

**REPORT BY THE  
AUDITOR GENERAL  
OF CALIFORNIA**

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**PROCUREMENT OF STERILE MEDFLIES  
FROM PERU: RESPONSE TO QUESTIONS  
POSED BY THE LEGISLATURE**

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REPORT OF THE  
OFFICE OF THE AUDITOR GENERAL  
TO THE  
JOINT LEGISLATIVE AUDIT COMMITTEE

092

PROCUREMENT OF STERILE MEDFLIES FROM PERU:  
RESPONSE TO QUESTIONS POSED BY THE LEGISLATURE

OCTOBER 1981



# California Legislature

## Joint Legislative Audit Committee

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October 14, 1981

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The Honorable President pro Tempore of the Senate  
The Honorable Speaker of the Assembly  
The Honorable Members of the Senate and the  
Assembly of the Legislature of California

Members of the Legislature:

Your Joint Legislative Audit Committee respectfully submits the Auditor General's report which answers specific questions posed by the Legislature concerning procurement of sterile Mediterranean fruit flies from Peru.

Respectfully submitted,


  
WALTER M. INGALLS  
Chairman, Joint Legislative  
Audit Committee

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## SUMMARY

The California Department of Food and Agriculture and the United States Department of Agriculture (USDA), under a cooperative agreement, are sharing responsibilities and some costs of a program to eradicate the Mediterranean fruit fly (medfly) detected in the Santa Clara Valley in June 1980.

To answer specific questions posed by the Legislature, we reviewed the procurement and use of sterile Mediterranean fruit flies from Peru. We found that the USDA procured sterile medflies from Peru under a cooperative agreement because California needed flies immediately and because other suitable sources were either unacceptable or unavailable.

The USDA alone negotiated the contract procuring the medflies from Peru. According to an opinion rendered by the Legislative Counsel, the contract contains no provisions allowing California to recover damages.

And finally, our review of quality control procedures disclosed that the laboratory in Peru is responsible for ensuring its medflies are, in fact, sterile. Specifically, the

contract with the USDA requires the laboratory to perform certain sterilization procedures and quality control tests. According to federal officials who visited the Peruvian laboratory, these procedures were adequate to ensure the sterility of the medflies. Yet since we did not visit the laboratory in Peru, we cannot verify that those procedures were followed.

## INTRODUCTION

In response to a request by the Joint Legislative Audit Committee, the Office of the Auditor General has reviewed the procurement of sterile Mediterranean fruit flies (medflies) from Peru. This review was conducted under the authority vested in the Auditor General by Sections 10527 and 10528 of the Government Code.

We were asked to answer specific questions about the procurement of medflies from Peru. These questions are grouped into three general areas, the first of which concerns the rationale for obtaining sterile flies from the laboratory in Peru and the qualifications of that laboratory. The second group of questions relates to the contract and its provisions, while the final group includes questions about the quality control procedures used by the Peruvian laboratory to ensure sterility.

In addition, we were asked to obtain the results of the current research being conducted in Florida which links the medflies found in California to their country of origin. This report does not address this issue because we could not obtain the research information.

## Background

The Mediterranean fruit fly was first detected in the Santa Clara Valley in June 1980. To respond to this infestation, the United States Department of Agriculture (USDA) and the California Department of Food and Agriculture (CDFA) entered into a cooperative agreement to eradicate the medfly. The eradication program consists of various components, such as stripping fruit, spraying insecticide from the ground, and releasing sterile fruit flies. Other aspects of this program include trapping wild flies to determine the precise location and magnitude of the infestation and imposing quarantines on the transport of produce from the infested areas.

The costs of the eradication program and the responsibilities for its administration are shared by the State and the Federal Government under a cooperative agreement. Specifically, when the federal appropriations have been spent, the California Department of Food and Agriculture finances the remaining costs.

Although both the USDA and the CDFA administer this medfly project as a joint effort, the USDA has assumed responsibility for procuring sterile medflies by entering into cooperative agreements with laboratories in other countries--



Mexico, Peru, and Costa Rica.\* Under the agreements with Mexico and Peru, the USDA has agreed to provide funds and assistance to the laboratories. In return, these laboratories have agreed to ship sterile insects to California for use in its eradication program. The program has also obtained sterile flies from a research laboratory in Hawaii operated by the USDA as well as another laboratory in Hawaii operated by the CDFA. To identify the sterile flies, each laboratory dyed its insects a different color. For instance, flies from the CDFA laboratory in Hawaii were dyed blue, while the flies from the USDA laboratory in Hawaii were dyed green. Peruvian flies were dyed yellow, and Mexican flies, pink.

In June 1981, one year after the eradication program began, medfly project personnel found numerous larvae deposits of the flies in Santa Clara County.\*\* Then in June and July 1981, two female flies, among others, were found in traps set

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\* The USDA is authorized under the United States Code to cooperate with governments of western hemisphere countries to eradicate, suppress, control, or retard the spread of plant pests, including the Mediterranean fruit fly.

\*\* The Mediterranean fruit fly has four life phases--egg, larvae, pupae, and adult. Eggs, which are deposited into fruits and vegetables, hatch into larvae that feed on the pulp surrounding them. After the fruit spoils and falls to the ground, the larvae enter the soil where they become pupae, later emerging as adult flies.

as part of the eradication program. These two flies, which carried eggs, contained yellow dye indicating they were from a shipment of sterile flies received from Peru. Based on this discovery, one program official reported that because this shipment may have contained fertile flies, its release probably caused the 1981 infestation.

This led to the development of the Peruvian fly theory explaining the 1981 infestation. Yet there are other theories that may account for the new larvae finds. Some entomologists believe the size of the infestation in June 1980 was underestimated because last year some of the fruit trees were not stripped or sprayed in many of the same areas where larvae were found in June 1981. Also, project personnel have had problems identifying wild flies because their natural color closely resembles the color of dye one laboratory used to identify sterile flies. Therefore, some project personnel speculate that wild flies were being found in the traps but were being treated as sterile flies because of the similarity of color. Other scientists believe the presence of eggs in female flies does not necessarily prove that the flies have not been sterilized. Project personnel have identified female flies from another laboratory that were sterilized even though they carried eggs. As further support for this point, the

cooperative agreement between the USDA and Peru recognizes that sterilized female insects may have eggs; however, such eggs would not develop into fruit flies.

#### Scope of Review

This report answers questions related to the procurement of sterile flies from Peru, the provisions of the agreement by which the flies were procured, and the procedures and quality control used by the Peruvian laboratory to ensure sterility.

To provide the information requested, we obtained copies of the agreements between the USDA and laboratories providing sterile fruit flies. We reviewed the agreement with Peru and compared its provisions to the provisions of other agreements. We also interviewed state and federal entomologists and project personnel and examined project records.

We reviewed the procedures and quality control tests which are required by the agreement between the USDA and Peru, yet we did not visit the laboratory in Peru. Thus, we cannot verify that this facility adhered to the prescribed procedures.

## STUDY RESULTS

In this section, we discuss three areas that encompass the specific questions we were asked to address. The first group of questions concerns the selection of the Peruvian laboratory and its reputation; the second focuses on the contract and its provisions; and the third group includes questions about the quality control procedures used by the Peruvian laboratory to ensure the sterility of its medflies.

### Selection of the Peruvian Laboratory and Its Reputation

These questions were asked concerning the selection of the Peruvian laboratory:

- What was the rationale for purchasing sterile Mediterranean fruit flies from Peru?
- What kind of reputation or qualifications did the Peruvian laboratory have to rate the contract?

According to project officials of the California Department of Food and Agriculture and the United States Department of Agriculture, sterile Mediterranean fruit flies were obtained from Peru because California needed to procure as

many sterile flies as possible. The other laboratories raising sterile flies could not provide the several hundred million insects needed for the eradication program.

At the start of the eradication program, the USDA obtained sterile flies from two main sources: a USDA-operated facility in Hawaii and a laboratory in Mexico. Yet these did not supply enough sterile flies for California's program. Flies from Costa Rica were also used for a short time, but these shipments were discontinued because of their poor quality. Switzerland was also a possible supplier of flies; however, that alternative was never used because of the difficulties involved in shipping flies such a distance. California was also building a laboratory in Hawaii to produce sterile flies. However, this facility did not begin shipments until April of 1981.

Faced with limited resources from which to obtain flies, the USDA acted to develop fly production at an existing research facility in Peru. This laboratory had previously been known for both its research efforts and its production of flies. In recent years, however, it had stopped producing flies because of funding cuts. The USDA supplied start-up funds to revive production, employing many of the existing

laboratory staff who were familiar with medfly eradication efforts. In November 1980, the laboratory began shipping sterile flies to California.

In summary, sterile Mediterranean fruit flies were acquired from Peru primarily because California needed a vast supply of them immediately. Other sources producing flies were either unavailable or unacceptable.

#### Contract Evaluation

The Legislature asked these questions relating to the contract and its provisions:

- Was the contract initiated by state or federal agencies?
- Was the contract negotiated through normal channels?
- Does the contract contain provisions which allow California to seek damages for negligence?

The contract with Peru was initiated by the USDA, the federal agency in charge of procuring sterile flies to be used in the California medfly eradication program. Specifically, the agreement was negotiated by the Animal and Plant Health

Inspection Service, Plant Protection and Quarantine Programs of the USDA, and Peru's Ministry of Agriculture and Nutrition. The State of California was not a party to the contract; neither was the California Department of Food and Agriculture involved in establishing the terms of the agreement.

The contract with Peru is in the form of a cooperative agreement, the same format used with the Mexican laboratory that produces sterile flies. Federal officials have stated that this type of agreement is often used in negotiations with other countries. Likewise, the contract with Peru contains provisions similar to those within the other agreements; that is, the USDA and the laboratory agree to work cooperatively to halt the spread of the Mediterranean fruit fly. The USDA further agrees to provide start-up funds as well as a consultant for the Peruvian laboratory. Under the agreement, the USDA is also obligated to train employees and to assist in developing, engineering, and designing the production facility.

Peru, in return, is required to obtain the necessary equipment and facilities to perfect and increase its capability to produce sterile flies for the USDA. The Peruvian laboratory also agrees to maintain a quality control system adequate to measure the effectiveness of production and production

capability. Another contract clause notes the USDA may refuse to accept sterile flies if the laboratory fails to meet specific requirements relating to fly quality and delivery of shipments.

Finally, according to a Legislative Counsel opinion that is included as Appendix A, the cooperative agreement between the USDA and Peru contains no provisions which allow California to seek damages for negligence.

Again, the contract procuring sterile flies from Peru was negotiated by the USDA. According to federal officials, this contract is similar to other contracts with foreign governments. California was not a party to the agreement and was not involved in establishing the terms of the agreement. According to a Legislative Counsel opinion, the contract does not contain provisions allowing California to recover damages.



## Quality Control Procedures

Finally, these three questions were asked about the quality control procedures used to monitor the production of the Peruvian flies:

- Which agency was responsible for performing quality control to ensure that the flies were sterile?
- What quality control or sampling techniques were used to ensure that the flies were, in fact, sterile?
- Were the procedures used by the Peruvian laboratory adequate to ensure that medflies shipped to California were sterile?

As stipulated in the cooperative agreement between the USDA and Peru, the Peruvian laboratory was required to maintain a quality control system adequate to measure the effectiveness of production and production capabilities. Specifically, this laboratory was responsible for performing several quality control tests, including one that checked sterility in the medflies. The cooperative agreement outlined the procedures for performing each test.

The agreement with Peru also detailed certain procedures used to sterilize the flies. In fact, the agreement required the procedures to be sufficient to ensure 99 percent sterility in male flies and total sterility in all female flies.

According to federal officials who visited the Peruvian laboratory, the procedures used by the laboratory were adequate to ensure sterility. But because we did not visit the laboratory in Peru, we were unable to verify that these procedures were followed.

Upon receiving shipments of sterile flies from Peru, medfly project personnel in California also conducted certain quality control tests as part of their standard procedures.\* Some of these tests were performed to ensure that the flies were sterile. Sample sizes used in sterility tests varied depending on the size of the fly shipments and the workload of the quality control staff. The shipment of Peruvian flies that is suspected to have contained fertile flies included approximately 10 million pupae.\*\* Of this shipment, 72 flies

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\* The quality control laboratory in California was staffed by both USDA and CDFA personnel.

\*\* As noted in the Introduction, from the pupae stage medflies emerge in their adult form. Typically, sterile flies were shipped as pupae.

were dissected in California to test for sterility. No fertile flies were found. Based on this sample size, one could be 95 percent confident that no more than 4.2 flies per hundred were fertile. Furthermore, sterility tests on other Peruvian shipments revealed that all sampled flies were sterile.

To restate, the Peruvian laboratory was responsible for performing quality control procedures to ensure the flies were sterile. These procedures were detailed in the agreement between the USDA and Peru. According to federal officials who visited the Peruvian laboratory, the procedures used by the laboratory were adequate to ensure sterility. Furthermore, tests conducted by project personnel in California indicated that flies sampled from Peruvian shipments were sterile.

Respectfully submitted,

  
THOMAS W. HAYES  
Auditor General

Date: September 30, 1981

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## DEPARTMENT OF FOOD AND AGRICULTURE



1220 N Street  
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September 29, 1981

Thomas W. Hayes  
Auditor General  
660 J Street, Suite 300  
Sacramento, CA 95814

Dear Mr. Hayes

Thank you for providing this department an opportunity to respond to your report entitled "Procurement of Sterile Medflies from Peru: Response to Questions Posed by the Legislature."

We would like to suggest that the report contain a paragraph concerning the general poor quality of the sterile Peruvian flies. Accordingly, we suggest the following language which could be added to page four of the report:

"Project records indicate that the Peruvian flies were of poor quality in general, i.e. low emergence and flight capability.\* In addition, sterile fly shipments from Peru received in April and May 1981 contained other insect material or live Mediterranean fruit fly larvae."

Sincerely

A handwritten signature in black ink, appearing to read "RER Rominger", is written over the word "Sincerely".

Richard E. Rominger  
Director

\* Auditor General Comment: This information was not included in our report because we were specifically asked to address quality control procedures relating to ensuring sterility, not issues regarding general quality of flies received from Peru.

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APPENDIX A

# Legislative Counsel of California

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Sacramento, California  
September 22, 1981

Mr. Thomas W. Hayes  
Auditor General  
660 J Street, Suite 300  
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## Mediterranean Fruit Flies - #19500

Dear Mr. Hayes:

### QUESTION

You have asked whether there is a provision in the Mediterranean fruit fly Cooperative Agreement No. 12-16-5-2334 between the United States Department of Agriculture and the Instituto Nacional Del Investigacion Agraria of the Republic of Peru which authorizes California to bring legal action against an agency of the Republic of Peru for damages caused by fertile flies of Peruvian origin having been supplied to California as part of this state's program to eradicate the Mediterranean fruit fly.

### OPINION AND ANALYSIS

We have reviewed the English version of Cooperative Agreement No. 12-16-5-2334 between the United States Department of Agriculture and the Instituto Nacional Del Investigacion Agraria of the Republic of Peru by which, among other things, sterile Mediterranean fruit fly pupae are supplied to the department.

Mr. Thomas W. Hayes - p. 2 - #19500

In our opinion the agreement does not contain a provision which authorizes California to bring a legal action for damages caused by fertile flies of Peruvian origin having been supplied to California as part of this state's program to eradicate the Mediterranean fruit fly.

Very truly yours,

Bion M. Gregory  
Legislative Counsel

*Richard B. Weisberg*  
By  
Richard B. Weisberg  
Deputy Legislative Counsel

RBW:kca

cc: Walter M. Ingalls, Chairman  
Joint Legislative Audit Committee

cc: Members of the Legislature  
Office of the Governor  
Office of the Lieutenant Governor  
Secretary of State  
State Controller  
State Treasurer  
Legislative Analyst  
Director of Finance  
Assembly Office of Research  
Senate Office of Research  
Assembly Majority/Minority Consultants  
Senate Majority/Minority Consultants  
California State Department Heads  
Capitol Press Corps