



United States
Department of
Agriculture

Marketing and
Regulatory
Programs

Animal and
Plant Health
Inspection
Service



Melon Fruit Fly Cooperative Eradication Program

Arvin Area, Kern County,
California

Environmental Assessment,
November 2010

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Appendix A. Detection Sites and Quarantine Zone for Melon Fruit Fly—Arvin Area, Kern County, California

I. Need for the Proposal

The melon fruit fly, *Bactrocera cucurbitae* (Coquillett), is a destructive agricultural pest in many parts of the world. It is native to tropical Asia, and has a long history of being a serious pest of tropical and subtropical fruits. Following introduction into the Hawaiian Islands in 1895, this fly multiplied rapidly, and currently is known to infest more than 34 different host species in the State of Hawaii. Worldwide, the melon fruit fly (MFF) has been recorded infesting more than 125 species of plants including cucurbit crops, avocado, papaya, citrus, beans, and tomatoes. Adult MFF are strong fliers, which makes it possible for commercial host-plant growing and production regions well outside a detection area to become infested (Mau and Kessing, 2007). A female MFF may lay an average of 15 eggs per day, and up to 1,000 in her lifetime. The eggs hatch in about 1 day (19 to 28 hours). Completion of the life cycle normally requires 1 to 2 months, but may be completed in 15 days under optimal conditions (CDFA, 2010a).

MFF is not established in the continental United States. The first recorded detection was in July 1956 in Los Angeles County, California (IFAS, 2004). Subsequent California infestations in 1987 and 1999 were successfully eradicated (CDFA, 2010b). The State of California has not had to regulate any area for MFF since June 23, 2000 (CDFA, 2006). On August 9, 2010, a new detection of MFF was made in the Arvin area of Kern County, California (CDFA, 2010c). Because of the species' rapid population growth and potential for damage, a prompt response is desired to contain and eradicate any infestation found in the conterminous United States.

Identification of the current infestation as MFF was confirmed on August 10, 2010. Five sexually immature MFF were collected from a ChamP™ trap placed within a garden/semi-commercial orchard—3 unmated female MFF and 2 male MFF (CDFA, 2010c). Confirmation of this infestation triggered Federal involvement in response to the outbreak. On August 11, another male MFF was collected in the same vicinity from a trap in an apple tree (CDFA, 2010d). An additional two flies, both adult males, were collected on August 28 from grape vines about 1.5 miles from the original detection site (CDFA, 2010e and 2010f).

Many host plant species are grown in Kern County and adjacent counties, which increases the potential for environmental impact if the Arvin outbreak should expand. MFF infestations represent a major threat to the agriculture and environment of California and other U.S. mainland States. The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) and the California Department of Food and Agriculture (CDFA) have proposed a cooperative program to eradicate the

MFF infestation and prevent the spread of MFF to noninfested regions of the United States.

APHIS' authority for cooperation in the program is based upon the Plant Protection Act (Title 4 of the Agricultural Risk Protection Act of 2000), which authorizes the Secretary of Agriculture to carry out operations to eradicate insect pests and to use emergency measures to prevent the dissemination of plant pests new to, or not widely distributed throughout, the United States. Authorities for CDFA's pest eradication and quarantine actions are based on sections 407, 5301, 5302, and 5322, of the California Food and Agricultural Code. Authorities for actions against pests taken by California agricultural commissioners at the county level are based upon sections 2271–2287 of the California Food and Agricultural Code.

Since 1984, APHIS has cooperated with State departments of agriculture on a number of successful exotic fruit fly eradication programs. The most recent example is the Oriental Fruit Fly Cooperative Eradication Program conducted with CDFA in La Verne, Los Angeles County, California (USDA–APHIS, 2009; CDFA, 2010g).

This environmental assessment (EA) for the MFF program has been prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA), USDA Implementing Regulations (7 Code of Federal Regulations (CFR), Subtitle A, Parts 1b&c), and APHIS' NEPA Implementing Procedures (7 CFR Part 372).

This site-specific EA analyzes the environmental consequences from the alternatives which have been considered for MFF eradication, and considers, from a site-specific perspective, environmental issues relevant to this particular MFF eradication program. Alternative methods for MFF eradication have been discussed and analyzed comprehensively within the Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001 (FF EIS) which is incorporated by reference and summarized within this EA (USDA–APHIS, 2001).

The eradication measures being considered for this program have been discussed and analyzed comprehensively within the fruit fly chemical risk assessments (USDA–APHIS, 1998a and 1998b) and risk assessments for spinosad (USDA–APHIS, 1999a, 1999b, and 2003). Those documents are also incorporated by reference and summarized within this EA.

II. Alternatives

Alternatives considered for this program include (1) no action, and (2) eradication using an integrated pest management (IPM) approach. Component techniques of eradication include the use of chemical

pesticides to facilitate the timely elimination of the current MFF infestation.

A. No Action

The no action alternative would result in taking no Federal action to eradicate MFF or restrict its expansion from the currently infested sites. In the absence of a Federal effort, regulatory and eradication activity would be left to State and local government, grower groups, and individuals. Expansion of the infestation would be influenced by any pest control actions exerted over it, by the proximity of host plants, and by climatic conditions.

It should be noted that “no treatment” might be the only choice with respect to some sensitive locations. In such cases, lack of action could result in a continuing and expanding infestation. An expansion of the infestation would likely result in substantial economic losses to growers in the United States and losses of U.S. export markets. Under the no action alternative, APHIS would continue to support detection trapping programs and advisory services.

B. Eradication (Preferred Alternative)

Eradication is the preferred alternative. It has been determined that no nonpesticidal options available will effectively eradicate MFF (CDFA, 2010b). APHIS’ preferred alternative for the Bakersfield MFF program is eradication using an IPM approach, as has been used before in successfully managing California outbreaks of exotic fruit flies (CDFA OPA, 2010). Multiple options for the eradication of MFF are analyzed in the FF EIS (USDA–APHIS, 2001). Components available for the preferred alternative include (1) male annihilation using bait stations, (2) supplemental spot spraying of chemicals, (3) regulatory treatments and control, (4) mass trapping, and (5) host removal. Population control activities for this MFF program will include foliar spinosad bait sprays around each detection site, and mass trapping using Jackson sticky traps (baited with male-attractant cue lure and the pesticide naled).

To allow host commodities to move out of the quarantine area, regulatory treatments by growers will include aerial applications of malathion to commercial acreage, and soil drenches of diazinon for potted nursery plants. The selected chemical control methods target various life stages of the fruit flies. The malathion and spinosad treatments target adult fruit fly stages, while diazinon soil drenches target the larval and emerging adult stages.

According to established MFF program protocol, treatment placement is determined by a boundary of 3 by 3 square miles around each site on which an adult fly is trapped, or on which another life stage of MFF is present. The land area thus encompassed will be treated with mass trapping and targeted spinosad bait spraying (CDFA, 2010b). (See appendix A for a map of the detection sites and quarantine zone.¹)

For the mass trapping portion of this program, Jackson traps are placed throughout the 9-square-mile eradication area surrounding each detection site in order to determine the efficacy of treatments. Traps for MFF eradication are placed on trees, shrubs, and/or inanimate objects, and are serviced for a period equal to two life cycles after the last fly was trapped. All monitoring traps are serviced for a period equal to three MFF life cycles beyond the date of the last fly detection (CDFA, 2010b). Lack of detections in traps after this period of time is recognized as the point where eradication is complete. MFF goes through a four-stage life cycle—egg, larva, pupa, and adult—which is completed in 2 weeks to 2 months. Breeding is continuous, with as many as 8 to 10 generations per year (IFAS, 2004). In addition, monitoring for the detection of MFF will continue throughout all counties of California.

The location of the August 28 detections required the eradication treatments to cover the current total of 15 square miles (CDFA, 2010h). The delimitation surveillance area for the current infestation includes those portions of Kern County which fall within an 81-square-mile quarantine zone (9 miles by 9 miles) centered on each detection site. The boundary will be adjusted, as necessary, to include other properties on which an adult fly is trapped or on which another MFF life stage is found to be present. Delimitation traps are placed throughout the quarantine zone to determine the extent of infestation, and to monitor post treatment fly populations. These traps are serviced on a regular schedule for a period equal to three MFF generations beyond the date of the last fly find (CDFA, 2010b).

Because multiple MFF have been detected in an agricultural production area, a ground-based foliar bait treatment will also be applied. For such treatment, host trees and plants within a 200-meter radius of the find site are treated with a hand-held hose or hydraulic spray that consists of an organic formulation of the pesticide spinosad and protein bait. If larvae, mated females, or evidence of a breeding population are detected, additional foliar bait and/or soil drench treatments may be required to mitigate the spread of MFF (CDFA, 2010b).

¹ For the purposes of this document, the "quarantine zone" includes both eradication treatment and regulatory treatment areas.

Larval surveys will be conducted up to 200 meters around any property where MFF are trapped in order to determine if other life stages are present. The detection of larvae will result in the removal of fruit from 100 meters around all known infested and adjacent properties (CDFA, 2010b).

In the event of multiple adult detections, the detection of a single adult mated female MFF, a MFF larval or pupal detection, a quarantine boundary is established to ensure that any host material which leaves the quarantine area is free of MFF. Host material subject to quarantine may be treated by cold treatment, vapor heat treatment, irradiation, or fumigation with methyl bromide (USDA-APHIS, 2001 and 1989).

III. Potential Environmental Consequences

This EA analyzes the potential environmental consequences of alternatives that have been considered for MFF eradication, and considers, from a site-specific perspective, environmental issues relevant to this particular program. The preferred alternative, eradication, would involve an IPM approach that may use any or a combination of the following: (1) no action, (2) eradication chemical applications (protein bait spray and/or foliar spray spot treatment), (3) mass trapping for eradication, monitoring, and surveillance purposes, and (4) regulatory quarantine treatment and movement control of host materials.

Regulatory treatments are used to prevent human assisted movement of MFF outside of the quarantine area. Regulated entities which handle host commodities can include nurseries, farms, gardens, groves, and orchards.

Alternatives for MFF eradication were discussed and analyzed comprehensively within the FF EIS (USDA-APHIS, 2001). The site-specific characteristics of the Arvin MFF quarantine zone have been considered with respect to the program's potential to affect (a) human health, (b) nontarget species (including threatened and endangered species), and (c) environmental quality. In addition, potentially sensitive sites have been identified, considered, and accommodated through special selection of eradication methods and use of specific mitigation measures. At this time, the quarantine zone affects portions of Kern County located approximately 25 miles to the south of the city of Bakersfield (CDFA, 2010b). Further analysis will be required if there is any expansion of the current quarantine zone boundaries.

Kern County is located at the southern end of the Central Valley portion of California, and contains diverse natural areas with mountain, desert, and

valley ecologies. The Sequoia National Forest and the Sequoia National Park are situated about 32 miles north of the current detection sites. The Los Padres National Forest lies about 16 miles south of the detection sites. The local climate ranges from semi-arid to temperate. Average rainfall in the current MFF quarantine zone may vary from 6 to over 12 inches each year (City-Data, 2010).

The cities and communities within the quarantine zone are part of the region located in the Kern Delta and the Arvin-Wheeler Ridge watersheds of the South Valley Floor (Calflora, 2010). The region obtains irrigation and drinking water from dams and reservoirs belonging to the California State Water Project, as well as from ground water, local rivers, and streams (WEF, 2006). Urban and agricultural runoff may flow directly into local waters, thus picking up trash, dirt, chemicals, and other contaminants along the way. The current eradication program calls for Jackson trap placement and ground-based spot spraying of MFF host plants in agricultural districts and neighboring communities. This method of application is designed to minimize the potential for introduction of program chemicals to local water resources.

The MFF detection sites are located just east of the unincorporated rural community of Mettler, California. Mettler had a population of 157 people in the year 2000. This low-income community occupies a land area of less than 0.25 square mile, at an elevation of 541 feet above sea level (HTL, 2010).

The closest city to the infestation is Arvin, California, about 13 miles to the northeast. The city of Arvin is located about 15 miles southeast of the city of Bakersfield (also in Kern County) and 86 miles northwest of Los Angeles. The city of Arvin is part of the Bakersfield Metropolitan Statistical Area with a population of about 16,200 people. Agriculture crops, such as cotton, grain, carrots, potatoes, almonds, oranges, and grapes surround the city, as well as numerous private dairies and farmland (Arvin, 2010).

The center of the current MFF quarantine zone lies about halfway between Mettler and Arvin. It is also within a few miles of the registered landmark for Sinks of the Tejón—an historic meeting place for Indians, and later a station on the Butterfield Stage Line. Operating during 1858–61, this overland mail line ran from St. Louis, Missouri (through the current MFF quarantine zone) to San Francisco, until the outbreak of the Civil War (SOC, 2009).

About 7 miles to the west of Arvin and 9 miles north of the quarantine zone lies the unincorporated community of Weedpatch, California. The

community's recorded population in 2000 was 2,726 people. Weedpatch is the location of the Arvin Federal Government Camp, known colloquially (and in the John Steinbeck novel *The Grapes of Wrath*) as "Weedpatch Camp." This camp was a government rescue center for distressed migrant workers fleeing the Oklahoma Dust Bowl agricultural disaster during the Great Depression. The camp has undergone historical restoration and still aids and houses migrants today (Weedpatch, 2010).

The largest city near the quarantine zone is Bakersfield, California, with its downtown center located about 25 miles northwest of the current MFF detection sites. Bakersfield reported a population of 324,463 people in 2009. The city area covers 113.1 square miles and has an elevation 408 feet above sea level (City-Data, 2010). The Bakersfield region is home to numerous private and municipal airports, as well an international airport, Meadows Field Airport, which is about 27 miles away from the quarantine zone. Mojave Air and Space Port and Edwards Air Force Base are about 90 miles to the east.

There are over a dozen State parks and national wildlife refuges within 100 miles of the quarantine zone. The closest refuge is Bitter Creek National Wildlife Refuge, about 45 miles southwest from the quarantine zone (FWS, 2010). Land more than 30 miles away from the program treatments is not expected to be affected.

A. Human Health

The principal concerns for human health identified in the FF EIS are related to potential program uses of certain chemical pesticides, including naled lure (male annihilation technique trap formulation), spinosad bait (spray formulation), malathion, diazinon, and methyl bromide (a fumigant) (USDA-APHIS, 2001). Three major factors influence the human health risk associated with pesticide use—pesticide exposure to humans, its toxicity to humans, and the fate of the pesticide in the environment. Each of the program pesticides is known to be toxic to humans; however, exposure to the pesticides is likely to be minimal owing to program use patterns.

The Arvin eradication program will initially deploy naled/cuelure trapping and ground-based spot applications of spinosad protein bait. Potential exposure to naled or cuelure is unlikely due to the trap design and method of placement. Potential exposure is low for spinosad bait to be used in this eradication program because treatments are limited to ground-based spot treatments of plants at the find sites and on adjacent properties. Malathion and diazinon exposure are also expected to be low because commercial applications are applied to properties owned by commercial growers and producers where exposure to the general public is unlikely. The analyses

and data of the FF EIS and human health risk assessments indicate that exposures to pesticide from normal program operations are not expected to result in substantial adverse human health effects. (Refer to the FF EIS (USDA–APHIS, 2001) and the human health risk assessments (USDA–APHIS, 1999a and 1998a) for more detailed information relative to human health risk.) No adverse impacts to human health are expected to occur from these actions, if executed properly and in accordance with label requirements.

A mitigation measure to further minimize the exposure of humans to program pesticides is the requirement for public notification. The public will be kept informed of the MFF eradication program via written notices and news releases to the media. Property owners will be notified at least 24 hours prior to insecticidal treatment or physical removal of potentially infested fruit from their property, and provided with guidelines for post-treatment precautions and harvest protocols.

For the control of this melon fruit fly outbreak, a well-coordinated eradication program using IPM technologies is designed to result in the least usage of chemical pesticides overall, and have the least potential to adversely affect human health. The no action alternative would not eliminate MFF as readily, or as effectively, as the eradication alternative. Growers would be expected to apply control measures to protect their crops under a no action scenario. The cumulative impacts of grower pesticide applications over a protracted period of no action would readily exceed the transient impacts from a short-term eradication program.

B. Other Considerations

NEPA requires compliance with laws and regulations that fulfill the purpose of preservation and protection of important historic and cultural resources, such as the National Historic Preservation Act (NHPA, 16 United States Code (U.S.C.) 470 et seq.) and the Archeological Resources Protection Act (ARPA, 16 U.S.C. 470aa-mm). The MFF program will deploy Jackson traps and apply spinosad bait spray to targeted host plants. The visibility of pest detection traps at historic sites may detract from their aesthetic appeal. Certain bait spray formulations are known to mark some surfaces; however, under the preferred alternative for this program, the other chemical control methods selected for use are expected to have little to no effect on the external surfaces of objects within the treatment areas (USDA—APHIS, 2001). The preferred alternative for this MFF program involves targeted bait spray and other program activities that are designed to prevent exposure to, and adverse effects from, historic and archeological properties and, therefore, are not expected to affect any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places under the National Historic Preservation Act or the Archeological

Resources Protection Act. Figure 1 shows the location of the current MFF quarantine zone in relation to Weedpatch Camp and the registered historic marker for the Butterfield Stage Line station, Sinks of the Tejón.

No other designated historic or archeological sites have been identified within or nearby the current program boundary, and no adverse effects to such sites are anticipated as a result of program pesticide applications. Should the quarantine zone expand to culturally sensitive areas, a protective buffer around each sensitive area will be imposed to protect the property from potential surface discoloration or other effects from program chemicals.

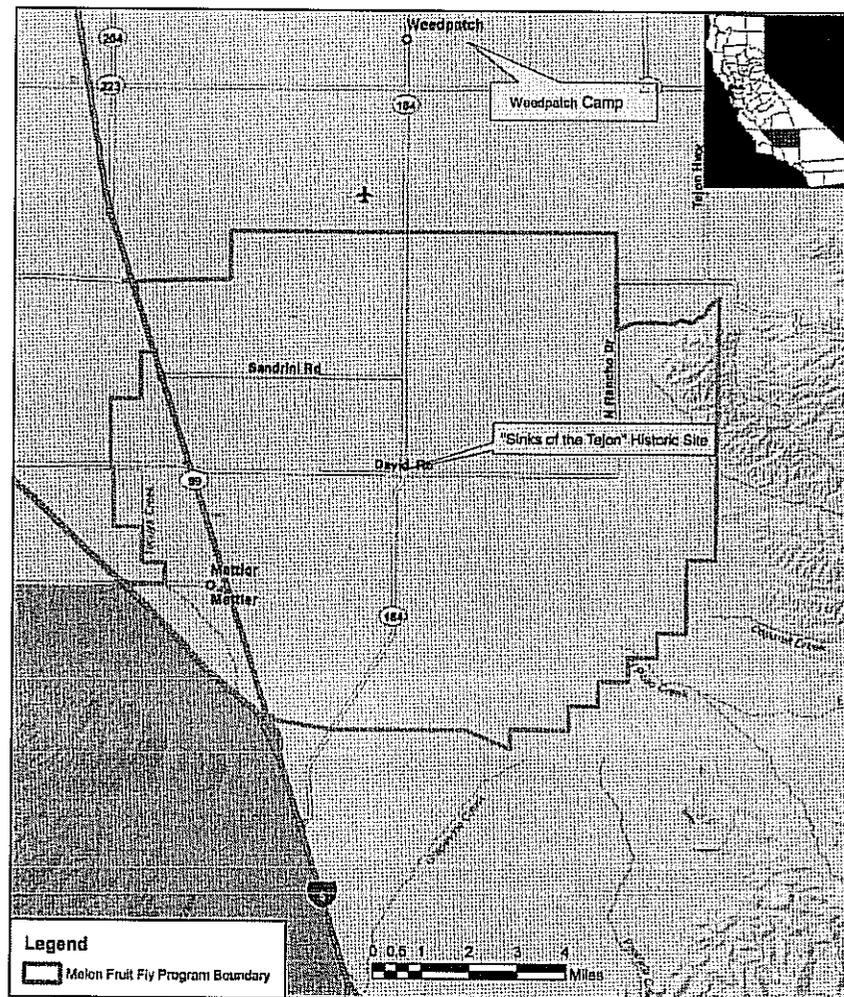


Figure 1. MFF quarantine zone and culturally sensitive sites.
(Source: USDA-APHIS)

Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," was issued to ensure that there would be "meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications...." No tribal lands are located within the current program boundary and no tribal

population is likely to be affected by program activities (see figure 2). Should future detections of MFF warrant expansion of the current quarantine zone into tribal lands, program officials will initiate consultation with the governing tribal authorities before undertaking further action.

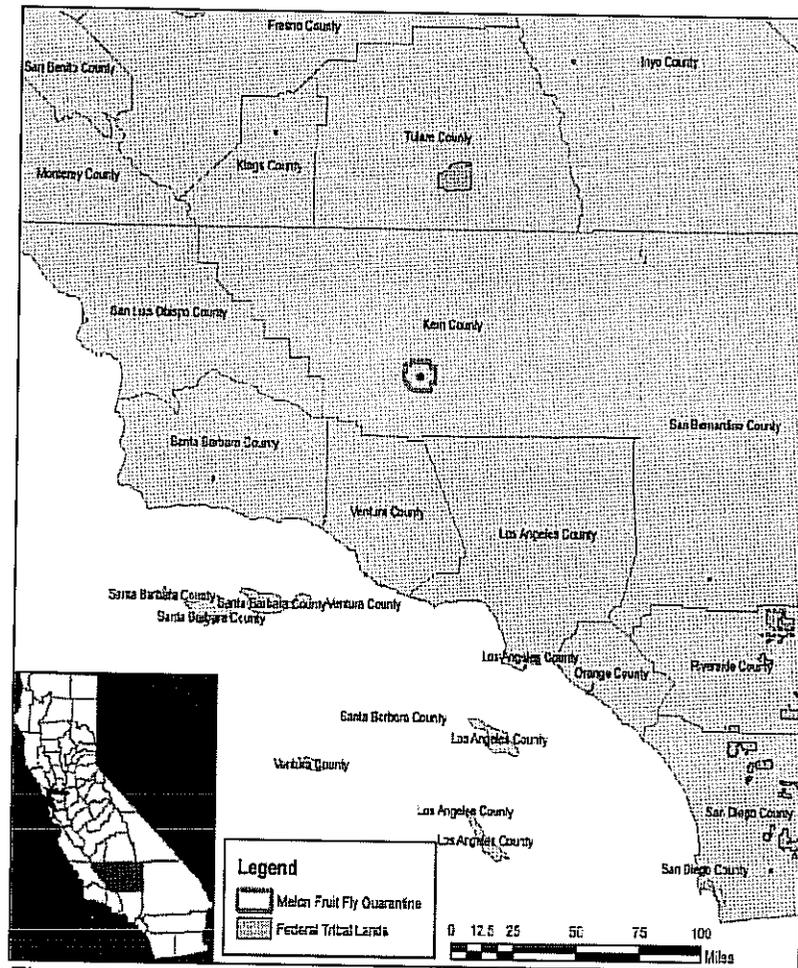


Figure 2. Federal tribal lands nearest to the MFF quarantine zone. (Source: USDA-APHIS)

Some Executive orders, such as Executive Order 13045, “Protection of Children From Environmental Health Risks and Safety Risks,” and Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” as well as departmental and/or agency directives, call for special environmental reviews in certain circumstances. No circumstance that would trigger the need for special environmental reviews is involved in implementing the preferred alternative considered in this document. The program mitigation measures are designed to preclude pesticide exposure to individuals not involved in program applications and, thereby, the program does not pose any disproportionate adverse effects to children, minority populations, or low-income populations over those effects to the general population.

C. Nontarget Species

The principal concerns for nontarget species, including threatened and endangered species, also relate to potential harm from the program use of pesticides. Paralleling human health risk, the risk to nontarget species is related to the pesticides' exposure to nontarget species, toxicity to the nontarget species, and fate in the environment. All of the program pesticides are highly toxic to invertebrates; however, the likelihood of exposure (and thus, impact) varies a great deal with the use pattern.

A well-coordinated eradication program using IPM technologies (the preferred alternative) generally results in the least use of chemical pesticides overall, with minimal adverse impacts to nontarget species. The no action alternative is less effective at eliminating MFF. The extended control measures expected to occur under the no action alternative would have ongoing cumulative impacts until eradication would be completed or another circumstance eliminated the need for treatment (e.g., a change of crop or the removal of host plants from the site of production). Without a coordinated effort to eradicate MFF, the use of pesticides by homeowners and commercial growers would continue to occur, with correspondingly greater potential for adverse impacts to the environment.

Under the preferred alternative, eradication activities include the placement of Jackson traps and ground-based foliar applications of spinosad bait to host plants, with fruit stripping as indicated by larval finds. The trap lure used as an MFF male attractant is specific for this group of flies and will not harm other insects, such as bees or butterflies. Spinosad bait attracts only a small number of invertebrate species other than MFF. The spinosad treatments target MFF host plants in a manner that limits potential exposure and associated risks to only those nontarget species on the MFF hosts. Fruit stripping will be limited to plants at larval find sites and on adjacent properties, and is expected to have no adverse effect on nontarget species. (Refer to the FF EIS (USDA-APHIS, 2001) and its nontarget risk assessments (USDA-APHIS, 2003, 1999b, and 1998b) for more information on risks from all eradication activities and all regulatory quarantine activities to all classes of nontarget species.)

Regulatory quarantine treatments by the growers may include applications of malathion and/or diazinon formulations. Although malathion treatments are directed at application to the crop until harvest, the potential for drift of malathion from such control measures has been shown to affect aquatic species (USDA-APHIS, 2001). Therefore, it is important to coordinate aerial applications in such a manner as to minimize contamination of water bodies and aquatic habitat. Diazinon soil drench applications have high dermal toxicity for most invertebrates and,

therefore, adverse effects may be expected from both contact and ingestion. To minimize these effects, the soil drenches are watered directly into the soil of potted nursery stock, thus limiting the exposure area and potential risk to nontarget species.

The Arvin quarantine zone was considered with respect to special characteristics that could influence the implementation of program operations. The affected region consists primarily of developed agricultural and rural residential space; program actions undertaken in these localities are expected to pose negligible adverse affect on nontarget species and habitats.

Threatened and Endangered Species

APHIS reviewed the program treatment areas in Kern County to identify the potential co-occurrence of listed species and critical habitats that might be affected by this action. An online species list was created at: http://www.fws.gov/sacramento/es/spp_lists/auto_list.cfm for the Arvin (214A), Weed Patch (214B), Mettler (214C), Tejon Hills (214D) and Coal Oil Canyon (215D) U.S.G.S. 7.5 minute quadrangles which include the program treatment areas. APHIS reviewed the program treatment areas to determine if any listed species or critical habitat could be present in the area, and consulted staff from the Sacramento Fish and Wildlife Service's Field Office. It was determined that the action would not affect any listed species or critical habitat. This finding is based on the fact that the entire quarantine zone is developed for agriculture, and the likelihood of any listed species being present in the area is extremely low. Some federally listed species are known to utilize developed agricultural lands; however, this area within Kern County does not cultivate crops likely to be associated with those species. Therefore, APHIS has made a determination that the proposed action will have no effect on listed species or critical habitat. A complete administrative record of this consultation is available upon request.

D. Environmental Quality

The principal physical environmental quality concerns are for the protection of air and water quality, and the minimization of the potential for environmental contamination. Pesticide use is the primary concern of the public and the program in regard to preserving environmental quality. Although program pesticide use is limited, especially in comparison to other agricultural pesticide use, the anticipated actions would result in a controlled release of chemicals into the environment. The fate of those chemicals varies with respect to the environmental component (air, water, or other substrate) and its characteristics (temperature, pH, dilution, etc.).

- Naled is practically nonpersistent in the environment, with reported field half-lives of less than 1 day. It rapidly degrades in the presence of sunlight. Naled does not bind strongly to soils. It is rapidly broken down if wet (a reported half-life of about 2 days), and is moderately volatile. Soil micro-organisms break down most of the naled in the soil; therefore, it should not present a hazard to ground water. The half-life of naled on foliage ranges from 2.3 to 2.5 days. Plants reductively eliminate bromine from naled to form dichlorvos which may evaporate or be further metabolized (Exttoxnet, 1996).
- CDFA has safely used spinosad, a pesticide approved for organic agriculture, to eradicate numerous exotic fruit fly infestations. Spinosad adsorbs strongly to soil particles and is unlikely to leach to great depths. Dissipation half-lives for spinosad in the field may last 0.3 to 0.5 day. It is photodegraded quickly on soil exposed to sunlight, but the degradation rate is decreased at longer exposure times. Spinosad is quickly metabolized by soil micro-organisms under aerobic conditions, and has a half-life of 9.4 to 17.3 days. Because natural water bodies and rain are generally not of basic pH, spinosad will not hydrolyze in them or on moist plant surfaces. Aqueous photolysis is rapid in natural sunlight (half-life of less than 1.0 to 1.6 days), and is the primary route of degradation in aquatic systems exposed to sunlight. Under anaerobic conditions, the degradation rate is slower, between 161 and 250 days. Spinosad has a half-life of 2.0 to 5.3 days on foliar surfaces. After initial photodegradation, residues are available for metabolism by plant biochemical processes. Effects from residues of individual treatments are no longer detectable in environmental substrates within a few weeks of application (Kollman, 2003).
- Cuelure, the male MFF attractant in the Jackson traps, has been determined by the U.S. Environmental Protection Agency (EPA) to have minimal to no toxic effect on mammals. It is toxic to fish and is, therefore, prohibited from use or disposal in aquatic environments (EPA, 2005). Program use of cuelure, under the preferred alternative, is expected to result in negligible effects to the environment.
- Aerial malathion bait applications by growers consist of the pesticide malathion mixed with a protein hydrolysate bait for adult fruit flies. Malathion has an atmospheric vapor phase half-life of 1.5 days. The half-life of malathion in water with pH values from 5 to 8 ranges from 6 to 18 days. (Aquatic species are particularly vulnerable to adverse effects from exposure to malathion.) Malathion in chlorinated swimming pool water degrades readily to the more toxic metabolite malaoxon. Malaoxon was determined to have a half-life of 37 hours in one California study of chlorinated swimming pool water, but more

recent monitoring data for a Florida malathion program found a half-life of 7.4 hours. The California data showed no cumulative concentrations of malathion or malaoxon in freshwater or chlorinated swimming pools. The half-life of malathion on foliage ranges from 1 to 6 days. With low wind speeds (5 miles per hour) and release heights (200 feet), detectable malathion residues have been predicted up to 3 ½ miles from a treatment block, and as far as 12 miles in high winds (10 miles per hour) and high release heights (500 feet). Following a rainstorm, the concentration of malathion would be expected to decrease in the upper 1 centimeter of soil, but increase slightly in the lower soil layers. The half-life of malathion in natural soil ranges from less than 1 day to 6 days, with 77 to 95 percent of the degradation occurring through microbial activity. Malaoxon, the major malathion degradation product of concern in soil, has half-lives of 4 and 5 days in soils of pH 7.2 and 8.2, respectively (USDA—APHIS, 2001).

- The half-life of diazinon in soil ranges from a few days to 10 weeks; overall persistence in soils has been reported to last from 3.5 to 14 weeks. When present in water at neutral pH, diazinon has a half-life from 8 to 9 days. Diazinon leaches very slowly in soil and, as a targeted treatment to potted nursery stock, is unlikely to contaminate surface water or ground water. Diazinon volatilizes only slightly from soil; little or no diazinon would be expected to be detected in the air following a treatment (USDA—APHIS, 2001).
- Methyl bromide fumigation will not be used as an eradication treatment, but may be employed as a regulatory treatment. Methyl bromide has a half-life in the environment of 3 to 7 days; however, the small quantities that would be used disperse immediately when fumigation chambers are vented. (Refer to the FF EIS (USDA—APHIS, 2001) for a more detailed consideration of the environmental fates of pesticides.)

E. Cumulative Effects

APHIS has considered the potential of program actions to contribute to cumulative effects to the environment. APHIS has considered implementation of the preferred alternative in conjunction with other pest insect eradication and quarantine projects in California. As of October 12, 2010, there were no other designated MFF quarantine zones in the State, and no other current fruit fly eradication programs in close proximity (less than 50 miles away) to this program.

Spinosad may be used as a substitute for malathion bait formulations in rural areas (USDA—APHIS, 2001). APHIS has received work plans for

the spinosad treatments (CDFA, 2010b and 2010g), and a description of the aerial malathion treatments being applied in Kern County (County of Kern, 2010). If directly sprayed, water bodies within the aerial treatment zone could have malathion concentrations exceeding the EPA chronic freshwater and saltwater criteria immediately following malathion aerial bait application; however, program mitigation measures are designed to preclude direct applications. Modeling predicts that malathion concentration decreases rapidly in flowing water and in water bodies with drainage outlets. For shallow water bodies in which CDFG water quality criteria may be exceeded for a short time, natural degradation processes make it unlikely that chronic exposures could result from program activities (USDA-APHIS, 2001). Malathion and spinosad applications will be made to rural areas—not to aquatic habitats or residential neighborhoods. Consideration is given for mitigation of potential impacts related to pesticide drift. Monitoring of spinosad and malathion treatments will be conducted to avoid overlap and the potential for cumulative effects in the environment.

There is a potential for cumulative effect should certain treatments for the suppression of glassy-winged sharpshooter (GWSS) overlap with naled treatments for MFF. Kern County enforces CDFA's program of chemical treatment and movement restriction for GWSS host material (CDFA, 2009). The toxic mechanism of action of naled (used against MFF) is the same as chlorpyrifos, and similar to methomyl (used against GWSS). Also, cyfluthrin and pyrethrins (used against GWSS) are synthetic pyrethroids that are known to cause synergistic increases in toxicity for exposures to organophosphates (e.g., naled and chlorpyrifos) and carbamates (methomyl). These classes of pesticides are all general toxicants to insects. Although it is unlikely that GWSS applications would be applied to the same plants being treated for MFF control (host plant applications in proximity of fly find), it is still possible that chemical interaction resulting in additive or synergistic effects cannot be ruled out (USDA-APHIS, 2002). Should pesticide treatment for GWSS be indicated within the MFF quarantine zone, CDFA and APHIS will coordinate to adjust the MFF and GWSS chemical applications, as necessary, so as to minimize the potential for cumulative effects to the environment.

Other chemical treatments in California have potentially overlapping pest management programs that target different insects and are not expected to affect the same nontarget organisms. Many of these pest species have the potential to occur in Kern County, but have not yet been detected there. Additional programs in place at the time of preparation of this EA (CDFA, 2010i) have been designed to target the following—

- Asian citrus psyllid outbreaks in 6 other California counties;

- European grapevine moth outbreaks in 6 California counties, including a location in Kern County about 46 miles away from the MFF quarantine zone;
- gypsy moth outbreak in 1 other California county;
- karnal bunt in 1 other California county;
- light brown apple moth outbreaks in 18 other California counties;
- Mediterranean fruit fly outbreaks in 2 other California counties; and
- oriental fruit fly outbreaks in 3 other California counties.

No significant cumulative effects are anticipated as a consequence of implementing the preferred alternative or its component treatment measures. There have been no residual impacts from previous Federal or non-Federal actions targeting fruit fly infestations in the Arvin area, and there are no reasonably foreseeable future actions that could result in incremental increases in environmental effects. Based on APHIS' review of the context and intensity of the existing, ongoing, and potential future treatments, there will be no cumulative effects to the environment resulting from this program.

As discussed previously, expanded treatments and actions may be required to complete eradication of MFF in this program, including quarantines and regulatory treatments. The anticipated use of these treatments is considered to pose a minimal risk to the environment, as determined in the FF EIS (USDA-APHIS, 2001), and nontarget species and human health risk assessments (USDA-APHIS, 2003, 1999a, 1999b, 1998a, and 1998b).

IV. Listing of Agencies Consulted

California Department of Food and Agriculture
Plant Health and Pest Prevention Services
Pest Detection/Emergency Projects
1220 N Street, Room 315
Sacramento, CA 95814

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Fruit Fly Exclusion and Detection Programs
4700 River Road, Unit 7
Riverdale, MD 20737

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Policy and Program Development
Environmental and Risk Analysis Services
4700 River Road, Unit 149
Riverdale, MD 20737

U.S. Fish and Wildlife Service
Sacramento Field Office
2800 Cottage Way
Sacramento, CA 95825

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CDFA—See California Department of Food and Agriculture

CDFA OPA—See California Department of Food and Agriculture Office of Public Affairs

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FWS—See U.S. Department of the Interior, Fish and Wildlife Service

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WEF—See Water Education Foundation

**Finding of No Significant Impact
for
Melon Fruit Fly Cooperative Eradication Program
Arvin Area, Kern County, California
Environmental Assessment
November 2010**

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) has prepared an environmental assessment (EA) that analyzes alternatives for control of the melon fruit fly (MFF), *Bactrocera cucurbitae* (Coquillett), an exotic agricultural pest that has been detected in the region of Arvin, Kern County, California. The EA, incorporated by reference in this document, is available from—

USDA, APHIS, PPQ
State Plant Health Director
650 Capital Mall, Suite 6-400
Sacramento, CA 95814

or

USDA, APHIS, PPQ
Fruit Fly Exclusion and Detection Program
4700 River Road, Unit 7
Riverdale, MD 20737

The EA for this program analyzed alternatives of (1) no action and (2) eradication for a section of Kern County that currently includes an area to the south and slightly east of the city of Bakersfield, between Mettler and Arvin, California. Each of the alternatives was determined to have potential environmental consequences. APHIS selected eradication using an integrated pest management approach for the program because of its capability to achieve eradication in a way that also reduces the magnitude of those potential environmental consequences.

APHIS has reviewed the regulatory quarantine zone and proposed program treatment activities, and has determined that the proposed action will not affect any listed threatened and endangered species or their critical habitats. All program treatments are restricted to residential property and developed agricultural areas. Should the regulatory quarantine zone expand, or a new species or critical habitat be listed, APHIS will revisit this determination and consult with the appropriate agency, as necessary. A full administrative record for this determination is available upon request.

I find that implementation of the proposed program will not significantly impact the quality of the environment. I have considered and based my finding of no significant impact on the quantitative and qualitative risk assessments of the program pesticides, and on my review of the program's operational characteristics. Further, I find the preferred alternative to be consistent with the principles of environmental justice as expressed in Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and the protection of children, as expressed in Executive Order 13045, "Protection of Children From Environmental Health Risks and Safety Risks." The program does not pose any disproportionate adverse effects to children, minority populations, or low-income populations over those effects to the general population. Lastly, because I have not found evidence of significant environmental impacts associated with this program, I further find that an environmental impact statement does not need to be prepared and that the program may proceed.

Helene Wright for HR Wright

Helene Wright
State Plant Health Director, California
Animal and Plant Health Inspection Service

12/02/2010

Date