAM evaluation study; however, its use could offer a way of reducing radiation dose and improving male

competitiveness in the future. The dose chosen for use is above the level that would allow production of significant numbers of sterile F1 progeny and, because of the quality assurance monitoring of sterile moths production, the releases will not lead to an increase in the pest population.

B. Transport of Moths

One commenter was concerned that the escape-proof containers were not really escape proof. (5)

All transportation of LBAM moths for irradiation will take place under the biosecure conditions required by a CDFA Plant Pest Permit allowing the transport of plant pests. The moths will be transported by trained personnel using standard double containment transportation methods. Moths will be kept in sealed, labeled containers that are escape proof and crush proof. These containers are then placed in a plastic ice chest with a tight fitting and sealed lid, and are kept at 40 °F. These methods are well established (USDA–APHIS, 1983) and will be executed by trained USDA–APHIS employees.

C. Mating Competitiveness

One commenter was concerned about the mating competitiveness of the SIT moths compared to wild moths. (5)

Optimization of the sterilization process is critical for the efficiency of SIT (Parker and Mehta, 2007). APHIS' study is designed to assess the impact of sterilization on the ability of male moths to find mates and compete for females. By studying this in small scale field plots, the feasibility of larger scale field trials can be assessed.

XI. Environmental Effects

One commenter stated USDA failed to provide any detailed or quantified information to support its statement that the program will have minimal environmental effects. (6)

The EA documented the potential impacts of using sterile LBAM in the field evaluation study. The EA evaluated the impacts of the sterile moths on the environment and the potential effects of the Calco Red dye used to distinguish the SIT moths from wild LBAM. The program activities were evaluated and analyses were provided, where appropriate. The analysis can be found in section III. B. of the EA.

A. LBAM Population

One commenter wanted to know what the effects would be to the current LBAM population. (5)

Currently, the population of LBAM in the project test area is very low, and larval populations have not been detected; therefore, the release of sterile moths is unlikely to

affect the population that exists there. Monitoring for native moths in the project area will be conducted, and their interactions with sterile moths will be studied if wild moths are found.

One commenter raised the issue of resistance to SIT. (6)

While the development of resistance to SIT is a possibility, it is considered a highly unlikely event (Whitten and Mahon, 2005). If resistance to SIT were to develop in moths, there are three possible mechanisms to consider—

1. **Development of resistance to the sterility caused by transfer of radiation-induced lethal mutations during mating.**

   Radiation induces sterility by causing breaks and translocations in the insect chromosomes. When the insect chromosome is damaged, cellular repair mechanisms allow the broken pieces to reattach so that the basic structure of the chromosomes remains intact (Robinson, 2005). However, after treatment the chromosomes contain numerous mutations which are lethal to any embryo formed by the mating of a sterile insect with the wild untreated insect pest. These radiation-induced mutations are numerous, they express dominant lethality, and they occur at random locations on the chromosomes (Robinson, 2005). To evolve a type of resistance to this mechanism of lethality, a mutation would have to arise in the wild field population of the pest insect that could somehow overcome the dominant lethality expressed on numerous random locations on the chromosomes. Such a mechanism is unknown, and has never been observed in any laboratory or wild populations of insects. Sterility levels of mass-reared strains for sterile release are routinely monitored in operational programs to ensure that high levels of sterility are maintained in the operation of a program.

2. **Development of resistance by evolution of mating preference so that wild insects do not mate with the sterile release insect.**

   While evolution of traits within a wild population to avoid mating with sterile insects leading to resistance to SIT is possible (Boesiger, 1972; Whitten and Mahon, 2005), it is unlikely to occur in LBAM because of the mating systems used by moths. When females are receptive to mating, they express a pheromone (female calling) that signals male moths to find and mate with them.

   Minor changes in the male moth's behavior will not cause females to become choosy about which males mate with them, nor affect the ability of sterile males to find the wild female. It is conceivable that a change in the receptivity of males to a reduced titer of pheromone produced by calling females might occur within the mass-rearing system; however, this would not affect mating in the field as the male attraction to females has been shown to be relatively insensitive to changes in both pheromone titer and the proportion of components in the pheromone blend expressed (Haynes and Baker, 1988; Allison, 2008). Only a complete change in

pheromone might result in a development of mating preferences that would exclude laboratory-produced sterile males from finding and mating with wild females. There are strong evolutionary pressures on the mating systems in Lepidoptera which prevent the development of pheromone signals that could cause differences in attractiveness of pheromone to males (Allison, 2007). While such evolutionary changes in the mating preferences of a wild population are possible, it is very unlikely over the time spans associated with control programs and has not been observed in any operational SIT program for either moths or flies (Whitten and Mahon, 2005). In addition, if an operational LBAM SIT program were initiated, attraction of sterile males to wild females, and of wild males to sterile females, would be routinely monitored to detect any changes that might affect the efficacy of the program.

This is different from that which has been observed in the SIT for Diptera. Tephritid fly females actively choose whether or not to mate with a male based on a complex pre-mating ritual, and is not based on a pheromone attraction system like moths. There have been some cases where wild populations of female tephritid fruit flies appear to discriminate between sterile mass-produced and wild male flies. There have been several studies which have documented that this effect was caused by reduction in quality of the mass-produced sterile release male fly, and not because of any evolutionary change in preference leading to resistance to SIT (Whitten and Mahon, 2005). Because of such effects and the demonstration that mass-produced insect quality is a critical factor to SIT success, all sterile insect release programs have many quality assurance and field monitoring systems in place to ensure that the quality of the release insect remains high in order to maintain effective field performance of the release insect.

3. **The development of resistance to SIT by the occurrence of an asexual reproduction mechanism in the wild pest population**.

A pest species could escape the impact of SIT release if an asexual strain were to arise in the target population. Whitten and Mahon (2005) consider this possibility and conclude that for this to occur within the short time span of a control program, a mix of asexual and sexual modes of reproduction would need to exist within the pest species as the pest population would be driven extinct locally before such a dramatic genetic change could occur.

One mechanism that could presumably change the sexual reproductive mode of the population without a drastic genetic change is infection by a sex ratio-distorting bacterium, such as *Wolbachia* spp. (Werner, 1997). These symbionts are widespread in arthropods (Werner, 1997; Tagmai and Muiura, 2004; Hilgenboecker et al., 2008) and have a range of effects, including causing decreases in viability and fecundity, sexual incompatibility between different populations, and sex ratio distorting effects caused by bacteria that kill males or cause development of asexual reproductive modes (Werren, 1997).

Documentation of asexual modes of reproduction outside of Hymenoptera are unknown (Werner, 1997), and there are strong evolutionary pressures that limit development or populations with skewed sex ratios because infection usually results in reduced fecundity of the population infected with a form of *Wolbachia* that changes the sex ratio (Dyson and Hurst, 2004).

There are no documented cases of changes in the sex ratios or development of asexual modes of reproduction that have been observed in the target pest populations or in the mass-rearing colonies of any operational programs (Whitten and Mahon, 2005). SIT program managers are aware of changes in sex ratios and development of asexual modes of reproduction; therefore, the sex ratios of both the target pest population and the mass-rearing colony are routinely monitored, as well as the frequency of mating between the wild and the sterile release insect. In the case of LBAM, this species has been reared and studied for more than 30 years in New Zealand and Australia, and more recently in the United States. No cases of asexual reproduction or skewed sex ratios have been observed.

B. Nontarget Species

Several commenters had questions about the impact of SIT on other species, pollinators, and predators. (4, 5, 6, 7)

The addition of 1,400 sterile moths per acre will not be likely to cause any adverse environmental impacts. Insects present in agricultural systems are measured in numbers or in biomass. A typical agricultural field contains 400 million insects per acre (Pedigo and Rice, 2009), or 2,471 kg of insects and other arthropods per acre (Schoonhoven et al., 2006). The addition of 1,400 moths per acre per week will not affect total insect numbers or insect biomass in the agricultural field because it represents a small fraction of the total insect numbers and biomass. The total population of LBAM will not increase over time because the sterile insects will live only 2 to 3 weeks.

The total number of moths released (1,400 moths per acre per week or 1,400 moths per 43,560-square feet) will amount, on average, to only 0.032 moths per square foot per week or about 3 moths per 100-square feet per week (the size of a 10 x 10 foot room) APHIS is able to keep the number of insect releases small because both modeling exercises (Kean et al., 2008) and research associated with other moth release programs (i.e., painted apple moth in New Zealand) suggest that small frequent releases more rapidly eradicated the wild population. This is especially true for moths with several generations per year, like LBAM.

Because the total number of insects to be released is approximately 3 moths per 100-square feet, the effect on other organisms is likely to be small. Adult LBAM are more active right after sunset (Suckling and Brockerhoff, 2010), and are unlikely to compete with other pollinators. They inhabit trees and shrubs, and will not interfere with soil-dwelling organisms. When the moths die, they will fall to the ground and decompose by natural methods without overwhelming natural soil bacteria.

Predators

Natural insect populations increase and decrease naturally over time (Price, 1984). For example, each spring mayflies (Ephemeroptera) emerge in the thousands, but die in a few days (Borror et al., 1992). Most predators have a long life cycle (compared to their prey), and can switch to abundant prey when one source disappears (Begon et al., 1986). While this is not true for specialized predators, there are no known specialist predators in California who consume only the LBAM; therefore, even though adding sterile moths to a field will increase food supply, the predators can return to their natural habitat and food sources when LBAM is difficult to find.

Native Leafrollers

Currently, there are no reported cases of hybridization between introduced LBAM and native Tortricid leafrollers. The amount of pheromone present in pheromone traps or in pheromone releases is much more concentrated than the amount of pheromone emitted by individual moths. In addition, pheromones are highly developed chemical signals designed to affect conspecifics (Gullan and Cranston, 1994). Considering the small number of moths that will be released and the specificity of the pheromone, it is unlikely that sterile LBAM release will affect any native moth mating cycle.

Release of sterile LBAM is unlikely to affect pollinator species in the project area. Moth pollination is generally associated with tubular flowers that open at night, whereas pollination carried out by butterflies and bees occurs with bright, open flowers that open during the day (Gullan and Cranston, 1994).

One commenter stated USDA–APHIS has provided no information regarding endangered species besides a commitment to consult. It lacks sufficient information for the agency to make an informed decision regarding the SIT field test. (6)

APHIS assessed the SIT evaluation project area for the potential impacts on federally listed threatened and endangered species and critical habitats and has completed that assessment with agreement from both the Fish and Wildlife Service and the National Marine Fisheries Service. APHIS uses site specific information including the footprint of the proposed action and areas that may be directly or indirectly affected by the proposed action (action area) and generates a list of federally listed species and critical habitats that may occur in the area, these lists are obtained from the appropriate consulting agency websites (e.g., http://www.fws.gov/sacramento/es/spp_list.htm). APHIS then uses aerial photograph interpretation to evaluate potential habitat for listed species and assesses all components of our action on those species, their habitats and any constituent elements of critical habitat to determine the potential for effects to those species and the need for further consultation with the consulting agencies. If any aspect of the proposed action may affect listed species or critical habitat, APHIS will initiate consultation. For the purposes of the LBAM SIT evaluation project, APHIS followed the above process and determined there would be no effects to listed species or critical habitat. A complete administrative record of this consultation is available upon request.

C. Impacts on Huichica Creek

One commenter expressed concern about the environmental impact of SIT release on Huichica Creek. (6)

The total number of moths that will be released (1,400 moths per acre per week) is equivalent to 0.03 moths per square foot. The treatment site is an agricultural area primarily composed of grape vineyards. Most of these moths will likely die and decompose on soil in the vineyards, and the few moths that may decompose in the creek would be such a small number that there would be negligible effects on stream ecology.

One commenter stated the release of moths over the Huichica Creek is a discharge of pollutants and would require a National Pollutant Discharge Elimination System (NPDES) permit. (6)

When contacted, the San Francisco Bay Regional Water Quality Control Board confirmed that the release of sterile insects is not considered to be a point source discharge, and that no NPDES permit is required for such actions.

D. Use of Calco Red

One commenter stated the EA does not disclose the ingredients of the Calco Red dye and the Material Safety Data Sheet (MSDS) states the presence of heavy metals. (4)

The EA states that the material used to mark insects is an oil-soluble azo-dye. The dye is not a formulated material, such as may occur with pesticides, where several other ingredients may be present and are not disclosed. The MSDS, referenced in the SIT EA comments, contains Calco Red dye information beginning on page 7 (http://www.vwrsp.com/msds/10/820/82021-206.pdf). The chemical structure of the dye is disclosed on the MSDS and is listed under section II (Hazardous Ingredients) of the MSDS by reference to the Chemical Abstract Services number (4477-79-6). The MSDS also states that in addition to the dye, mineral spirits are present. Based on information provided in the MSDS, no other ingredients are present.

The reference to heavy metals in the MSDS (chromium, cadmium, mercury, arsenic, lead, and antimony) does not imply that heavy metals are present in the dye. These metals are listed on the MSDS with associated threshold concentrations for each metal under the Coalition of Northeastern Governors (CONEG) model toxic legislation. CONEG (http://www.coneg.org/default.htm) has set limits for the presence of heavy metals in materials that are produced in the Northeastern United States. The MSDS does not state that the Calco Red dye exceeds any of the threshold safety criteria established by CONEG.

One commenter stated that USDA–APHIS failed to adequately examine the impacts of Calco Red dye on aquatic resources. (6)

The screening level risk assessment (appendix B of the EA) provided conservative assumptions regarding the loading of marked moths and Calco Red dye into aquatic waterbodies. The assumption was that the maximum number of moths per acre, over the entire 27-week period, was deposited instantaneously into a non-flowing, shallow body of water and that all of the dye would be soluble. These assumptions would be considered more conservative than estimating exposure in a flowing body of water, such as Huichica Creek. This is considered extremely conservative because it assumes every moth over a 27-week period contains a maximum amount of dye and would be deposited simultaneously into the water which is not feasible. Also, it would be very unlikely that all moths in an area would be deposited into a water body. This assumption results in potential Calco Red concentrations beyond those expected from the release of dye into water immediately adjacent to a moth, as proposed in the comments to the SIT EA. In addition, the estimated exposure levels in the assessment assumed that the dye is water soluble and would remain in the water column which is not the case for these types of chemicals, as referenced in appendix B of the SIT EA. There is uncertainty regarding toxicity to fish and aquatic invertebrates that may consume a marked moth; however, based on the available aquatic toxicity data, conservative exposure assumptions previously described, and the reduced bioavailability of bound dye to aquatic fauna, the risk through this exposure pathway would not be expected to result in negative impacts to aquatic organisms.

One commenter stated the EA fails to properly analyze the effects of azo dyes on those animals most likely to consume moths, such as insectivores. (6)

USDA–APHIS evaluated the potential risk of Calco Red exposure to an insectivorous shrew (appendix B). The intent of the screening level assessment was to select an insectivore that would represent risk to other insectivores by making conservative assumptions regarding exposure to Calco Red dye. The shrew was selected because it consumes a high percentage of its body weight in food per day due to its high metabolism, and it would provide a conservative estimate of exposure for other mammals and insectivores that would receive smaller doses as a percentage of their body weight. In addition, the shrew was selected because it consumes moths as part of its diet (EPA, 2003). The assumption in the risk assessment in appendix B was that the shrew would consume only moths that contained maximum levels of dye. These are considered to be extremely conservative assumptions since insectivorous mammals and birds consume numerous other food items in addition to moths and, if they do consume a marked moth, they will not always consume a moth with the highest dye residues. Also, insectivorous birds and mammals will forage in areas outside of the area where moth releases will occur, further reducing the potential for exposure. Based on the extremely conservative assumptions designed to unrealistically maximize exposure that were used in this assessment, the shrew would have to consume several hundred times its body weight to receive a dose equivalent to the lowest reported acute toxicity value for these types of dyes. In the assessment, the wide margins of safety estimated for the shrew under very conservative exposure assumptions can be used to provide insight into the potential risk to other insectivores, such as bats. Based on the assumptions used in the assessment, the risks to bats would be expected to be comparable or less than those estimated for the

shrew. There is greater uncertainty regarding the extrapolation of risks from insectivorous shrews to birds. Azo dye toxicity data to birds is limited; however, avian toxicity of an acid azo dye has shown that these types of dyes have low toxicity to birds with median lethal dose (LD_{50}) and no observable effect concentrations (NOEC's) of greater than 5,620 mg/kg (EPA, 2005). Based on conservative assumptions regarding exposure, available toxicity of azo dyes to birds, and the low risk to mammals from Calco Red, the weight of evidence would suggest minimal risk to birds.

One commenter stated the EA did not consider the potential for sublethal impacts from Calco Red dye, such as endocrine disruption, carcinogenicity, and mutagenicity; the EA only relied on median lethal toxicity values for related compounds. (6)

Calco Red is part of a large group of chemicals known as azo dyes that have been used to establish and publish quantitative structure activity relationships (QSAR's) that are used to provide estimates of environmental fate and toxicity. These types of relationships can be used to estimate and characterize the environmental fate and toxicity of related azo dyes, as well as other organic compounds. When available, USDA–APHIS relied on environmental fate and ecological toxicity data for Calco Red, or on the QSAR data that has been developed and was referenced in appendix B. The data for this class of dyes, as well as the use of published quantitative structure activity relationship information, was used to assess potential impacts to nontarget organisms. The most conservative median lethal toxicity value was selected from the range of values in the risk characterization. Acute toxicity values were selected based on the availability of several values for a range of azo dyes. The intent of this screening level assessment was to evaluate the acute effects data and then, based on unrealistic exposure scenarios, characterize risk to aquatic and terrestrial nontarget organisms. If the screening level assessment would have demonstrated that there is a potential for risk, then a refined risk assessment with conservative realistic exposure estimates would be needed, along with additional discussion regarding other effects data. Based on the screening assessment that was provided in the EA using unrealistically high exposure scenarios, the acute, sublethal, and chronic aquatic toxicity would have to be at least 1,000 times more toxic to aquatic organisms to trigger any risk concern. For insectivores, sublethal and chronic toxicity would have to be orders of magnitude lower to suggest any potential for risk using the assumptions in the screening assessment. Under more realistic, conservative exposure scenarios, toxicity would have to be even greater to suggest any risk to nontarget organisms. There is uncertainty associated with the available acute and chronic effects data for this dye, as there is in any effects analysis; however, the use of such unrealistic exposure assumptions accounts for some of that uncertainty, and provides support that the use of dye for marking LBAM will not result in significant impacts to terrestrial and aquatic organisms.

E. Impacts of Aircraft

One commenter mentioned that the EA did not analyze the impacts low-flying aircraft may have on bat and bird populations in the area. (6)

APHIS evaluated the impacts of the flight releases to wildlife, including bats and birds, in the proposed area, and concluded that the activities of the field evaluation project would be similar to activities that currently occur in the area. The agricultural areas surrounding the field evaluation site use similar planes to apply pesticides and other treatments to their fields. The Napa County Airport is approximately 3 miles from the evaluation study. It is a small airport that averages 346 planes per day, including both take offs and landings. Over half of the flights (51 percent) are for local aviation.

The most common impacts to wildlife, including bats and birds, are from noise pollution. The noise generated from the planes used in the field evaluation project is equivalent to the noise of a power lawn mower (Pepper et al., 2003). For study purposes, the planes will make a maximum of one pass per week. This is an insignificant level of noise compared to the noise generated from agricultural equipment such as trucks, plows, tractors, and generators. Therefore, our action will not have significant impacts on wildlife, including bats and birds.

The article, "Ecological Risk Assessment Framework for Low Altitude Overflights by Fixed-Wing and Rotary-Wing Military Aircraft" (Efroymson et al., 2001), referenced by the commenter, focused on noise pollution as the key impact to bat and bird populations although visual and physical stressors may occur. The document outlined how the military should evaluate the risk of use of aircraft for military flights. These military operations generally involve multiple planes and multiple flights per day. In addition, military operations generally occur in undeveloped areas that are not accustomed to high base levels of noise. In contrast, the field evaluation study will only use one flight per week. The field evaluation study will utilize existing airports. The area is primarily agriculture and, therefore, has ambient noises including the use of aircraft, tractors, and generators. In addition, the Napa County Airport is approximately 3 miles from the field evaluation site. This airport has been in existence since October 1944. Wildlife populations in the area have been exposed to aircraft noise for the entire history of the airport.

F. Cumulative Impacts

One commenter stated the EA failed to examine the need for and the environmental impacts of the SIT project and how the use of SIT would add cumulatively to the study. (6)

The LBAM SIT pilot study will provide critical data that will be the basis for decisionmaking in the direction of needed future evaluations of SIT to determine if it can be used in a wider scope to combat LBAM infestation. It is premature to forecast the characteristics of any future SIT program.

One commenter stated agencies can only properly analyze the cumulative impacts of a project when the agency possesses quantified, detailed information regarding the project. A cumulative impact analysis must be sufficiently detailed in order to be

useful to the decisionmaker in deciding whether or how to alter the program to lessen cumulative impacts. (6)

APHIS analyzed the cumulative effects of the proposed study and determined that no cumulative effects would be anticipated. APHIS has been in contact with the landowners, and was informed that no other projects were currently ongoing or planned to occur in the future in and surrounding the project area. None of the comments received highlighted any State, Federal, or private actions that are ongoing or will occur in the project area during the time of APHIS' study that would add cumulatively to this action.

The only potential cumulative effect addressed in the comments was the idea that this action would add, cumulatively, to the use of LBAM SIT in the LBAM Program. As stated above, the LBAM Program's use of LBAM SIT is dependent on the outcome of these studies. How and where LBAM SIT could be used in the program is still under consideration, and is not reasonably foreseeable at the current time. Effects analysis of the use of SIT LBAM in the program is premature.

One commenter stated that the use of SIT is most effective when pesticide is released in targeted area, and these effects should be discussed in the EA. (6)

Although it may be true that population suppression by pesticide application often aids SIT, this field evaluation project does not call for the use of pesticides. The results of this field evaluation will provide information that will be useful in determining if SIT would be appropriate for use in the LBAM Programand, if so, how such a SIT effort should be designed.

The use of pesticides in this project would be counter-productive. This project is strictly a methods development project. One of the advantages of the research site is that wild LBAM populations are low and there is no need for population suppression in order to increase the efficacy of SIT. If SIT were to be considered on a wide scale in the LBAM program, the need for population suppression or knockdown prior to using SIT would need to be addressed. It is premature to consider such a question at this time.

One commenter stated widespread use of LBAM SIT with Calco Red needs to be evaluated in this EA. In addition, the risk of releasing fertile moths in the SIT program should also be explained within the EA. (6)

As mentioned above, the discussion of the possible effects of LBAM SIT use in the LBAM Program is premature. Results from this study are needed to evaluate how and if LBAM SIT could be used in the LBAM Program in California. Effects from the widespread use of LBAM SIT with Calco Red and the risk of releasing fertile moths will be evaluated under a programmatic document when and if the LBMA Programindicates that SIT is a likely tool for use in the program.

G. Future LBAM Program

One commenter stated it seems obvious from the EA that the goal is for future releases and these should be discussed. (4)

As mentioned earlier, any future use of LBAM SIT would be based upon information gathered from this study. It is too early to determine how and where or if LBAM SIT could be used for future studies, or for use in the LBAM Program.

One commenter was concerned of the possible future program's effects on predators due to artificially increased populations of sterile moths. (5)

Any decision regarding the use of SIT in the future LBAM program is premature at this time. Information from this proposed study will be used along with other available information to determine if SIT is practical and, if so, to develop a strategy for its use that can be analyzed under the APHIS–NEPA implementing procedures. If it is determined that SIT is a treatment alternative that should be considered, an analysis of the impact of that program on predators will be prepared, and public comments will be welcomed.

One commenter noted that the project counties for LBAM have many listed threatented and endangered species, including birds, that the EA failed to consider. (6)

APHIS has evaluated the potential impacts of the LBAM SIT evaluation project on listed species and critical habitat (see response to comment XI.B above). The proposed field evaluation lies in a 3-square mile area straddling the county line and is dominated by agricultural use, primarily vineyards. Listed species and critical habitat surrounding the area were evaluated and APHIS made the determination the proposed action would not affect those species or critical habitats. . Further, APHIS has discussed this project in detail with both the Fish and Wildlife Service and the National Marine Fisheries Service, who both concurred the proposed SIT evaluation project will not affect any listed species or critical habitats. A complete administrative record of this consultation is available upon request.

XII. Other Alternatives

One commenter stated other action alternatives should have been addressed especially if other sites could be selected for the study. These sites should be mentioned so that other sites and timeframes that are more beneficial to the environment could be evaluated by the public. (6)

No other sites for this particular study are being considered. However, if for one reason or another it was not possible to do the study at this location in Napa and Sonoma, another site could be considered. If this were to occur another environmental assessment would be prepared and the public would have an opportunity to comment.

XIII. The LBAM Program

One commenter stated APHIS should end the LBAM program. (2)

The proposed action is designed to gather information that will be useful in the potential use of SIT in the LBAM Program. Any decision regarding the continuation of an LBAM program will be based on all available information and will not be dependent solely upon the results of the SIT field evaluation project.

One commenter stated just as the State of California had to conduct a full environmental impact report, the requirement of a full environmental impact statement (EIS) should be extended to USDA. (4)

The EA was prepared to analyze the environmental impacts of the proposed action. Once an EA is prepared and made available to the public, APHIS will make a final determination on whether the action will have significant impacts or not. If the agency determines that the action will have significant impacts, an EIS will be prepared. On the other hand, if the Agency determines that there are no significant impacts, a finding of no significant impact is prepared and signed and, therefore, no additional environmental documentation is needed.

XIV. Miscellaneous Comments

One commenter sent in an article on the Australian moth on organic blueberries and a trial on codling moth. (1)

APHIS thanks you for the news article regarding the economic loss of organic blackberries in the Watsonville area that was attributed to LBAM in June, and the information on the organic adjuvant to enhance the efficacy of insecticides.

One commenter stated we need to move away from monoculture and toward raising a number of different crops in each area. (7)

APHIS thanks you for your advice; however, the comment is outside the scope of this document which outlined the environmental impacts resulting from a field evaluation project in a 3-square mile area on the Napa and Sonoma County borders.

One commenter stated there should be warnings on twist ties about toxicity if Bacillus thuringiensis (Btk) is used. (7)

Btk will not be used in the field evaluation project. In addition, Btk is not a component of twist ties.

One commenter stated many of the chemicals used, even in the traps, are toxic to humans, bees, bats, and other animals even in minute amounts. (7)

No chemicals are being used in this field evaluation project other than the use of Calco Red dye in the larval diet of moths raised during the study. An analysis of the toxicological effects of Calco Red dye was provided in the EA.

One commenter stated that hand-picking moth larvae is the best method of control. (7)

This study is designed to assess the use of LBAM SIT in a grape vineyard. Control of moth larvae is not being evaluated.

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