



United States Department of Agriculture

**Animal and Plant Health Inspection Service
Fruit Fly Exclusion and Detection Program
Strategy**

Fiscal Years 2024 - 2028

Table of Contents

Program Focus	4
Cross-Cutting Themes	6
Authorities and Linkages to Other Plans and Initiatives.....	6
Strategic Direction of the Program.....	7
Goal 1.....	8
Goal 2.....	11
Goal 3.....	14
Goal 4.....	17
Appendix 1	1

A Message from the Deputy Administrators

Exotic fruit flies are among the most destructive pests of fruits and vegetables, making the Fruit Fly Exclusion and Detection (FFED) Program critical to the health and prosperity of U.S. agriculture. The Animal and Plant Health Inspection Service (APHIS) responds to non-native fruit fly risks with an integrated system that incorporates domestic and offshore surveillance, control and eradication activities, analysis of pest risk data, and mitigation measures and regulatory actions. This multi-tactical approach is the product of partnerships and close collaborations within APHIS and between APHIS and its fruit fly program cooperators and stakeholders.

APHIS, through Plant Protection and Quarantine (PPQ) and International Services (IS), presents this Strategy to guide the FFED Program's goals and objectives for the next five years, providing a road map for the Agency to ensure American agriculture is protected from the threat of invasive fruit flies and measure progress along the way.

The FFED Program is a complex program with a rich history. Internationally, in FY 2022, APHIS, through its cooperator Moscamed, produced an average of one billion sterile Mediterranean fruit flies (Medflies) per week to mitigate northward movement from Mexico and Guatemala, and to release in high-risk areas of California and Florida. APHIS continued to assist collaborators in Mexico by funding the additional production of 200 million sterile Medflies for release in Chiapas, Mexico. Domestically, APHIS and its cooperators released 120 million sterile Medflies per week in California and 80 million per week in Florida in FY 2022. To combat Mexican fruit fly (Mexfly) incursions in Texas, APHIS rearing facilities in Guatemala and Texas produced 9 billion sterile Mexflies for release in Texas and Mexico. In New York State, APHIS worked with cherry producers to streamline regulatory measures that allow the movement of cherries out of the European cherry fruit fly quarantine areas.

The FFED Program's success involves a vast amount of cross-cutting work, including the application of science and technology, considerations of climate change impacts, close collaboration with industry and strategic partners, and public outreach. Employees across the Agency and cooperators deliver the program's mission every day, creating opportunities for those joining the program to learn from the past and maintain forward momentum. In the end, our employees and cooperators are the most valuable resource in safeguarding agriculture against one of the world's most destructive plant pests.

Sincerely,



Cheryle L. Blakely
Deputy Administrator
International Services
Animal and Plant Health Inspection Service



Dr. Mark L Davidson
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Program Focus

The Fruit Fly Exclusion and Detection (FFED) program conducts a range of activities to ensure that non-native fruit fly species of economic importance do not become established within the United States and do not threaten U.S. agricultural production or trade. Two main focuses of the FFED program are the Mediterranean fruit fly (Medfly) and Mexican fruit fly (Mexfly). APHIS has conducted long-standing, successful domestic and offshore activities, including area-wide sterile insect technique (SIT), to target these pests.

Bactrocera dorsalis (Oriental fruit fly or OFF) and other non-native tephritid species also pose serious potential threats to U.S. industry. APHIS and its partners engage in continuous efforts, offshore, along our borders, and at U.S. ports of entry, to prevent introduction of these pests. Large-scale surveillance trapping networks within the U.S. are designed to detect incursions as early as possible. When any of these species are detected within the U.S., the domestic FFED program initiates emergency response activities to delimit or eradicate the invading fruit flies.

European cherry fruit fly (ECFF; *Rhagoletis cerasi*) invaded the U.S. in 2017 and established in western New York. APHIS and partners conduct ongoing operations to slow the spread of this pest and protect sensitive agricultural industries in unaffected areas.

APHIS is concerned with two types of entry risk associated with non-native fruit flies. Each type of entry risk is described below.

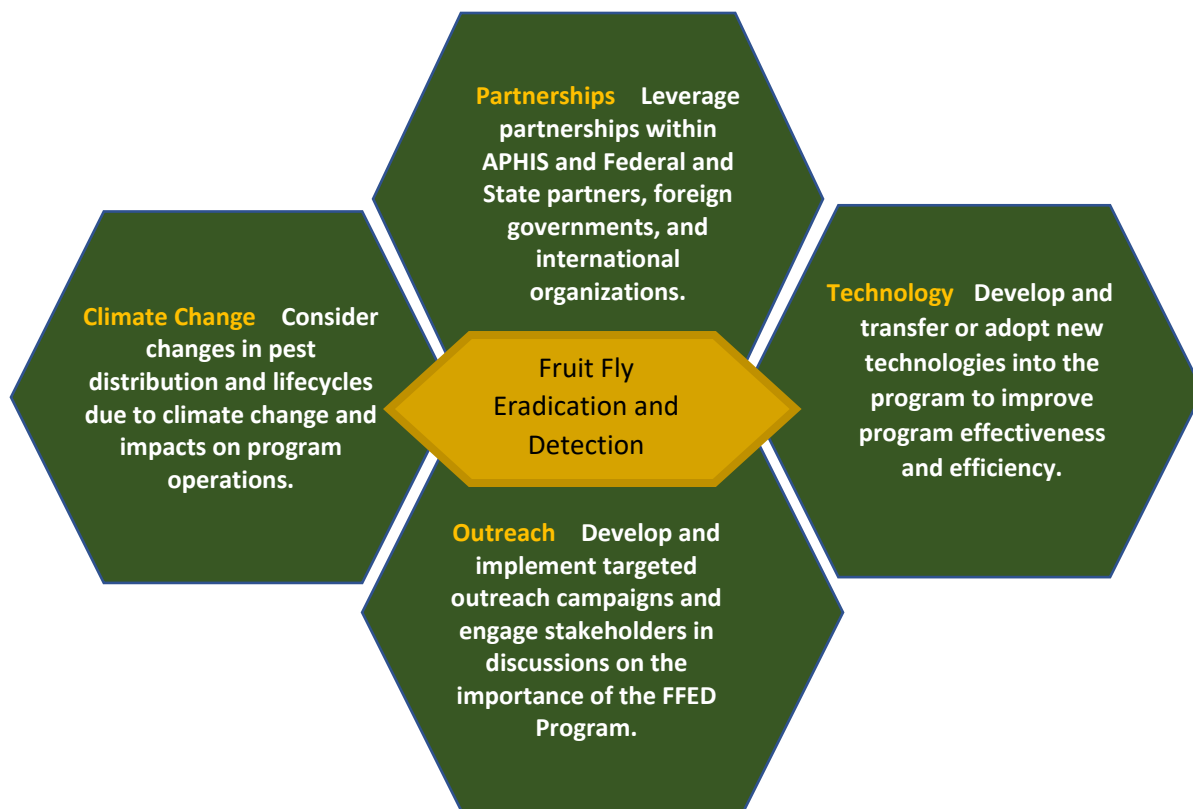
- **Long-distance movement of infested articles.** APHIS protects against the risk of entry into the United States of infested fruit or vegetables from fruit fly-infested countries distant from our borders. This also includes infested fruit or vegetables of non-Canadian origin entering via the Canadian border and the eastward spread from Hawaii of fruit fly pests established on the islands but not in the continental United States. The regulated host material may be smuggled or transported from overseas locations in baggage by passengers who may or may not be aware of the regulations against the movement of the material.
- **Short-distance natural spread or migration.** APHIS protects against the risk of fruit flies flying naturally or being carried on wind northward into the United States via Mexico and the Caribbean. Mexico is an especially high-risk pathway due to the shared border and human immigration from fruit fly-infested areas of Central America and Mexico. Humans may convey fruit fly-infested articles to markets or within baggage to border towns with the United States, from which fruit flies can easily spread on their own. Some Caribbean islands have become infested with Medfly, increasing the risk of

spread into Puerto Rico and Florida. APHIS is also concerned with the spread of fruit flies from along the northern border.



Cross-Cutting Themes

Throughout the planning process, several cross-cutting themes emerged that are relevant across multiple goals and objectives. We will work to ensure that these themes are addressed across the program components. These cross-cutting themes include partnerships, technology, outreach, and climate change.



Authorities and Linkages to Other Plans and Initiatives

APHIS' FFED Program carries out mission activities under the authority of the Plant Protection Act of 2000 (7 United States Code (U.S.C.) 7701 et seq.). Additionally, APHIS programs support activities that directly or indirectly enhance the mission of the APHIS FFED Program. These include PPQ's Greater Caribbean Safeguarding Initiative, IS' Trade Support Team and International Technical and Regulatory Capacity Building, and established cross-cutting working groups, such as PPQ's Fruit Fly Pathway Taskforce.

This strategy was developed with priorities that align with the USDA Strategic Plan Fiscal Years 2022-2026 goals and objectives and the APHIS Strategic Plan Fiscal Years 2023-2027 goals and objectives. See Appendix 1 for the specific goals and objectives.

Strategic Direction of the Program

Mission Statement

The mission of the APHIS Fruit Fly Exclusion and Detection (FFED) Program is to protect the health and value of American agricultural resources threatened by the establishment of invasive fruit fly populations.

Goals and Objectives

The strategic goals of the APHIS FFED Program consider the entirety of the safeguarding continuum from offshore regional approaches and exclusion at ports of entry to domestic surveillance, emergency response and mitigation, and eradication or management. Additionally, APHIS must continue the innovative and forward-looking approach to enhance facilities and technology available to the FFED Program.

The five-year strategy outlines four priority goals for fruit flies of regulatory significance:

Goal 1: Strengthen domestic surveillance to support early detection.

Goal 2: Strengthen management and emergency response to ensure timely mitigation.

Goal 3: Strengthen targeted and effective sterile insect technique (SIT) for preventive release and eradication programs (assuring rearing facilities are maintained for efficiency and safety).

Goal 4: Strengthen international and import efforts to mitigate against the introduction and spread of invasive fruit flies in the United States.

Additional information on each goal, including objectives, tactics to support the objectives, and key performance measures, are captured in the next section.



Goal 1

Domestic surveillance in support of early detection



Early detection of invasive fruit fly populations is critical to ensuring successful, timely, and cost-effective eradication, reducing the size and duration of regulatory quarantines and other emergency response activities. In cooperation with state partners, the fruit fly trapping program ensures the early detection and triggering of appropriate response actions to fruit fly introductions. Early detection is especially critical in urban, suburban, and environmentally sensitive areas where large-scale application of pesticides could be a challenge.

Adoption of modern detection technologies allows APHIS to detect fruit flies more effectively and efficiently and adapt to changing conditions and program needs. Public outreach is an essential element of the detection trapping program to ensure community members with dooryard fruit fly host plants understand their role in reducing the risk of incursions and encourage the public's participation in risk reduction and response activities.

Objective 1.1: Ensure implementation of an effective nation-wide detection program for economically important fruit fly species of regulatory significance.

Tactics to achieve the objective:

- Conduct risk-based evaluations of state-level program, as needed, to support the nation-wide detection system at appropriate trap type and densities, lure types, and service frequency.
- Increase public awareness of program goals and processes to encourage cooperation and acceptance for routine surveillance operations.

Objective 1.2: Improve the detection systems for economically important fruit fly species.

Tactics to achieve the objective:

- Support research and development to improve traps and lures.
- Support research, development, and implementation of modern detection technologies into program operations.



**Key Performance Measures for Goal 1:
Strengthen domestic surveillance in support of early detection**

<i>Measure</i>	<i>Target</i>
<i>Number of detection traps set in all states trapping for non-native fruit flies as part of routine surveillance</i>	<i>153,000 (full complement of annual trapping in participating states)</i>
<i>Traps serviced according to program protocols</i>	<i>90% serviced in proper time frame, according to trap schedules</i>



Goal 2

Strengthen management and emergency response to ensure timely mitigation

The United States must maintain its “fruit fly free” status to enable access of many U.S. agricultural commodities to international markets. Detection of a non-native tephritid fruit fly species may trigger an emergency response. The type and extent of response varies depending on the species, location, and specific conditions of the initial detection. Emergency response activities range from delimitation to determine whether the individual was a lone transient or part of a larger population to quarantine where agricultural markets are prohibited from moving their fruit until eradication is declared.

The impact of climate change on the ecosystem is expected to cause pest populations, such as fruit flies, to shift into new or expanded habitats. This movement may result in increased spread of the fruit flies.

To ensure continued success of fruit fly management and eradication efforts, APHIS must continue to promote the incorporation of a variety of treatment and control tools that complement each other and target fruit fly threats from multiple angles. New population suppression technologies, such as male annihilation technique or mass-trapping, should be explored for their effectiveness at controlling fruit flies, and for their cost-effectiveness and operational compatibility with SIT and pesticides.

Objective 2.1: Strengthen emergency response programs to respond to fruit fly incursions more efficiently.

Tactics to achieve the objective:

- Assess and remedy gaps in emergency response and develop and implement control technologies and processes.
- Enhance emergency response capabilities through development of training exercises to improve consistency, speed, and effectiveness of responses.
- Effectively communicate eradication program goals and processes to stakeholders and the public to increase cooperation and acceptance for emergency responses.

Objective 2.2: Improve the effectiveness and efficiency of mitigation and eradication efforts to reduce impacts on growers and other stakeholders.

Tactics to achieve the objective:

- Implement appropriate improvements after evaluating the effectiveness of fruit fly commodity treatments and mitigation measures.
- Implement contingency response plans after evaluating the economic and environmental significance, trade implications, and industry impacts of novel fruit fly species incursions.

**Key Performance Measures for Goal 2:
Strengthen management and emergency response to ensure timely mitigation**

<i>Measure</i>	<i>Target</i>
<i>Quarantines established</i>	<i>Within one (1) week of triggering event</i>
<i>Emergency response trapping initiated</i>	<i>Within one (1) week of triggering event</i>
<i>Economically significant fruit fly infestations eradicated</i>	<i>Within five (5) lifecycles</i>



Goal 3

Targeted and effective sterile insect technique for preventive release and eradication programs (assuring rearing facilities are maintained for efficiency and safety)

SIT is a species-specific population management tool that requires mass-production of target fruit fly species in large facilities. APHIS operates two large production facilities in Guatemala and one in Texas. Additionally, APHIS operates several eclosion and release facilities (ERFs) for Medfly and Mexfly in Guatemala, northern Mexico, Florida, and Texas, and collaborates with the California Department of Food and Agriculture on the funding and operation of a Medfly rearing facility in Waimanalo, Hawaii, that supplies flies to an ERF in California.

Rearing and release operations are extensive and costly. Incorporating advanced technologies could lead to optimizing production efficiency. The FFED Program is seeking to renovate and/or replace aging domestic fruit fly production and dispersal facilities. Continued investments in maintenance and enhancement of facilities in Guatemala and Mexico will ensure a continued supply of high-quality sterile insects for eradication and control efforts.

Objective 3.1: Produce high-quality and cost-effective sterile fruit flies for program use.

Tactics to achieve the objective:

- Provide recommendations on infrastructure improvements to increase operational efficiency at SIT facilities. Develop an implementation plan when appropriate.

- Develop and implement methods to reduce costs and improve efficiencies to ensure optimal production of sterile fruit flies.
- Advance the development of new and/or improved sterile fruit fly strains.



Objective 3.2: Enhance and refine SIT releases to increase effectiveness and efficiency.

Tactics to achieve the objective:

- Develop/revise and implement methods to reduce costs and improve efficiencies of sterile fruit fly release to ensure SIT programs continue to be cost-effective and meet Agency needs.



**Key Performance Measures for Goal 3:
Targeted and effective sterile insect technique for preventive release
and eradication programs (assuring rearing facilities are
maintained for efficiency and safety)**

<i>Measure</i>	<i>Target</i>
<i>One (1) billion Medfly pupae produced at El Pino weekly</i>	<i>95% of weeks</i>
<i>Total of 175 million male Mexfly pupae produced per week¹</i>	<i>95% of weeks</i>
<i>Meet or surpass IAEA specifications for minimum flight ability of 65% for Medfly and Mexfly</i>	<i>90% of weeks</i>

¹From all rearing facilities.



Goal 4

International and import efforts to mitigate against the introduction and spread of invasive fruit flies in the United States

APHIS responds to the risk of fruit flies of economic significance with an integrated system that incorporates both domestic and offshore activities. In addition to offshore sterile fruit fly production for use in preventive release and eradication efforts in the United States, working with international and regional partners to prevent, detect, and control fruit flies at origin is a more cost-effective strategy than outbreak response.

Through international cooperative agreements, APHIS supports the establishment of Medfly-free and reduced-prevalence areas offshore, contributing to safer trade while protecting American agriculture. Capacity building initiatives help ensure fruit fly free areas are managed according to International Standards and are protected from reinfestation. Extension and outreach initiatives support greater understanding of the economic impacts of fruit flies on agricultural production and trade, thereby creating motivations for international regional cooperation, surveillance activities, information sharing, and emergency response planning. Outreach includes educating travelers on regulations aimed at preventing the transport of regulated host material from overseas locations, while border protection activities serve to enforce regulations and detect, reduce, and/or deter smuggling.

APHIS will develop and encourage the use of tools that improve the way we capture data, share the information, and report invasive fruit flies and other pests of quarantine concern. These tools can inform APHIS risk assessment, identify when fruit fly levels are high in certain areas or seasonally, make more effective use of resources to mitigate pathways, and develop improved quarantine policy.

Together, these strategies reduce the likelihood of these entering the United States through commercial trade in agricultural commodities and non-commercial pathways.

Objective 4.1: Support efforts to prevent the re-establishment of Medfly in internationally recognized free areas of Mexico, Guatemala, and Belize.

Tactics to achieve the objective:

- Continue to foster collaborative relationships with Mexico, Guatemala, and Belize through continued participation in the leadership of Moscamed program activities.
- Provide technical support, guidance, and training for detection, eradication, and barrier management programs overseas.
- Integrate new and sustainable technologies into program operations that can improve program efficiency.

Objective 4.2: Enhance international capacity for detection, emergency planning, and response.

Tactics to achieve the objective:

- Provide subject matter expertise to support fruit fly detection and response planning led by the Greater Caribbean Safeguarding Initiative Program through the Caribbean Plant Health Directors and partner organizations.
- Improve accessibility to our data to inform risk management decision making.

- Identify needs and support capacity building on fruit fly detection and control strategies in high-risk offshore areas.

Objective 4.3: Enhance quarantine inspection (including predeparture and preclearance), data sharing, and risk analysis for improved identification and mitigation of fruit fly pathways (means by which they spread).

Tactics to achieve the objective:

- Develop and implement a risk assessment tool to direct operational resources towards improved detection and mitigation efforts.
- Improve coordination with port risk committees, which target inspections at ports of entry, inform special operations, and support educational and outreach activities.
- Use all available data to strengthen mitigation measures for commercial and non-commercial fruit fly pathways.



**Key Performance Measures for Goal 4:
International and import efforts to mitigate against the introduction and
spread of invasive fruit flies in the United States**

<i>Measure</i>	<i>Target</i>
<i>Number of international Medfly detections north of the State of Chiapas</i>	<i>0</i>
<i>Number of training/capacity building opportunities for international partners and stakeholders</i>	<i>5 events per year</i>
<i>Percent increase in Caribbean country participation in fruit fly survey and reporting</i>	<i>10% per year</i>
<i>Percent of traps in MOSCAMED work areas serviced on time</i>	<i>90% or above</i>

Appendix 1

USDA Goals & Objectives that align with FFED Strategy	
USDA Goals	USDA Objectives
USDA Goal 1: Combat Climate Change to Support America’s Working Lands, Natural Resources, and Communities	1.2: Lead Efforts to Adapt to the Consequences of Climate Change in Agriculture and Forestry
USDA Goal 2: Ensure America’s Agricultural System is Equitable, Resilient, and Prosperous	2.1: Protect Plant and Animal Health by Minimizing Major Diseases, Pests, and Wildlife Conflicts 2.3: Foster Agricultural Innovation
USDA Goal 3: Foster an Equitable and Competitive Marketplace for All Agricultural Producers	3.3: Expand All Producers’ Access to Global Markets Through Negotiation and Enforcement of Trade Agreements 3.4: Expand International Marketing Opportunities and Build Demand in Developing Countries Through Delivery of Technical Assistance and Capacity Building
USDA Goal 5: Expand Opportunities for Economic Development and Improve Quality of Life in Rural and Tribal Communities	5.3: Increase Capacity, Sustainability, and Economic Vitality in Rural and Tribal Communities
USDA Goal 6: Attract, Inspire, and Retain an Engaged and Motivated Workforce that’s Proud to Represent USDA	6.1: Foster a Culture of Civil Rights, Diversity, Equity, Inclusion, Accessibility, Transparency, and Accountability 6.2: Establish a Customer-Centric, Inclusive, High-Performing Workforce that is Representative of America and the Communities We Serve 6.3: Promote USDA Operational Excellence Through Better Use of Technology and Shared Solutions

APHIS Goals & Objectives that align with FFED Strategy

APHIS Goals	APHIS Objectives
<p>APHIS Goal 1: Protect agriculture from plant and animal diseases and pests</p>	<p>Objective 1: Prevent plant and animal diseases and pests from entering the country</p> <p>Objective 2: Manage plant and animal diseases and pests established in the country</p> <p>Objective 3: Ensure effective emergency preparedness and response</p> <p>Objective 5: Ensure the development of safe agricultural biotechnology products using a science-based regulatory framework</p> <p>Objective 6: Ensure timely and accurate diagnostic and other laboratory support and services</p>
<p>APHIS Goal 2: Cultivate a talented, diverse, and public service focused workforce where employees are supported, valued, and engaged</p>	<p>Objective 1: Recruit new talent</p> <p>Objective 2: Empower and engage employees</p> <p>Objective 3: Improve equity and inclusion</p> <p>Objective 4: Deliver outstanding services to the public</p> <p>Objective 5: Promote safety and wellness</p> <p>Objective 6: Create sustainable and cost-effective IT solution</p>
<p>APHIS Goal 3: Reduce the impacts of zoonotic and emerging diseases and climate change</p>	<p>Objective 3: Mitigate and adapt to the effects of climate change</p>
<p>APHIS Goal 4: Maintain and expand the safe trade of agricultural products nationally and internationally</p>	<p>Objective 1: Facilitate safe agricultural trade through the effective management of sanitary and phytosanitary issues</p> <p>Objective 2: Maintain and expand the Agency’s leadership role through international standard setting and collaboration</p> <p>Objective 3: Create safe export opportunities</p>