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Animal and Plant Health Inspection Service

Mexican Fruit Fly Cooperative Eradication Program

Laredo, Texas

Environmental Assessment, March 2007

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1. Need for the Proposal

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 permanently established on the U.S. mainland.

On March 8, 2007 it was confirmed that a mated female Mexican fruit fly had been trapped in the city of Laredo in Webb County, Texas. This location is 150 miles north-west of the ongoing control program for Mexican fruit fly in the lower Rio Grande Valley. The infestation is presently found in urban and suburban area of Laredo, Texas although that situation may change in the future. This Mexican fruit fly infestation detected in southern Texas represents a major threat to the agriculture and environment of Texas and other U.S. mainland States. The U.S. Department of Agriculture’s (USDA) Animal and Plant Health Inspection Service (APHIS) and the Texas Department of Agriculture (TDA) are proposing a cooperative program to eradicate the 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 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 Mexican fruit fly control and considers, from a site-specific perspective, environmental issues that are relevant to this particular program. The control measures being considered for this program have been discussed and analyzed comprehensively within the fruit fly chemical risk assessments (USDA, APHIS, 1998a, b, 1999, and 2003). Those documents are incorporated by reference and summarized within this EA.

II. Alternatives

Alternatives considered for this proposed program include (1) no action, (2) nonchemical control, and (3) integrated control. APHIS' preferred alternative for the program is integrated control (using chemicals) to facilitate timely eradication of the current Mexican fruit fly infestation.

A. No Action

Under this alternative, APHIS would not participate in efforts to eradicate the current infestation of the Mexican fruit fly in Laredo, Texas. An eradication could proceed under the direction of the State and/or County government, but the lack of Federal/State coordination would likely jeopardize timely and efficient implementation of this program. This could result in delays in achieving eradication, expansion of the infested area, and permanent establishment of the Mexican fruit fly. Potential adverse environmental effects of this alternative would be at least as severe as those under the proposed integrated program alternative, and would be more severe if the infestation expanded substantially or could not be eradicated. Establishment of Mexican fruit flies would lead to increased damage to crops and backyard produce, uncoordinated use of insecticides by commercial and backyard growers, and increased environmental risk from the insecticide applications. Such adverse effects would be of an indirect, but continuing and escalating nature.

B. Nonchemical Control

Under this alternative, APHIS would participate in a cooperative program to eradicate the existing infestation of Mexican fruit fly in Laredo, Texas, with solely nonchemical methods. Examples of such methods include: sterile insect technique (SIT), physical control, cultural control, and regulatory control. Biological control and biotechnological control are other nonchemical methods that were considered, but have not yet been proven efficacious or technologically feasible. Federal/State approval of such a nonchemical program is unlikely because nonchemical technologies cannot respond quickly enough to the infestation to contain and eliminate it before it has had the opportunity to spread. Nonchemical methods, such as SIT, have greater effectiveness when used as components of integrated programs, or in preventive programs designed to eliminate pest introductions before they become infestations. Cold treatments, vapor heat treatments, and irradiation treatments are regulatory treatments that are applicable to some commodities. The potential adverse environmental impacts of a nonchemical program would be expected to be as severe as under the no action alternative because of the anticipated inability of such a program to quickly and effectively eradicate the infestation. The infestation would grow, resulting in increased damage to crops and backyard produce, uncoordinated use of insecticides by commercial and backyard growers, and increased environmental risk from insecticide applications. Such adverse impacts would be of an indirect, but continuing and escalating nature.

C. Integrated Control (Preferred Alterative)

The proposed integrated program would use any of a combination of control methods, based upon site-specific requirements that take into account program efficacy and environmental considerations. As a form of integrated pest management (IPM), integrated control may include the use of both chemical and nonchemical methods in a timely manner to achieve the program goal of eradication and minimize potential environmental consequences that could arise from program activities. This is the preferred alternative, from both program and environmental perspectives.

Specifically, this integrated program could use any or a combination of the following methods: chemical control, SIT, physical control, cultural control, and regulatory control. Biological control and biotechnological control also were considered, but have not yet been proven to be efficacious or technologically feasible for this species of pest. The eradication program is likely to consist of three ground applications of either malathion or spinosad bait, applied at 14-day intervals. This may be followed by the release of sterile Mexican fruit flies. Diazinon will be drenched with water into the soil within the drip line of plants known or suspected to contain Mexican fruit fly larvae. Spinosad may include both ground and aerial applications of pesticide and bait to all commercial acreage of Mexican fruit fly hosts. At present the pesticide used in the eradication program is limited to spinosad bait applied to hosts plants applied within 2000 ft of the host find. Other control options include the use of mass trapping, host removal, and regulatory control. Regulatory control involves quarantine of fresh produce and commodities from host plants of Mexican fruit fly. Specific regulatory treatments are required for transport of produce grown within the designated quarantine area to destinations outside this regulated area. The treatment of produce and nursery stock may involve malathion or spinosad bait spray applications, diazinon soil treatments, or methyl bromide fumigations. For now, program use of chemical control methods for regulatory treatments will only involve ground use of spinosad and fumigation with methyl bromide. However, pesticide use by the program may expand to include malathion or diazinon in their eradication efforts.

There are potential adverse environmental impacts from the use of chemicals in the integrated program, but those impacts are fewer and less severe than in the other alternatives. In general, the integrated program would have direct adverse impacts of a non-continuing nature.

III. Potential Environmental Consequences

The analysis of potential environmental consequences will consider the alternatives of no action, nonchemical control, and integrated control. Because the principal environmental concern over an integrated control program relates to its use of chemical pesticides, this assessment will focus on the potential environmental consequences of the pesticides on human health, nontarget species, and endangered and threatened species.

A. No Action

Under the no action (no APHIS effort) alternative, Mexican fruit fly control would be left to the State, grower groups, or individuals. Without a coordinated effort between APHIS and cooperators, it is likely that the infestation would spread to other areas of Texas and the U.S. mainland. Any response by individuals or organizations to control such an expanded infestation would probably result in a greater magnitude of environmental impact than would be associated with a coordinated APHIS/State eradication program. Under those conditions, any available controls (including more hazardous chemical pesticides) could be used, resulting in greater environmental impact than is associated with the action alternatives analyzed within this assessment.

1. Human Health

Under the no action alternative, private homeowners and commercial growers would have few options other than pesticides to reduce the Mexican fruit fly damage to their crops. 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 a 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 resulting adverse consequences probably would be greater than if pesticides were applied in a cooperative government program. The spread of the infestation will reduce the amount of locally available produce and may 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.

2. Nontarget Species

Broader pesticide use resulting from lack of APHIS effort 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.

3. Endangered and Threatened 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) if species listed or proposed for listing are likely to be adversely affected. There are five endangered species that occur in Webb County, Texas. The no action alternative involves no activity by APHIS that would affect these species or the riparian, marsh, or sand habitats of these species. Further expansion of the Mexican fruit fly's range would be likely to include the habitats of threatened and endangered species, with unquantified risk to those species from uncoordinated pesticide use under the no action alternative. No adverse impacts to threatened or endangered species would result directly from APHIS' implementation of the no action alternative.

B. Nonchemical Control

The nonchemical control methods proposed for use under this alternative include SIT, physical control, cultural control, cold treatment, and vapor heat treatment. Although biological control and biotechnological control are being researched for development, these methods have not yet been proven efficacious or technologically feasible, so their potential environmental consequences are not analyzed here.

1. Human Health

Under the nonchemical control alternative, human health is not expected to be adversely affected. SIT, physical control, and cultural control do not pose a risk to human health. The control program includes some regulatory treatments (cold treatments, irradiation, and vapor heat treatments) that occur in restricted access facilities and that are strictly supervised to ensure no effects occur to human health. In general, the use of nonchemical methods reduces substantially the need for chemical applications, thereby decreasing the magnitude of impact from chemical usage. The nonchemical control alternative may not be successful for larger infestations, and the human health consequences of inadequate control could be comparable to the no action alternative if the infestation of Mexican fruit fly expanded due to insufficient containment of the pest.

2. Nontarget Species

The nonchemical techniques that may be employed could disturb nontarget species due to noise or mere human presence. In general, little risk is associated with these disturbances. Use of SIT could have a positive effect, that of providing a food source to some insectivores. Nonchemical methods have the potential for less pesticide use than the other alternatives, but control and containment of Mexican fruit fly under this alternative depend upon low pest populations. If nonchemical methods were insufficient to eradicate the pest population, the ultimate expansion of the infestation could result in pesticide usage comparable to that of no action.

3. Threatened and Endangered Species

Nonchemical methods will not directly impact threatened or endangered species. FWS has determined that SIT is compatible with threatened or endangered species. The nonchemical regulatory treatments are not made to these species or their critical habitats.

Cultural and physical control methods can affect some species through habitat disturbance, but the ecological risk assessment determined that no nonchemical program actions will affect the threatened or endangered species or their critical habitat (USDA, APHIS, 1998b). None of the nonchemical control methods are known to affect threatened or endangered species within the program area.

C. Integrated Control (Preferred Alternative)

The environmental consequences of nonchemical methods were discussed under the nonchemical control alternative, and this information will not be repeated in this section. The components of the proposed program which potentially have the greatest impact on the environment are the chemical pesticides. Special registration procedures are required for pesticides used against exotic pests, such as the Mexican fruit fly which is not native to this country. A section 18 (emergency) or section 24c (special local needs) exemption under the Federal Insecticide, Fungicide, and Rodenticide Act allows their use. The environmental consequences from the use of these pesticides (malathion, spinosad, diazinon, and methyl bromide) are discussed below. Because of the limited and restricted nature of these chemical control actions necessary in this integrated control, it has been analyzed within the framework of an environmental assessment.

I. Chemical Control Impacts

Three major factors influence the risk associated with pesticide use: fate of the pesticide in the environment, its toxicity to humans and nontarget species, and the exposure of humans and nontarget species to the pesticide. These factors will be evaluated below for each of the chemicals analyzed. Effects of pesticide use on threatened and endangered species and their habitat is presented in section five.

1. Malathion Bait Spray

a. 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, for both aerial and ground applications. The half-life of malathion in soil or on foliage ranges from 1 to 6 days; in water, from 6 to 18 days. Malathion bait spray is applied from the ground, generally as a spot treatment to individual trees, or from the air. Trees, shrubs, and other surfaces such as soil, roads, and ponds are likely to receive spray from aerial applications, although efforts, including the use of buffers, are made to avoid directly spraying water bodies. Malathion is generally of more concern in aquatic areas because of its high toxicity to aquatic organisms.

b. Toxicity

Malathion is an organophosphate that acts by inhibiting acetylcholinesterase. Mildly acutely toxic, malathion is classified by EPA as category III (Caution) based on 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 pathways yield nontoxic intermediates.

EPA has 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 used with other organophosphate or carbamate pesticides.

Oral doses of malathion are slightly to moderately acutely toxic to mammals and 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 malathion bait spray applications have been documented.

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
Stone flies	1.1 - 8.8

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

c. Exposure and Risk

(1) Human Health

Potential exposure to humans is by dermal absorption, inhalation, or ingestion of residues. Due to the potential for aerial application of malathion bait spray, dermal absorption from direct application or contact with treated surfaces is the primary exposure route for the public. Public exposure from a ground malathion bait spray application will be lower than exposure from an 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 assessment of malathion bait suggest that exposures to pesticides from comparable program operations are not likely to result in substantial adverse human health effects. Residues on commodities or backyard fruits resulting from the malathion bait spray application 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 per 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). Results suggest that exposure from normal program operations will not present a human health risk either to workers or the public. In addition, risks to humans have been analyzed qualitatively, with reliance on information from past fruit fly eradication programs in California. The exposure scenarios from previous fruit fly eradication efforts will not differ substantially from the current program.

(2) Nontarget Species

Malathion bait spray will kill insects other than the Mexican fruit fly. Malathion is highly toxic to bees, and direct application 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 a concern of aerial application. Secondary pest outbreaks have occurred concurrently with the use of aerial applications of malathion bait spray, but have not been determined conclusively to be associated with the applications. In 1981, fish kills also occurred from a similar treatment method. Since then, the State of California has instituted procedures to reduce the likelihood of fish kills. None have been known to occur from aerial applications of malathion bait spray since the procedures were implemented.

Terrestrial animals are exposed to malathion primarily through dermal and oral routes. Ingesting prey containing residues, rubbing against treated vegetation, and grooming contribute to total dose. Aquatic species can be exposed to direct application and runoff. Exposure of malathion bait spray by aerial application poses high risk to nontarget invertebrates and some aquatic species. Some insectivores may be affected. Ground application of malathion bait spray has far fewer environmental consequences because the treated area is smaller and delivery is more accurate. Fewer species would be exposed and thus the treatment poses less total risk to nontarget species than does aerial application.

2. Spinosad Bait Spray

a. Fate

Spinosad is a mixture of macrocyclic lactones produced naturally by an actinomycete bacteria. The active ingredients in spinosad are spinosyn A and spinosyn D. The bait formulation includes sugars and attractants that are of low toxicity and do not contribute to the overall hazard, but these substances may decrease the rate of degradation, particularly photodegradation, by blocking the penetration of sunlight. The actual concentration of spinosad used by the program in the bait spray formulation is very low (0.008%). Spinosad is registered for use on various crops and has permanent EPA-approved tolerances for some fruits (including citrus), nuts, vegetables, cotton, and meat.

Thorough risk assessments have been prepared for human health (USDA, APHIS, 2003) and nontarget species (USDA, APHIS, 2003) for spinosad bait spray applications. Information from those assessments is incorporated by reference into this document and is summarized here.

The hazards of spinosad to environmental quality are minimal. This is primarily a function of the environmental fate. Spinosad persists for only a few hours in air and water. The low vapor pressure of spinosad indicates that it is not volatile. The aerobic soil half-life of both spinosyn A and D is 14.5 days. The photolysis half-life in soil is 8.68 days for spinosyn A and 9.44 days for spinosyn D (Dow Agrosciences, 1998). Although spinosyn A is water soluble, the compound readily binds to organic matter and no leaching to groundwater is anticipated for either spinosyn. The spinosyns bind readily to organic matter on leaf surfaces also. The photodegradation of spinosad residues occurs readily on plants, and tolerances on crops are not of great concern to EPA (EPA, 1998a). The rapid breakdown and lack of movement in the environment ensure that there will be no permanent effects on the quality of air, soil, and water for the program applications.

b. Toxicity

Spinosad acts as a contact and stomach poison against insects, and it is particularly effective against all stages of flies (Adan *et al.*, 1996). The mode of toxic action of this compound against insects has been shown to relate to the widespread excitation of isolated neurons in the central nervous system (Salgado *et al.*, 1997). This is caused by persistent activation of nicotinic acetylcholine receptors and prolongation of acetylcholine responses. The symptoms of intoxication are unique and are typified by initial flaccid paralysis followed by weak tremors and continuous movement of crochets and mandibles (Thompson *et al.*, 1995). The receptors affected by spinosyns in insects are not present or vital to nerve transmission in most other taxa, so toxicity to most other organisms is low. There have been no reported human illnesses from the manufacturing or pesticide applications of spinosad.

Acute hazards from exposure to spinosad are low to mammals by all routes of exposure. The acute oral lethal dose for 50% of animals treated (LD_{50}) to rats is greater than 5,000 milligrams (mg) of spinosad per kilogram (kg) body weight (Dow Agrosciences, 1998; EPA, 1998a). The acute dermal LD_{50} to rats is greater than 2,800 mg/kg. Primary eye irritation tests in rabbits showed slight conjunctival irritation. Primary dermal irritation studies in rabbits showed slight transient erythema and edema. Spinosad was not found to be a skin sensitizer.

Subchronic and chronic studies also indicate low hazard. The systemic NOEL for spinosad from chronic feeding of dogs was determined to be 2.68 mg/kg/day (EPA, 1998a). The LOEL for this study (8.22 mg/kg/day) was based upon vacuolated cells in glands (parathyroid) and lymphatic tissues; arteritis; and increases in serum enzymes. The regulatory reference values selected for spinosad are based upon this study applying a safety factor of 10 for occupational exposure to make allowance for inter-species variability. An additional safety factor of 10 was applied for general public exposure to make allowance for intra-species variability and potential for wider ranges in sensitivity in the general public than in the occupational population. A neuropathology NOEL of 46 mg/kg/day was determined for male rats. EPA has classified the carcinogenic potential of spinosad as Group E—no evidence of carcinogenicity based upon chronic studies of mice and rats (EPA, 1998b). There has been no evidence of mutagenic effects from spinosad. The reproductive NOEL from a 2-generation study of rats was determined to be 10 mg/kg/day (EPA, 1998a).

The primary active ingredients in spinosad are spinosyn factor A and spinosyn factor D. All other substances in the formulated products of spinosad are of lower toxicity. Spinosyns are relatively inert, and their metabolism in rats resulted in either parent compound or N- and O-demethylated glutathione conjugates as excretory products (EPA, 1998a). Studies have found that 95% of the spinosad residues in rats are eliminated within 24 hours.

Acute oral doses of spinosad are very slightly toxic to mammals and practically nontoxic to birds (table 3). Spinosad is slightly to moderately toxic to fish and most aquatic invertebrates, but highly toxic to marine molluscs (table 4). Spinosad is of slight to moderate acute toxicity to algae.

Table 3. Acute Oral LD_{50}s[1] for Selected Species Dosed with Spinosad (mg/kg)[2]

Rat	>5,000
Mouse	23,100
Shrew	3,400
Mallard	>2,000
Pheasant	>2,000

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

Table 4. Spinosad 96-hour LC_{50}s[1] for Selected Aquatic Species (µg/L)

Grass shrimp	9,760
Rainbow trout	30,000
Bluegill	5,900
Daphnia	92,600
Eastern oyster	295

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

c. Exposure and Risk

(1) Human Health

Potential exposure to humans is 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 an 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 assessment prepared for spinosad bait spray applications suggest 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 tested 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, but 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.

(2) 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 that to 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, but 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 toxicity is high to honey bees, the bait spray is not attractive to the and direct applications to areas where plants are blooming are not expected to result in high bee kill (USDA, APHIS, 2003).

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.

3. Diazinon Soil Treatments

a. Fate

Technical grade diazinon is a sweet, aromatic, amber-brown liquid. The program formulation is applied at a rate of 5 pounds active ingredient per acre. Its half-life in soil ranges from 1.5 to 10 weeks, and in water at neutral pH ranges from 8 to 9 days. Small amounts of diazinon are used to treat soil within the drip line of trees that have fruit infested with Mexican fruit fly larvae. Surface vegetation may retain residues and, depending on soil type, local hydrology, and topography, diazinon may occur in runoff water.

b. Toxicity

Although diazinon is widely used and generally is not considered a hazard to human health under its registered uses, it can be toxic to humans. EPA has classified the formulation of diazinon as category II (Warning) for program use in soil treatment. Although not a primary dermal or eye irritant, it can be absorbed through these routes and, at high concentrations or prolonged exposure, causes severe irritation.

The mode of toxic action of diazinon occurs through inhibition of the enzyme, acetylcholinesterase. Symptoms of poisoning in humans, who are much less susceptible to the effects of diazinon than insects, include blurred vision, nausea, vomiting, slurred speech, and mental confusion. Death, which can occur from high doses, results from respiratory arrest caused by muscle paralysis and bronchoconstriction. Accidental oral poisonings have resulted in death from doses between 50 and 500 mg/kg.

Diazinon has many metabolites, but toxicity data on most are not currently available. Although the metabolite diazoxon is more toxic than diazinon, it is also more easily metabolized and excreted.

Diazinon may exhibit synergistic effects with other commercial pesticide formulations currently in use. Diazinon is not considered to be a carcinogen and is nonmutagenic.

Animals differ in their sensitivity to diazinon, both within and between species. Toxicity varies widely and depends on sex and life stage (table 5). Diazinon is toxic to vertebrate laboratory animals and very toxic to livestock. Diazinon is extremely toxic to birds, which are sensitive, because their blood has no enzymes to hydrolyze diazoxon (a toxic metabolite), as does mammalian blood (Eisler, 1986). Signs of intoxication include salivation, stiff-legged gaits, wing spasms, and wing-beat convulsions (Hudson *et al.*, 1984). Many incidents of avian mortality (particularly geese and other waterfowl) on golf courses have occurred because of the use of granular formulations of diazinon. These incidents led EPA to cancel use of diazinon on golf courses and sod farms in 1986. Some terrestrial invertebrates, such as bees, are extremely sensitive to diazinon. Diazinon causes high earthworm mortality but does not have a similar effect on nematodes.

Table 5. Acute Oral LD_{50}s[1] for Selected Species Dosed with Diazinon (mg/kg)

Rabbit	130
Mouse	80 -135
Female rat	76 - 250
Male rat	108 - 285
Guinea pig	280
Calf	0.5
Starling	110
Mallard (3 to 4 months old)	3.5
Pheasant (3 to 4 months old)	4.3
Bobwhite quail	3.4 - 10
Chicken (5 days old)	8.4
Redwinged blackbird	2.0
Butterfly	8.8
Honey bee	0.372/bee

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

Freshwater cladocerans (water fleas, common to aquatic areas) are among the aquatic species most sensitive to diazinon; *Gammarus fasciatus* has a 96-hour LC_{50} of 0.20 grams per liter. There is some evidence that juvenile fish are more sensitive than eggs. Sublethal effects include reduced growth and reproduction in both marine and freshwater invertebrates, including reduced emergence of insects (Eisler, 1986). Algae are unaffected by concentrations fatal to aquatic invertebrates.

c. Exposure and Risk

(1) Humans

Potential exposure to humans is by ingestion or dermal absorption. The soil drenching application (rate of 52 mg per square foot of treated area) techniques prevent inhalation exposure. Because the diazinon is watered into the soil and the drenched area is small, public exposure will be limited. Program use of the pesticide precludes exposure to residues from produce on host plants because any fruit will be stripped from the plants before treatment. Occupational exposure will be reduced by wearing gloves when handling or applying diazinon. The only human health risk associated with diazinon is the consumption of soil from the drenched area by toddlers. The public will be notified when a drench has occurred and will be advised of the necessary precautions.

(2) Nontarget Species

Diazinon exposure to nontarget organisms is restricted to those organisms that traverse or visit the treated area as well as relatively immobile species that inhabit the area directly treated. The treatments are limited (generally less than 10 gallons per year) and occur only within the drip line of host trees. However, due to diazinon's high toxicity, organisms that are directly exposed are at high risk. Limiting exposure will reduce this risk.

4. Methyl Bromide Fumigation

a. Fate

Methyl bromide is an odorless, colorless, volatile gas which is three times as heavy as air. Its half-life is 3 to 7 days. Methyl bromide is released when a fumigation chamber is aerated. Because methyl bromide is heavier than air, the gas can collect in isolated pockets, which could create hazardous conditions when there is little air circulation or mixing, such as during thermal inversions or periods of low wind.

b. Toxicity

Methyl bromide gas and liquid are acutely toxic to humans. Contact with liquid or vapors can cause serious skin or eye injury. Inhalation can cause acute illness, including pulmonary edema (fluid buildup in the lungs), gastrointestinal distress, and convulsions which can be fatal. The LD_{50} of rats to methyl bromide is 2,700 ppm for a 30-minute exposure. In humans, 1,583 ppm (6.2 mg/L (milligrams per liter)) methyl bromide is lethal after 10 to 20 hours of exposure and 7,890 ppm (30.9 mg/L) is lethal after 1½ hours of exposure (EPA, 1986). EPA has derived an RfC (reference concentration) of 0.48 mg/m^3 (milligrams per cubic meter) for general population exposure to methyl bromide (EPA, 1992).

Methyl bromide is rapidly absorbed by the lungs and affects both the lungs and kidneys. Increased exposure to methyl bromide results in elevation of bromine levels in the blood; poisoning symptoms occur at a level of 2.8 mg/100 ml of blood (Curley, 1984). Symptoms of acute exposure typically are headache, dizziness, visual problems, gastrointestinal disturbances, and respiratory problems. In more extreme cases, muscular pain, numbness, or twitching precede convulsions, unconsciousness, and possibly death.

Chronic exposure can result in behavioral changes, loss of ability to walk, neurological damage, and renal and liver function disturbances (Verberk *et al.*, 1979). Because there are a number of toxicity data gaps, the chronic and subchronic toxicity of methyl bromide is not well characterized. For this reason, and the implication of its contribution to ozone depletion, EPA has issued a call-in notice to provide this information for reregistration. Manufacturers must supply more information.

Based on laboratory studies of the effects of methyl bromide inhalation and ingestion, nontarget species of mammals and birds exhibit symptoms similar to humans: weakness, lack of muscular coordination, neurological and behavioral abnormalities, and death from high doses. Due to its restricted use as a fumigant, wild animals are rarely exposed to methyl bromide and toxicity data is limited to farm animals. Residues in hay ranging from 6,800 ppm to 8,400 ppm caused symptoms of intoxication in cattle, horses, and goats (Knight and Costner, 1977).

c. Exposure and Risk

(1) Humans

Inhalation is the primary exposure route for methyl bromide. Concentrations of methyl bromide are electronically monitored during the fumigation. Because the gas is odorless and nonirritating during exposure and the onset of symptoms is delayed, leaks and spills causing extreme exposure can occur without persons being aware of its presence. Protective clothing and self-contained breathing apparatus are worn whenever concentrations of methyl bromide are anticipated to reach or exceed 5 ppm. The American Conference of Governmental Industrial Hygienists (ACGIH) has established exposure standards (threshold limit value) of 5 ppm (20 mg/m^3) to protect against adverse neurotoxic and pulmonary effects (ACGIH, 1990). Dermal exposure to workers could occur in the unlikely event of a spill of liquid methyl bromide.

Ingestion of methyl bromide residues and its degradation products is a third exposure route. Following aeration of the commodity, the small amount of methyl bromide that remains dissipates and degrades, leaving only inorganic bromide residues. However, residues from the methyl bromide fumigation will remain on the commodity. EPA tolerances for residues of methyl bromide, measured as inorganic bromides (40 CFR 180.123), range from 5 ppm (for apples, pears, and quinces) to 240 ppm (for popcorn), with most commodities at 50 ppm or less. Ingestion of these small amounts of residues is considered to have no adverse toxicological effect.

EPA has classified methyl bromide as a class I ozone depleting chemical in a manner consistent with the Montreal Protocol. EPA is expected to require the phaseout of most uses of methyl bromide by 2005. There is, however, an exemption to this phaseout for Quarantine and Pre-shipment uses. The relative importance of methyl bromide to ozone depletion, however, is subject to fundamental uncertainties.

Workers will have little exposure to methyl bromide because fumigations are contained. The public will be restricted from access to the fumigation chamber by a 30-foot wide barrier zone. Residues in fumigated commodities will be within tolerance limits. There is very little risk to human health from a methyl bromide fumigation.

(2) Nontarget Species

Few nontarget species will be exposed to methyl bromide directly. The aeration duct will deliver a plume which will disperse quickly. Species within this plume, such as insects which inadvertently fly in, might die. However, these effects are restricted to areas within the 30-foot wide barrier zone (Bergsten, personal communication). In addition, ground-dwelling organisms immediately outside the fumigation chamber vent are not anticipated to survive.

5. Threatened and Endangered Species

Section 7 of the ESA and its implementing regulations require Federal agencies to consult with the U.S. Fish and Wildlife Service (FWS) 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.

Five federally listed endangered species are known to occur in Webb County, Texas. These include the Gulf Coast jaguarundi (*Herpailurus yagouaroundi cacomitli*), ocelot (*Leopardus pardalis*), least tern (*Sterna antillarum*), ashy dogweed (*Thymophylla (=Dyssodia*) *tephroleuca*), and Johnston's frankenia (*Frankenia johnstonii*). However, program activities will not take place in the habitats where these species occur. Eradication activities will occur in the downtown Laredo area and 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 has determined that use of spinosad, malathion, diazinon, fumigation of host material with methyl bromide, and the release of sterile Mexican fruit flies will have no effect on the federally listed endangered species in Webb County.

Control activities in Mexico are under the control of the Federal Government of Mexico,which has responsibility for the protection of endangered and threatened species on its sovereign soil.

6. 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 EA 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. This effect is known as potentiation or synergism. Malathion bait spray and diazinon could be applied during the same treatment regimen. Because malathion has frequently been observed as one constituent of a potentiating pair of organophosphorus insecticides (Murphy, 1980), synergistic effects from the combination of malathion and diazinon (both organophosphorus insecticides) could occur. However, malathion bait spray is applied to the tree canopy and diazinon to the soil within the drip line of the canopy, so synergistic effects are limited to animals that are active on both foliage and soil. In addition, the restriction of diazinon treatments to plants with infested fruits makes it unlikely that any animals would get concurrent exposure to both insecticides. The mechanism of intoxication from exposure to spinosad is unique and unlike other pesticides. Theoretically, spinosad is not expected to have any synergistic or potential effects from other potential chemical exposures.

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

Because eradication may require the simultaneous use of malathion bait spray and diazinon, both of which are organophosphate cholinesterase inhibitors, there could be cumulative effects of using two pesticides. The history of the eradication efforts for the Mexican fruit fly shows that this use pattern does not result in adverse effects to the general resident population nor the workers. Because most nontarget species are mobile, it is unlikely that an individual will be exposed to more than one treatment. In addition, diazinon treatments are restricted to locations where Mexican fruit fly larvae are detected. Domestic animals and less mobile organisms, such as those dwelling near the soil surface, could be exposed. There could be cumulative effects from exposure to spinosad bait spray and diazinon, but spinosad is effective only by ingestion. Most species are not attracted to spinosad bait and are not expected to ingest sufficient quantities for toxicity effects, so cumulative impacts are considerably less likely with spinosad bait.

The cumulative impacts from fumigations with methyl bromide have been discussed in detail in an environmental impact statement designed to address these issues (USDA, APHIS, 2002). This document included analysis of the limited use of methyl bromide in local eradication programs, such as this one, and determined that their potential cumulative contribution to ozone depletion is not significant.

In terms of the cumulative effects of pesticide use from the proposed action with pesticide use from other fruit fly programs, the small area requiring treatment for this program should not substantially increase exposure to workers, public, or nontarget species.

7. Methods To Reduce Risk

Human pesticide exposure would be primarily to workers, especially in the case of the soil drench pesticide, diazinon, or methyl bromide which is used only in certified fumigation chambers or under tarpaulins (enclosures). Residents within the eradication area will be exposed to malathion or spinosad bait spray and diazinon to an extent, depending on where the pesticides are applied. The public could be exposed to residues on any treated material moved out of the eradication area.

Current worker safety measures protect fumigators and other pesticide applicators from excessive exposure to methyl bromide, diazinon, and malathion during routine operations. To minimize worker exposure to methyl bromide, the fumigation chamber is opened only after concentrations are reduced below 5 ppm. Proper sealing of fumigation enclosures and proper aeration facilitate dispersal of the fumigant. Worker exposure to diazinon can be prevented by gloves and safety goggles, which are indicated as protective clothing requirements on the label (Meister, 1990). Studies on exposure to diazinon during yard applications reveal that 85% of the exposure to workers is to their hands.

Dermal exposure of workers to malathion and spinosad can also be substantially reduced by the use of protective clothing. Written public notification will provide information about the schedule for pesticide treatments and applications, and about specific precautions that residents should take to avoid excessive exposure such as remaining indoors during bait spray applications or diazinon soil treatments or not harvesting malathion-treated produce for 3 days after application. However, individuals with greater sensitivity to cholinesterase inhibitors or the protein bait may need to take extra precautions to avoid even minimal exposure.

The program, properly implemented, represents a relatively low risk to human health except for extremely sensitive individuals who have had problems with similar programs in the past. However, this assessment does contain uncertainties associated with toxicity data gaps and estimations of exposure. Furthermore, synergistic interactions between the pesticides which could be used in this program, as well as other pesticides not associated with the program and possibly used in the same area, could increase toxicity and the associated risk. Potential risk will be substantially diminished due to the localized nature and short duration of the program.

Risks to nontarget organisms can be reduced by limiting exposure. If aerial applications are conducted, beekeepers and backyard pond owners should be notified. A survey of water bodies within the treatment area should be conducted and mapped so they will be avoided by establishing “no treatment” zones during aerial operations. Ground application of bait spray poses little direct risk. Pet owners should be notified to limit animals’ exposure to treated trees. Soil treatments pose more risk due to higher toxicities, and a barrier or other safeguards should be used. Timing of the treatment should be considered to reduce exposure.

Standard operating procedures for methyl bromide fumigations include fencing or other barriers to limit access to the fumigation and aeration area and preclude exposure of many vertebrates. Irradiation equipment is sealed to prevent entry of nontarget species and poses no risk to these organisms.

To ensure that threatened or endangered species are not adversely impacted, FWS will be consulted if the program area is expanded.

The potential environmental impacts of the program's alternatives and component treatment methods have been discussed and analyzed in detail within the risk assessments. In addition, potential cumulative impacts were analyzed as well. Refer to the risk assessments for greater detail.

8. Site-specific Issues

This EA focuses on site-specific issues and conditions, especially with respect to any effects they might have on potential environmental impacts. Issues of concern associated with this proposed action include (1) potential effect on human health from chemical pesticide applications, (2) potential effect on wildlife (including threatened and endangered species) from program activities and treatments, and (3) potential effect on environmental quality.

The area of the proposed program has urban and suburban characteristics. The current eradication zone (where eradication treatments will occur) is the area including and immediately surrounding the Mexican fruit fly detections. The eradication zone is predominantly urban, but includes some plant nurseries and fruit sellers. There are no sensitive sites within the treatment zone however, expansion of the program area could place some sensitive sites within the quarantine zone.

The Laredo International Airport, Casa Blanca Golf Course, Laredo Medical Center, Texas A & M University, and Memorial Gardens of Laredo are to the east. Fort McIntosh and Laredo Community College are to the south of the initial fruit fly detection. There are some grade schools located within the proposed treatment area but applications are applied directly to host plants so no exposure is anticipated. Casa Blanca Lake is to the east but located outside the eradication boundaries. The program has adjusted treatments in the spray areas to minimize human exposures through the use of ground applications rather than aerial applications. If the treatment zone should expand in the future to include the State Park, appropriate protection measures will be employed to avoid adverse impacts to this area.

Consistent with Executive Order 12898, "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations," APHIS considered the potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The population of this area as a whole is diverse and lacks any special characteristics that differ from that of the general population. The potential for expansion of the treatment area could result in potential exposure of many different communities to treatment chemicals, but there is no evidence that any one population is likely to have disproportionate effects from program activities.

APHIS also recognizes that a proportion of the population may have unusual sensitivity to certain chemicals or environmental pollutants and that program treatments pose higher dangers for these individuals. Consistent with Executive Order 13045, "Protection of Children From Environmental Health Risks and Safety Risks," APHIS considered the potential for disproportionately high and adverse health or safety effects to children. The potential risks from potential program actions were determined to pose no excess risk to children. Special notification procedures and precautions are required and serve to minimize the risks to individuals and groups considered to have potential for increased sensitivity.

The alternatives were compared with respect to their potential to affect local nontarget species. Paralleling the findings for human health, we have determined that 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 and nonchemical control 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.

APHIS has consulted with FWS, under the provisions of section 7 of the Endangered Species Act of 1973. There are no plans to treat any riparian, marsh, or sand dune habitats or areas not adjacent to paved roads. The biological assessment prepared by APHIS has determined no effect to any threatened and endangered species and their habitat. This precludes any effects on the 5 endangered species found within the county. The BA prepared by APHIS has determined no effect. If the program expands into other areas of the county and if there is a potential for affecting federally listed or proposed threatened and endangered species, APHIS will consult with FWS over protective measures that may be required. No adverse impacts to threatened or endangered species or their habitats are foreseen.

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. The present program area contains no special characteristics that would require a departure from the standard operating procedures and mitigation measures.

In conclusion, the majority of the risk in the program is associated with pesticide use. Pesticide exposure, together with its subsequent risk to humans and nontarget species, is not expected to be substantial in this program because of the localized nature of the infestation, the limited use of pesticides, the precise targeting of pesticides, and the safety procedures employed. Although minimal exposure could pose higher risk to some sensitive individuals and some nontarget organisms, pesticide exposure is generally expected to be minimal and program standard operating procedures and mitigations (especially notifications) serve to minimize that risk. Risk to environmental quality is considered minimal. No significant cumulative impacts are expected as a consequence of the proposed program or its component treatment methods.

IV. Agencies, Organizations, and Individuals Consulted

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, 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

V. References Cited

ACGIH. American Conference of Governmental Industrial Hygienists, 1990. Threshold limit values for chemical substances and physical agents and biological exposure indices. Pub. No. 0205. Cincinnati, OH.

Adan, A., Del Estal, P., Budia, F., Gonzalez, M., and Vinuela, E., 1996.L Laboratory evaluation of the novel naturally derived compound spinosad against *Ceratitis capitata*. Pesticide Sci. 48:261–268.

Bergsten, D., 1992. Observations as a PPQ Officer, New Jersey.

Curley, W.H., 1984. Methyl bromide: A profile of its fate and effect in the environment. Submitted by Roy F. Weston, Inc., West Chester, PA, to U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine. Contract No. 53–3294–3–39.

Dow Agrosciences, 1998. Material safety data sheet: Tracer® Naturalyte insect control. Dow Agrosciences, Indianapolis, IN.

Eisler, R., 1986. Diazinon Hazards to Fish, Wildlife, and Invertebrates: A synoptic review. U.S. Department of the Interior, Fish and Wildlife Service, Patuxent Wildlife Research Center. Biological Rpt. No. 85 (1.9).

EPA—See U.S. Environmental Protection Agency.

Hudson, R.H., Tucker, R.K., and Haegele, M.A., 1984. Handbook of toxicity of pesticides to wildlife (2nd ed.). U.S. Department of the Interior, Fish and Wildlife Service. Resource Pub. 153. Washington, DC.

Kizer, K.W., 1991. Health risk assessment of aerial application of malathion-bait. California Department of Health Services, Berkeley, CA.

Knight, H.D., and Costner, G.C., 1977. Bromide intoxication of horses, goats, and cattle. J. Am. Vet. Med. Assoc. 171(5):446–448.

Meister, R.T. (ed.), 1990. Farm Chemicals Handbook. Meister Publishing Co., Willoughby, OH.

Murphy, S.D., 1980. Pesticides. *In* J. Doull, C.D. Klassen, and M.O. Amdur (eds.), Toxicology: The basic science of poisons (2d ed.), p. 357–408. Macmillan Publishing Co., Inc., New York.

Salgado, V.L., Watson, G.B., and Sheets, J.J., 1997. Studies of the mode of action of spinosad, the active ingredient in Tracer® insect control. *In* 1997 Procs., Beltwide Cotton Conf., New Orleans, LA, p. 1082–1086. National Cotton Council of America, Memphis, TN.

Thompson, G.D., Busacca, J.D., Jantz, O.K., Kirst, H.A., Larson, L.L., and Sparks, T.C., 1995. Spinosyns: An overview of new natural insect management systems. *In* 1995 Procs., Beltwide Cotton Conf., San Antonio, TX, p. 1039–1043. National Cotton Council of America, Memphis, TN.

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, 2002. Rule for the importation of unmanufactured wood articles from Mexico, with consideration for cumulative impact of methyl bromide use. Final environmental impact statement—September 2002. USDA, APHIS, Riverdale, MD.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1999. 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, 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.

U.S. Environmental Protection Agency, 1998a. Spinosad; time-limited pesticide tolerance. 63 FR 144:40239–40247, July 28.

U.S. Environmental Protection Agency, 1998b. Notice of filing of pesticide petitions. 63 FR 179:49568–49574, September 16.

U.S. Environmental Protection Agency, 1992. Office of Research and Development. Integrated Risk Information System (IRIS). Cincinnati, OH.

U.S. Environmental Protection Agency, 1986. Pesticide Fact Sheet No. 98: Methyl bromide (August 22). Office of Pesticides and Toxic Substances, Office of Pesticide Programs, Washington, DC.

Verberk, M.M., Rooyakkers-Beemster, T., De Vlieger, M., and Van Vliet, A.G.M., 1979. Bromine in blood, EEG and transaminases in methyl bromide workers. British J. Ind. Med. 36:59–62.

Finding of No Significant Impact
for
Mexican Fruit Fly Cooperative Eradication Program
Laredo, Texas
Environmental Assessment,
March **2007**

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 eradication of the Mexican fruit fly, an exotic agricultural pest that has been found in Laredo, Texas. The EA, incorporated by reference in this document, is available from:

USDA, APHIS, PPQ State Plant Health Director 903 San Jacinto Blvd, Suite 270 Austin, TX 78701-2450	or	USDA, APHIS, PPQ Fruit Fly Exclusion and Detection Program 4700 River Road, Unit 137 Riverdale, MD 20737–1234

The EA analyzed alternatives of (1) no action, (2) nonchemical control, and (5) integrated control (including chemicals). Each alternative was determined to have potential environmental consequences. APHIS selected eradication of Mexican fruit fly using integrated control for the proposed program because of its capability to achieve eradication in a way that also reduces the magnitude of those potential environmental consequences. Program standard operational procedures and mitigative measures serve to negate or reduce the potential environmental consequences of this program.

In consultation with the U.S. Fish and Wildlife Service, APHIS has determined that five endangered species reside within Webb County, Texas. Review of the proposed program operations relative to these species and their habitat indicates that "no effect" will occur to those species. Should the program be expanded to cover a larger area, then APHIS will revisit this issue. APHIS will adhere to any protective measures designed specifically for this program and mutually agreed upon with U.S. 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 No. 12898 and protection of children as expressed in Executive Order No. 13045. It is expected that the program will pose no disproportionate adverse impacts to minority populations, low-income populations, or children. 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.

/s/
Stuart Kuehn
State Plant Health Director - Texas
Plant Protection and Quarantine
Animal and Plant Health Inspection Service

March 13, 2007
Date