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Animal and Plant Health Inspection Service

Mexican Fruit Fly Cooperative Management Program

Lower Rio Grande Valley, Texas

Environmental Assessment, May 2008

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I. Introduction

The Mexican fruit fly, *Anastrepha ludens* (Loew), is native to central Mexico and is a major pest of agriculture throughout many parts of the world. Commercial and home-grown produce that is attacked by the pest is unfit to eat because the larvae tunnel through the fleshy part of the fruit, damaging the fruit and subjecting it to decay from bacteria and fungi. Because of its wide host range (over 40 species of fruits) and its potential for damage, a permanent infestation of Mexican fruit fly would be disastrous to agricultural production in the United States. In the past, eradication programs have been implemented successfully to prevent the pest from becoming established permanently on the U.S. mainland.

II. Purpose and Need

Mexican fruit fly populations in Mexico represent a continual threat to the agricultural production areas of the Lower Rio Grande Valley in southern Texas. There has been a sterile fruit fly preventive release program in the area for many years and, in 2001, a formal Mexican Fruit Fly Cooperative Management Program was initiated to further protect the agricultural production in the Valley. Despite these efforts and cooperative efforts with agricultural officials in Tamaulipas, Mexico, to control this pest, there continues to be periodic outbreaks of Mexican fruit flies that pose economic impacts to local growers. In particular, the larger infestations detected in 2008 are of greater concern than previous outbreaks, and the risk of becoming established permanently remains. The U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), therefore, has proposed to expand the cooperative management program to be implemented by APHIS and the Texas Department of Agriculture (TDA) that will include the use of ground applications of malathion bait spray and the extended use of spinosad to cover aerial applications over urban, suburban, and rural parts of the Valley. To the extent possible, the program will include coordinated control activities in adjacent portions of Mexico; these activities will be conducted under control of the government of Mexico.

APHIS' authority for cooperation in this 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. The agency use of insecticides in this program is contingent upon the U.S. Environmental Protection Agency (EPA) granting registrations or exemptions for the applied formulations under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act

(FIFRA), as amended. These may include full section 3 registrations, special local need (section 24(c)) registrations, and emergency (section 18) exemptions for quarantine pests.

This environmental assessment (EA) has been completed in compliance with the National Environmental Policy Act of 1969 (NEPA), its implementing regulations and procedures, and, to the extent that international actions may be applicable in this program, Executive Order 12114, "Environmental Effects Abroad of Major Federal Actions."

This site-specific EA analyzes the environmental consequences of alternatives which have been considered for Mexican fruit fly control and considers, from a site-specific perspective, environmental issues that are relevant to this particular program. Alternatives for Mexican fruit fly control have been discussed and analyzed comprehensively within the "Fruit Fly Cooperative Control Program, Final Environmental Impact Statement—2001" (USDA, APHIS, 2001a), the findings of which are incorporated by reference and summarized within this EA. Likewise, the previous EA for the Mexican Fruit Fly Cooperative Management Program in the Lower Rio Grande Valley (USDA, APHIS, 2001b) is summarized and incorporated by reference into this EA. In addition, the control measures being considered for this program have been discussed and analyzed comprehensively within the fruit fly chemical risk assessments (USDA, APHIS, 1998a, 1998b) and the risk assessments for spinosad (USDA, APHIS, 1999a, 1999b, and 2003). Those documents are also incorporated by reference and summarized within this EA.

III. Alternatives

Two alternatives were considered in relation to the need for more effective and rapid response to Mexican fruit fly infestations in the Lower Rio Grande Valley of southern Texas: no action (continue the present management program), or the proposed expansion of the cooperative management program to extend aerial applications of spinosad bait spray to urban and suburban areas and include ground applications of malathion bait spray to host plant and to agricultural settings.

A. No Action

The no action alternative would continue the existing preventive releases of sterile Mexican fruit flies throughout the Lower Rio Grande Valley and the applications of spinosad in grove situations around any fly finds. The aerial and ground applications follow the methods described in the previous EA (USDA, APHIS, 2001b). This program has been effective in protecting the Valley's agricultural resources, however, its effectiveness in heavy infestations when large numbers of flies enter the region is less

certain. The production of sterile Mexican fruit flies at the APHIS laboratory in Mission, Texas, has an excellent history of program support and they continue to work on improving strains and increasing production.

The environmental consequences of the present program are local and minimized by selective actions based upon results of field monitoring data for fly populations. The use of releases of flies subject to the sterile insect technique poses no risk to the environment, and their production involves negligible impacts related to sterile fly production. The limited regulatory controls and applications of spinosad bait spray in the groves and host trees are very effective at reducing Mexican fruit fly populations to the point that sterile insect releases prevent damage to the crops above the economic threshold; however, the movement of flies from adjacent areas of Mexico make it less clear how effective such applications are in the eradication of Mexican fruit fly from the region. There is program interest in ultimately eliminating this pest from the Valley and surrounding areas in Mexico. That goal is considerably more difficult to achieve using the no action alternative than using the proposed expansion of the cooperative management program. Although the present program prevents most damage to crops, it does require ongoing applications of pesticides and releases of sterile flies. It is desirable to decrease this ongoing expense; one approach is to consider more effective and less expensive methods to control the Mexican fruit fly.

B. Expansion of the Cooperative Management Program

The alternative for expansion of the cooperative management program will continue to use those methods already employed by the present program. In addition, it applies a revised strategy to more efficiently reduce pest populations at a reduced cost. It continues the broader coverage with sterile flies of the potentially infested geographical area in the Lower Rio Grande Valley, but also allows controlled pesticide applications in suburban and urban settings to ensure elimination of small populations of Mexican fruit fly that continue at locations outside the groves. This helps to remove small pockets that might otherwise pose ongoing pest risks. In addition, the proposed program use of ground applications of malathion bait spray in host trees and groves allows for the use of a lower cost alternative to spinosad for some areas. The cost reductions and better treatment coverage of potential host plants make this strategy more effective and more cost efficient for the program.

As with the present program for projected treatment areas that are in the vicinity of houses, program personnel will consult with their Aircraft and Equipment Operations unit to determine what part of the treatment area must be treated by ground application equipment. Program personnel will

notify the public (via English and Spanish fliers), the local police, and the public health authorities of the treatments. Program personnel will also be responsible for monitoring the treatment sites and conducting bioassays after the treatments.

IV. Affected Environment and Potential Environmental Consequences

A. Affected Environment

The affected environment includes areas of the Lower Rio Grande Valley of Texas near the Mexican border where feral Mexican fruit fly detections occur. This will occur most likely in citrus groves or backyard plantings. Although most recent detections have occurred in Cameron County and Hidalgo County, adjacent counties could also have infestations where the cooperative management program applications of spinosad bait are applied. The Lower Rio Grande Valley consists of plains areas and various water bodies associated with the Rio Grande River. The current program area is primarily suburban and rural in character. There are, however, several small cities (including Brownsville and Harlingen) within the potential program area.

In past programs, detections of Mexican fruit fly in this area have occurred in clusters near the fruit orchards. Regulatory treatments to control fly outbreaks in these areas are often made by aerial application. There are known to be some adjacent residential areas, some of which are subdivisions (colonias) inhabited by individuals of Mexican origin with limited financial resources. Many of the colonias have weak housing construction and lack an adequate source of clean drinking water. These conditions adjacent to program sites make it necessary to assess conditions to ensure that the low-income residents of these colonias are not disproportionately affected by program actions.

There are several natural areas primarily associated with the Rio Grande River and the Gulf of Mexico. This includes the Laguna Atascosa National Wildlife Refuge, the Santa Ana National Wildlife Refuge, the Bentsen-Rio Grande Valley State Park, and the Rio Grande National Wildlife Refuge. These protected areas are home to a number of endangered and threatened species of wildlife.

B. Potential Environmental Consequences

The analysis of potential environmental consequences will consider the alternatives of no action and the proposed expansion of the cooperative management program. Because the principal environmental concern over this program relates to its use of chemical pesticides, this assessment will focus on the potential environmental consequences of the pesticide applications on human health, nontarget species, and endangered and threatened species.

1. No Action

Under the no action (no change in APHIS effort) alternative, the Mexican Fruit Fly Cooperative Management Program would continue preventive measures through sterile insect technique, limited aerial applications of spinosad bait spray to groves, and ground applications of spinosad bait spray to tree canopies. The ongoing releases of sterilized fruit flies over commercial fruit groves and selective application of pesticide treatments ensure that commercial produce is kept free of Mexican fruit fly.

Monitoring of fly populations suggests that this approach may allow residential infestation of Mexican fruit fly to continue, and does not provide the level of protection from these outbreaks that the program desires. A heavy infestation or a large outbreak from adjacent areas of Mexico could make the present program ineffective at protecting the groves. Although economic damage would most likely be prevented by the present program, it would not be as efficient as the more extensive coverage provided by the proposed expansion. The present program could lead to further spread of Mexican fruit fly and more intensive pesticide application by the State, grower groups, or individuals than would likely occur with the expanded program. Any uncoordinated response to control such an infestation by individuals or organizations would probably result in a greater magnitude of environmental impact than would be associated with the proposed expansion of the cooperative management program to be coordinated by APHIS. Under those conditions, any available controls (including more hazardous chemical pesticides) could be used, resulting in greater environmental impact than is associated with the proposed expansion of the present program.

The previous EA for this program (USDA, APHIS, 2001b) analyzed this alternative and the use of spinosad bait spray applications in detail. This included descriptions of the environmental fate, potential effects to human health, and effects to nontarget species. The findings of those documents are incorporated by reference and summarized within this EA. Potential changes to the program area since 2001 are considered.

a. Human Health

Under the no action alternative, APHIS would continue present practices. The irradiation treatments of flies are conducted in approved facilities and in accordance with strict safety guidelines. The irradiation equipment releases radiation to the immature flies to cause sterility, however, the flies do not store any radioactivity from the exposure. Irradiation equipment at approved facilities is checked on a regular basis by the USDA Radiation Safety Staff in accordance with standards set by the Nuclear Regulatory Commission. Under APHIS permits, no problems with the use of irradiation equipment have been known to occur. Equipment design and shielding ensure negligible risks to workers at these facilities. Monitoring of radiation at the facilities has demonstrated background radiation level at plant boundaries. The release of flies may occur from aircraft or ground motor vehicles, and the environmental risks from these releases are negligible. Safety procedures are designed to prevent accidents, and the negligible releases of hydrocarbons from combustion in the engines do not contribute substantially to air pollution.

Potential exposure to humans from pesticide applications occurs by dermal absorption, inhalation, or ingestion of residues. Dermal contact with treated surfaces is the primary exposure route for the public. Public exposure from ground bait spray application is less than exposure from aerial application because less area is treated and less pesticide is used. Workers, such as ground applicators and the ground crew for aerial applications, may have inhalation exposure as well as dermal exposure.

Results of the quantitative risk assessments prepared for spinosad bait spray applications and the present program EA (USDA, APHIS, 2001b) indicate that potential exposures are not likely to result in substantial adverse human health effects. The highest potential occupational exposure was determined to occur in the extreme exposure scenario for ground personnel. The margin of safety for these program workers is about 100-fold. The highest potential exposure to spinosad for the general public occurs in the extreme scenario of a child consuming contaminated runoff water. The margin of safety for this individual exceeds 1,000-fold. No adverse effects are anticipated to human health from spinosad bait spray applications, even under extreme or accidental exposure scenarios.

Risks to human health from spinosad bait spray applications were also analyzed qualitatively for some chronic and subchronic effects. Since EPA has determined that there is no evidence of mutagenicity or any carcinogenic potential for spinosad, these outcomes are not expected to be of any concern. Most of the potential outcomes analyzed in laboratory tests required much higher exposures than would be anticipated from program applications. Outcomes, such as reproductive and developmental

toxicity, teratogenicity, and neurotoxicity, are highly unlikely to occur from exposures to program applications. Spinosad is not a skin sensitizer, however, other immunotoxic responses could occur if allergic reactions or hypersensitive conditions exist. Based upon experience in past programs, it must be kept in mind that the source of any immunotoxic responses to exposure may relate to a reaction to the bait in the formulation rather than the pesticide.

Spinosad bait applications are made at very low application rates, and potential human exposures are less than those associated with any adverse effects. Although some individuals may have allergic or hypersensitive reactions to spinosad or the bait in the formulated product, this response to exposure has not been shown for present program applications.

Private homeowners and commercial growers would be limited to applications of pesticides to reduce the Mexican fruit fly damage to their crops if the ongoing program were ineffective. Any pesticides registered for use could be applied in an unsupervised and uncoordinated manner. Accordingly, greater pesticide amounts and higher frequencies of application are likely to be used than would be expected with the coordinated, cooperative government program. In addition to the direct toxic effects of those pesticides, humans could also be affected by cumulative impacts resulting from synergistic effects of combining various pesticides for use against Mexican fruit fly. Human exposure to pesticides and the resulting adverse consequences probably would be greater than if pesticides were applied in a cooperative government program. The potential spread of the Mexican fruit fly infestation would reduce the amount of locally available produce and could restrict the fruit consumption of some members of the public. Some members of the public may depend upon this source of fruit as a substantial portion of their diet.

b. Nontarget Species

The estimated doses to wildlife are based on the environmental concentrations determined from exposure models and scenarios. These results are described in greater detail in the nontarget risk assessment (USDA, APHIS, 2003). The exposure of nontarget organisms to spinosad from bait spray applications is lower than from malathion. As a result of low exposure and low toxicity, the potential for adverse effects is expected to be negligible to mammals, birds, reptiles, fish, and amphibians from spinosad bait spray applications. Unlike malathion (toxic to all organisms by all routes of exposure), the active ingredients in spinosad are only toxic to certain invertebrates primarily by dermal and oral exposure. Any invertebrate that is attracted to and feeds upon the spinosad bait will be affected; nevertheless, most species are not attracted to the bait. A small

number of phytophagous invertebrates (particularly Lepidoptera caterpillars) may be killed by consumption of residues on leaves from spinosad bait spray applications. Predatory invertebrates in treated areas are not expected to have much mortality. Although spinosad bait spray is not attractive to honey bees, their susceptibility to spinosad toxicity is high. Studies of spinosad bait applications indicate that the repellant nature of spinosad results in negligible exposures to honey bees and other pollinators, and toxic effects or mortality to honey bees have not been observed in field studies at locations where spinosad bait spray has been applied.

Aquatic species are at very low risk of adverse effects. The calculated concentration of spinosad in water is several orders of magnitude less than any concentration known to adversely affect aquatic organisms. Residues of spinosad are not expected to bioconcentrate based upon the water solubility and short residual half-life in water.

The irradiation equipment used to create sterile flies is in enclosed facilities where nontarget species are not likely to occur. The irradiators are enclosed and shielded to ensure that only the target immature Mexican fruit flies are exposed to the radiation. Therefore, nontarget species are unlikely to be exposed.

Broader pesticide use resulting from ineffective efforts to combat Mexican fruit fly would increase the pesticide load to the environment and, therefore, increase the probability of effects to nontarget species. The potential expansion and establishment of the pest also would have unknown effects on insect community structure and on predators in those systems. Expansion of the coordinated efforts would limit the effects to nontarget species to those locations where control is needed and would prevent excessive use of insecticide that would be expected with the more frequent use in infestations, if this expansion were not to occur.

c. Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973 (ESA) requires Federal agencies to consult with the U.S. Department of the Interior, Fish and Wildlife Service (FWS) and/or the U.S. Department of Commerce, National Marine Fisheries Service if species listed or proposed for listing are likely to be adversely affected. This consultation has been done for the current program (USDA, APHIS, 2001). Program officials have required the use of protective measures to ensure that no adverse effects occur to endangered and threatened species or their critical habitats. Control activities in Mexico are under the control of the Government of Mexico, which has responsibility for the protection of endangered and threatened species on its sovereign soil.

Further expansion of Mexican fruit fly's range would be likely to include threatened and endangered species habitats, with unquantified risk to those species from uncoordinated pesticide use.

2. Expansion of the Cooperative Management Program

The proposed expansion of the cooperative management program will continue to use the existing preventive releases of sterile Mexican fruit flies and program pesticide applications in areas of the Lower Rio Grande Valley. The potential environmental impacts from this action are as described in the no action alternative. The aerial applications of spinosad bait spray would be expanded to cover urban, suburban, and rural areas. The potential impacts of this use were analyzed in the previous EA (USDA, APHIS, 2001) and are summarized in the no action alternative above. (Description of these impacts will not be repeated here.) In addition, the proposed expansion includes the ground use of malathion bait spray to host trees and groves. The potential impacts of this application have not been considered in a site-specific manner for this program. This section will focus on addressing issues related to the proposed use of malathion bait spray.

Three major factors influence the risk associated with pesticide use: fate of the pesticide in the environment, toxicity to humans and nontarget species, and the exposure of humans and nontarget species to the pesticide. These factors will be evaluated for the proposed ground applications of malathion bait spray.

a. Malathion Bait Spray

(1) Fate

Malathion is an amber-colored liquid that is combined with a protein bait to form a sticky spray. The formulation used in the program is 0.175 pounds of active ingredient per acre mixed with 9.6 fluid ounces of protein hydrolysate bait per acre. The half-life of malathion in soil or on foliage ranges from 1 to 6 days; in water from 6 to 18 days. The rate of degradation of malathion increases with corresponding increases in organic matter content, pH, and microbial activity. Malathion does not penetrate soil much below the surface layer. The low rate of mobility of malathion in soil makes it unlikely that malathion will leach into groundwater at detectable levels. The rapid breakdown and lack of movement in the environment ensure that there will be no permanent effects on the quality of air, soil, or water from the program applications. Malathion bait spray is applied from the ground, generally as a spot treatment to individual trees. Host trees, shrubs, and other adjacent surfaces, such as soil and roads, are likely to receive residues from the applications or the potential drift. Malathion is generally of greater concern in aquatic areas because of its high toxicity to aquatic organisms;

however, ground applications are directed to preclude drift to bodies of water.

Thorough risk assessments of malathion bait spray applications have been prepared for human health (USDA, APHIS, 1998a) and nontarget species (USDA, APHIS, 1998b). Information from those assessments is incorporated by reference into this document and is summarized in this section.

(2) Toxicity

Malathion is an organophosphate pesticide that acts by inhibiting acetylcholinesterase. Mildly acutely toxic to humans, malathion is classified by EPA as category III (Caution) based upon oral, dermal, and inhalation exposure routes. At high doses, toxic effects from malathion may include headache, nausea, vomiting, blurred vision, weakness, and muscular twitching. In humans and other mammals, metabolism by one degradation pathway leads to the formation of malaoxon, a more potent cholinesterase inhibitor than malathion. The more common degradation parthways yield less toxic intermediates.

EPA recently evaluated the carcinogenic potential of malathion. Their new classification describes malathion as having "suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential." This indicates that any carcinogenic potential of malathion is so low that it cannot be quantified based upon the weight of evidence. The low exposures to malathion from program applications would not be expected to pose any carcinogenic risks to workers or the general public. Malathion may have synergistic effects when applied with other organophosphate or carbamate pesticides.

Acute oral doses of malathion are slightly to moderately toxic to mammals and practically nontoxic to birds (table 1). Signs of poisoning are similar to the reactions of humans. Malathion is highly toxic to some forms of aquatic life, including invertebrates, amphibians, and fish (table 2). EPA has established a chronic water quality criteria of 0.1 micrograms per liter (µg/L) for protection of freshwater and marine aquatic life. Fish kills that may have been associated with aerial bait spray applications have been documented for programs in California and Florida.

Table 1. Acute Oral LD_{50}s[1] for Selected Species Dosed with Malathion (mg/kg)

Mouse	720 – 4,060
Female rat	1,000
Male rat	1,375
Mallard	1,485
Pheasant	167

[1] LD_{50} = Lethal dose for 50% of animals treated.

Table 2. Malathion 96-hour LC_{50}s[1] for Selected Aquatic Species (µg/L)

Tadpole	200
Rainbow trout	4.1 – 200
Bluegill	20 – 110
Daphnia	1 – 1.8
Stoneflies	1.1 – 8.8

[1] LC_{50} = Lethal concentration for 50% of animals treated.

(3) Exposure and Risk

(a) Human Health

Potential exposure to humans is through dermal absorption, inhalation, or ingestion of residues. Dermal contact with treated surfaces is the primary exposure route of concern for the public. Public exposures from ground applications of malathion bait spray are less likely than exposures from aerial applications because less area is treated and less pesticide is used. Workers, such as ground applicators and the ground crew for aerial applications, may have inhalation exposure, as well as dermal exposure.

Results of the quantitative risk assessment prepared for malathion bait spray applications suggest that potential exposures are not likely to result in substantial adverse human health effects. Residues on commodities or backyard fruits resulting from the malathion bait spray applications are unlikely to greatly increase exposure to the consuming public. Malathion concentrations on vegetation estimated by the California Department of Health Services (Kizer, 1991) indicate that levels of malathion on vegetation are not likely to exceed the residue tolerance levels set by EPA. Residue tolerances for malathion on many food items are established (40 CFR 180.11) and most are 8 parts per million (ppm). The provisional acceptable daily intake is 0.02 mg/kg/day.

The human health risks of comparable treatments are evaluated quantitatively in the Human Health Risk Assessment for Fruit Fly

Cooperative Control Programs (USDA, APHIS, 1998a). Those findings suggest that exposure from normal program operations will not present a human health risk either to workers or to the public. In addition, risks to humans have been analyzed qualitatively, with review of information from past fruit fly eradication programs. The exposure scenarios from previous fruit fly eradication efforts will not differ substantially from those in expansion of the current program.

Consistent with Executive Order 12898, "Federal Actions To Address Environmental Justice in Minority Populations and Low-income Populations," and with Executive Order 13045, "Protection of Children From Environmental Health Risks and Safety Risks," APHIS considered the potential for disproportionately high and adverse human health or environmental effects on any minority populations, low-income populations, and children. In particular, the close proximity of the program actions to some colonias was an issue of concern.

Malathion and spinosad bait applications are made at very low rates, and potential human exposures are less than those associated with any adverse effects. Although some individuals may have allergic or hypersensitive reactions to malathion, spinosad, or the bait in the formulated products, this response to exposure has not been shown to relate to income level, ethnic origins, or age. Determination of the malathion and spinosad reference doses for pesticide regulation did not indicate the need for any additional safety factors for children based on the lack of evidence for differences in susceptibility based upon age. Therefore, no disproportionate effects on children, minority populations, or low-income populations in the Lower Rio Grande Valley are anticipated as a consequence of implementing the preferred alternative.

(b) Nontarget Species

Applications of malathion bait spray will kill insects other than the Mexican fruit fly. Malathion is highly toxic to bees, and direct applications to areas of blooming plants can be expected to result in a high bee kill. Although malathion is not phytotoxic, there could be potential indirect effects on plant populations due to lower pollination rates if bee or other pollinator populations are reduced. This is generally of greater concern for aerial applications, but the ground applications in this program should consider this factor. Secondary pest outbreaks have occurred concurrently with the use of applications of malathion bait spray, however, have not been determined conclusively to be associated with the applications. In 1981, some fish kills were associated with aerial applications of malathion bait spray in California. These effects are unlikely with the ground applications proposed in expansion of the present program.

The estimated doses to wildlife are based on the environmental concentrations determined from exposure models and scenarios. These results are described in greater detail in the nontarget risk assessment (USDA, APHIS, 1998b). Terrestrial animals are exposed to malathion primarily through dermal and oral routes. Ingested prey containing residues, rubbing against treated vegetation, and grooming contribute to the total dose. The exposure of birds, mammals, adult reptiles, and adult amphibians to malathion is unlikely to result in intoxication or direct adverse effects. However, those insectivorous species that depend upon invertebrates as a food source would be expected to extend their foraging, particularly if aerial applications were made. Aquatic species can be exposed to direct application and runoff; nevertheless, these exposures are less likely with the ground applications proposed for this program. Exposure of malathion bait spray through aerial application poses higher risk to nontarget invertebrates, including some insectivores. Ground applications of malathion bait spray have far fewer environmental consequences because the treated area is smaller and delivery is more accurate. Fewer species are exposed and the treatments pose less total risk to nontarget species than do aerial applications.

(c) Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973 (ESA) requires Federal agencies to consult with the U.S. Department of the Interior, Fish and Wildlife Service (FWS) and/or the U.S. Department of Commerce, National Marine Fisheries Service if species listed or proposed for listing are likely to be adversely affected. APHIS is currently in the process of consulting with FWS regarding the proposed program expansion in four Texas Counties: Cameron, Hidalgo, Starr, and Willacy. At the completion of the consultation process, program officials will implement any protective measures necessary to ensure no adverse effects occur to federally listed endangered and threatened species or designated critical habitat. The species that could require protection during control efforts are dependent upon the control methods used (i.e., not all control methods affect all species equally). Thus, protective measures will vary depending on the control method being used and the species found within the limited treatment area. Control activities in Mexico are under the control of the Government of Mexico, which has responsibility for the protection of endangered and threatened species on its sovereign soil.

Further expansion of Mexican fruit fly's range would be likely to include endangered and threatened species habitats, with unquantified risk to those species from uncoordinated pesticide use.

b. Cumulative Impacts

Cumulative impacts are those impacts, either direct or indirect, that result from incremental impact of the program action when added to other past, present, and reasonably foreseeable future actions. It is difficult to quantitatively predict the cumulative impacts for a potential emergency program in an environmental assessment such as this. The impacts can be considered from a subjective perspective. Some chemicals, when used together, have been shown to act in a manner that produces greater toxicity than would be expected from the addition of both toxicities. This effect is known as potentiation or synergism. The mechanism of toxic action of spinosad is unique and different from other registered agrochemicals. It is, therefore, unlikely that potentiation or synergism of the toxicity of spinosad could occur through exposure to other chemicals. On the other hand, malathion is an organophosphate insecticide that has a similar mechanism of toxic action to other organophosphates. The inhibition of acetylcholinesterase in humans and other nontarget species would likely be increased by exposure to malathion and other organophosphates. The effect of that increased inhibition could result in increased toxicity and associated adverse effects. Malathion bait spray applications can occur closely in time and location to other chemicals that increase the overall toxicity in this manner. Malathion toxicity can be synergized by concurrent exposure to other organophosphate or carbamate pesticides (Murphy, 1980). The notification of growers of the timing of malathion bait spray applications decreases the likelihood of multiple chemical exposures. The restrictions on entry to treated areas also prevent this possibility. In addition, the ground applications direct the malathion bait spray at the canopy where potential exposure is limited and exposure to multiple pesticides is further prevented. Although it is possible for synergism of toxicity, the above application methods and mitigations make it highly unlikely to occur.

Impacts from implementation of the program are expected to be temporary with potential adverse effects ending shortly after the cooperative management program actions are completed. No bioaccumulation or environmental accumulation of malathion or spinosad is foreseen due to their rapid degradation rates. In contrast, the ongoing applications expected from the no action alternative could be expected to have potential cumulative effects. Therefore, any cumulative impacts of the expansion of the cooperative management program are expected to be less than those that might occur under the no action alternative, an alternative which most likely would ultimately result in escalating use of pesticides by the public.

In terms of the cumulative effects of malathion and spinosad use from the proposed action combined with pesticide use from growers and other

programs, the small area requiring treatment for this program should not substantially increase exposures or risks to workers, public, nontarget species, or environmental quality.

c. Methods to Reduce Risk

Human pesticide exposure in this program would occur primarily to workers. Current worker safety measures protect pesticide applicators from excessive exposure to malathion and spinosad during routine operations. Dermal exposure of workers to malathion and spinosad is substantially reduced by the use of protective clothing.

Residents near the cooperative management program areas could be exposed to malathion or spinosad bait spray, depending on where the pesticides are applied. The public could also be exposed to residues on any treated material moved out of the eradication area. The short half-lives of malathion and spinosad make the likelihood of these exposures low. Written public notification will provide information about the schedule for pesticide treatments and applications and specific precautions that residents should take to avoid exposure, such as remaining indoors during bait spray applications. However, individuals with greater sensitivity to malathion, spinosad, and the protein baits may need to take extra precautions to avoid even minimal exposure.

The proposed expansion of the program, properly implemented, represents a low risk to human health except for extremely sensitive individuals who have had problems with similar programs in the past. However, this assessment does analyze uncertainties associated with toxicity data gaps and estimations of exposure. Potential risks from the program actions are substantially diminished due to the localized nature of actions taken under the cooperative management program.

Risks to nontarget organisms can be reduced by limiting exposure. If aerial applications are conducted, beekeepers should be notified. A survey of water bodies within the treatment area should be conducted and mapped so they will be avoided. Ground application of malathion and spinosad bait spray poses less direct exposure and lower potential risk. Timing of the treatments should also be considered to reduce potential exposures.

V. Agencies Consulted

The following agencies were consulted during the preparation of this environmental assessment:

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Program Support
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Riverdale, Maryland 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

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Finding of No Significant Impact
for
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Environmental Assessment,
May 2008

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), has prepared an environmental assessment (EA) that analyzes potential environmental consequences of alternatives for control of the Mexican fruit fly, an exotic agricultural pest that presents an ongoing threat to fruit production in the Lower Rio Grande Valley of Texas. The EA, incorporated by reference in this document, is available from—

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
903 San Jacinto Boulevard, Suite 270
Austin, TX 78701

or

U.S. Department of Agriculture
Animal and Health Plant Inspection Service
Plant Protection and Quarantine
Fruit Fly Exclusion and Detection Programs
4700 River Road, Unit 7
Riverdale, MD 20737–1234

The EA analyzed alternatives of (1) no action (continuation of the present program) and (2) the proposed expansion of the cooperative management program (the preferred alternative). Each alternative was determined to have potential environmental consequences. The proposed expansion was preferred because of its capability to achieve the control objective in a way that reduces the magnitude of those potential environmental consequences and provides better control of the Mexican fruit fly. Program standard operational procedures and mitigative measures serve to negate or reduce the potential environmental consequences of this program.

APHIS has determined that there will be no signficant impact to the human environment from the expansion of the cooperative management program, the preferred alternative. APHIS' Finding of No Significant Impact for this program is based upon the limited nature of the program and its expected environmental consequences, as analyzed in the EA. In addition, APHIS is consulting with U.S. Fish and Wildlife Service to ensure that program protection measures preclude any potential adverse impacts to threatened or endangered species or their critical habitats from this action. I find that the expansion of the cooperative management program poses no disproportionate adverse effects to children or minority and low-income populations and the actions undertaken for this program are entirely consistent with the principles of "protection of children," as expressed in Executive Order 13045, and 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."

Lastly, because I have not found evidence of significant environmental impact associated with the proposed expansion of the program, I further find that an environmental impact statement does not need to be prepared and that proposed expansion of the cooperative management program may be implemented.

Stuart Kuehn
State Plant Health Director, Texas
Plant Protection and Quarantine
Animal and Plant Health Inspection

May 22, 2008
Date