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Mediterranean Fruit Fly Cooperative Eradication Program

Solano County, California

Environmental Assessment, September 2007

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I. Need for the Proposal

The Mediterranean fruit fly or Medfly, *Ceratitidis capitata* (Wiedemann) is a major pest of agriculture throughout many parts of the world. Because of its wide host range (over 250 species of fruits and vegetables) and its potential for damage, the Medfly represents a serious threat to U.S. agriculture. Although it has been introduced intermittently to the U.S. mainland several times since its first introduction in 1929, eradication programs have been implemented to prevent it from becoming a permanent pest on the U.S. mainland.

A permanent infestation of Medfly would be disastrous to agricultural production in California and the United States. Although established on the Hawaiian Islands, Medfly's unchecked presence on the U.S. mainland would result in widespread destruction of crops such as apricot, avocado, grapefruit, nectarine, orange, peach, and cherry. Commercial crops, as well as home production of host fruits, would suffer if Medfly were allowed to remain. Fruit that has been attacked by Medfly is unfit to eat because the Medfly larvae tunnel through the fleshy part of the fruit, damaging the fruit and subjecting it to decay from bacteria and fungi.

On September 10, 2007, it was confirmed that a single unmated female Medfly and three male Medflies were trapped in the city of Dixon in Solano County, California. Subsequently, on September 11, an additional male Medfly was detected 1 mile east of the original find site. The infestation is presently found in urban and suburban areas of Dixon, California, although that situation may change in the future. The Medfly infestation detected in central California represents 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) are proposing a cooperative program to eradicate the Medfly infestation and eliminate that threat.

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.

This site-specific environmental assessment (EA) analyzes the environmental consequences of alternatives which have been considered for Medfly control

and considers, from a site-specific perspective, environmental issues that are relevant to this particular program. Alternatives for Medfly control have been discussed and analyzed comprehensively within the "Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001" (EIS) which is incorporated by reference and summarized within this EA. The control 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 proposed program include: (1) no action, (2) quarantine only, (3) quarantine and commodity certification, and (4) Medfly eradication (integrated program). Our review of this proposed program and of the technologies currently available to APHIS for an emergency program of this nature has identified the need for Medfly eradication within the infested area. The fourth alternative—the preferred alternative—eradication, incorporates eradication chemical treatments with the methods used in the other alternatives.

A. No Action

The no action alternative would involve no Federal regulatory effort to restrict the spread of the Medfly or facilitate (certify) the commercial movement of Medfly host materials and other regulated articles. In the absence of a Federal effort, quarantine and control would be left to State government, grower groups, and individuals. The infestation's expansion would be limited by any controls exerted over it, by the proximity of host plants, and by climatic conditions. No action could be applied on a limited basis for sensitive sites, but there would be limited control of the damage from Medfly in these areas and continuing infestation would be expected. Expansion of the infestation would result in substantial economic losses to growers in the United States and losses of U.S. export markets.

B. Quarantine Only

Under the quarantine only alternative, commodities harvested within the quarantine area would be restricted to movement within that area. The absence of regulatory treatments would result in a reduction of the movement of Medfly to outside of the quarantined area, but the infestation would remain established within the quarantine boundaries. Medfly eradication efforts

would be managed by and are wholly under the control of CDFA. A Federal quarantine excluding regulatory treatments requires that commodities harvested within the quarantine boundaries be destroyed or sold within the local retail market within the quarantined area. In large infestations, intensive quarantine enforcement activities may be necessary including safeguarding of local fruit stands, mandatory baggage inspection at airports, and judicious use of road patrols and roadblocks.

C. Quarantine and Commodity Certification

This alternative couples the Federal quarantine previously described with commodity treatment and certification. The same quarantine, described above, would be imposed; however, commodity certification (with prescribed treatments) would allow the movement of certain commodities outside the quarantine area. This would complement the State's efforts to eradicate the infestation. APHIS' Plant Protection and Quarantine commodity certification regulations set requirements for the movement of regulated produce harvested within the quarantined boundaries to outside locations. Interstate movement of that produce requires the issuance of a certificate or limited permit, contingent upon the grower or shipper complying with specific conditions designed to minimize pest risk and prevent the spread of the Medfly.

Control methods that may be used in this alternative include: (1) no action, (2) quarantine, (3) regulatory chemicals (fumigation, soil treatment, and bait spray application), (4) cold treatment, (5) vapor heat treatment, and (6) irradiation treatment. No action could be used in a limited sense where regulatory efforts would not be allowed under a State or local law, or could be used temporarily until such a legal constraint could be resolved, or where an effective treatment does not exist for a commodity. The quarantine component is essentially the same as the alternative described above in II.B. Regulatory chemical treatments would include fumigation with methyl bromide, soil treatment with diazinon, and topical bait spray with a mixture of spinosad or malathion and a protein hydrolysate bait. (Refer to the EIS (USDA, APHIS, 2001) for more detailed information about the chemicals and their uses.)

Cold treatment of certain produce, as a requirement for certification and shipping, may be done in facilities that are inspected and approved by APHIS. Vapor heat treatment is also used for treatment of certain produce prior to movement and in facilities that are approved by APHIS.

D. Eradication (Preferred Alternative)

APHIS' preferred alternative for the Medfly program is eradication using an integrated pest management (IPM) approach. This alternative combines all of the methods described in the other alternatives with eradication chemical treatments. Specifically, this integrated program could use any or a combination of the following methods: chemical control, sterile insect technique, physical control, cultural control, and regulatory control.

The eradication program may include either ground applications of malathion or spinosad bait. If Medfly larvae are found, eradication treatments may also employ foliar sprays and soil drenches. Foliar applications, which are applied up to a 200-meter radius around an infested property, may consist of spinosad or malathion protein bait formulations which are applied with hydraulic spray or hand-spray equipment. The applications will be repeated at 6- to 14-day intervals. Soil drenches with a diazinon formulation may be applied to the dripline of hosts with fruit known or suspected to be infested with Medfly eggs or larvae. (For more detailed information on the alternatives for Medfly control and their component methods, refer to the earlier fruit fly risk assessments (USDA, APHIS, 2003, 1999a, 1999b, 1998a, and 1998b)).

For now program use of chemical control methods will only involve ground use of spinosad with methyl bromide fumigation. However, pesticide use by the program may expand to include malathion or diazinon in their eradication efforts.

III. Potential Environmental Consequences

The potential environmental consequences of each of the alternatives (no action, quarantine only, quarantine and commodity certification, and eradication) were considered. The proposed program—eradication—would involve an IPM approach that would use any or a combination of the following control methods: (1) no action, (2) quarantine, (3) regulatory chemicals (fumigation, soil treatment, and bait spray application), (4) eradication chemical applications (protein bait spray and soil treatment), (5) cold treatment, (6) vapor heat treatment, and (7) irradiation treatment. Each of these has been analyzed and discussed in detail within the EIS (USDA, APHIS, 2001) and the human health risk assessment (USDA, APHIS, 1999a).

For this specific program, the following issues were identified and analyzed: (1) potential effects on human health from chemical pesticide applications, (2) potential effects on wildlife (including endangered and threatened species) from program activities and treatments, and (3) potential effects on

environmental quality. The site-specific characteristics of the program area were considered with respect to their potential to alter or influence the anticipated effects on human health, wildlife, or environmental quality. No significant cumulative impacts are expected as a consequence of the proposed program or its component treatment methods.

The proposed treatment area is both urban and suburban, with commercial and residential characteristics and includes parts of Dixon. The West and East Basin are to the south of the proposed treatment area. There are parks, some streams, and small bodies of water in the area as well. The use of site-specific buffers may be needed to avoid drift and minimize contamination of those water bodies, particularly if an expanded program should require bait spray applications as part of the regulatory treatments. Standard program operational procedures and mitigative measures will be employed to avoid adverse impacts to these areas.

A. Human Health

The principal concerns for human health are related to the program use of chemical pesticides: malathion bait, spinosad bait, diazinon (a soil drench), and methyl bromide (a fumigant). Three major factors influence the human health risk associated with pesticide use: fate of the pesticides in the environment, their toxicity to humans, and their exposure to humans. Each of the program pesticides is known to be toxic to humans. Exposure to program pesticides can vary, depending upon the pesticide and the use pattern. Potential exposure is low for all applications except malathion and spinosad bait. The limited program use of malathion and spinosad bait is for regulatory treatments only, and these applications are mainly applied to commercial groves where exposure to the general public is unlikely. The analyses and data of the EIS and human health risk assessments indicate that exposures to pesticides from normal program operations are not likely to result in substantial adverse human health effects. (Refer to the EIS (USDA, APHIS, 2001) and the human health risk assessments (USDA, APHIS, 1999a, and 1998a) for more detailed information relative to human health risk.)

The alternatives were compared with respect to their potential to affect human health. In general, a well-coordinated eradication program using IPM technologies would result in the least use of chemical pesticides overall, and the least potential to adversely affect human health. The other alternatives would not be expected to eliminate Medfly as readily or as effectively as the eradication alternative. The no action alternative, the quarantine only alternative, and the quarantine and commodity certification alternative would be expected to result in broader and more widespread use of pesticides by

homeowners and commercial growers, with correspondingly greater potential for adverse impact.

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 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.

B. Nontarget Species

The principal concerns for nontarget species, including endangered and threatened species, also involve the use of program pesticides. Paralleling human health risk, the risk to nontarget species is related to the pesticides' fate in the environment, their toxicity to the nontarget species, and their exposure to nontarget species. All of the pesticides are highly toxic to invertebrates, although the likelihood of exposure (and thus, impact) varies a great deal from pesticide to pesticide and with the use pattern. In general, a well-coordinated eradication program using IPM technologies would result in the least use of chemical pesticides overall, with minimal adverse impact to nontarget species. The no action alternative, the quarantine only alternative, and the quarantine and commodity certification alternative would be expected to result in broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impact. (Refer to the EIS (USDA, APHIS, 2001) and its nontarget risk assessments (USDA, APHIS, 2003, 1999b, and 1998b) for more information on risks to all classes of nontarget species.) The area was considered with respect to any special characteristics that would tend to influence the effects of program operations. Potentially sensitive areas have been identified, considered, and accommodated through special selection of control methods and use of specific mitigative measures.

Section 7 of the Endangered Species Act and its implementing regulations require Federal agencies to consult with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat. APHIS has considered the potential effects on endangered and threatened species and their habitats.

CDFG has determined, from the California Natural Diversity DataBase, that the State-listed threatened Swainson's hawk (*Buteo swainsoni*), the federally listed threatened vernal pool fairy shrimp (*Branchinecta lynchi*), and valley elderberry longhorned beetle (*Desmocerus californicus dimorphus*) occur in the project vicinity. However, program activities will not take place in the habitats where these species are known to occur and, therefore, would not expose these species to spinosad treatments. Fumigation of host material, such as citrus fruits, in an enclosed fumigation chamber would not expose these species to methyl bromide. Sterile insect technique has been found to be compatible with conservation of threatened and endangered species. Therefore, APHIS' review of this proposed program has determined that there will be no effect to endangered or threatened species or their habitats. Review of potential endangered and threatened species will be repeated if there is any expansion of the treatment area, particularly to other locations within the county where federally listed species are known to occur.

C. Environmental Quality

The environmental quality issues include concerns for the preservation of clean air, pure water, and a pollution-free environment. Program pesticides remain the major concern for the public and the program in relation to preserving environmental quality. Although program pesticide use is limited, especially in comparison to other agricultural pesticide use, the proposed action 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.). The half-life of malathion in soil or on foliage ranges from 1 to 6 days; in water, from 6 to 18 days. The half-life of spinosad ranges from 8 to 15 days; in water, residues persist for only a few hours. The half-life of diazinon in soil ranges from 1.5 to 10 weeks; in water at neutral pH, from 8 to 9 days. Methyl bromide's half-life is 3 to 7 days, but the small quantities used disperse when fumigation chambers are vented. (Refer to the EIS (USDA, APHIS, 2001) for a more detailed consideration of the pesticides' environmental fates.)

The alternatives were compared with respect to their potential to affect environmental quality. Risk to environmental quality is considered minimal. Again, a well-coordinated eradication program using IPM technologies would result in the least use of chemical pesticides overall, with minimal adverse impact on environmental quality. The no action alternative, the quarantine only alternative, and the quarantine and commodity certification alternative would be expected to result in broader and more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse impact.

The proposed program area was examined to identify characteristics that would tend to influence the effects of program operations. Allowances were made for the special site-specific characteristics that would require a departure from the standard operating procedures. The approaches used to mitigate for adverse impacts to bodies of water are described in the EIS (USDA, APHIS, 2001).

IV. Listing of Agencies and Persons Consulted

California Department of Food and Agriculture
Department of Plant Industry
Sacramento, California

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Invasive Species and Pest Management
4700 River Road, Unit 134
Riverdale, MD 20737-1236

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Policy and Program Development
Environmental Services
4700 River Road, Unit 149
Riverdale, Maryland 20737-1238

V. References Cited

USDA—See U.S. Department of Agriculture

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2003. Spinosad bait spray applications. Nontarget risk assessment, October, 2003. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2001. Fruit fly cooperative control program, final environmental impact statement—2001. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1999a. Spinosad bait spray applications. Human health risk assessment, March 1999. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1999b. Spinosad bait spray applications. Nontarget risk assessment, March 1999. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998a. Human health risk assessment for fruit fly cooperative control programs. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998b. Nontarget species risk assessment for fruit fly cooperative control programs. USDA, APHIS, Riverdale, MD.

**Finding of No Significant Impact
for
Mediterranean Fruit Fly Cooperative Eradication Program
Solano County, California
Environmental Assessment,
September 2007**

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 Mediterranean fruit fly, an exotic agricultural pest that has been found in areas of Solano 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 134
Riverdale, MD 20737-1236

The EA for this program analyzed alternatives of (1) no action, (2) quarantine only, (3) quarantine and commodity certification, and (4) eradication. Each of those alternatives was determined to have potential environmental consequences. APHIS selected eradication using an integrated pest management (IPM) approach for the proposed program because of its capability to achieve eradication in a way that also reduces the magnitude of those potential environmental consequences.

APHIS has determined that this program will have no adverse impacts to endangered and threatened species based upon its review of proposed program operations, and upon review of consultations by the California Department of Food and Agriculture with the U.S. Department of the Interior, Fish and Wildlife Service.

I find that implementation of the proposed program will not significantly impact the quality of the human environment. I have considered and based my finding of no significant impact on the quantitative and qualitative risk assessments of the proposed pesticides and on my review of the program's operational characteristics. In addition, I find that the environmental process undertaken for this program is entirely consistent with the principles of "environmental justice," as expressed in Executive Order 12898, and the protection of children, as expressed in Executive Order 13045. Lastly, because I have not found evidence of significant environmental impact associated with this proposed program, I further find that an environmental impact statement does not need to be prepared and that the program may proceed.

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

Date