PROCLAMATION OF AN ERADICATION PROJECT
REGARDING THE JAPANESE BEETLE

On August 5, 2010, one Japanese beetle (JB) was trapped in the community of Fair Oaks, in Sacramento County. In response to this JB detection, additional traps were placed in the area. On July 12, 2011, two additional JBs were detected within 0.1 miles of the initial detection site. Between June 6 and 21, 2012, four additional JBs were detected within 0.1 miles of the 2010 and 2011 detection sites. Based on the survey data, pest biology, recommendations by the California Department of Food and Agriculture Japanese Beetle Science Advisory Panel, and evidence presented to me by my professional staff, I have determined that an infestation of JB exists in the area.

The JB, *Popillia japonica* Newman, is an exotic insect which has a long history of being a serious pest of turf, crops and ornamental plants in the Eastern United States. Following its introduction into the Eastern United States in 1916, this beetle multiplied rapidly, and currently is known to attack more than 300 different plants. Important California crops which would be attacked include corn, pome fruits, turf, strawberries, grapes and numerous ornamental plants. Damage occurs from adult beetles feeding on the plants and from larval feeding on plant roots. The first California infestation occurred in Sacramento in 1961, and centered around Capitol Park. This infestation was successfully eradicated, and since that time all other subsequent infestations of this pest have been successfully eradicated from the State.

In California, the favorable climate, large areas of permanent turf for larval feeding, the large variety of plants for adult feeding and ineffectual natural enemies are likely to result in the establishment of JB if this infestation is not eradicated. Establishment of JB could cause direct environmental damage via increased pesticide use Statewide by commercial growers and the public and via adverse feeding impacts on native plants. Populations of threatened and endangered plant species could be severely threatened or extirpated should this beetle adapt to feeding on them. JB are voracious feeders; feeding on the upper leaf surface, removing the soft tissue of the leaf and leaving the veins in a lacelike or skeletonized pattern. Plants in this condition may eventually die.

Under my statutory authority, as Secretary of the California Department of Food and Agriculture (CDFA), I have decided, based upon the likely environmental and economic damage that would be inflicted by an established infestation of JB, that it is incumbent upon me to address this threat. This pest poses a threat to commercial production of soft fruits and berries via direct crop loss. The combined gross production value in California of the fruit hosts listed above was over $6.2 billion in 2007. Additionally, feeding damage caused by JB will negatively impact all of California's landscape through defoliation and decline of native plants.

These JB detections meet the definition of an emergency as a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, property as described in the above, the Pest Profile, and as follows:

1. The situation is a sudden, unexpected occurrence, as JB is not endemic in California. In June 2012, three female JB and one male JB were trapped in Fair Oaks.

2. The situation presents a clear and imminent danger to many crops grown in California, the nursery industry, the urban environment, the natural environment and California's economy, via direct damage to plants and the imposition of quarantine restrictions designed to mitigate the spread of JB.

3. Immediate action is required, because the number of JB detected indicates that there is a breeding population in the Fair Oaks area. JB has formidable natural dispersal ability. Allowing a JB infestation to build up and spread will negate the Department's ability to effectively implement mitigation options.

4. Loss of, or damage to, property will occur via both physical loss or damage (skeletonized leaves, soft fruit damage and larvae feeding on roots) and economic loss or damage (loss of production, quarantine restrictions).

5. Populations of threatened and endangered plant species could be severely threatened or extirpated should JB adapt its diet to include those species.

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

Notwithstanding the above, CDFA did prepare an environmental impact report (EIR) entitled, "Environmental Impact Report, Japanese Beetle Project," 1974. However, for the current emergency, CDFA will implement the eradication techniques described in the attached work plan. These include the use of less toxic pesticide and an increase in the number of traps deployed to determine the extent of the infestation, in order to support a reduced treatment area than what is outlined within the existing EIR.

My duty to act, and this decision, is based upon authority set forth in Sections 24.5, 401.5, 403, 407, 408, 5401-5405, and 5761-5764 of the Food and Agricultural Code (FAC) authorizing and mandating the Secretary to: thoroughly investigate the existence of the pest; determine the probability that the pest will spread; adopt regulations [Title 3 of the California Code of Regulations, Section 3589(a)] as are reasonably necessary to carry out the provisions of this code; abate the pest from the established eradication area; and, prevent further economic damage. In order to determine the extent of the infestation, and to define an appropriate response area, an additional survey took place for several days over a 49 square-mile area, centered on the detection sites. The results of this additional survey indicated that the infestation is sufficiently localized to

be amenable for effective implementation of CDFA's current JB emergency response strategies, which include treatment. Emergency action is needed to protect California from the negative environmental and economic impact this pest will cause, should it be allowed to remain in this area and spread. The enclosed project plan describes CDFA's actions which are necessary to mitigate the spread of this pest.

This decision, to proceed with a treatment program, is based upon a realistic evaluation that it may be possible to eradicate the JB using currently available technology in the same manner as has been successfully used to eliminate previous infestations. Treatment needs and environmental conditions are outlined in the attached work plan.

In making this decision, CDFA has evaluated possible eradication methods. In accordance with integrated pest management principles, the following is a list of the options that I have considered for eradication of this JB infestation: 1) mechanical controls; 2) cultural controls; 3) biological controls; 4) chemical controls; and 5) host removal.

Based upon input from my professional staff, and the input of expert's familiar with JB, I have concluded that there are no mechanical, biological or cultural controls which can effectively eradicate JB and allow CDFA to meet its statutory obligations. To eradicate JB from this area, I am ordering ground applications of pesticides be made to all JB hosts within a 200-meter radius around the detection sites. If additional JB or immature life stages are detected in the survey area, the treatment area may expand to an 800-meter radius around the infested properties. A description of the alternative treatment methods considered, and methodologies chosen, are contained in the attached work plan.

Sensitive Areas

The treatment area has been reviewed by consulting the Department of Fish and Game's California Natural Diversity Database for threatened or endangered species. Mitigation measures will be implemented as needed. CDFA also consults with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service when rare and endangered species are located within the treatment area. CDFA will not apply pesticides to bodies of water or undeveloped areas of native vegetation. All treatments will be applied to residential properties, common areas within residential developments, and other non-commercial properties.

Treatment Plan

The proposed project area encompasses those portions of Sacramento County which fall within an approximate 49 square-mile area around each property in which JB has been detected. A map of the detection sites with the project boundaries and the

proposed treatment work plan is attached. In summary form, the treatment plan consists of the following elements:

1. Delimitation. Japanese beetle traps will be placed throughout the project area to delimit the infestation and to monitor post-treatment JB populations. Traps are placed at a minimum density of 50 traps per square-mile in the one mile core area around each find site, 25 traps per square mile in the surrounding 8 miles, and 5 traps per square mile in the two square mile rings outside of the 25 trap ring, thus forming a 3.5 mile radius delimitation area. Additional traps may be added to further delimit the extent of the infestation and to determine the efficacy of the treatments. Traps will be serviced on a regular schedule for a period equal to three beetle generations beyond the date of the last JB find.

2. Treatment. Properties within the treatment area will be treated according to the following protocol: 1) Tempo® SC Ultra (cyfluthrin) or Sevin® SL (carbaryl), contact insecticides for controlling the adults of JB, will be applied to the foliage of host plants; 2) Merit® 0.5 G, an imidacloprid insecticide, will be applied to grass turf and the ground beneath ground cover to eradicate developing grubs.

   Treatments will be repeated as per label instructions, for up to two life cycles beyond the last JB detected. Foliar insecticides are applied by ground using hydraulic spray equipment, whereas the imidacloprid insecticide will be spread onto the surface of the ground and watered into the soil.

Public Information

Residents of affected properties are invited to a public meeting where officials from CDFA, the California Department of Pesticide Regulation, the Office of Environmental Health Hazard Assessment, and the County Agricultural Commissioner's Office will be present to address residents' questions and concerns. Residents are notified in writing at least 48 hours in advance of any treatment in accordance with FAC Section 5779.

After treatment, completion notices are left with the residents detailing precautions to take and post-harvest intervals applicable to any treated fruit or vegetables.

public information concerning the JB project will consist of press releases to the public and direct notification of project developments to concerned local and State political representatives and authorities. Press releases are prepared by CDFA's information officer and the county agricultural commissioner, in close coordination with the project leader responsible for treatment. Either the county agricultural commissioner or the public information officer serves as the primary contact to the media.

If you have any questions related to this program, please contact the CDFA Toll-Free Hotline at 1 (800) 491-1899.

Attachments

INTEGRATED PEST MANAGEMENT ANALYSIS OF ALTERNATIVE TREATMENT METHODS TO ERADICATE THE JAPANESE BEETLE
June 2012

The chemical treatment program used by the California Department of Food and Agriculture (CDFA) for control of the Japanese beetle (JB), *Popillia japonica* (Coleoptera: Scarabaeidae), targets multiple life stages. A contact insecticide is used for an immediate control of adults in order to prevent spread, and a systemic insecticide is used to control developing larvae. The contact insecticides preferentially used contains either the synthetic pyrethroid cyfluthrin or the synthetic organophosphate carbaryl, while the systemic insecticide contains the synthetic neonicotinoid imidacloprid. These products have been shown to be effective against JB in other uninfested states such as Colorado, Oregon, and Utah.

Below is an evaluation of alternative treatment methods to eradicate JB which have been considered for treatment programs in California.

A. MECHANICAL CONTROL

Mass Trapping. Mass trapping of adults involves placing a high density of traps in an area in an attempt to physically remove them before they can reproduce. It is not recommended as a general eradication measure against established populations because trap capture can be low, and studies indicate that there is only a 40 to 50% drop in population numbers at high trap densities (1 per acre, or 640 per square mile). However, it has been shown to reduce numbers significantly in isolated populations, but several years are required. Also, trapping as a small scale eradication technique within a larger infested area is not recommended because it has been shown to encourage mating by drawing in males and females to nearby foliage, where they more readily can find each other and mate, and can actually increase the damage on plants around the traps.

Active Beetle Removal. Adult Japanese beetles are mobile day time fliers, and adults could be netted or collected off of foliage. However, due to their ability to fly when disturbed, and the laborious and time-prohibitive task of collecting small insects from several properties by hand, it would be highly unlikely that all adults could be captured and removed. Grubs live in the soil in and around plant roots, so all potentially infested plant roots and associated soil would have to be removed and disposed of in order to remove the larvae from the environment. For these reasons, mechanical control is not considered to be an effective alternative.

B. CULTURAL CONTROL

Cultural Control. Cultural controls involve the manipulation of cultivation practices to reduce the prevalence of pest populations. These include crop rotation, using pest-resistant varieties, and intercropping with pest-repellent plants. None of these options are applicable for JB control in an urban environment, and may only serve to drive the beetles outside the treatment area, thus spreading the infestation. For these reasons, cultural control is not considered to be an effective alternative.

C. BIOLOGICAL CONTROL

MIcroorganisms. Milky spore is a soil bacterium, *Paenibacillus popilliae* (formerly *Bacillus*), which attacks the grubs. It can be effective in limiting the density of populations, but takes two to three years to build up sufficient numbers for control. The 1983-84 California Environmental Assessment of the Sacramento County Japanese beetle project noted that USDA had an extensive program that resulted in inoculation of the milky spore pathogen into large areas of the northeast U.S. However, results were variable and complete elimination of Japanese beetle had never been achieved. In addition, pest resurgences were noted in a number of areas. Also, at very low JB densities there are insufficient grubs to allow buildup of spores in the soil. The assessment concluded that milky spore was not an option for eradication. No milky spore products have been registered in California since 1987. Two other bacteria, namely *Bacillus thuringiensis japonensis* and *Ovavesicula popilliae*, have shown some effectiveness against Japanese beetle grubs. However, no products containing these microorganisms are registered in California.

Nematodes. *Heterorhabditis bacteriophora* and *Stenernema glaseri* appear to be the most widely used soil nematodes used against JB grubs. The California Department of Pesticide Regulation does not regulate nematodes because they do not require pesticide registration for multicellular biocontrol organisms, so they can be used in California. However, success of nematodes is problematic because soil type, moisture, and temperature can greatly influence their effectiveness. Nematodes require a fairly loose textured soil (sand, loamy sand, or sandy loam) because they need to be able to move through the spaces between the soil particles. Nematodes work best in a moist soil (watered, but not to excess) and generally have a narrow soil temperature range in which they work best.

Parasites and Predators. There have been 24 parasites released in the U.S. against JB, but only five have become established and only three of these are considered somewhat successful. However, they are not available commercially. Parasites and predators in general are not considered an effective stand alone eradication method because their success is density dependent, in that they are more effective against dense prey populations than against light populations, so their effectiveness decreases as the prey population declines.

Sterile Insect Technique (SIT). SIT involves the release of reproductively sterile insects which then mate with the wild population, resulting in the production of infertile eggs. Some research on the production and release of sterile JB adults was done in the 1960's and 1970's, but it has not been pursued further and has never been developed as a control tactic.

D. CHEMICAL CONTROL

Foliar Treatment. A number of contact insecticides have been researched for use against JB adults elsewhere. The following products have been considered for use by CDFA, based on a combination of effectiveness against JB, worker and environmental safety, and California registration status.

Tempo® SC Ultra is a formulation of cyfluthrin which may be applied to the foliage of host plants. Tempo® SC Ultra is effective against JB. Tempo® SC Ultra is a wide-spectrum synthetic pyrethroid insecticide which controls hundreds of insect species, including beneficial insects. Tempo® SC Ultra is preferentially used over other contact insecticides by CDFA

because it has low mammalian toxicity and a relatively shorter half-life. However, it is not registered for use on a number of backyard fruit and vegetable crops which are attacked by JB, so its usage is restricted primarily to ornamental plants.

Sevin® SL is a formulation of carbaryl which may be applied to the foliage of host plants. Sevin® SL is effective against JB. Sevin® SL is a wide-spectrum carbamate insecticide which controls hundreds of insect species, including beneficial insects. Sevin® SL is registered for use on various backyard fruit and vegetable crops. Therefore, it is used in situations where the preferred insecticide for foliar treatment, namely Tempo® SC Ultra, cannot be used because of label restrictions on the application to fruits and vegetables.

Soil Treatment. A number of systemic and contact insecticides have been researched for use against JB grubs. The following product has been considered for use by CDFA, based on a combination of effectiveness against JB, worker and environmental safety, and California registration status.

Merit® 0.5 G is a granular formulation of imidacloprid which may be applied to the root system of host plants via spreading on the soil surface and subsequent watering. Merit® 0.5 G is effective against JB. Imidacloprid is a synthetic neonicotinoid insecticide which controls a number of other root feeding pests, but is generally considered safe for beneficial insects.

E. HOST REMOVAL

Host Removal. Removal of host plants would involve the large scale destruction of plants and their roots by either physical removal or phytotoxic herbicides. The remaining soil may have to be protected against new plants sprouting up by regular herbicide sprays or by tarping. For these reasons, host removal is considered economically inefficient and too intrusive to use over the entirety of the 200- to 800-meter radius treatment area used for JB. Additionally, host removal could promote dispersal of female beetles in search of hosts outside of the treatment area, thus spreading the infestation.

F. RESOURCES

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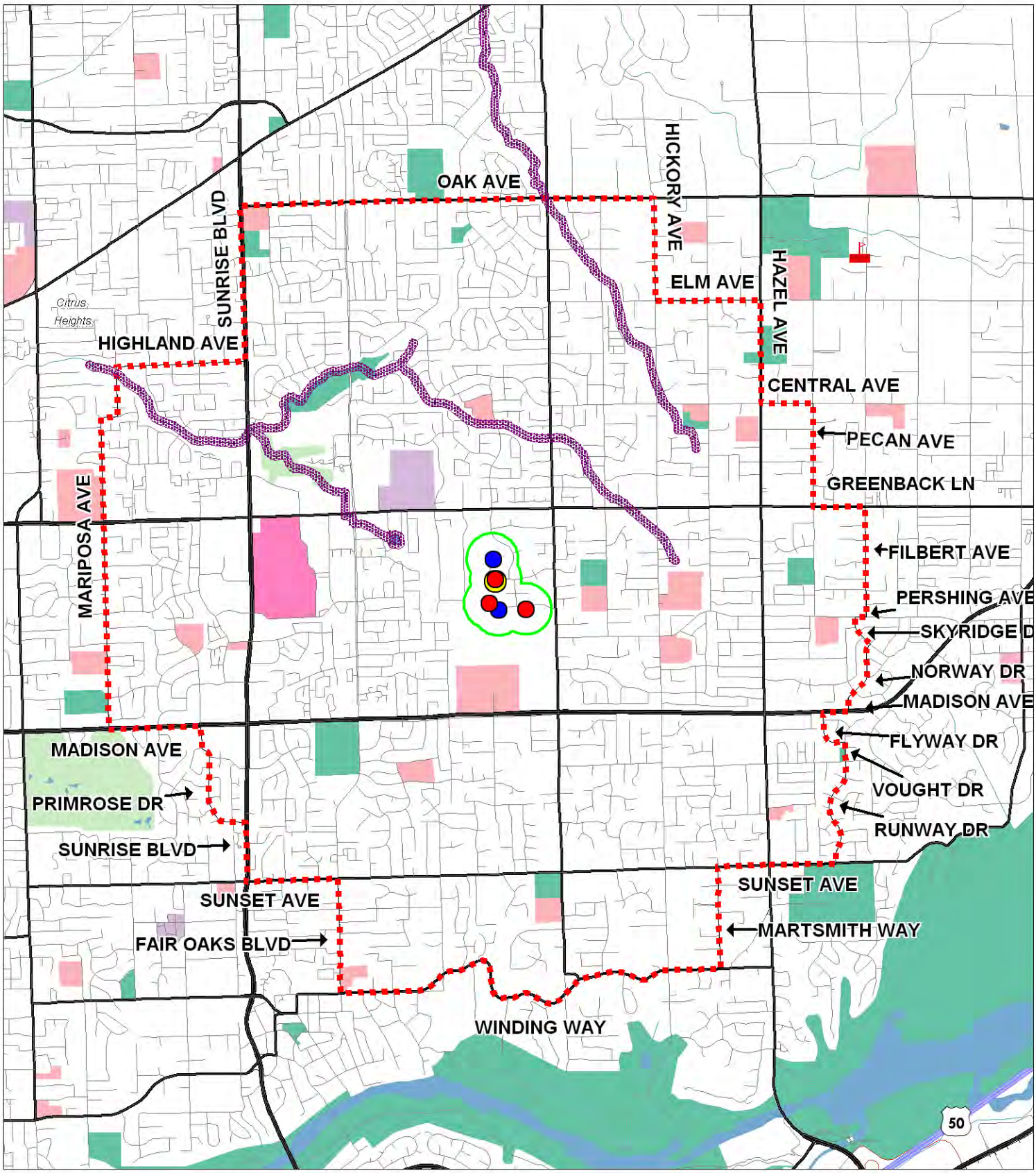
JAPANESE BEETLE
FAIR OAKS, SACRAMENTO COUNTY
2010 / 2011 / 2012



2012 DETECTION SITE

2011 DETECTION SITE

2010 DETECTION SITE

MAXIMUM PROGRAM BOUNDARY

PROPOSED 200M TREATMENT AREA

SENSITIVE ENVIRONMENTAL AREA / TREATMENT MITIGATIONS IN PLACE

cdfa