United States Department of Agriculture

Animal and Plant Health Inspection Service

Plant Protection and Quarantine

Japanese Beetle Program Manual For Airports

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APHIS Mission

The Animal and Plant Health Inspection Service (APHIS) is an Agency within the United States Department of Agriculture (USDA). The mission of APHIS is to protect the health and value of American agriculture and natural resources.

PPQ Mission

APHIS Plant Protection and Quarantine (PPQ), an operational program, safeguards agriculture and natural resources from the risks associated with the entry, establishment, or spread of animal and plant pests and noxious weeds. Because of the extensive damage it causes, the Japanese beetle (JB) *Popillia japonica* Newman, is a significant pest.

Japanese Beetle Policy

The primary objective of the JB program is to protect the agriculture of the western United States by preventing the artificial spread of the JB from the eastern United States. Artificial spread is the movement of an organism to a new area by other than natural means; in this case, artificial spread refers specifically to the **movement of JBs on aircraft**. This *Japanese Beetle Program Manual for Airports* will help APHIS–PPQ personnel and cooperators prevent artificial spread of the JB.

Protected States

Nine western States requested protection from JB infestation, they are Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Washington; therefore, these States are known as the protected States.

Japanese Beetle Program Manual Tasks

Specifically, this manual will address the following tasks:

- Determining the risk at JB-infested airports
- Issuing and cancelling Emergency Action Notifications (EANs)
- Monitoring airports in JB-free areas
- Monitoring airports in protected States
- Treating aircraft
- Treating grounds
- Using Compliance Agreements (CAs)

The *Japanese Beetle Program Manual for Airports* is to be used with other manuals, directives, and the Code of Federal Regulations (CFR). See the Japanese beetle CFR.

Background

First Detection

The Japanese beetle (JB) was first found in the United States in 1916 near Riverton, New Jersey. In 1918, the USDA and New Jersey authorities attempted to exterminate this pest; however, the infestation was so well established that eradication by the control measures then in use and with the funds available was impossible.

Dispersal Information

By 1932, infestations were found as far west as St. Louis, Missouri and East St. Louis, Illinois.

By 1967, 19 States in the eastern United States contained major or widespread infestations and four additional States had less extensive or more isolated infestations.

Transportation by aircraft threatens to introduce the JB to the western United States.

U. S. Domestic Japanese Beetle Harmonization Plan

On August 19, 1998, the National Plant Board initiated use of the first version of the *U.S. Domestic Japanese Beetle Harmonization Plan.* This plan established procedures for the free movement of JB host commodities, such as nursery stock. A revision of this plan was put into use on June 17, 2004.

The *U.S. Domestic Japanese Beetle Harmonization Plan* contains additional information on the movement of nursery stock. For more information on the *Harmonization Plan*, see the National Plant Board Web site.

Scope

The chapters in this manual are as follows:

Introduction

The introduction discusses the following topics:

1. Purpose of the manual
2. Historical background of the JB containment program
3. Scope of the manual
4. Intended manual users
5. Related documents that could be used with the manual
6. Information on updating the manual

General Information

General information discusses the following topics:

1. Economic importance
2. Distribution
3. Hosts and nonhosts
4. Life cycle
5. Descriptions of stages

Compliance Agreements (CAs) and Management

Compliance agreements and management discusses the following topics:

1. Using the CA for monitoring airports
2. Using the CA at regulated airports
3. Operating under the CA
4. Cancelling the CA

Airport Monitoring and Classification

Airport monitoring and classification discusses the following topics:

1. Introduction—the reason for airport monitoring
2. Monitoring airports in JB-infested areas
3. Determining the risk at JB-infested airports
4. Using Emergency Action Notifications (EANs)
5. Monitoring and managing airports in JB-free areas

Control Measures for Airports

Control measures for airports discusses the following topics:

1. Introduction
2. Initiating control and safety procedures
3. Treating aircraft
4. Treating grounds

Appendixes

The appendixes contain the following material:

Users

The primary users of this manual may include the following:

1. APHIS–PPQ field personnel
   - **A.** Monitoring airports
   - **B.** Cooperating under Compliance Agreements (CA)
   - **C.** Supervising PPQ Officers
2. State/county personnel
   - **A.** Monitoring airports
   - **B.** Cooperating under CAs
3. Airport personnel
   - **A.** Monitoring airports
   - **B.** Cooperating under CAs
   - **C.** Applying pesticides

Related Documents

The following documents may supplement this manual:

1. *Code of Federal Regulations: 7—Parts 300 to 309*—published by the Office of the Federal Register (National Archives and Records Administration) at the United States Government Printing Office, this CFR (*Code of Federal Regulations*) guide contains information on the JB in Subpart 301.48.
2. Plant Protection Act—the Plant Protection Act of June 20, 2000, which modernized and streamlined the plant quarantine laws, replaced the previous laws. Information is in 7 USC 7701-36, with sections 14, 15, 23, 24, and 31 addressing specific issues.
3. *U. S. Domestic Japanese Beetle Harmonization Plan*—the National Plant Board working with USDA–APHIS–PPQ and the American Nursery and Landscape Association developed the *U. S. Domestic Japanese Beetle Harmonization Plan*. This plan establishes procedures for the free movement of JB host commodities. This plan is available at the National Plant Board Web site.
4. *Treatment Manual*—published by USDA–APHIS–PPQ, this manual contains accepted treatments for various commodities including aircraft (T409).

5. *Managing the Japanese Beetle: A Homeowner's Handbook*—program Aid No. 1599—published by USDA–APHIS.

Revisions

The Manuals Unit of PPQ issues revisions via email. Each email provides the following information:

1. Transmittal number used to track revisions
2. Purpose of the revision
3. Attached Adobe Acrobat Portable Document Format (PDF) file of the pages to be added or replaced **or** directions to the Web site of the Manuals Unit where an updated manual can be obtained.

Revisions are **not** issued to correct a minor typographical error. However, errors leading to an incorrect action are immediately corrected and updated.

Questions on *Japanese Beetle Program Manual for Airports*

Refer any questions concerning the use or content of the *Japanese Beetle Program Manual for Airports* to the following office:

Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Emergency and Domestic Programs
4700 River Road, Unit 26
Riverdale, Maryland 20737-1236
(301) 734-8247
FAX: (301) 734-8584

2

Japanese Beetle Program Manual

General Information

Contents

Economic Importance

The Japanese beetle (JB) is a highly destructive plant pest causing both plant damage and increased control costs. For many years, extremely high populations have sporadically occurred. Feeding on grass roots, the grubs damage lawns, golf courses, and pastures. Attacking foliage, flowers, or fruits, the adults feed on more than 300 different ornamental and agricultural plants.

JB control by insecticides or biological methods is often expensive due to the labor, equipment, and/or insecticides involved.

State plant pest and regulatory officials in uninfested areas are concerned about the introduction of JB. To protect uninfested areas, cooperative Federal/State regulatory programs have been operating for many years.

First Detection

The JB (*Popillia japonica* Newman) was first found in the United States in 1916 near Riverton, New Jersey. In 1918, the USDA and New Jersey authorities attempted to exterminate this pest. However, because: 1) the infestation was well established; 2) control measures then in use were marginally effective; and 3) funds were limited, eradication was impossible.

Since its introduction in 1916, the JB has spread throughout most of the United States east of the Mississippi. Because of the possibility of artificial spread by aircraft, the JB is a major threat to the agriculture and flora of the Western United States.

Distribution in the United States

East of the Mississippi

At present, JB occurs throughout most of the United States east of the Mississippi River. For the current distribution, refer to the Web site below.

West of the Mississippi

Many States west of the Mississippi River are noninfested; however, several States west of the Mississippi River are partially infested (Arkansas, Iowa, Kansas, Missouri, Nebraska, and Oklahoma).

Infestations in protected States and noninfested States are eradicated.

Distribution at the County Level

Appendix B on **page B-1-1** contains a current list by county of geographical localities infested by JB. The National Agricultural Pest Information System (NAPIS) also contains distribution information.

Distribution in Canada

Areas regulated for JB in Canada include: 1) the southwestern portion of Quebec Province south of Montreal; 2) southeastern Ontario Province along the shores of the St. Lawrence; and 3) southwestern Ontario Province in the area bounded by Lake Huron, Lake St. Clair, and Lake Erie. This last area includes the western shore of Lake Ontario. A complete listing of infested regional municipalities and a map are located at the Canadian Food Inspection Agency Web site.

Distribution in Asia

A native of Asia, JB occurs in Japan (Hokkaido, Honshu, Shikoku, and Kyushu) and in at least one of the Kuril Islands (Kunashir), which are currently part of Russia.

Hosts and Nonhosts

Host Range

Larvae feed on the roots and underground stems of plants, particularly grasses.

Adult JBs are gregarious general feeders on leaves, flowers, and fruits. Hosts include small fruits, tree fruits, garden crops, ornamental shrubs, vines, and trees. Feeding studies show a host range in excess of 300 plants in 79 plant families.

Preferred Hosts

The following are preferred hosts.

Table 2-1-1 Preferred Japanese Beetle Hosts

Abutilon hybridum	Chinese-lantern
Acacia baileyana	Cootamundra wattle
Acer palmatum	Japanese maple
Acer plantoides	Norway maple
Aesculus hippocastanum	Horse chestnut
Alcea rosea	Hollyhock
Althaea sp.	Althaea
Arbutus unedo	Strawberry tree
Bauhinia variegata	Orchid tree
Betula populifolia	Gray birch
Castanea dentata	American chestnut
Ceanothus griseus	Carmel ceanothus
Citrus sinensis	Orange
Cydonia oblongas	Common quince

Eucalyptus sideroxylon	Red ironbark
Fremontodendron californicum	Common flannel bush
Glycine max	Soybean
Grewia caffra	Lavender starflower
Hibiscus syriacus	Rose-of-sharon
Juglans nigra	Black walnut
Lagerstroemia indica	Common crapemyrtle
Larix occidentalis	Western larch
Malus domestica	Apple
Nandina domestica	Heavenly bamboo
Parthenocissus quinquefolia	Virginia creeper
Platanus acerifolia	London planetree
Podocarpus macrophyllus	Yew pine
Polygonum spp.	Smartweed
Populus nigra	Italian poplar
Prunus spp.	Cherry
P. domestica	Plum
P. persica	Peach
Punica granatum	Flowering pomegranate
Quercus palustris	Pin oak
Rosa spp.	Rose
Rubus spp.	Raspberry
Sassafras albidum	Sassafras
Sorbus americana	American mountain-ash
Tilia spp.	Linden
Ulmus americana	American elm
U. procera	English elm
Vitis spp.	Grape
Zea mays[1]	Maize
Zinnia elegans	Zinnia

1 The adults seriously injure corn by eating the silk, which interferes with pollination and kernel formation.

Nonpreferred Hosts and Nonhosts

Although adult JB feeds on over 300 species of plants, it feeds sparingly or not at all on many cultivated plants. Some plants are rarely or never fed on; among these are the evergreens, common grains, most truck and field crops, and many of the common ornamental flowers. The pear is not a host of the JB.

When beetles are abundant, plant damage may be avoided by using species that are immune or seldom attacked by the insect (Fleming, ARS Technical Bulletin No. 1545).

Appendix A on **page A-1-1** lists plants that are either nonpreferred hosts or nonhosts.

Life Cycle

There is usually one generation each year, but a percentage of the grubs may take two years to mature, especially in wet, cold soils. A diagram of a typical life cycle is shown with Diagram of the Life Cycle of the Japanese Beetle on **page 2-1-6**. However, temperature and moisture affect the development of life stages. Therefore, in any locality, the life stages will appear at varying times from year to year; in addition, the life stages will appear at varying times from north to south.

Egg Stage

The female JB burrows into the soil to a depth of about three inches to lay eggs. The eggs are deposited singly and only a few are laid at one time. Egg laying is intermittent and females usually deposit forty to sixty eggs.

Larval Stage

The eggs hatch in about two weeks and the grubs begin to feed on grass and other roots. During the summer, the grubs feed within the upper four inches of soil in the turf; in late fall, they work downward in the soil as deep as eight to ten inches to spend the winter. In the spring, the grubs move upward and resume feeding on grass roots.

The full-grown larvae are about one inch long and usually lie in the soil in a curled position.

Pupal Stage

When full-grown, the grubs go slightly deeper in the soil and form an earthen cell in which to pupate. A prepupal stage is followed by a pupal stage that lasts seven to seventeen days. Therefore, the grubs enter the pupal stage about two weeks before adult emergence. Note that the pupal stage can last from seven days to twenty days.

Adult Stage

Newly emerged adults may remain in the pupal cell for two to fourteen days before emerging from the soil. The adult JB is present during the warm summer months and lives above the ground.

In eastern North Carolina, the beetles begin to emerge from the soil in mid-May. In the vicinity of Philadelphia, the beetles begin to emerge about mid-June. In Tennessee, adult emergence begins in mid-June and continues until mid-August. Emergence is later in more northern locations, occurring in late June in southern New England and in early July in northern New England.

Peak adult activity occurs four to six weeks after first emergence.

In eastern North Carolina, most beetles are gone by mid-August, but in New England some may live until frost.

Beetles fly only during the day, and are especially active on warm, sunny, calm days. Often gregarious, the beetles feed mostly on the upper surfaces of leaves exposed to the sun. When feeding on the leaves, the beetles chew out the parts between the veins leaving only the veins. After this type of feeding, the leaves are described as being either “lace-like” or “skeletonized.”

A diagram of the life cycle can be seen in **Figure 2-1-1**.

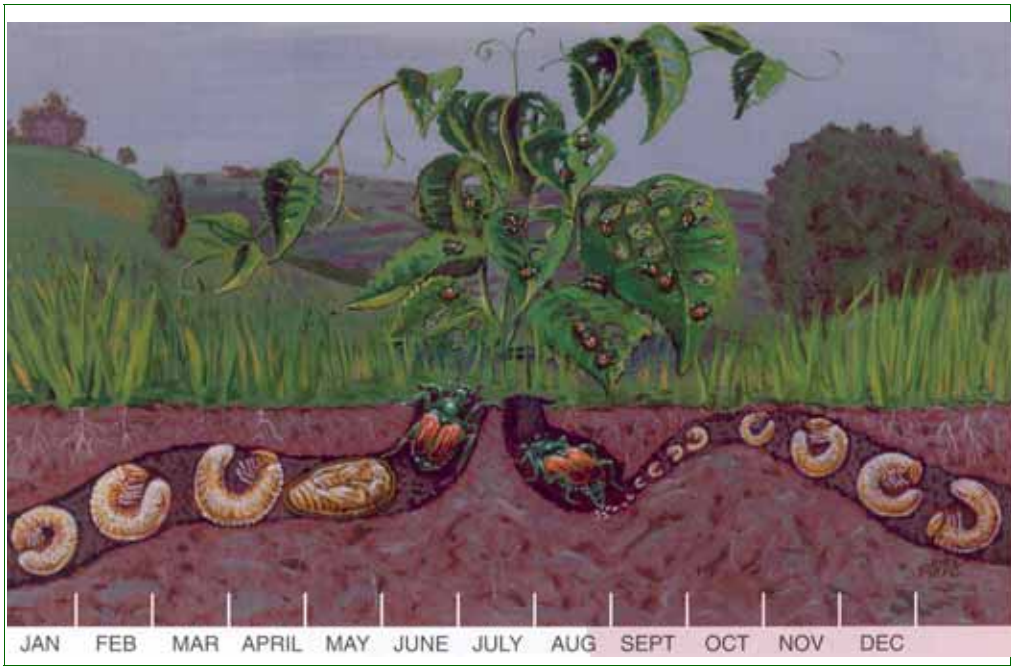

Figure 2-1-1 Diagram of the Life Cycle of the Japanese Beetle

The Japanese beetle (JB) Web site was developed in NAPPFAST for personnel involved in monitoring and reporting JP at airports located in infested areas of the eastern and western United States. The JB Web site provides weekly phenology maps displaying the initial emergence of adult JB using a degree day model. The phenology maps can serve as a guide for timing trap establishment and initiating monitoring ac it i vt i es. The JB Web site allows for easy data reporting and visualizing JB activity. If you would like access to the JB Web site, please contact your regional JB program manager.

Adult Life Stage

Description of Adults

Adult beetles are 10 to 12 millimeters (mm) long; their color is shiny metallic green with coppery-brown elytra. The beetles can readily be recognized by the presence of six small patches of white along each side and the back of the abdomen, just under the edges of the elytra.

Figure 2-1-2 Single Adult Japanese Beetle

Sexing the Adults

A hand lens is helpful when sexing beetles in the field; with practice, sexing can be done with the unaided eye.

Adults can easily be sexed by the shape of the foretibia and tarsi. For males, the apical tibial spur terminates in a sharp point; for females, the apical tibial spur is elongated and more rounded. For males, the tarsus is shorter and stouter, with the first segment about as long as wide; for females, the tarsus is somewhat longer and more slender, with the first segment elongated and about equal in length to the next two or three segments combined. For males, the insertion of the tarsus is close to the apex of the tibia; for females, the insertion of the tarsus is closer to the mid-point of the tibia.

Table 2-1-2 Sexing the Adult Japanese Beetles

Males	Females
1. Foretarsus Shorter and stouter	1. Foretarsus Longer and more slender
2. Insertion of foretarsus Close to apex of tibia	2. Insertion of foretarsus Closer to mid-point of tibia
3. First tarsal segment About as long as wide	3. First tarsal segment 2 to 3 times as long as wide
4. Apical spur of foretibia Short and pointed	4. Apical spur of foretibia Elongated and rounded

The photograph appearing as **Figure 2-1-4**, illustrates the differences between male and female adults.

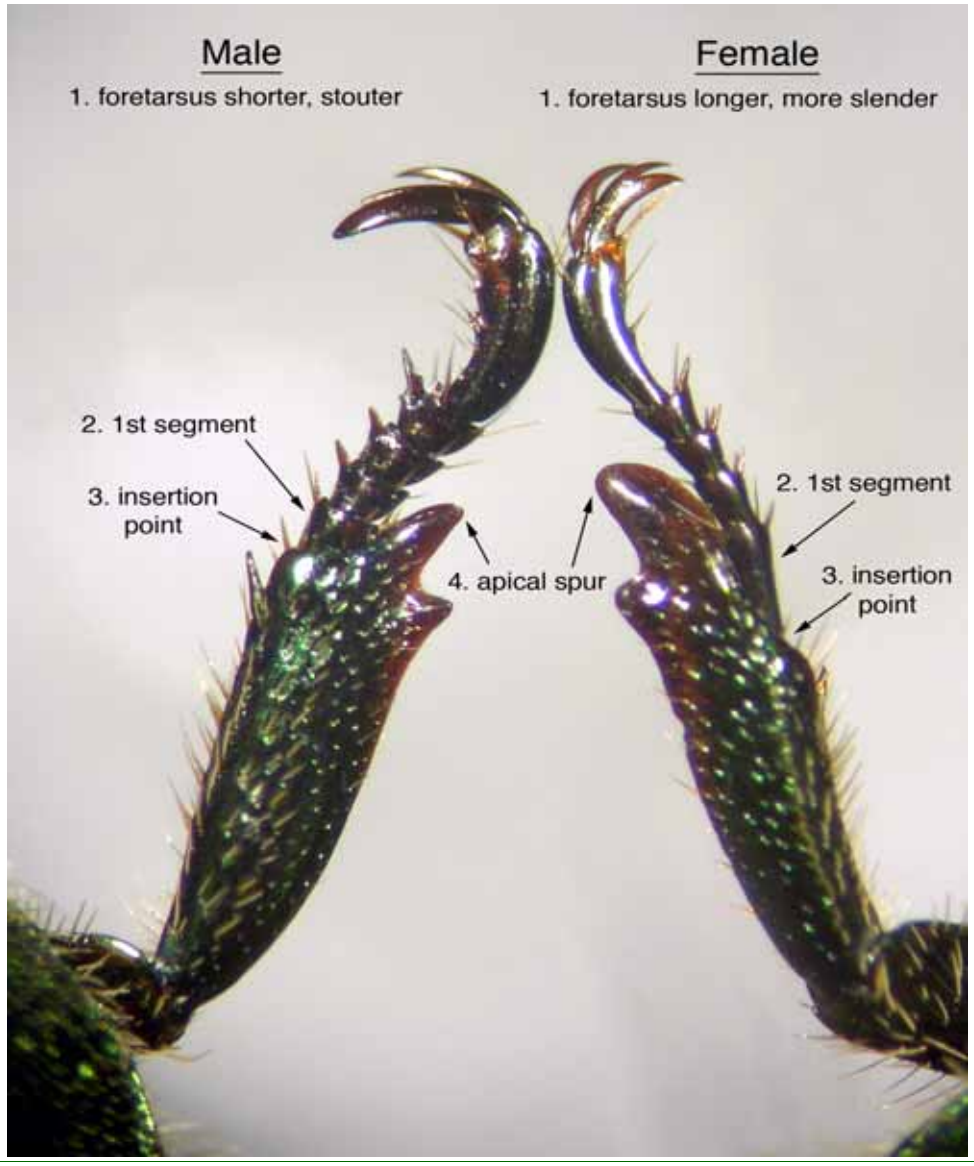

Figure 2-1-4 Photograph Showing the Foretibia of Males and Females with Distinctive Differences[1]

1 This photograph is shown courtesy of Bruce Gill, Centre for Plant Quarantine Pests, Canadian Food Inspection Agency, Ottawa, Canada.

Larval Life Stage

Description of Larvae (First, Second, and Third Instars)

A micrometer eyepiece can be used to measure the length of the instar and the width of the head capsule; these measurements serve as an index for identifying the different larval stages.

Figure 2-1-5 Japanese Beetle Larvae

Table 2-1-3 Size of Larval Instars

	First Instar	Second Instar	Third Instar
Length of instar	10.5 mm	18.5 mm	32 mm
Width of head	1.2 mm	1.9 mm	3.1 mm

Description of Larvae (Third Instars)

Length: 32 mm

Form: C-shaped

Width of Head: 3 mm

Surface of Head: Smooth, shining. Epicranial stem a fine, dark, impressed line. Epicranial arm not conspicuous. Front with a short, vague, longitudinal, median impression in apical third. At each side of this is a row of five punctures diverging toward the middle bend of epicranial arm.

Color of Head: Pale dull yellow

Raster: Numerous coarse, rather long, scattered, brown, hooked spines. Medially, two conspicuous, divergent rows of shorter, straight spines in V form; 6 or 7 spines in each row. At sides and end of tenth segment, numerous rather long, yellowish hairs.

Anal Slit: Transverse, arcuate

Vestiture: Entire grub with rather long scattered brown hairs. Dorsal convexities of first six abdominal segments clothed with fine, short, brown spines.

Habitat: In soil, primarily under turf

The distinct V-like arrangement of short dark spines of the raster is sufficient to identify this species. Two rows of six or seven conspicuous, short, straight spines are arranged in a V-shape on the underside of the last body segment. **Figure 2-1-6** shows the V-like arrangement of the spines on the raster.

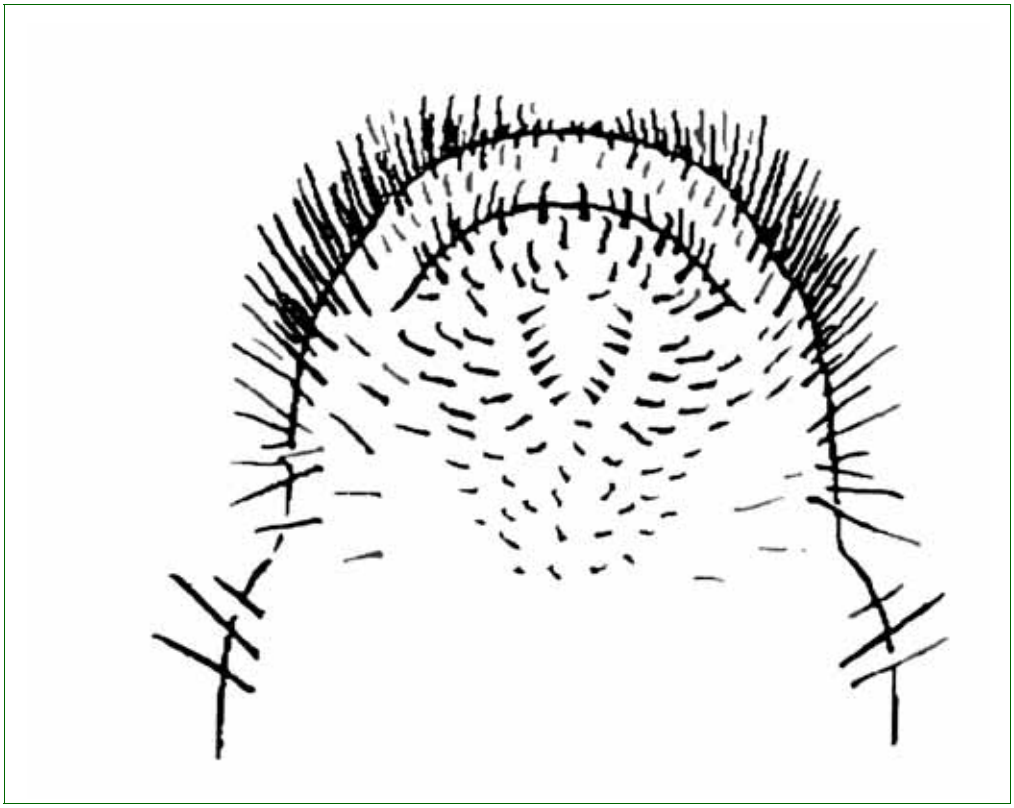

Figure 2-1-6 V-like Arrangement of Spines on the Raster

For further information on the identification of various white grubs found in turfgrass, use the extension factsheet found at the Bugwood Web site.

Responsibilities of Protected States

In this section of the manual, the responsibilities of protected States in the Japanese beetle program are described. As part of fostering cooperation within the JB program, a protected State is encouraged to:

- Maintain a parallel intrastate quarantine for the JB, if applicable
- Participate as frequently as possible in the weekly conference calls during the JB season in order to provide current update on program activities within the State
- Provide information on the current JB distribution within the State based on current survey data

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Japanese Beetle Program Manual

Compliance Agreements (CAs) and Management

Contents

Definition of a Compliance Agreement

A Compliance Agreement (CA) is a written agreement between APHIS and an individual in a business engaged in growing, handling, or moving regulated articles. In a CA for the Japanese beetle (JB), an individual will agree to comply with the provisions in the *Code of Federal Regulations* that deal with the JB (7 CFR 301.48). Compliance with these provisions will reduce the risk of JB introduction into the Protected States.

The CA can be used for many purposes. For example, if aircraft are likely to be JB-infested, they can be considered regulated articles. As "regulated articles," aircraft likely to be infested are subject to regulation and, if needed, treatment. As another example, CAs can be used to monitor the JB status of airports receiving infested flights. These and other examples are discussed on the following pages.

NOTICE

Instructions for completing the Compliance Agreement (PPQ Form 519) can be found in the *Manual for Agricultural Clearance (MAC)*.

Using the Compliance Agreement for Monitoring Receiving Airports

Airport monitoring at an airport **receiving** at-risk flights, possibly infested flights, will determine if a high-risk JB level exists at an airport or a portion of an airport. Under these circumstances, a CA is useful when establishing the goals and responsibilities of an airport monitoring program.

- How will the airport monitoring be done to determine if an infestation exists?
- Is the airport presently infested?
- When will the airport monitoring start?
- Who will do the work?

Using the Compliance Agreement for Monitoring Originating Airports

Airport monitoring at an airport **from which** at-risk flights originate will determine if a high-risk JB level exists at an airport or a portion of an airport. A CA is useful when establishing the goals and responsibilities of an airport-monitoring program.

- Are infested flights leaving the airport?
- How will the airport monitoring be done?
- When will airport monitoring start and stop?
- Who will do the work?

- The following statements are examples of stipulations that may be included on page 2 of the CA:
  - Aircraft may be retreated in the protected state if two or more live beetles are discovered
  - All aircraft must be treated no more than one hour prior to loading
  - All areas around doors, hatches, and other openings must be inspected prior to removing exclusion devices; all doors and hatches must be closed immediately after the exclusion devices are removed
  - All cargo containers that have not been safeguarded in a protected area must be covered with plastic such as Saran Wrap
  - All openings of the aircraft must be safeguarded by operative exclusion equipment or other devices during the daylight hours of 7:00 a.m. to 8:00 p.m.
  - All personnel must inspect their clothing for JB prior to entering the aircraft
  - Prior to and during the loading process, these covered containers must be inspected for JB

Using the Compliance Agreement at Regulated Airports

When a high-risk JB population exists at an airport or a portion of an airport, a CA is useful to establish the goals and responsibilities at the regulated airport.

- How will aircraft be handled and/or treated?
- Will the grounds need treatment?
- If the grounds need treatment, how will the grounds be treated? When will treatments start?
- Who will do the work?

Appendix D on **page D-1-1** contains an example of a completed CA and additional information to include on the CA. Also see Control Measures on **page 5-1-1**.

Operating Under a Compliance Agreement

Authorized Inspectors

Authorized inspectors can be: 1) any employee of APHIS; or 2) an individual authorized by APHIS to enforce the JB quarantine.

Access for Authorized Inspectors

An individual who enters into a CA (and employees or agents of that person) must allow authorized inspectors access to all areas where regulated material are handled. These areas include the following:

- Aircraft-operating areas at airports in JB-free areas where unloading and servicing (and possibly treatment) occur
- Aircraft-operating areas at regulated airports where loading, unloading, servicing, and/or treatment of aircraft occur
- Secured areas of airports

To allow authorized inspectors access to secured areas, procedures should be in place as soon as possible.

NOTICE

Because gaining access to secured areas may take some time, preparation to obtain needed clearance should start as soon as possible; in fact, the State Plant Health Director (SPHD) should ensure that employees obtain clearance for potential inspections before the need arises.

Recordkeeping and the Compliance Agreement

Any individual who enters into a CA (and employees or agents of that person) must allow authorized inspectors access to all records regarding treatment.

Applicators treating aircraft or supervising aircraft treatments must keep their records for two years. If authorized inspectors request records for review, the records must be presented.

NOTICE

If a CA is not in place (because of a refusal to sign or any other cause), an Emergency Action Notice (EAN) will be used, when needed, for regulatory purposes.

Legal Recourse for Noncompliance

Title IV of the Agriculture Risk Protection Act of 2000, known as the Plant Protection Act (PPA), provides the authority to prohibit the interstate movement of plant pests (Section 411, Section 412). Also, the PPA provides the authority to increase the civil penalty to a maximum of $250,000 per violation for businesses (Section 424); in a single adjudication, there is a $500,000 cap for civil penalties (Section 424).

Canceling a Compliance Agreement

If authorized inspectors determine that compliance was not satisfactory, they may cancel CAs. The cancellation may be written or oral. If the cancellation is oral, within 20 days of cancellation the Authorized Inspector will write a letter that: 1) confirms the oral cancellation; and 2) states the reasons for the cancellation.

Appealing a Compliance Agreement Cancellation

Within 10 days after receiving written notification of a cancellation, any person whose CA has been canceled may appeal the decision by writing to the APHIS Administrator. The appeal must state all facts and reasons showing the CA was wrongfully canceled. The APHIS Administrator will adopt rules of practice for a hearing to resolve the conflict.

As promptly as circumstances allow, an appeal will be granted or denied in writing. The reasons for the decision will be stated.

If cancelled, the CA will remain canceled pending decision of the appeal.

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Japanese Beetle Program Manual

Airport Monitoring and Classification

Introduction

Contents

Goal of Airport Monitoring

The goal of airport monitoring is to assess the three major factors that will indicate the level of risk and the likelihood that Japanese beetles (JB) will enter aircraft:

- Amount of JB activity near aircraft-operating areas
- Level of the JB population
- Risk of JB entry into aircraft and transport to JB-free areas

Remember that aircraft operating areas include passenger boarding, luggage handling, and/or cargo loading areas.

The information gathered when monitoring will allow the subsequent classification of the entire airport or a part of the airport. Part of an airport may represent only one or two flights or airlines leaving daily from a high-risk area and arriving into a protected State.

Goal of Airport Classification

The goal of airport classification is to classify airports in the JB-infested area into either a regulated or nonregulated status. This classification into regulated and nonregulated airports is based on the threat the individual airports pose to the JB-free areas. In the JB-free area, nine western States have protected status, they are Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Washington.

Regulated airports in the JB-infested areas under quarantine should be those airports where the JB is likely to enter aircraft and be transported to JB-free areas. APHIS will issue an Emergency Action Notification (EAN) to inform airport personnel when the airport is to be regulated. APHIS inspectors can cancel an EAN to return a regulated airport to nonregulated status.

Nonregulated airports in the JB-infested areas under quarantine should be those airports where the JB is **not** likely to enter aircraft and be transported to JB-free areas.

4

Japanese Beetle Program Manual

Airport Monitoring and Classification

Airport Monitoring in Japanese Beetle-Infested Areas

Contents

Introduction

The State Plant Health Director (SPHD), an APHIS employee, is responsible for arranging a monitoring survey to determine the risk status of an airport. A minimal level of monitoring requires visual surveys of aircraft-operating areas in airports that were regulated in any of the last three years.

In Japanese beetle (JB)-infested areas, authorized inspectors (either PPQ officers or inspectors authorized by APHIS–PPQ) will survey under the direction of the SPHD to determine the potential risk at each airport. Monitoring surveys will determine the JB population level and the threat of entry into aircraft.

Monitoring will use one or more of the following methods:

- Adult visual surveys at aircraft-operating areas
- Larval surveys for the grubs
- Trapping adult beetles

Trapping Adult Beetles

Trapping adults is a valuable monitoring method that gives a population estimate at the time when transport is most likely. Within a single season, trapping adults will determine when adult emergence begins, peaks, and ends. Over several seasons, trapping adults will detect population trends within the airport.

Number of Traps

For infested airports with flights to JB-free areas, a trapping rate of four to eight traps per airport is recommended. These traps will be placed to monitor adult emergence. Upon first JB capture, these traps will be removed and placed at least one-half mile from the airport environs.

Trap Types

Dual-lure traps, containing both food and pheromone lures, are most effective in attracting adults. The trap and lure procurement database can be used to request JB traps and lures. Please check with your regional trap and lure program manager for details.

If only a food-type lure is used, it should be PEG which is a combination of phenyl ethyl propionate, eugenol, and geraniol in a ratio of 3:7:3. Using the food-type lure alone is not recommended.

Commercially prepared, sustained-release dispensers are available to disperse the pheromone lure for 75 to 100 days. Neither trap color nor size is a factor in trapping JB adults. JB traps are usually yellow; however, white and green traps are equally effective.

Trap Placement

Trap placement is critical. Place traps to meet the following criteria:

- All-day sun (or at least midday sun)—traps placed in direct sunlight are twice as effective as those placed in the shade
- Close proximity to host plants (but not immediate proximity). Trap placement should be three to seven yards from favored trees, shrubs, and vines. Do not place traps immediately adjacent to tall, bushy plants or

other objects that could interfere with dissemination of the lure. General Information on **page 2-1-1** includes a list of common names of JB host plants.

- Place about 22 inches above ground level—traps baited with a pheromone attractant and PEG were most effective at 22 inches above ground level.

NOTICE

When placing traps, *never* put traps closer than one mile to aircraft-operating areas. Above all, *never* put traps *only* near aircraft-operating areas. Traps near aircraft-operating areas will only attract beetles into the aircraft-operating areas, creating entry problems where none existed.

Trap Examination

Periodically examine traps to ascertain traps are completely operative. Remove contents of receptacles and clean the trap. Discard all insects other than the JB; save JB suspects for identification. Never reuse traps without inspecting for the presence of dead or live beetles. In areas of high populations, traps may need to be inspected more often, up to each day if necessary.

NOTICE

If the airport is in a State involved in invasive species surveys, consider examining the traps for nontarget exotic species. If an airport receives flights from around the world, an additional examination for exotic species may be a valuable part of an exotic species detection program.

At the end of the monitoring (or control) season, traps should be stored in a dry location. They may be stored either assembled or disassembled. Traps should be thoroughly cleaned for storage.

Trap Removal

When a high-risk situation exists at an airport (JBs are likely to enter aircraft in an aircraft-operating area), traps should be removed following the first detection.

When a low-risk situation exists at an airport (JBs are **not** likely to enter aircraft in an aircraft-operating area), traps can remain in place throughout the monitoring period. In this situation, traps can be checked less frequently depending on the weather.

Larval Surveys

Because of the time and effort required, larval surveys are usually done: 1) when a high-level population is likely and an insecticide treatment may be necessary; and/or 2) when traps for monitoring adults are not placed. Larval surveys are most often done to determine the most common life stage and the population level when traps for monitoring adults are not placed.

If turf damage indicates a large number of grubs in the soil, a larval survey should be done. During the spring and fall, grubs damage turf leaving the surface soft and spongy as the fibrous roots are consumed. Severely damaged turf, even though still green, can usually be rolled back like a rug. Other scarabaeid grubs produce damage similar to the damage caused by JB; therefore, identification of the damaging grubs is necessary.

Appendix F on **page F-1-1** contains a larval survey method for economic populations.

Adult Visual Surveys

Adult visual surveys are commonly used to determine the level of the JB population in aircraft-operating areas. A minimal level of monitoring requires visual surveys of aircraft-operating areas in airports that were regulated in any of the last three years.

To coordinate visual surveys with the most optimum periods, use traps to detect the start of the emergence and the peak emergence period. As an alternative, use surveys of various preferred hosts.

Peak Emergence Period

Adult beetles begin to emerge in May in southern localities, later in northern localities. Peak adult activity occurs four to six weeks after emergence starts.

Frequency of the Visual Surveys

During the peak emergence period, perform visual surveys three to five times weekly, depending on the weather.

Duration of the Visual Survey

Each visual survey at an aircraft-operating area should last at least 15 minutes and should be conducted under conditions favorable for JB activity.

Time, Humidity, and Temperature

Adults fly only in the daytime. Critical times to observe JB associated with aircraft would be during daylight hours on warm, sunny, and calm days when beetles are active. When air temperatures reach the peak for the day, usually between 1:00 p.m. and 2:00 p.m., peak captures occur.

Trapping has showed that 45 percent of beetle activity occurs between 10:00 a.m. and 1:00 p.m. Although captures were spread out over most of the afternoon, peak captures occurred between 1:00 p.m. and 2:00 p.m., when air temperatures were at their peak for the day. Fewer than 5 percent of the beetles were captured after 5:00 p.m. or before 9:00 a.m.

Beetles fly on clear days when the temperature reaches about 70 °F and relative humidity is below 60%. Often, but not always, temperatures above 95 °F or relative humidity above 60% stop or reduce flights of the adults. (In Louisville, KY, flights did occur when the temperature was near 100 °F and the relative humidity was 70%.) When Japonilure was used alone, about 70% of the captures occurred between 10:00 a.m. and 1:00 p.m. and captures peaked at about noon.

Rain and the Visual Survey

Adult emergence is especially heavy the day following a rainstorm. If possible, conduct visual surveys on the days following a rainstorm.

Detections on Aircraft

Airport monitoring using traps, larval surveys, and/or visual surveys may not detect a high-risk situation. A single interception at an airport in a JB-free area is an indication of a potentially high-risk situation at the originating airport. Therefore, when JBs are found on aircraft in the JB-infested area and those aircraft are scheduled to go to JB-free areas, a high-risk situation probably exists.

Reporting Monitoring Information

Instead of weekly reports during the monitoring period, information will be:

- Entered into the National Agriculture Pest Information System (NAPIS); and/or
- Presented during the National Weekly Japanese Beetle Conference Call.

If monitoring data is to be useful, it must be accurate and timely; ideally, entry within 24 hours after collection is desirable.

Reports from Japanese Beetle-Infested Areas

Information from JB-infested States will be entered into NAPIS.

When monitoring information indicates a threatening condition, weekly reports are necessary. Even if a threatening condition is not present, weekly reports are desirable for the exchange of information on emergence and population levels.

The first find of a JB infestation in a county or State, a New County Record or a New State Record, must be entered into the National Agricultural Pest Information System (NAPIS).

Reports at the End of the Season

After traps are removed for the season, information on New State Records (NSRs) and New County Records (NCRs) will be entered into NAPIS.

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Japanese Beetle Program Manual

Airport Monitoring and Classification

Determining the Risk at Japanese Beetle-Infested Airports

Contents

NOTICE

Refer to this section for general guidelines. Refer to the *Code of Federal Regulations* (CFR) section 301.48-2(a) for the appropriate language.

Steps for Evaluating a Japanese Beetle-Infested Airport

To determine the risk situation at a Japanese beetle (JB)-infested airport, use the following steps.

Step 1—Step 1—Determine if the Airport Is at Risk

Use the following risk criteria to determine if the airport is at risk:

JB Population Level

Consider the first criterion: is the JB population at a high-risk level? Another way of stating this criterion is: is the JB population high enough to place aircraft or cargo at high risk? Are JB host plants growing in close proximity to either the airport, terminal, or hangar? High-risk aircraft is defined as:

- Aircraft scheduled to fly to a protected State; and
- Aircraft is either exposed to infestation by JB or is carrying cargo exposed to infestation

The detection of JBs at an origin airport or in the immediate vicinity is not in itself sufficient reason for declaring the airport under quarantine, nor is treated as a high-risk regulated airport.

Beetles must be closely associated with aircraft that are loading, unloading, or parking during critical times. In addition, the JBs must present a danger of gaining entry to the interior of aircraft, either by direct flight or by hitchhiking on passengers' clothing or cargo.

Aircraft-Operating Areas

Consider the second criterion: are aircraft in aircraft operating areas or cargo likely to become infested? Generally, high-level JB populations alone are not sufficient to cause an airport (or part of an airport) to be regulated. A high-level population may be isolated from the aircraft operating area.

NOTICE

However, a high-level population with a high probability of aircraft or cargo infestation will necessitate airport regulation.

When medium or high adult populations are present at or adjacent to aircraft operating areas, a high-risk situation is usually readily apparent. Light populations may be more difficult to evaluate. Regardless of JB numbers, entry into an aircraft is likely if JBs fly near or rest on the aircraft's exterior surfaces, boarding ladders, or similar items. This situation should be considered high risk. If a 15-minute visual survey, done under optimal conditions around an aircraft-operating area, finds 2 or more live adults, aircraft infestation is highly likely.

Detections In Protected States

Consider the third criterion: are infested aircraft arriving in the protected States? A single JB interception in any protected State (or in any JB-free area) indicates a potentially high-risk situation at the originating airport or at a previous stopover airport (or airports); therefore, regulation at a high-risk infested airport should be considered. (Information on responding to a detection in the States is in a later section; ***Monitoring and Managing Airports in the Protected States*** on **page 4-5-1**.)

Step 2—Determine Which Specific Areas, Carriers, Aircraft, and Containers Are at Risk

Use the risk criteria presented in Step 1—Determine if the Airport Is at Risk on **page 4-3-1** to determine the risk from various factors: individual aircraft operating areas; carriers; aircraft at high-risk times aircraft at low-risk times; containers stored outdoors; containers stored indoors; and various other factors.

If a 15-minute visual survey done under optimal conditions around an aircraft-operating area finds 2 or more live adults, aircraft infestation is highly likely.

Step 3—Evaluate Mitigating Measures

If one or more high-risk factors have been identified, evaluate all mitigating measures that, either alone or in combination, would reduce each high-risk factor and produce a low-risk situation. Examples of mitigating measures are:

- Keeping all at-risk aircraft closed whenever possible
- Moving at-risk aircraft and cargo operations to a low-risk part of the airport
- Reducing JB populations in the airport and in surrounding areas
- Rescheduling aircraft loading and flight times to low-risk times
- Using excluders whenever an at-risk aircraft is opened

These examples and other mitigating measures are discussed in detail in the following chapter, ***Control Measures*** on **page 5-1-1**.

Prompt application of one or more mitigating measures may allow an airport to remain unregulated.

Step 4—Complete an Emergency Action Notification (EAN) (if necessary)

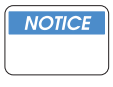
If an airport or a carrier needs to be regulated to prevent JBs being transported to the protected States, complete an EAN. Information on the EAN and other required activities is in the following section: ***Issuing the Emergency Action Notification (EAN)*** on **page 4-4-1**.

Using the Risk Criteria for Decision Making

Cooperating with State Department of Agriculture personnel, the State Plant Health Director (SPHD) will review the situation at the airport using an evaluation based on the three criteria. The SPHD can decide to regulate all or part of the airport.

Potential High-Risk Airports

PPQ officers should determine the flight numbers and airlines of high-risk aircraft at airports expected to become high risk. High-risk aircraft are aircraft that fly to the protected States; these aircraft may be exposed to infestation or may carry cargo exposed to infestation. High-risk aircraft may require safeguarding and/or treatment if a high-risk population of JB develops. High-risk aircraft depart to the JB-free areas during the hours of greatest JB activity, usually between 7:00 a.m. and 8:00 p.m.



High-risk aircraft include any aircraft with a destination anywhere in the protected States; even if the aircraft has intermediate stops in other airports along the way to the destination in the protected States, the aircraft is still considered high risk.

Before control procedures are needed, train airline and airport personnel in control procedures. Coordinate all training with the state Plant Regulatory Official (SPRO). Know in advance how to apply all Federal and State pesticide regulations.

Flight information for potential high-risk aircraft should be obtained at beetle emergence.

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Japanese Beetle Program Manual

Airport Monitoring and Classification

Using the Emergency Action Notification (EAN) and Other Activities

Contents

Introduction

If aircraft going to the protected States are likely to be infested, an APHIS official, the State Plant Health Director (SPHD) or a designee, may designate any airport within a quarantined State as a regulated airport. The distinct possibility that JB-infested aircraft are likely to spread the Japanese beetle (JB) to the protected States justifies this regulation.

Issuing the Emergency Action Notification (EAN)

After determining that an airport is high risk and must be regulated, the SPHD (or a designee) will immediately complete and issue an Emergency Action Notification (EAN) (PPQ Form 523, Emergency Action Notification (EAN) on **page D-1-6**) to the following individuals:

- Official in charge of the airport
- Officials in charge of airlines sending aircraft during daylight hours to the protected States
- Regional Program Manager (RPM) responsible for the originating airport

Using email, the RPM will inform the JB National Program Manager (NPM). Using email, the NPM will inform the program staff through updates that list regulated and deregulated airports.

Regulated Airport Report

When an airport is regulated, the National Program Manager (NPM) of the JB program (USDA–APHIS–PPQ) will inform all interested parties by circulating the following report by fax or email.

Name of Airport	
Date regulated/time:	Date—00:00 hours
Date deregulated/time:	Date—00:00 hours

SPHDs responsible for regulated airports will inform their Regional Directors through the Regional Program Managers (RPMs) of all actions taken. If additional actions are necessary, the SPHDs will notify the RPMs.

The RPM will then notify the NPM of the actions taken and the airlines involved.

High-Risk Flights

When an airport is regulated, the SPHD (or a designee) must obtain schedules listing all high-risk flights. The high-risk flights are usually those departing during daylight hours (between 7:00 a.m. and 8:00 p.m.) for the protected States; however, high-risk flights may depart at other times. The SPHD (or a designee) will then distribute these schedules to APHIS personnel and SPROs in the protected States. The SPHD will also distribute schedules of these flights to APHIS personnel and SPROs in infested States, particularly if the flights originated in another infested State.

Unscheduled Flights

When flights are unscheduled, personnel at the originating airport will notify personnel at the destination airport *at least one hour before departure of the flight.* This procedure for unscheduled flights is for both commercial and military flights. The SPHD may omit the one-hour notification requirement on a case-by-case basis. For detailed information see CFR 301.48-4 para. (d).

Arranging Control Measures

To protect JB-free areas, the SPHD must implement control measures at the regulated airports. These control measures may change the airport from regulated to nonregulated. Control measures may be: 1) mitigation procedures, such as rescheduling aircraft loading and flight times to low-risk times, and loading aircraft in a part of the airport where the JB population is low; and 2) treatments, such as treating host plants.

Once an airport is regulated, the SPHD will inform airline officials that control measures, which may or may not be treatments, must start as soon as possible. The SPHD will inform the airline officials that PPQ personnel will train the airline personnel for aircraft treatments at the regulated airport, if needed.

When airport regulation is likely, the SPHD must contact airline personnel before the start of control measures to discuss the control procedures and possible training needs.

More information on control measures is located in Control Measures on **page 5-1-1**.

Failure to Comply with Emergency Action Notification (EAN)

An airport or airline that does not comply with the requirements of an EAN is subject to a violation notice (PPQ Form 518). The officer may choose to issue a 518 if the airport or airline does not take corrective action.

Military Cooperation

Authorization for military cooperation is contained in a Joint Armed Forces Directions, *Quarantine Regulations of the Armed Forces* (SECNAV Instruction No. 6210.2A, Army Regulations No. 40-12, and Air Force Instruction 48-104. This document is available at the following Web site:

If a SPHD has any difficulty in obtaining cooperation, the SPHD will call the Commanding Officer's attention to the provisions of Section I, No. 30 of these joint Army–Navy–Air Force regulations.

Canceling Emergency Action Notification (EAN)

APHIS personnel may cancel the regulated status of an airport; this cancellation returns the airport to nonregulated status.

Terminating the High-Risk Situation

Authorized inspectors, PPQ officers, and other personnel will keep the SPHD informed of JB activity around the airport and in aircraft-operating areas. When the SPHD determines that a high-risk situation no longer exists, the SPHD can change the status of the regulated airport.

Revoking the Emergency Action Notification

When the high-risk situation no longer exists, the SPHD will complete Block 16 of the EAN, Action Taken. As examples, the action taken may be application of treatments or monitoring to detect a fall in the threatening population. Copies of the updated EAN will go to affected airline and airport officials.

The SPHD responsible for the recently deregulated airport will inform the Regional Director through the Regional Program Manager (RPM) of the EAN revocation. Using email, the RPM will notify the JB National Program Manager (NPM).

Using email, the NPM will inform the program staff through updates that list regulated and deregulated airports.

Reporting the Deregulation of an Airport

When an airport is deregulated, the NPM (or a designee) will inform all interested parties by completing and distributing the following report.

Name of Airport	
Date regulated/time:	Date—00:00 hours
Date deregulated/time:	Date—00:00 hours

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Japanese Beetle Program Manual

Airport Monitoring and Classification

Monitoring and Managing Airports in the Protected States

Contents

Introduction

To maintain a Japanese beetle (JB)-free status, airports in the protected States are monitored.

Airport Monitoring

The following methods, alone or in combination, are often used to monitor airports in the protected States, particularly when the airports have repeated interceptions:

- Inspecting high-risk flights from regulated airports
- Inspecting high-risk flights from unregulated airports
- Trapping

Selecting the appropriate monitoring method or methods will be done by the State Plant Health Director (SPHD) or by the State Plant Regulatory Official (SPRO) (or by a cooperative decision). The resources available will determine the method or methods to be used.

Personnel at airports in the protected States will arrange surveys of aircraft originating in the JB-infested areas, particularly those aircraft originating from regulated airports.

Because of the use of treatments, interception of JBs, either dead or moribund, on aircraft from regulated airports are to be expected.

If two or more live JBs are intercepted on aircraft from either regulated airports or unregulated airports, immediate action is required.

Using the Japanese Beetle Aircraft Inspection Record (JBAIR)

When inspecting flights from infested airports, the Japanese Beetle Aircraft Inspection Record (JBAIR) is available to collect data. A completed JBAIR will specify the total number of JBs found, the condition of the JBs, and the specific locations on the infested aircraft where the JBs were found.

Reports will be available for PPQ, State, and industry personnel. The reports will enable PPQ, State, and industry personnel to evaluate: 1) how effective exclusion procedures are; and 2) how effective pesticide treatments are.

An example of a JBAIR can be located at ***Japanese Beetle Aircraft Inspection Record (JBAIR)*** on **page D-1-11**.

Responding to Interceptions from Unregulated Airports or Carriers

Interceptions of JBs on aircraft from unregulated airports or carriers is an indication that a high-risk situation probably exists and that regulation in the JB-infested area is probably necessary.

Results of inspections are to be recorded on the JBAIR and entered into the ISIS database.

When JBs are intercepted at an airport in the protected States and the origin of the JBs from an infested airport is verified, the State Plant Health Director (SPHD), by sending a copy of the JBAIR, will immediately notify the following individuals:

- Regional Program Manager (RPM) responsible for the airport in the JB-free area
- RPM responsible for the originating airport
- SPHD and State Plant Regulatory Official (SPRO) responsible for the airport from which the flight originated
- SPRO

Within 24 hours, the SPHD at the originating airport will determine if a high-risk situation exists by following the steps in the earlier section (Steps for Evaluating a Japanese Beetle-Infested Airport on **page 4-3-1**).

After completing the determination, the SPHD responsible for the **originating** airport will immediately inform the SPHD responsible for the **receiving** airport of the actions taken (monitoring results and/or mitigating measures implemented).

If the aircraft upon which the interception was made transited two or more airports within the JB-infested States, and the origin of the JB cannot be verified, the SPHD at the receiving airport must notify the SPHDs responsible for all the transited airports. The SPHDs responsible for the transited airports will follow the previously mentioned steps to determine which of the transited airports are high risk.

When live JBs are found, the SPHD responsible for the receiving airport (or a designee) may take appropriate action to safeguard the receiving airport. Appropriate action may include one or more of the following actions:

- Closing the infested aircraft and treating the aircraft and/or cargo at a later destination
- Issuing an Emergency Action Notification (EAN)
- Monitoring unloading activities
- Terminating all unloading activities
- Treating the infested aircraft and/or cargo immediately

Generally, the SPHD responsible for the receiving airport (or a designee) will issue an EAN and the aircraft will be treated.

Responding to Interceptions from Regulated Airports or Carriers

Interceptions of dead or moribund JBs on aircraft from regulated airports are to be expected. Finding live JBs in aircraft from regulated airports and carriers is an indication that safeguarding procedures were **not** correctly followed or were **not** completely effective.

Results of inspections are to be recorded on the JBAIR and entered into the ISIS database.

When JBs are intercepted at an airport in the JB-free area and the origin of the JBs from a regulated airport or carrier is verified, the SPHD, by sending a copy of the JBAIR, will immediately notify the following individuals:

- Regional Program Manager (RPM) responsible for the airport in the JB-free area

- RPM responsible for the originating airport
- SPHD and SPRO responsible for the regulated airport or carrier

Within 24 hours, the SPHD at the originating airport will determine the effectiveness of the safeguarding procedures. In the determination, the SPHD will consider the following and similar questions:

- Are all mitigating procedures being used correctly?
- Are treatments being applied correctly?
- Are treatments effective when used correctly?
- How effective are the mitigating procedures being used?

After completing the determination, the SPHD responsible for the **originating** airport under quarantine or the regulated carrier will immediately inform the SPHD responsible for the **receiving** airport of the actions taken (determination results and/or mitigating measures implemented).

If the aircraft upon which the interception was made transited two or more airports within the JB-infested States, and the origin of the JB cannot be verified, the SPHD must notify the SPHDs responsible for all the transited airports. The SPHDs of the transited airports will follow the previously mentioned steps to determine which of the transited airports are high risk.

When live JBs are found, the SPHD responsible for the receiving airport (or a designee) may take all appropriate action to safeguard the receiving airport; for example the SPHD responsible for the receiving airport (or a designee) may issue an EAN and the aircraft may be treated (or retreated). (For appropriate actions, see the last paragraphs in Responding to Interceptions from Unregulated Airports or Carriers on **page 4-5-2**.)

High-Risk Flights

When an airport is regulated, the SPHD (or designee) responsible for a destination airport in a protected State should receive schedules listing all high-risk flights, those flights departing during daylight hours for the destination airport in the protected State and likely to be infested. The SPHD responsible for a destination airport will forward this information to the cooperating agency doing the aircraft inspections.

When flights are unscheduled, personnel at the originating airport will notify personnel at the destination airport *at least one hour before departure of the flight.* This procedure for unscheduled flights is for both commercial and military flights. The SPHD may omit the one-hour notification requirement on a case-by-case basis. For detailed information, see CFR 301.48-4 para. (d).

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Japanese Beetle Program Manual

Airport Monitoring and Classification

Monitoring and Managing Airports in Japanese Beetle-Free Areas Outside of the Protected States[1]

Contents

Introduction

This section of the manual addresses monitoring protocols at airports **outside** of the protected States. When JB is intercepted at these airports, the SPHD (or designee) or the SPRO (or by a cooperative decision) determines how they should be monitored. The available resources will determine the method or methods used.

Available Methods

The following methods, alone or in combination, can be used to conduct additional JB monitoring at the airports.

- Conduct random inspections of high-risk flights from regulated airports such as cargo flights
- Conduct random inspections of high-risk flights from unregulated airports within the quarantine area
- Conduct a visual survey of the area where JB was initially trapped
- Increase the number of traps around the area where JB was initially trapped

1 Trapping at these airports is optional and dependent on available resources.

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Japanese Beetle Program Manual

Control Measures

Introduction

Contents

Introduction

Goal

The ultimate goal of airport control procedures is to prevent the Japanese beetle (JB) from entering aircraft going to the protected western States.

Methods

Depending on the situation, use the following methods, alone or in combination, to control JBs at infested airports:

- Exclude beetles from high-risk aircraft
- Lower the JB population to a nonthreatening level
- Treat infested aircraft

Lowering the Japanese Beetle Population

The following methods will lower the JB population:

- Apply fast-acting insecticides to host plants to control adults
- Apply insecticides to the soil to control larvae
- Destroy host plants
- Introduce biocontrol agents (however, control may develop slowly, if at all)
- If airport is in an agricultural area, request that farmers treat host plants during beetle season

The JB population may be lowered throughout the infested airport or only in a portion of the infested airport.

Excluding Japanese Beetles from High-Risk Aircraft

JBs can be excluded by using the following techniques:

- Change aircraft-operating areas to areas less attractive to the JB
- Position aircraft in ways less attractive to the JB
- Safeguard cargo and baggage (as examples, keeping containers closed, storing containers in enclosed areas, covering cargo containers with plastic wrap)
- Schedule flights when the JBs are not flying (or flying in reduced numbers)
- Use aircraft excluder devices to prevent beetles from entering the aircraft
- Use physical barriers, such as enclosed walkways

Treating Infested Aircraft

Currently, the Environmental Protection Agency (EPA) authorizes two insecticides, d-phenothrin and cyfluthrin (Tempo®), for use on infested aircraft. However, because the *Treatment Manual*, a USDA–APHIS publication, authorizes only the use of d-phenothrin, PPQ personnel may only use d-phenothrin. This chapter contains information on the use of these two insecticides.

Bendiocarb (Ficam® W; Ficam® Plus) is authorized for use on infested aircraft; however, bendiocarb is **not** being produced. Existing stocks may be used.

Initiating Control

Ideally, control will begin before a JB population reaches a high-risk level requiring regulation; therefore, control should be both long- and short range.

Long-range control will emphasize integrated pest management (IPM) practices that will keep the JB population below the high-risk level; examples of long-range controls include:

- Landscape planning at the airport—prevents the planting of host plants near aircraft-operating areas
- Biocontrol agents (such as the bacterium that causes milky spore disease)—keeps JB populations below the hazardous level

Short-range control will emphasize the quick reduction of a population at the high-risk level; examples of short-range controls include:

- Quick-acting soil insecticide—quickly reduces a high population of grubs to a nonthreatening level
- Foliar treatment of hosts—reduces adult population levels
- Removing host plants—reduces adult population levels

When designing a control program for JB, it is wise to seek advice from IPM consultants, entomologists, cooperative extension personnel, and other professionals. Carriers have hired consultants who develop IPM programs that emphasize exclusion and are suitable for specific airports.

Monitoring Results

To monitor the effectiveness of the aircraft and grounds treatments, use one or more of the following:

- Adult visual surveys (see Airport Monitoring and Classification on **page 4-1-1**.)
- Detections on aircraft arriving in the JB-free area
- Detections on aircraft at the infested airport
- Larval surveys (see Airport Monitoring and Classification on **page 4-1-1** and Appendix F on **page F-1-1**.)
- Trapping (see Airport Monitoring and Classification on **page 4-1-1**.

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Japanese Beetle Program Manual

Control Measures

Safety Procedures

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General Safety Procedures

Ideally, training potential applicators should start before hazardous conditions exist.

To protect the applicators' health and all who could be exposed, all insecticide applications must follow the recommended Federal and State procedures. For example, safety glasses must be worn when treating baggage and cargo areas.

For additional information and advice on procedures, contact the Otis Plant Protection Center:

USDA, APHIS, PPQ
Otis PSDEL
Building 1398 West Truck Rd.
Buzzards Bay, MA 02542-329
Tel: (508) 563-9303
Fax: (508) 564-4398

Safety Precautions for Aircraft Safety

- After applying insecticide, wash hands before smoking or eating; never smoke or eat while applying insecticides
- Always wear long sleeves and pants
- Collect empty pesticide containers; follow label directions to dispose of containers
- If treating the passenger compartment, always delay catering until after the treatment
- Never apply any chemical treatment in the presence of passengers, crew, or animals

- Take precautions when applying d-phenothrin aerosols; instruct applicators to seek fresh air immediately if they feel light-headed or dizzy when applying the aerosol
- When applying insecticide, wear safety glasses; protective gloves and respiratory equipment are recommended, but not required

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Japanese Beetle Program Manual

Control Measures

Treatments for Aircraft

Contents

Insecticides

Insecticide Information and Distributors on **page G-1-1** contains additional information on insecticides and distributors. Before using any insecticide, read the instructions on the label.

NOTICE

Only two insecticides registered for use on aircraft are currently being produced. One is Beta-Cyfluthrin, which is applied as a spray. The other is 10% d-phenothrin, which is applied as an aerosol. Authorized by the *Treatment Manual* (T409-b), d-phenothrin is the only insecticide available for use by APHIS–PPQ employees.

Bendiocarb

Bendiocarb is no longer in production; existing stocks may be used to treat aircraft. However, because it is not included in the *Treatment Manual*, APHIS–PPQ employees may **not** use bendiocarb.

Sold under the trade name of Ficam® W by AgrEvo Environmental Health, Ficam® W is a 76% wettable powder insecticide approved for use on aircraft. Usually used on unloaded cargo aircraft, the Bendiocarb solution is applied to areas where the Japanese beetles (JBs) may be found.

The Ficam® Plus formulation is also usable on aircraft. This formulation contains Bendiocarb plus pyrethrins and piperonyl butoxide.

Beta-Cyfluthrin

Beta-cyfluthrin is the active ingredient in Tempo SC Ultra insecticide, EPA registration number 72155-58.

Two restrictions appear on the label for Tempo SC Ultra:

1. "Do not use in aircraft cabins."
2. "May be applied to carpet or upholstery in the cargo area only where there is no prolonged human contact."

d-Phenothrin, 10%

Authorized by the *Treatment Manual* (T409-b), d-phenothrin is registered for use as an aerosol on aircraft in the 10% formulation. 10% d-Phenothrin, EPA registration number 10308-21. Usually, application of this insecticide is either to passenger-carrying aircraft (when unoccupied) or loaded cargo aircraft (when unoccupied).

This insecticide is also used if, upon inspection of arriving aircraft, two or more live JB are found in a protected State.

d-phenothrin is for use by or under the direction of Federal/State personnel. Only personnel trained by the U.S. Department of Agriculture (USDA) can apply this insecticide. If trained by the USDA, airline personnel can apply this insecticide.

Requests for d-phenothrin are sent to the Regional Program Manager (RPM) via email.

With the 10% formulation, the rate of application is 8 grams per 1,000 cubic feet. Without an extender, the aerosol can is calibrated to dispense 5 grams per second. Therefore, 8 grams per 1,000 cubic feet will take 1.6 seconds to dispense. When using an extender, the rate is cut in half to 2.5 grams per second; therefore, to apply the same amount, double the application time.

The use of respirators is recommended (but not required).

Calculations for the 10% d-Phenothrin Aerosol

To determine the amount of material required to treat an aircraft, first find the cubic capacity and then the seconds of application time.

1. Determine the number of cubic feet in the aircraft.

   Information on the volume of commonly used aircraft is in the PPQ *Treatment Manual* in Section VI; this manual is a USDA–APHIS document.

   However, to be absolutely certain of the volumes of the aircraft holds, pay attention to the following note.

Always ask the engineering department or ground crew for information on the volumes of holds, especially when unsure. Aircraft are often altered for various reasons. As an example, extended-range aircraft (ER aircraft) carry additional fuel tanks or larger fuel tanks. This alteration and other alterations change the volume of the holds.

2. To obtain the units of 1,000 cubic feet, divide the cubic feet present in the aircraft by 1,000 . With 10% d-phenothrin, each unit of 1,000 cubic feet will require 8 grams, which requires 1.6 seconds of treatment.

EXAMPLE

If the aircraft cabin has a volume of 10,800 cubic feet, then:

$\frac{10,800}{1,000}$ = 10.8 units of 1,000 cubic feet

1.6 seconds x 10.8 = 17.3 = 17 seconds of dispensing time

Dispensing d-Phenothrin Aerosol

In passenger aircraft with two aisles, it is advantageous to have two individuals dispensing the material at the same time. When dispensing the aerosol, use a stopwatch, a wristwatch with a second hand, or count aloud using the technique 1001, 1002, etc. Accurate timing not only ensures the proper amount is dispensed, but also increases the likelihood of obtaining an equal distribution. When applying, keep the dispensing valve fully depressed. To avoid wetting surfaces, hold the nozzle at least 18 inches away from all surfaces.

Start (perhaps with another applicator) 10 feet from the end of the aircraft. While backing slowly through the aircraft, dispense aerosol in a sweeping motion with cans pointed upward at a 45° angle.

Table 5-3-1 Determining the Procedure to Use for Treating *Passenger Aircraft* Compartments

If the compartment is a:	Then:	Authority:
Lavatory	1. Seal off 2. Remove JBs	7 CFR 301.48-4
Cockpit		
Galley		
Cargo hold	1. Seal off 2. Treat with d-phenothrin	
Passenger cabin	Contact RPM for concurrence prior to taking action	

Never treat passenger compartments when passengers are inside.

Passenger Compartment Procedure—d-Phenothrin Aerosol

This procedure for treating a passenger compartment will **not** normally be applied in commercial aircraft passenger compartments destined to the protected States.

With slight modification (Step 6), this procedure can be used with military aircraft that will be carrying passengers,

To treat a passenger compartment, use the following procedure.

1. Vacuum clean before treatment.
2. Close cockpit windows. Thoroughly inspect cockpit area and remove any JB found. Keep windows closed until departure. Close cockpit door to prevent aerosol from entering.
3. Close off the galleys with barriers (doors, curtains, plastic sheets, or prefabricated structures) to prevent aerosol particles from entering. Remove any JB found.

Curtains must be full-length to prevent the entrance of aerosol particles into the galley. If the curtains are not full-length, use other means to seal the entrance. Airlines should provide materials, such as polyethylene, to seal galley areas.

4. Outside the galley areas, cover the following items with an impervious material (such as polyethylene):
   - **A.** Water fountains
   - **B.** Beverage and food preparation surfaces
   - **C.** Exposed oxygen masks
5. Open doors to lavatories and carefully inspect lavatories. Remove any JB found, then close lavatory doors.
6. Check aisles and remove all obstacles.
7. Put on safety glasses (and respirator, if desired).
8. Stop all aircraft ventilation systems prior to treatment.
9. Close aircraft entrance doors.
10. Start (perhaps with another applicator) 10 feet from the end of the aircraft. While backing slowly through the aircraft, dispense aerosol in a sweeping motion with cans pointing upward at a 45° angle. Do not spray any closer than 18 inches to any object.
11. Close all doors after exiting and keep the aircraft closed for 15 minutes post-treatment.
12. After the 15-minute post-treatment period, start the aircraft ventilation system. Ventilate the aircraft for 15 minutes before boarding passengers, crew, or ground personnel. If aerosol particles are still noted in the air after the 15-minute ventilation period, the aeration should continue until the particles disappear. With most ground air-conditioned trucks, a complete air change can occur within 3 to 5 minutes.

The individual who starts the ventilation equipment must wear safety glasses.

Some military aircraft (used to carry passengers) do not have a ventilation system other than a forced air system when in flight. If the military aircraft do not have a ventilation system, treat well before use.

13. After treatment, safeguard the aircraft until departure.

Post-Treatment Cleanup Procedure for d-Phenothrin Aerosol

1. Do not remove barriers from galleys until catering is completed; JBs can enter during the catering process.
2. Do not open cockpit doors.

3. Reinspect and collect all beetles.
4. If lavatory doors were left open during treatment, wipe the seat surfaces with a clean, damp cloth and discard exposed facial tissue and soap.
5. Remove covers used to protect specific items outside the galley (e.g., drinking fountains).
6. After the cleanup, have all applicators thoroughly wash their hands, faces, and arms before smoking, eating, or drinking.

Maintaining a Pest-Free Condition

After treating a passenger compartment, keep the aircraft JB free with the following procedures.

1. Monitor the entrance to the aircraft to determine if JBs are entering.
2. Use enclosed walkways to board passengers either from the terminal or from the vehicles carrying passengers to the aircraft.
3. Remove any JBs that enter the aircraft and destroy them.
4. Keep the barrier (closure, curtain, or door) from the galley to the inside of the aircraft closed until after catering. After catering, thoroughly inspect for JBs in the galley area.

When airline personnel notice an exceptionally heavy population of JBs, they should notify a PPQ officer who will determine what further measures are necessary.

Treating Loaded and Unloaded Cargo Aircraft

Whenever possible, treat cargo aircraft before loading. Treatment before loading allows penetration of the insecticide to cargo areas and nooks that become inaccessible after loading. Treatment before loading is desirable, particularly when JB-free cargo will be loaded.

Table 5-3-2 Decision Table for Determining the Procedure to Use for Treating *Cargo Aircraft* Compartments

If the Compartment Is a:	And:	Then:	Authority:
Lavatory	→	1. Seal off 2. Remove JBs	7 CFR 301.48-4
Cockpit			
Galley			
Cargo hold	Unloaded **and** cargo is to be carried	1. Seal off 2. Treat with d-phenothrin *or* spray with cyfluthrin (or bendiocarb)[1]	
	Unloaded **and** personnel (and cargo) are to be carried	1. Seal off 2. Treat with d-phenothrin *or* spray with cyfluthrin (or bendiocarb) when unoccupied[1]	
	Loaded with cargo	1. Seal off 2. Treat with d-phenothrin	

1 PPQ personnel are not authorized to use bendiocarb.

Cooperators Treating Unloaded Cargo Aircraft with Beta-Cyfluthrin

To treat unloaded cargo aircraft with beta-cyfluthrin (or bendiocarb), use the following procedures.

1. Clean the aircraft, if needed.
2. Cover sensitive equipment in the cargo hold.
3. Put on safety glasses (and respirator, if desired).
4. Treat all vertical surfaces one foot above the horizontal surfaces.
5. Treat all horizontal surfaces starting from within the cargo area and working toward the hatch.
6. Treat the ball-matt area (the area where the cargo first enters the aircraft).

Treating Loaded Cargo Aircraft with d-Phenothrin Aerosol

Loaded aircraft that stand open during the day must be treated, regardless of loading time. JBs often fly into and remain in open aircraft. Use the following procedures to treat loaded aircraft.

NOTICE

Cover all sensitive equipment that will be exposed to the d-phenothrin aerosol.

NOTICE

Military (and other) cargo is often stored outside on pallets for lengthy periods. JBs often rest overnight on the cargo pallets. Loading the aircraft with JB-infested pallets will infest the aircraft. Therefore, treat the aircraft holds containing cargo pallets that have been stored outside and are likely to be JB infested. After treatment, remove all JBs.

Procedures for Treating Loaded Baggage/Cargo Holds with Aerosol

Two procedures are available for treating loaded baggage/cargo holds in aircraft. These are the recommended procedures when treating holds after loading cargo and baggage. When treatment is done after loading, do not deduct space occupied by cargo and baggage. If animals are not being shipped, aeration is not required in the luggage compartments of passenger aircraft.

Selecting the correct procedure depends on whether live animals are being shipped. The two procedures follow.

Treating Baggage/Cargo Holds With Live Animals Being Shipped

To treat a baggage/cargo hold when live animals, such as pets, will be shipped, use the following procedures.

1. Remove the live animals before treatment.
2. Put on safety glasses (and respirator, if desired).
3. Treat the baggage/cargo hold.
4. Keep baggage/cargo hold closed for 15 minutes.
5. Open the hold door(s); use a mechanical barrier to protect the treated hold.
6. Aerate the baggage/cargo hold for 15 minutes.

7. Reload the animals.
8. Close hold door(s).

Treating Baggage/Cargo Holds Without Live Animals Being Shipped

To treat a loaded baggage/cargo hold without live animals being shipped, use the following procedures.

1. Visually inspect baggage/cargo hold before loading, collecting, and destroying all JB found.
2. Visually inspect all baggage or cargo as it is being loaded. The loading will take place prior to treatment.
3. Calculate the rate. Use the same rate and procedures followed for baggage/cargo areas as cargo areas. Do not deduct the space occupied by baggage and cargo in computing the required treatment rate.
4. Put on safety glasses (and respirator, if desired).
5. Dispense the insecticide. In small holds, open the hatch just enough to allow a hand and the aerosol container inside; as an alternative, apply through an open porthole, if available, in the hatch. Many holds are small; therefore, applicators may treat these small areas by standing at the hatch and directing the spray either aft or forward.
6. After treatment, immediately close the hatch. Unless animals are to be loaded, aerating the holds is not necessary.

Treating Unloaded Baggage/Cargo Pods with d-Phenothrin Aerosol

To treat unloaded baggage/cargo pods with d-phenothrin aerosol, use the following procedures.

1. Select relatively airtight pods in good repair and without hand holes.
2. Put on safety glasses (and respirator, if desired).
3. Slightly open the pod door.
4. Spray for one second.
5. Keep pod closed for fifteen minutes.
6. Open and aerate the pod for fifteen minutes.
7. Load baggage or cargo and close pod.

Precautions for Aircraft Transiting High-Risk Airports

The following precautions must be used for aircraft transiting high-risk airports.

1. Use enclosed walkways to board passengers. Always keep the enclosed walkway tight against the aircraft.
2. Keep cockpit windows closed.
3. Seal off the galley(s) if the aircraft is to be catered at the hazardous airport. Inspect galleys after catering, but before removing barriers separating the galleys from the cabins.
4. Keep cargo holds closed except during loading and unloading.

Timing an Insecticide Application

Under the following conditions, adult JBs usually do not fly; therefore, the treatment of aircraft may **not** be necessary:

- Cool days below 73 °F (23 °C)
- Hot days above 104 °F (40 °C)
- Rainy days
- When arriving and leaving during the same night
- Windy days

However, because adult JBs sometimes fly when the temperature is high, when the temperature is low, or when the day is windy, treatment may be necessary. Similarly, on rainy days, JB may occasionally infest cargo stored outside. Therefore, based on a case-by-case evaluation of the situation, the State Plant Health Director (SPHD) (or a designee) will decide whether to treat at-risk aircraft or cargo.

If treating with d-phenothrin, treat aircraft no more than one hour before loading. If treating with cyfluthrin (or Bendiocarb), treat one hour or more before loading.

PPQ Form 250—Aircraft Clearance or Safeguard Order

If requested by personnel at the destination airport, issue a ***PPQ Form 250, Aircraft Clearance or Safeguard Order*** on **page D-1-9** to the pilot after treating an aircraft. However, if personnel at the destination airport do not request an Aircraft Clearance or Safeguard Order, do not issue the document.

Exclusion Devices/Excluders

In certain situations, exclusion devices will prevent the entry of JBs into aircraft. Certain exclusion devices called “excluders” are commonly used. Excluders are virtually enclosed compartments with an open side designed to fit snugly against the surface of an aircraft. Hatches may be opened within the excluder to permit loading and unloading.

Passengers

Exclusion devices physically exclude JBs from the cargo, baggage, or passenger compartments of aircraft. Examples of exclusion devices are enclosed walkways and bus-type vehicles for passenger loading and unloading. When used, these exclusion devices fit tightly against the aircraft.

When exclusion devices are used for passenger boarding, after the passengers have boarded, thoroughly inspect the passenger entrance to within 10 feet of the openings. Within the aircraft, pay special attention to the floor and window sills. Remove any JBs found from the aircraft.

Cargo

Effective exclusion devices have been developed for cargo aircraft by carriers faced with a JB entry problem. These exclusion devices are excluders that are now the standard for handling cargo aircraft at high-risk airports.

Figure 5-3-2 Example of Exclusion Devices

General Information on Exclusion Devices

Use exclusion devices whenever possible. Even if JBs enter the aircraft, the numbers entering will be greatly reduced.

Because JBs tend to closely follow the sunny side of a fuselage, they can often be excluded by the excluders, the exclusion devices that frame open doors. When the JBs encounter the excluders, they tend to drop below the open doors.

Do not use exclusion devices on aircraft parked at a regulated airport for cleaning or other purposes, which require exterior doors to remain open, until the aircraft are treated with an insecticide.

When exclusion devices are used, protect all openings in the aircraft from 7:00 a.m. to 8:00 p.m.

Selecting Aircraft-Operating Areas

Certain aircraft-operating areas are much more likely to attract JBs than other areas. Avoid the following aircraft-operating areas attractive to the JB:

- Close to feeding hosts for the adult JBs
- Close to moist, grassy areas on light-textured soil favorable for egg-laying and larval development
- Possessing a favored sunny exposure

If areas attractive to JBs are used for aircraft operations, especially during the hours of greatest JB activity, aircraft entries are likely.

If possible, loading areas less attractive to beetles should be used. Characteristics of less-attractive, aircraft-operating areas are as follows:

- Devoid of hosts for the JB
- Isolated from areas favorable for egg laying and larval development
- Shaded rather than sunny

Positioning Aircraft

If possible, position aircraft so the aircraft, or at least its doors, are in the shade. JBs prefer sunny locations and are more likely to enter if doors and hatches are exposed to the sun.

Stand-By Aircraft

The stand-by aircraft that replace aircraft on scheduled flights must be JB-free. “Tail-swapping” is the term for the replacement of one aircraft by another. When “tail-swapping” occurs, the stand-by aircraft may require treatment and safeguarding so it is JB free.

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Japanese Beetle Program Manual

Control Measures

Treatments for Airport Grounds

Contents

Additional information on insecticides and distributors may be found in ***Insecticide Information and Distributors*** on **page G-1-1**.

Treatments for Larvae

Chemical Control of Larvae

The major advantage of treating larvae (grubs) in the soil is the destruction of the grubs before they become adult Japanese beetles (JBs). The major disadvantage is the considerable expense for materials and labor.

Biological Control (Biocontrol) of Larvae

The major advantage of biological control is the possibility of long-term reduction of the JB population to a nonthreatening level. The major disadvantages are: 1) long-term control may be slowly developed; and 2) significant long-term control may not develop.

With varying degrees of success, the following organisms are used for biocontrol of the JB larvae:

Table 5-4-1 Organisms Used for Biocontrol of Japanese Beetles (JBs)

Scientific Name	Description
Bacillus popilliae	Bacterium-causing milky spore disease
B. thuringiensis tenebrionis (Btt)	Bt strain for the JB grub
Heterorhabditis bacteriophora	Nematode effective against JB grubs
Steinemema glaseri	Nematode effective against JB grubs
Tiphia vernalis	Small wasp parasitic on the JB grub
Isocheta aldrichi	Winsome fly, an internal parasite of the adult JB

Biocontrol agents against the larvae can be used with the biocontrol agent against the adults.

Treatments for Adults

Chemical Control of Adults

The major advantage of treating the adults (JBs) by fast-acting chemicals is a quick reduction in the adult population. The major disadvantage is that often the adults destroyed are quickly replaced by adults emerging after the effective period of the treatment.

Biological Control of Adults

The Winsome fly, *Istocheta aldrichi*, is a solitary internal parasite of the adult JB. The female flies deposit up to 100 eggs during a period of about 2 weeks. Usually laid upon the thorax of the female beetles, the eggs hatch into maggots which bore directly into the bodies of the hosts killing the beetles. In ideal situations, this fly can suppress JB populations before the beetles can reproduce.

Removal/Reduction of Host Plants

The major advantages of removing host plants are: 1) a quick reduction in the JB population threatening aircraft; and 2) long-term control is achieved by removing host plants. The major disadvantages are the aesthetic loss and environmental damage.

5

Japanese Beetle Program Manual

Control Measures

Treatments for Cargo

Contents

Safeguarding Cargo

Japanese beetles (JBs) often rest overnight on cargo pallets, cans (enclosed containers), and other devices for cargo handling; as a result, cargo stored outside for lengthy periods can become high risk. Therefore, safeguarding measures should be used to prevent JB infestation of cargo.

Treatments for Cargo Containers

Treatments for Unloaded Baggage/Cargo Pods with d-Phenothrin

To treat unloaded baggage/cargo pods with d-phenothrin aerosol, use the following procedures.

1. Select relatively airtight pods in good repair and without hand holes.
2. Put on safety glasses (and respirator, if desired).
3. Slightly open the pod door.
4. Spray for 1 second.
5. Keep pod closed for 15 minutes.
6. Open and aerate the pod for 15 minutes.
7. Load baggage or cargo and close pod.

A

Japanese Beetle Program Manual

Appendix A

Nonpreferred Hosts and Nonhosts

Nonpreferred Hosts and Nonhosts Table

The Japanese beetle (JB) feeds sparingly or not at all on plants in the following groups.

Table A-1-1 Japanese Beetle Nonpreferred Hosts and Nonhosts

Plant Group	Specific Plants
Small fruits	American cranberry, black huckleberry, European gooseberry, northern dewberry, northern gooseberry
Orchard fruits	Pear, persimmon
Truck and garden crops	Artichoke, brussel sprouts, cabbage, cantaloupe, cauliflower, celery, onion, cucumber, eggplant, endive, carrot, pea, radish, kale, leek, lettuce, muskmelon, parsley, parsnip, peanut, potato, pumpkin, red pepper, rutabaga, salsify, spinach, summer squash, sweet potato, tomato, turnip, watermelon
Field crops	Barley, buckwheat, hops, millet, oats, rye, timothy, tobacco, vetch, wheat
Ornamental herbs	Adam's needle yucca, ageratum, American columbine, American germander, American pennyroyal, American water lily, American wormseed, anise, baby's breath, balsam, bearded iris, begonia, blue flas-indigo, brown-eyed Susan, butterfly violet, caladium, carnation, catnip, Chile avens, Chinese lantern-lant, Christmas-rose, chufa, cockscomb, bamboo, cosmos, coneflower, coralbells, cornflower, dogtooth violet, dusty-miller, Easter lily, European columbine, evergreen candytuft, false-dragonhead, fern, flowering tobacco, forget-me-not, foxglove, fringed iris, gaillardia, goldenglow, ground-myrtle, gysophila, hardy larkspur, hyssop, Iceland poppy, Japanese iris, Japanese spurge, lance coreopsis, lily, lily-of-the-valley, mignonette, mountain-bluet, motherwort, mullein, nasturtium, New England aster, oriental poppy, oswego-tea, oxeye daisy, Pacific bleedingheart, pampas grass, pansy, perennial pea, petunia, phlox, portulaca, purple loosestrife, pyrethrum, sedum, skydrop aster, small white aster, snapdragon, southern maidenhair, spearmint, speedwell, spiderwort, strawflower, sweetpea, sweet scavbious, sweet violet, sweet-william, tawny daylily, tiger lily, verbena, Virginia dayflower, wandering-Jew, wave aster, white-top, white turtlehead, wild bergamot
Ornamental shrubs and vines	American bittersweet, American bladdernut, American elder, American holly, azalea, beautyberry, border forsythia, Canada yew, Carolina allspice, Catawba rhododendron, Chinese azalea, Chinese holly, Chinese redbud, climbing euonymus, climbing hydrangea, coralberry, English holly, English ivy, European cranberry bush, firethorn, gardenia, groundsel-bush, Japanese holly, Japanese honeysuckle, lantana, lilac, matrimonyvine, mockorange, mountain-laurel, panicle hydrangea, Persian lilac, pinxterbloom, privet, rosebay rhododendron, smooth hydrangea, snowberry, swamp azalea, sweet autumn clematis, torch azalea, tubeclematis, weeping forsythia, winged euonymus, winterberry, winter honeysuckle, witch hazel
Trees	Ailanthus, American arborvitae, American hazelnut, American sweetgum, Atlantic white-cedar, balsam fir, black locust, block oak, Bolleana poplar, boxelder, butternut, Canada yew, Chinese juniper, common juniper, common smoketree, cryptomeria, Douglas fir, English yew, flowering dogwood, hemlock, Hinoki-cypress, Japanese pagodatree, Japanese yew, laurel magnolia, Lawson white cedar, maindhair tree, mimosa, northern red oak, Norway spruce, oriental arborvitae, pignut hickory, post oak, red ash, red maple, red mulberry, saucer magnolia, Sawara-cypress, scarlet oak, Scotch pine, shagbark hickory, silver maple, southern magnolia, southern red oak, tuliptree, Virginia pine, western yew, white ash, white oak, white poplar

B

Japanese Beetle Program Manual

Appendix B

Japanese Beetle in the United States and Canada

American Data

NAPIS Data: To obtain an updated list of the infested and noninfested areas refer to the NAPIS Web site.

Canadian Data

Information on infestations in Canada is available at the Canadian Food Inspection Agency Web site.

C

Japanese Beetle Program Manual

Appendix C

Current Maps Showing Japanese Beetle Distribution

Distribution in the United States

The map that shows JB distribution is available on the APHIS–PPQ Plant Health Web site.

Distribution in Canada

Areas regulated for Japanese beetle (JB) in Canada include: 1) the southwestern portion of Quebec Province south of Montreal; and 2) southeastern Ontario Province along the shores of the St. Lawrence, and southwestern Ontario Province in the area bounded by Lake Huron, Lake St. Clair, and Lake Erie. This last area includes the western shore of Lake Ontario. A map showing infested areas (along with a complete listing of infested regional municipalities) is at the Canadian Food Inspection Agency Web site:

D

Japanese Beetle Program Manual

Appendix D

Forms Used In the Japanese Beetle Program

Contents

PPQ Form 519, Compliance Agreement

An example copy of the form for a Compliance Agreement (CA), PPQ Form 519, is on the following page.

The fillable PDF version of the form for the Compliance Agreement can be found at the following Web sites:

- Form library
- The *Manual for Agricultural Clearance*

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control numbers for this information collection are 0579-0054, 0088, 0129, 0198, 0238, 0257, 0306, 0310. The time required to complete this information collection is estimated to average 1.25 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

FORM APPROVED
OMB NUMBER 0579-0054/0088/0129/0198/0238/0257/0306/0310

UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE PLANT PROTECTION AND QUARANTINE	**COMPLIANCE AGREEMENT**
1. NAME AND MAILING ADDRESS OF PERSON OR FIRM	2. LOCATION

3. REGULATED ARTICLE(S)

4. APPLICABLE FEDERAL QUARANTINE(S) OR REGULATIONS

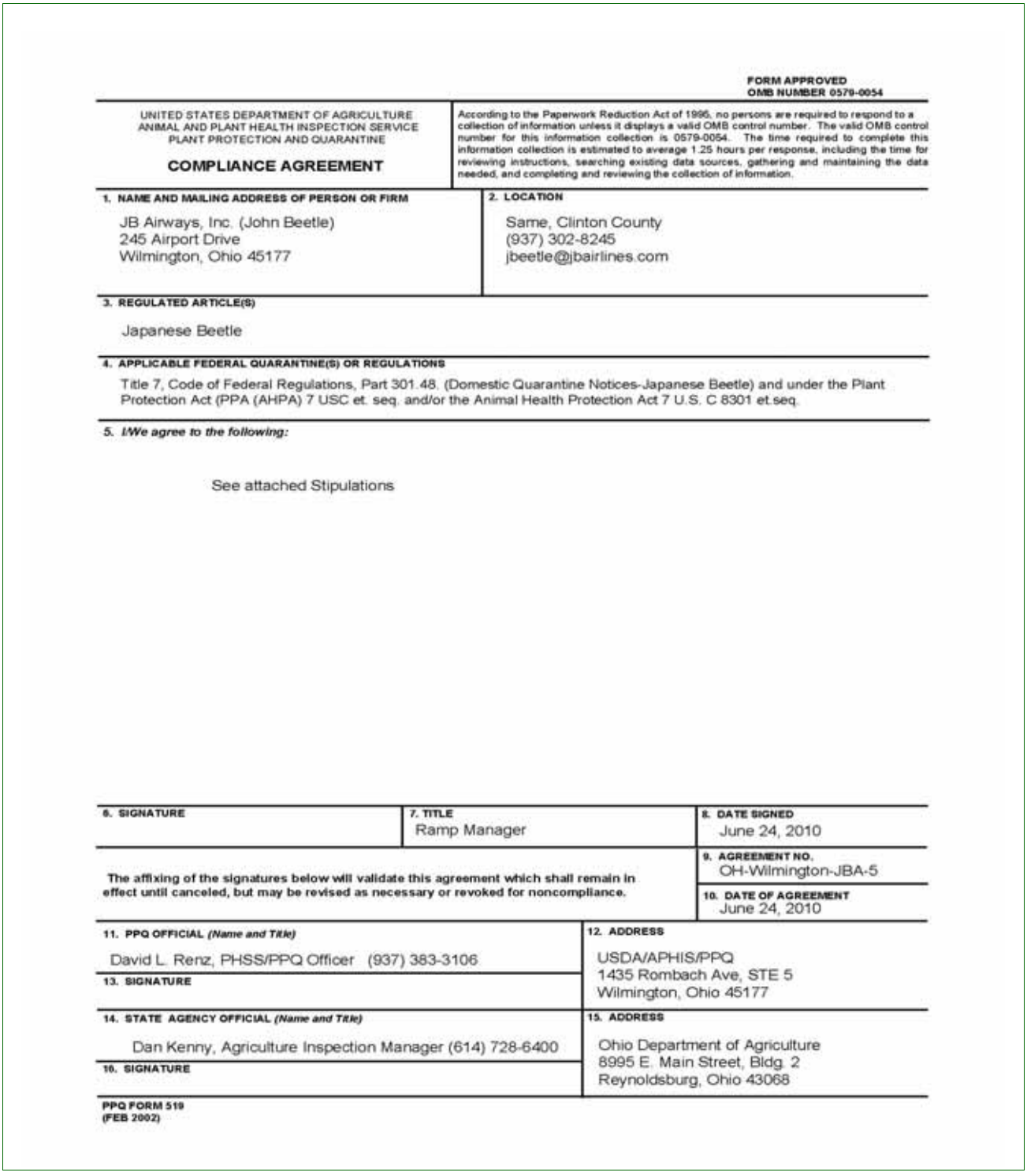
5. I / WE AGREE TO THE FOLLOWING:

6. SIGNATURE	7. TITLE	8. DATE SIGNED
		9. AGREEMENT NO.
The affixing of the signatures below will validate this agreement which shall remain in effect until canceled, but may be revised as necessary or revoked for noncompliance.		10. DATE OF AGREEMENT

11. PPQ/CBP OFFICIAL (NAME AND TITLE)	12. ADDRESS
13. SIGNATURE	
14. U.S. GOVERNMENT/STATE AGENCY OFFICIAL (NAME AND TITLE)	15. ADDRESS
16. SIGNATURE	

PPQ FORM 519 (MAY 2007) *Previous editions are obsolete*

Figure D-1-1 PPQ Form 519—Compliance Agreement (CA)



FORM APPROVED
OMB NUMBER 0579-0054

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

COMPLIANCE AGREEMENT

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0579-0054. The time required to complete this information collection is estimated to average 1.25 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

1. NAME AND MAILING ADDRESS OF PERSON OR FIRM

JB Airways, Inc. (John Beetle)
245 Airport Drive
Wilmington, Ohio 45177

2. LOCATION

Same, Clinton County
(937) 302-8245
jbeetle@jbairlines.com

3. REGULATED ARTICLE(S)

Japanese Beetle

4. APPLICABLE FEDERAL QUARANTINE(S) OR REGULATIONS

Title 7, Code of Federal Regulations, Part 301.48. (Domestic Quarantine Notices-Japanese Beetle) and under the Plant Protection Act (PPA (AHPA) 7 USC et. seq. and/or the Animal Health Protection Act 7 U.S. C 8301 et.seq.

5. *I/We agree to the following:*

See attached Stipulations

6. SIGNATURE

7. TITLE
Ramp Manager

8. DATE SIGNED
June 24, 2010

9. AGREEMENT NO.
OH-Wilmington-JBA-5

10. DATE OF AGREEMENT
June 24, 2010

The affixing of the signatures below will validate this agreement which shall remain in effect until canceled, but may be revised as necessary or revoked for noncompliance.

11. PPQ OFFICIAL *(Name and Title)*
David L. Renz, PHSS/PPQ Officer (937) 383-3106

12. ADDRESS
USDA/APHIS/PPQ
1435 Rombach Ave, STE 5
Wilmington, Ohio 45177

13. SIGNATURE

14. STATE AGENCY OFFICIAL *(Name and Title)*
Dan Kenny, Agriculture Inspection Manager (614) 728-6400

15. ADDRESS
Ohio Department of Agriculture
8995 E. Main Street, Bldg. 2
Reynoldsburg, Ohio 43068

16. SIGNATURE

PPQ FORM 519
(FEB 2002)

Figure D-1-2 Example of a Completed CA

UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE PLANT PROTECTION AND QUARNATINE **COMPLIANCE AGREEMENT FOR:** **JB AIRWAYS, INC.**	**STIPULATIONS** **FOR JAPANESE BEETLE (2 PAGES)**

STIPULATIONS

A. Keep all doors and cargo openings closed on regulated flights AT ALL TIMES when not in use. All doors and cargo openings on non-regulated flights should also remain closed when not actively being used.

B. Keep cockpit windows closed at all times when aircraft is on ground.

C. Daily procedures are that during the off-load, all personnel are to catch and destroy all beetles that enter the aircraft. After the off-load is complete all doors are shut. At this time the swatters lift all locks and look for any beetles that may be on board.

D. The next step is to treat the entire aircraft with an approved PPQ pesticide. All doors remain shut for a period of not less than 10 minutes after the spraying procedures are completed. All Ramp Representatives are required to verify that the flight has been sprayed and is ready to go before any on-load procedures can be started.

E. Excluders will be used on all regulated aircraft as directed by USDA-APHIS-PPQ.

F. All excluders will be inspected prior to docking to aircraft. Remove and destroy all beetles found.

Please see Attachment for EXCLUDER TEAM RESPONSIBILITIES

G. All empty cans must be inspected for beetles BEFORE being loaded with cargo; all beetles must be removed.

H. Ball-mat area must be kept clean and free of litter; either by vacuuming or removal by Excluder Team. Personnel are equipped with 3-cell flashlights to inspect this area for Beetles.

I. After the on-load is complete, the door is closed to the point of about 12 inches. During this closing process, the bottom door seal is monitored for any beetles that may have fallen into this area. The entire area around the

Figure D-1-3 Example of CA Stipulations (page 1 of 2)

door is then sprayed with the insecticide d-phenothrin, for added protection. After this, the door is closed completely while monitoring the door for bugs.

J. As the main cargo door is being closed, two Excluder Team members must be as close as possible to the door to prevent beetles from entering---this is the highest risk time frame of the entire process. It is imperative that the cargo doors be closed AS QUICKLY AS POSSIBLE once unload is complete.

K. All non-protected cargo holds and door openings will be monitored by Exclusion Team personnel AT ALL TIMES that they are opened; from block time to take-off.

L. All cans and pallets must be covered with plastic as directed by USDA-APHIS-PPQ.

M. All cans must be inspected immediately BEFORE and AFTER entering the excluder.

N. All personnel boarding the aircraft must be inspected for beetles attached to clothing PRIOR to entering the aircraft. Remove and destroy all beetles.

O. Immediately before aircraft departure, thoroughly inspect cockpit and galley area. Remove and destroy all Japanese Beetles.

P. Complete "Japanese Beetle Activity Record".

Q. If regularly scheduled aircraft are replaced with an alternate aircraft, it must be inspected, and all Japanese beetles must be removed. Also, all treatment and safeguard requirements applicable to the regularly scheduled aircraft must be implemented.

R. Aircraft treatment records must be maintained for 2 years.

S. Failure to comply with the Japanese Beetle Regulations and/or provisions of this Compliance Agreement may result in cancellation of this Compliance Agreement and/or assessment of civil penalties.

T. For more information, contact your local USDA-APHIS-PPQ offices:

For updates to the Japanese Beetle Manual
http//www.aphis.usad.gov/ppq/manuals/domestic/JBChapters.htm

Figure D-1-3 Example of CA Stipulations (page 2 of 2)

PPQ Form 523, Emergency Action Notification (EAN)

Use the EAN when either of the following conditions occurs:

- When a JB-infested aircraft is intercepted at an airport in the JB-free States; or
- When aircraft leaving an airport in the JB-infested area are likely to be JP infested

When the first condition occurs, use the EAN to obtain treatment of the infested aircraft.

When the second condition occurs, use the EAN to regulate the hazardous airport.

The EAN can be retrieved from the USDA–APHIS forms Web site.

An example copy of the form for EAN, PPQ Form 523, is on the following page.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information is 0579-0102. The time required to complete this information collection is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

FORM APPROVED - OMB NO. 0579-0102

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

EMERGENCY ACTION NOTIFICATION

SERIAL NO.

1. PPQ LOCATION | 2. DATE ISSUED

3. NAME AND QUANTITY OF ARTICLE(S)

4. LOCATION OF ARTICLES

5. DESTINATION OF ARTICLES

6. SHIPPER

7. NAME OF CARRIER

8. SHIPMENT ID NO.(S)

9. OWNER/CONSIGNEE OF ARTICLES

Name:

Address:

PHONE NO. | FAX NO.

SS NO. | TAX ID NO.

10. PORT OF LADING | 11. DATE OF ARRIVAL

12. ID OF PEST(S), NOXIOUS WEEDS, OR ARTICLE(S)

12a. PEST ID NO. | 12b. DATE INTERCEPTED

13. COUNTRY OF ORIGIN | 14. GROWER NO.

15. FOREIGN CERTIFICATE NO.

15a. PLACE ISSUED | 15b. DATE

Under Sections 411, 412, and 414 of the Plant Protection Act (7 USC 7711, 7712, and 7714) and Sections 10404 through 10407 of the Animal Health Protection Act (7 USC 8303 through 8306), you are hereby notified, as owner or agent of the owner of said carrier, premises, and/or articles, to apply remedial measures for the pest(s), noxious weeds, and or article(s) specified in Item 12, in a manner satisfactory to and under the supervision of an Agriculture Officer. Remedial measures shall be in accordance with the action specified in Item 16 and shall be completed within the time specified in Item 17.

AFTER RECEIPT OF THIS NOTIFICATION, ARTICLES AND/OR CARRIERS HEREIN DESIGNATED MUST NOT BE MOVED EXCEPT AS DIRECTED BY AN AGRICULTURE OFFICER. THE LOCAL OFFICER MAY BE CONTACTED AT:

16. ACTION REQUIRED

☐ TREATMENT:

☐ RE-EXPORTATION:

☐ DESTRUCTION:

☐ OTHER:

Should the owner or owner's agent fail to comply with this order within the time specified below, USDA is authorized to recover from the owner or agent cost of any care, handling, application of remedial measures, disposal, or other action incurred in connection with the remedial action, destruction, or removal.

17. AFTER RECEIPT OF THIS NOTIFICATION COMPLETE SPECIFIED ACTION WITHIN (Specify No. Hours or No. Days):

18. SIGNATURE OF OFFICER:

ACKNOWLEDGMENT OF RECEIPT OF EMERGENCY ACTION NOTIFICATION

I hereby acknowledge receipt of the foregoing notification.

SIGNATURE AND TITLE: | DATE AND TIME:

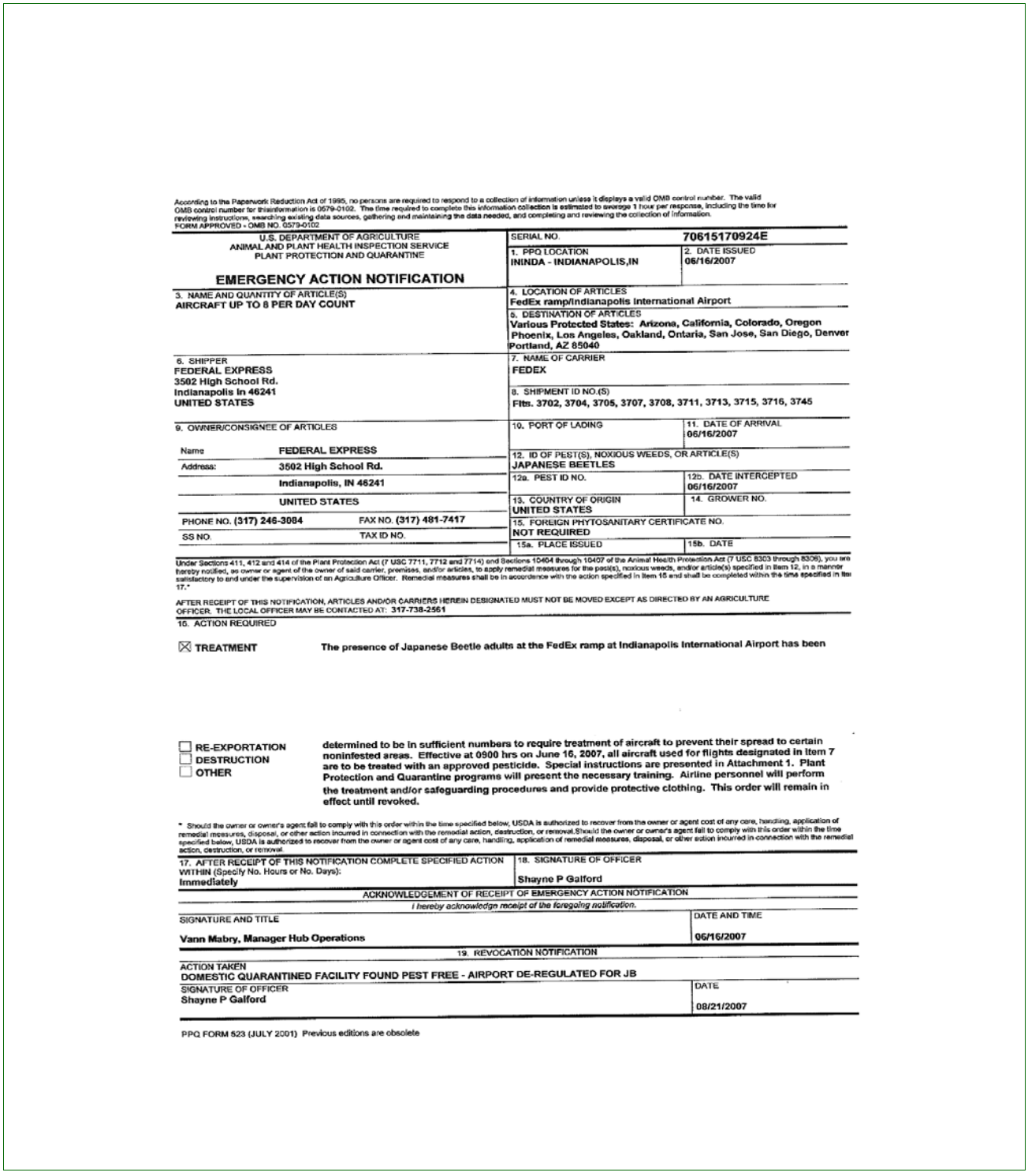
19. REVOCATION OF NOTIFICATION

ACTION TAKEN:

SIGNATURE OF OFFICER: | DATE:

PPQ FORM 523 (JULY 2002) Previous editions are obsolete.

Figure D-1-4 PPQ Form 523—Emergency Action Notification



According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information is 0579-0102. The time required to complete this information collection is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.
FORM APPROVED - OMB NO. 0579-0102

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

EMERGENCY ACTION NOTIFICATION

SERIAL NO. **706151709 24E**

1. PPQ LOCATION: **ININDA - INDIANAPOLIS,IN**
2. DATE ISSUED: **06/16/2007**

3. NAME AND QUANTITY OF ARTICLE(S): **AIRCRAFT UP TO 8 PER DAY COUNT**
4. LOCATION OF ARTICLES: **FedEx ramp/Indianapolis International Airport**
5. DESTINATION OF ARTICLES: **Various Protected States: Arizona, California, Colorado, Oregon Phoenix, Los Angeles, Oakland, Ontaria, San Jose, San Diego, Denver Portland, AZ 85040**

6. SHIPPER
FEDERAL EXPRESS
3502 High School Rd.
Indianapolis In 46241
UNITED STATES

7. NAME OF CARRIER: **FEDEX**
8. SHIPMENT ID NO.(S): **Flts. 3702, 3704, 3705, 3707, 3708, 3711, 3713, 3715, 3716, 3745**

9. OWNER/CONSIGNEE OF ARTICLES
Name: **FEDERAL EXPRESS**
Address: **3502 High School Rd.**
Indianapolis, IN 46241
UNITED STATES
PHONE NO. **(317) 246-3084** FAX NO. **(317) 481-7417**
SS NO. TAX ID NO.

10. PORT OF LADING
11. DATE OF ARRIVAL: **06/16/2007**
12. ID OF PEST(S), NOXIOUS WEEDS, OR ARTICLE(S): **JAPANESE BEETLES**
12a. PEST ID NO.
12b. DATE INTERCEPTED: **06/16/2007**
13. COUNTRY OF ORIGIN: **UNITED STATES**
14. GROWER NO.
15. FOREIGN PHYTOSANITARY CERTIFICATE NO.: **NOT REQUIRED**
15a. PLACE ISSUED
15b. DATE

Under Sections 411, 412 and 414 of the Plant Protection Act (7 USC 7711, 7712 and 7714) and Sections 10404 through 10407 of the Animal Health Protection Act (7 USC 8303 through 8306), you are hereby notified, as owner or agent of the owner of said carrier, premises, and/or articles, to apply remedial measures for the pest(s), noxious weeds, and/or article(s) specified in Item 12, in a manner satisfactory to and under the supervision of an Agriculture Officer. Remedial measures shall be in accordance with the action specified in Item 16 and shall be completed within the time specified in Item 17.*

AFTER RECEIPT OF THIS NOTIFICATION, ARTICLES AND/OR CARRIERS HEREIN DESIGNATED MUST NOT BE MOVED EXCEPT AS DIRECTED BY AN AGRICULTURE OFFICER. THE LOCAL OFFICER MAY BE CONTACTED AT: **317-738-2561**

16. ACTION REQUIRED

☒ **TREATMENT** — **The presence of Japanese Beetle adults at the FedEx ramp at Indianapolis International Airport has been determined to be in sufficient numbers to require treatment of aircraft to prevent their spread to certain noninfested areas. Effective at 0900 hrs on June 16, 2007, all aircraft used for flights designated in Item 7 are to be treated with an approved pesticide. Special instructions are presented in Attachment 1. Plant Protection and Quarantine programs will present the necessary training. Airline personnel will perform the treatment and/or safeguarding procedures and provide protective clothing. This order will remain in effect until revoked.**

☐ RE-EXPORTATION
☐ DESTRUCTION
☐ OTHER

* Should the owner or owner's agent fail to comply with this order within the time specified below, USDA is authorized to recover from the owner or agent cost of any care, handling, application of remedial measures, disposal, or other action incurred in connection with the remedial action, destruction, or removal.Should the owner or owner's agent fail to comply with this order within the time specified below, USDA is authorized to recover from the owner or agent cost of any care, handling, application of remedial measures, disposal, or other action incurred in connection with the remedial action, destruction, or removal.

17. AFTER RECEIPT OF THIS NOTIFICATION COMPLETE SPECIFIED ACTION WITHIN (Specify No. Hours or No. Days): **Immediately**
18. SIGNATURE OF OFFICER: **Shayne P Galford**

ACKNOWLEDGEMENT OF RECEIPT OF EMERGENCY ACTION NOTIFICATION

I hereby acknowledge receipt of the foregoing notification.

SIGNATURE AND TITLE: **Vann Mabry, Manager Hub Operations**
DATE AND TIME: **06/16/2007**

19. REVOCATION NOTIFICATION

ACTION TAKEN
DOMESTIC QUARANTINED FACILITY FOUND PEST FREE - AIRPORT DE-REGULATED FOR JB

SIGNATURE OF OFFICER: **Shayne P Galford**
DATE: **08/21/2007**

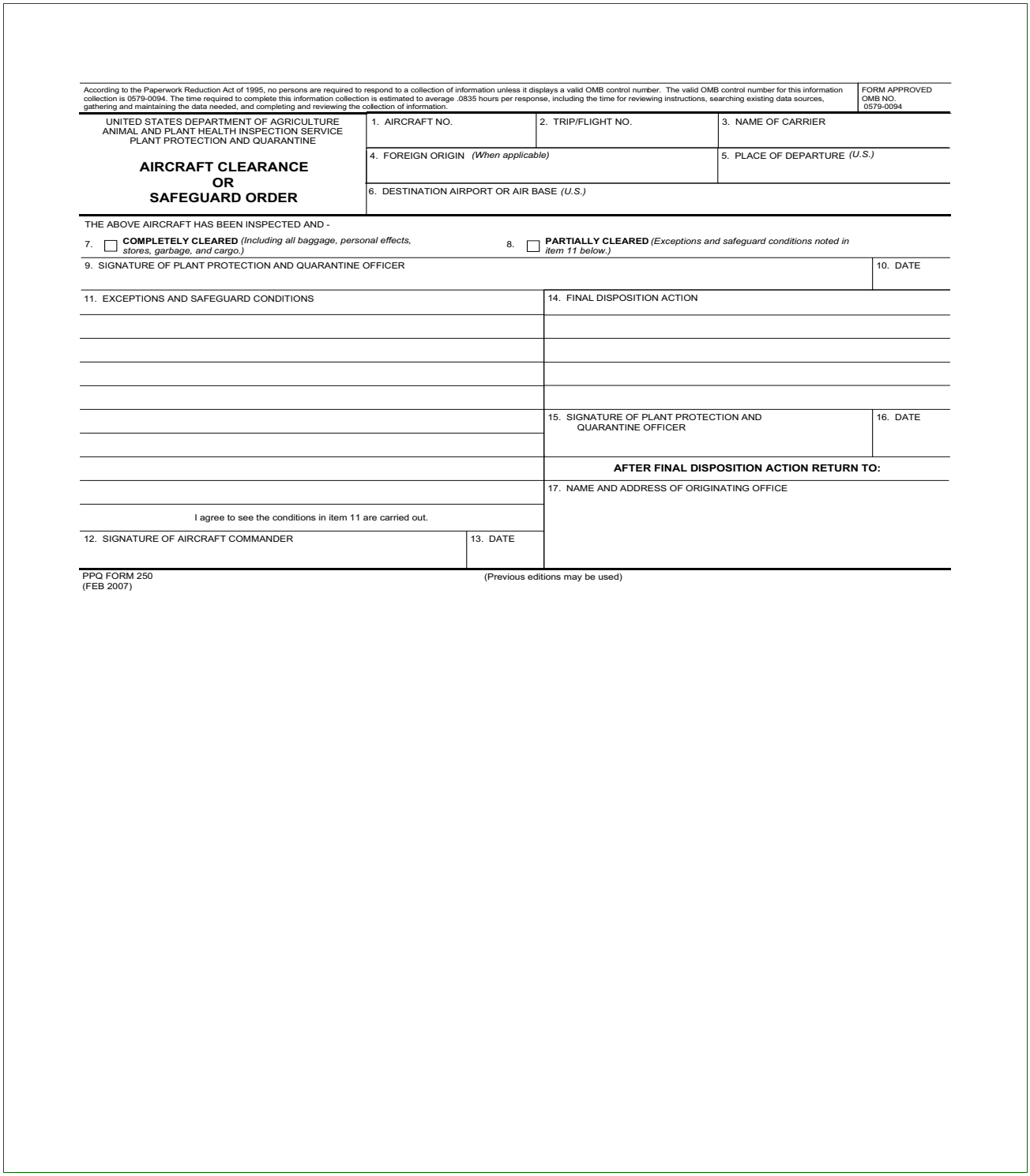
PPQ FORM 523 (JULY 2001) Previous editions are obsolete

Figure D-1-5 Example of a Completed EAN

PPQ Form 250, Aircraft Clearance or Safeguard Order

If requested by personnel at a destination airport, issue an Aircraft Clearance or Safeguard Order (PPQ Form 250) to the pilot after treating an aircraft. However, if personnel do not request a PPQ Form 250, do not issue this document.

The following page shows an example of PPQ Form 250, Aircraft Clearance or Safeguard Order.



According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0579-0094. The time required to complete this information collection is estimated to average .0835 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

FORM APPROVED
OMB NO.
0579-0094

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

AIRCRAFT CLEARANCE OR SAFEGUARD ORDER

1. AIRCRAFT NO.
2. TRIP/FLIGHT NO.
3. NAME OF CARRIER
4. FOREIGN ORIGIN *(When applicable)*
5. PLACE OF DEPARTURE *(U.S.)*
6. DESTINATION AIRPORT OR AIR BASE *(U.S.)*

THE ABOVE AIRCRAFT HAS BEEN INSPECTED AND -

7. ☐ **COMPLETELY CLEARED** *(Including all baggage, personal effects, stores, garbage, and cargo.)*
8. ☐ **PARTIALLY CLEARED** *(Exceptions and safeguard conditions noted in item 11 below.)*

9. SIGNATURE OF PLANT PROTECTION AND QUARANTINE OFFICER
10. DATE

11. EXCEPTIONS AND SAFEGUARD CONDITIONS

I agree to see the conditions in item 11 are carried out.

12. SIGNATURE OF AIRCRAFT COMMANDER
13. DATE

14. FINAL DISPOSITION ACTION

15. SIGNATURE OF PLANT PROTECTION AND QUARANTINE OFFICER
16. DATE

AFTER FINAL DISPOSITION ACTION RETURN TO:

17. NAME AND ADDRESS OF ORIGINATING OFFICE

PPQ FORM 250
(FEB 2007)

(Previous editions may be used)

Figure D-1-6 PPQ Form 250—Aircraft Clearance or Safeguard Order

Japanese Beetle Aircraft Inspection Record (JBAIR)

The JBAIR is the form used at receiving airports in the protected States to document the interception of Japanese Beetles (JBs) on arriving flights.

The following page contains an example of the JBAIR.

Japanese Beetle Aircraft Inspection Record

Date: 7/29/09
Airport: OAK
Carrier: UPS
Flight No.: 2946
Origin: SDF
Route: direct
Regulated at origin? ☐ Yes ☑ No
Tail No.: N 280UP
Aircraft Type: MD 11

Arrival Time: 1725
Time of Inspection: From: 1730 To: 1911
Inspectors: Jenny McVernon
PDR/309# 1512006
Treated at destination? ☐ Yes ☑ No
EAN issued? (attach copy) ☐ Yes ☑ No
Notice of violation issued? ☐ Yes ☑ No
Applicators:

Indicate location and condition of beetles found and total for each category:

	Cockpit	Cabin, Galley or Toilet (circle one)	Main Cargo Door Sill	Ball Mat or Vicinity	Main Cargo Area	Belly Hold (front)	Belly Hold (rear)	Other (specify)	Other (specify)	TOTAL:	No. Morb. Held:
DEAD (Dried):						1				1	
DEAD (Fresh):										0	
MORIBUND:										0	0
ALIVE:										0	
TOTAL:	0	0	0	0	0	1	0	0	0	1	

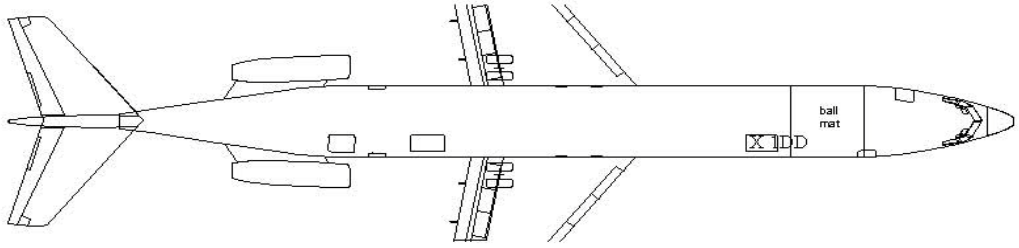
DEAD-dried (DD): No independent movement or response when stimulated. Dried out, appendages brittle. Beetle may be whole, broken or fragmented.

DEAD-fresh (DF): Same as above except appendages flexible, not brittle. Note: beetles may just be "playing" dead or cold. If motionless, allow beetles to warm up in hand or place in a vial in pocket for 20-30 seconds before evaluating.

MORIBUND (M): In advanced stages of dying. Capable of only minimal uncoordinated movement of appendages e.g. legs or antennae twitching, often on back and unable to right themselves. Incapable of coordinated movement (e.g. walking more than one body length) when warm. Incapable of feeding if held for observation.

ALIVE (A): Alert and active. Capable of coordinated movement when warm e.g. righting themselves if on back, walking at least one body length, responding to stimuli, struggling to escape, capable of feeding if allowed etc. Antennae out and open.

Indicate number, location and condition (DD, DF, M, A) of beetles found on the following diagram:



Please note specific locations of beetles found, additional comments, notes etc. (use back if necessary). Observation Results:

One dead dried beetle found in front ball mat.

Hours	Alive	Dead	Morb.
12			
24			
48			

Rev. 6/6/03

Figure D-1-7 Example of a Completed JBAIR

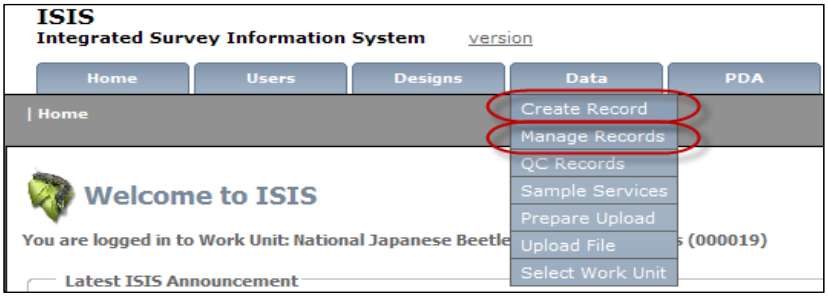
ISIS Design for Japanese Beetle Airplane Instructions

USDA PPQ ISIS Design For Japanese Beetle Airplane Inspections
ISIS Web Data Management
March 2010
ISIS.Support@aphis.usda.gov (888-272-3181)

Adding a new airport record

Log into ISIS using the credential provided by the work unit manager.

Once in, click the menu tab **Data** and then select **Create Records** to add a new airport or **Manager Records** to add additional flights and/or inspections.



Adding a new airport record

On the **Create record** page, enter the airport name (full name or initials), select the design name and click **Create Record**.

Once the new airport record is created you can add new carrier flights and inspections. This is a one-time requirement; only one record is required per airport.

Adding new flights and/or inspections

Click the menu tab **Data** and then select **Manager Records** to add additional flights and/or inspections.

On the **Manager Records** page select the appropriate Design name (if the JB Inspections design is not the default) and click **View Records** for a list of airports.

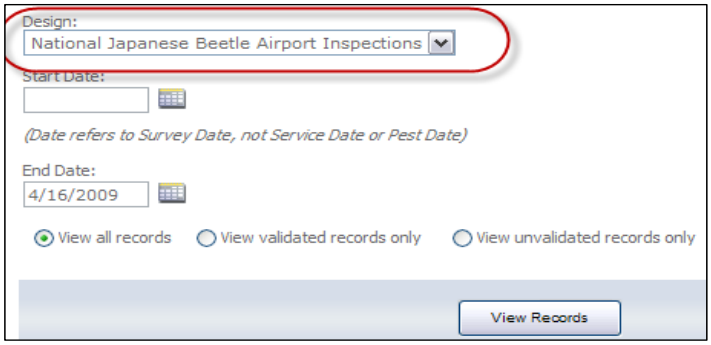
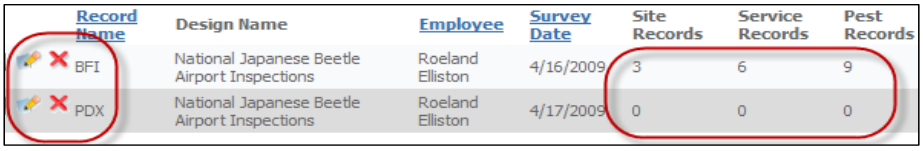


Figure D-1-8 ISIS Instruction Form (page 1 of 3)

Select airport

From the airport list, click the edit icon to add additional carrier flights and/or inspections.

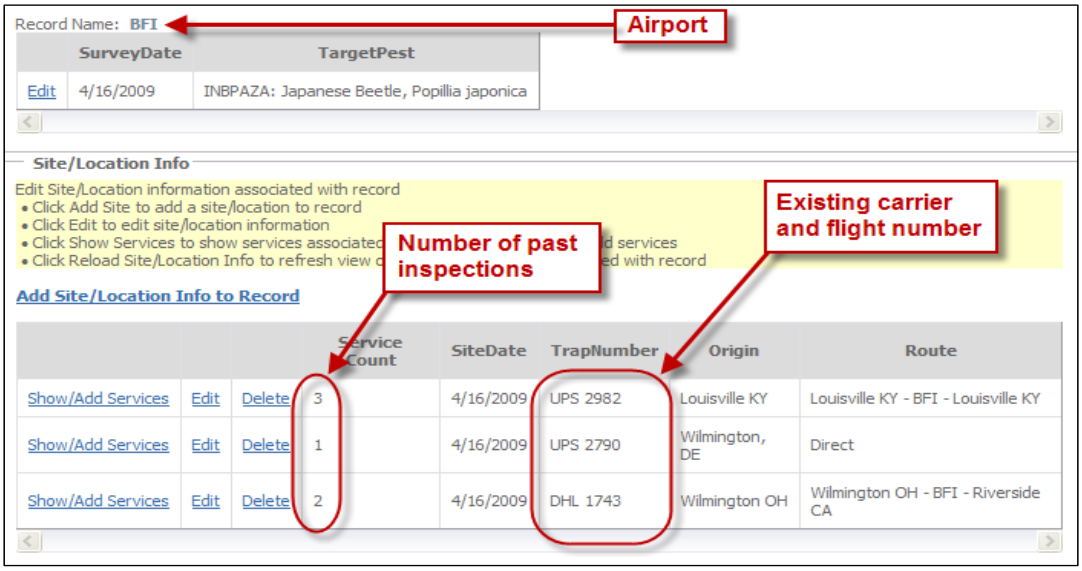


	Record Name	Design Name	Employee	Survey Date	Site Records	Service Records	Pest Records
	BFI	National Japanese Beetle Airport Inspections	Roeland Elliston	4/16/2009	3	6	9
	PDX	National Japanese Beetle Airport Inspections	Roeland Elliston	4/17/2009	0	0	0

For each airport, a summary list of carrier flights (site records), inspections (service records) and JB finds is listed to the right of each airport name.

Select existing carrier flight or add new

If the flight has been previously recorded simply click the '**Show/Add Services**' option to the left of the existing carrier name and flight number. If there is not yet a record for the flight, click '**Add Site/Location Info to Record**' and add carrier name and flight number (in the field labeled 'TrapNumber'), Origin and Route information.



After clicking '**Show/Add Services**,' past inspections will be listed along with the option to create a new service. Click '**Add Services to Site.**'

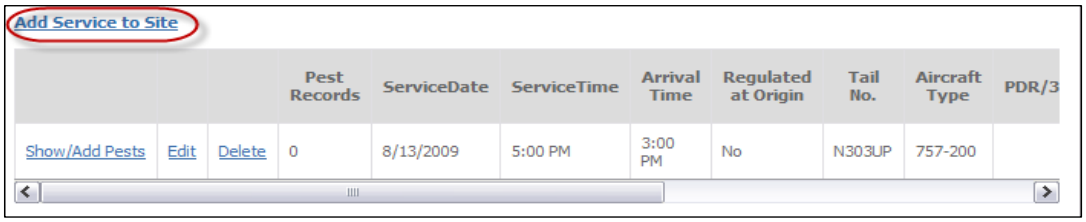


Figure D-1-9 ISIS Instruction Form (page 2 of 3)

Entering inspection data

Inspection information is based on the Japanese Beetle Airplane Inspection Report and consists of text fields and check boxes.

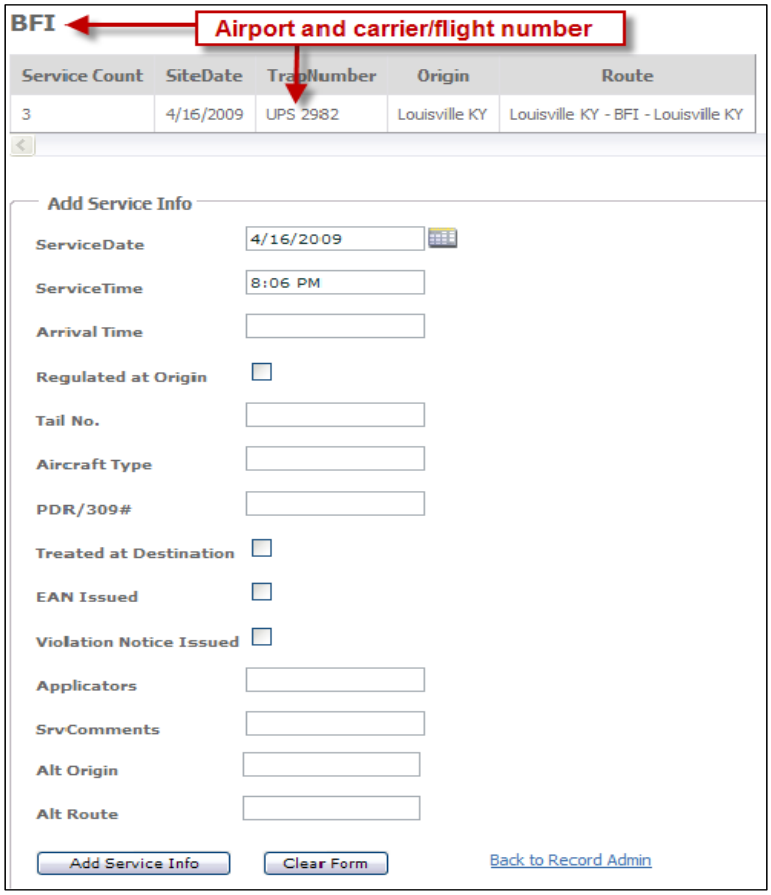
Enter all appropriate data and click '**Add Service Info**' when complete.

After clicking '**Add Service Info**' you will return to the Record Administration page where you can exit ISIS, enter additional inspections or add pest data.

If no JB suspects were found then you are done with this record. You can exit ISIS or click the menu tab **Data** and select **Manager Records** to add additional flights and/or inspections.

If JB suspects were found, after returning to the Record Administration page you need to click the '**Show/Add Pest**' option for the new inspection and add appropriate pest data.

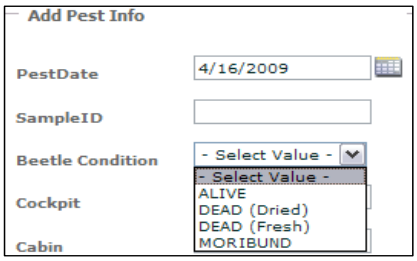
Once you click '**Show/Add Pest**,' click '**Add Pest**.'



Add Pest Info

Enter a pest record for each JB Beetle Condition found during the inspection. The pest record contains the count fields, as with the JB Airplane Inspection Report, and two additional 'Other' fields.

Enter all appropriate data and click '**Add Pest Info**' when complete.



Prepared by:
Dave Kowalski
USDA/APHIS/PPQ
(970) 494-7510
David.G.Kowalski@aphis.usda.gov

Figure D-1-10 ISIS Instruction Form (page 3 of 3)

E

Japanese Beetle Program Manual

Appendix E

Trap and Lure Database

The trap and lure procurement database can be used to request JB traps and lures. Please check with your regional trap and lure program manager for details.

F

Japanese Beetle Program Manual

Appendix F

Technique for Larval Surveys

Contents

Need for Larval Survey

When only larvae are present, a rapid and accurate method is desirable for estimating population density. The method must be able to classify populations into those that need control and those that do not.

In the following sequential sampling plan, the number of samples to be taken is **not** fixed; the required number of samples is determined by the cumulative total from the initial samples.

Larval Stage Requirement

This sequential sampling plan is for 2nd instar populations of JB. According to Vittum (1986), a population will be almost completely 2nd instar around the last day of August in New England (about 1 month after the midpoint of the flight period). Sampling was done in August in New Jersey.

Size of Sample

Each sample consists of 1 square foot of turf collected and examined for larvae to a depth of 4 to 5 inches.

Time Requirement

The time required to examine one sample is brief, around 15 minutes.

Control Threshold

Control of the 2nd-instars of JB is recommended when the average larval count is greater than 3 per square foot; control is not required when the count is less than 1 per square foot

Using ***Table F-1-1*** on **page F-1-3**, sampling should cease when the cumulative number of larvae falls within the category of “treatment not required” or “treatment required.”

Additional Information

Additional information can be found in the following publication:

Ng, Y. S., Trout, J. R., and Ahmad, S. 1983. Sequential sampling plans for larval populations of the Japanese beetle (Coleoptera: Scarabaeidae) in turfgrass. *J. Econ. Entomol.* 76:251–53.

Table F-1-1 Sequential Sampling Table for Treatment Decisions on 2nd Instars of the Japanese Beetle Larvae in Turfgrass

CUMULATIVE NUMBER OF LARVAE				
	10% Error Rate		5% Error Rate	
No. of Samples	Treatment not Required	Treatment Required	Treatment not Required	Treatment Required
1	[1]	6	[1]	7
2	[1]	8	[1]	9
3	1	9	[1]	11
4	3	11	1	13
5	4	13	3	14
6	6	15	5	16
7	8	16	6	18
8	10	18	8	20
9	11	20	10	21
10	13	22	12	23
11	15	23	13	25
12	16	25	15	26
13	18	27	17	28
14	20	28	18	30
15	22	30	20	32
16	23	32	22	33
17	25	34	24	35
18	27	35	25	37
19	29	37	27	39
20	30	39	29	40

1 Decision cannot be reached.

G

Japanese Beetle Program Manual

Appendix G

Insecticide Information and Distributors

Contents

Disclaimer

This appendix supplies additional information about the various insecticides used to control the Japanese beetle (JB) stages. Mention of these products and companies should not be considered an endorsement. These products and companies are mentioned merely as a convenience. Information on products and companies can be found at the following Web sites:

- Clemson University Pesticide Information Program
- Labels MSDS home page
- University of Minnesota Extension
- The Greenbook Group

As a safety precaution, read and follow all label directions. In addition to label directions, follow all pertinent State and Federal laws. Information on the distributors and their insecticides follows.

AgrEvo Environmental Health

Larval insecticides: Bendiocarb is the active ingredient in Ficam® W (a 76% wettable powder) and Ficam® Plus (a 29.5% wettable powder).

Bendiocarb was previously manufactured by AgrEvo for control of the JB adult in aircraft. AgrEvo was acquired by Bayer CropScience. The label was not renewed; however, the remaining stocks of Ficam® W and Ficam® Plus can still be used.

Airosol Company

Airosol Company
P.O. Box 120
Neodesha, KS 66757
Telephone: (620) 325-2666

Adult insecticide: The compound d-phenothrin is used for the control of adults on aircraft.

Comment: This compound is authorized for use on aircraft.

American Vanguard Corporation

Amvac Chemical Corporation
41 E. Washington Boulevard
Los Angeles, CA 90023
Telephone: (323) 264-3910

Adult insecticide: Acephate is the active ingredient in Orthene® Turf, Tree, and Ornamental Spray and Orthene® Turf, Tree, and Ornamental WSP, a water soluble powder.

Comments: Acephate is used to control the adult JB on trees, shrubs, and certain outdoor floral crops. According to Lawrence et al. (1973; *J. Econ. Entomol.* 66:477-479), activity will remain in spite of light rains.

Bayer Advanced

Bayer Advanced LLC
2 TW Alexander Drive
Research Triangle Park, NC 27709
Telephone: (877) 229-3725

Larval insecticides: Trichlorfon is the active ingredient in Bayer Advanced™ 24-Hour Grub Killer Plus Granules.

Imidacloprid is the active ingredient in Bayer Advanced™ Season-Long Grub Control.

Comments: The trichlorfon in the 24-Hour Grub Killer Plus Granules is labeled as giving "overnight results." Trichlorfon is an organophosphate with a high toxicity to birds and fish. Trichlorfon is **not** for use if there is a possibility that adjacent water will be exposed.

Imidacloprid in Bayer Advanced™ Season-Long Grub Control is a chloronicotinyl with low toxicity to birds and fish.

Adult insecticide: Beta-Cyfluthrin is the active ingredient in PowerForce® Multi-insect Killer, which is labeled for JBs on flowers, trees, shrubs, and ground covers.

Comments: Beta-Cyfluthrin is a pyrethroid insecticide with a high toxicity to bees and fish. Cyfluthrin is **not** for use if there is a possibility that adjacent water will be exposed.

Bayer CropScience

Bayer CropScience LP
2 T.W. Alexander Drive
Research Triangle Park, NC 27709
Telephone: (919) 549-2000

Adult insecticides: Carbaryl is the active ingredient in several formulations: 1) Sevin® XLR Plus contains carbaryl as a microfine suspension in a aqueous medium; 2) Sevin® 80S is a dry powder formulation in water soluble packs; and 3) Sevin® 4F is a liquid suspension for dispersion in water.

Cyfluthrin is the active ingredient in Renounce® 20WP. This is a restricted-use pesticide that can be used as a spray treatment for tree and vine crops.

Comments: Sevin® is probably the insecticide most commonly used to control JB. Sevin® XLR Plus is labeled for the control of JB on pome fruits. Sevin® 80S is labeled for the control of JB on tree fruit crops and forested areas. According to Lawrence et al. (1973; *J. Econ. Entomol.* 66:477-479), carbaryl is very effective; if rainfall does **not** occur or if light showers occur, the protective action will last at least 7 days.

Bayer Environmental Science

Bayer Environmental Science
2 TW Alexander Drive
Research Triangle Park, NC 27709
Telephone: (919) 549-2000

Larval insecticides: Imidacloprid is the active ingredient in several Merit® formulations

Comments: Imidacloprid is a chloronicotinyl with low toxicity to birds and fish.

Adult insecticide: Imidacloprid is the active ingredient in several Merit® formulations, which are labeled for JBs on flowers, trees, shrubs, and ground covers.

Cyfluthrin is the active ingredient in Tempo® SC Ultra. For the control of JB, this product is labeled for use in aircraft holds and cargo areas.

Dow AgroSciences

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268
Telephone: (317) 337-3000; (800) 258-3033

Larval insecticide: Chlorpyrifos is the active ingredient in Dursban® 50WSP, a wettable powder formulation used at the rate of 4 to 8 lb/acre for turf.

Comments: According to Villani et al. (1988; *J. Econ. Entomol.* 81:785-788) chlorpyrifos, applied as Dursban® 50% wettable powder at 1.5 lb/acre, give effective control (91%) for JB grubs.

Drexel Chemical Company

Drexel Chemical Company
1700 Channel Avenue
Memphis, TN 38113-0327
Telephone: (901) 774-4370

Larval insecticide: Carbaryl is the active ingredient in Carbaryl 4L.

Comments: Carbaryl 4L is labeled for the control of grubs, including JB larvae, in turfgrass at the rate of 8 qts per acre.

Adult insecticide: Carbaryl is the active ingredient in Carbaryl 4L.

Comments: Carbaryl 4L is labeled for the control of JB adults on pome fruits, stone fruits, trees, and ornamentals.

FMC Professional Solutions

FMC Professional Solutions
1735 Market Street
Philadelphia, PA 19103
Telephone: (800) 321-1362

Adult insecticide: Bifenthrin is the active ingredient in TalstarOne® Multi-Insecticide and in Onyx™ Insecticide.

Comments: With both products there is an application rate for JB adults on lawns and an application rate for JB adults on ornamentals.

Crop Production Services

Crop Production Services
3005 Rocky Mountain Avenue
Loveland, CO 80538
Telephone: (970) 685-3300

Adult insecticide: Carbaryl is the active ingredient in several formulations, such as Carbaryl 4L® (for tree fruit and nut crops).

Comments: Carbaryl, commonly used under the tradename Sevin®, is a carbamate insecticide.

St. Gabriel Organics

St. Gabriel Organics
14044 Litchville Drive
Orange, VA 22960
Telephone: (800) 801-0061

Larval insecticide: *Bacillus popilliae* is the important biological agent present in Milky Spore.

Comments: As a selective biological insecticide controlling the grub stage of JB, only one application is needed for lasting control. However, months may elapse before control occurs.

Syngenta Crop Protection, Inc.

Syngenta Professional Products
P. O. Box 18300
Greensboro, NC 27419
Telephone: (336) 632-6000

Larval insecticide: Thiamethoxam is the active ingredient in Flagship™ 25WG.

Comments: Flagship™ 25WG controls white grubs, including JB larvae.

Adult insecticide: Lambda-cyhalothrin is the active ingredient in several formulations, such as Scimitar® GC (for ornamentals, including trees, shrubs, flowers, foliage plants, and ground covers).

Comments: Scimitar® GC is a restricted use insecticide.

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Japanese Beetle Program Manual

Appendix H

Aircraft Information

Contents

Sources of Information

Several sources will supply information about aircraft.

1. The USDA–APHIS *Treatment Manual* also contains information on aircraft treatments (T409) and aircraft volumes. Similar information on aircraft volumes appears below.
2. The latest edition of Air Force Regulation 161-71, paragraph 4, entitled *How to Disinfect Aircraft* contains information on requirements for aerosol disinfestation of U.S Air Force aircraft.
3. The *Aircraft Volume Manual* can be found in each regional office.

Aircraft Volumes

Refer to the treatment schedule T409b in the PPQ *Treatment Manual* (TM) to determine the following:

- Process for applying 10% d-phenothrin
- Volume of the aircraft

Japanese Beetle Program Manual

Glossary

Use this *Glossary* to find the meaning of specialized words, abbreviations, acronyms, and terms used in the Japanese Beetle Program. To locate where in the manual a given definition, term, or abbreviated is mentioned, refer to the ***Index*** on **page Index-1-1**.

Definitions, Terms, and Abbreviations

adult stage. Fourth and final life stage of the Japanese Beetle.

Aircraft Clearance or Safeguard Order—PPQ Form 250. The document issued to the pilot after inspection and, possibly, treatment of an aircraft. Usually, this document is issued when requested by a destination airport in the Japanese beetle-free zone. If personnel at the destination airport do *not* request a PPQ Form 250, the document is *not* issued. PPQ Form 250, Aircraft Clearance or Safeguard Order on **page D-1-9** shows a sample PPQ Form 250, Aircraft Clearance or Safeguard Order.

aircraft-operating areas. Areas of an airport in which one or more of the following activities occur:

- Aircraft maintenance
- Cargo handling
- Luggage handling
- Passenger boarding

Animal and Plant Health Inspection Service (APHIS). An agency within the United States Department of Agriculture (USDA). The APHIS mission is to protect the animal and plant resources of the United States.

authorized inspector. Any employee of APHIS or any individual authorized by the APHIS Administrator to enforce the Japanese beetle quarantine.

compliance agreement (CA)—PPQ Form 519. A written agreement between APHIS and an individual in a business engaged in growing, handling, or moving regulated articles. In regard to transport of the Japanese beetle (JB) by aircraft, CAs are issued: 1) to monitor airports in the JB-free areas receiving at-risk flights; and 2) to determine the risk at airports with an established JB population.

egg stage. First life stage of the Japanese beetle.

Emergency Action Notification (EAN)—PPQ Form 523. The official Federal authorization of hold.

exclusion devices (excluders). Designed to prevent or reduce the entry of Japanese beetles (JBs) into aircraft during loading, unloading, and maintenance, exclusion devices, often called excluders, are a critical component of any JB management program. They will vary in size based on local environmental factors and facilities, and may be simple, such as netting (cloth or screen) covering the opening of an aircraft, or complex, such as a framed or covered structure.

high-risk aircraft. Those aircraft scheduled to fly to the protected States after probable exposure to infestation by the Japanese beetle (JB) or carrying cargo probably exposed to infestation. Because high-risk aircraft may be infested, they are regarded as regulated articles.

infested State. Those States in which surveys have found the Japanese beetle (JB) is established throughout the State or in a portion of the State.

Japanese Beetle Aircraft Inspection Record (JBAIR). The form used by receiving airports to document the interception of Japanese beetles on arriving flights. Japanese Beetle Aircraft Inspection Record (JBAIR) on **page D-1-11** contains a copy of the Japanese Beetle Aircraft Inspection Record.

Japanese beetle-free area. An area in which the Japanese beetle is not established. All of the protected States are JB free. (Note there are JB-free areas not located in the protected States.)

Japanese beetle interception database. APHIS database providing information on interceptions of Japanese beetles (JB) on aircraft arriving in a JB-free area.

larval stage. Second life stage of the Japanese beetle.

National Agricultural Pest Information System (NAPIS). The information-handling system developed to handle data on endemic and exotic pests from regulatory officials and scientists in the State departments of agriculture, scientists from land-grant universities, and regulatory officials in APHIS. Located at Purdue University (West Lafayette, IN), the NAPIS database contains information on the Japanese beetle (JB), one of many introduced pests tracked by the database. Selected information in the NAPIS database can be used to produce current distribution maps for the JB.

nonregulated airports. Airports in the Japanese beetle (JB)-regulated area where the JB is *not* likely to enter aircraft and be transported to the protected States (and other JB-free areas).

peak flight period, The time in which the Japanese beetle adults are most likely to be flying.

Plant Protection and Quarantine (PPQ). The operational program within the Animal and Plant Health Inspection Service (APHIS) responsible for preventing the spread of significant plant pests.

protected States. The western States free of the Japanese beetle (JB): Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Washington. In cooperation with APHIS and using the authorization in the *Code of Federal Regulations* (7 CFR 301.48), these nine protected States are taking action so they can remain free of the JB.

pupal stage. Third life stage of the Japanese beetle.

regulated airport. Those airports, in the JB-infested area under quarantine, where the Japanese beetle is likely to enter aircraft and be transported to JB-free areas; because of the threat to JB-free areas, these airports are "regulated" in that they must adopt certain practices to protect the JB-free areas.

regulated articles. Aircraft that are at or from regulated airports.

State Plant Health Director (SPHD). The APHIS–PPQ employee who has overall responsibility for Federal programs that deal with exotic and endemic pests. The SPHD will work closely with personnel in the State department of Agriculture.

State Plant Regulatory Official (SPRO). The authorized State official responsible for the operation of the State plant regulatory program.

United States Department of Agriculture (USDA). The Federal agency that provides leadership on food, agriculture, natural resources, and related issues.

United State Environmental Protection Agency (EPA). The Federal agency that leads the nation's environmental, science, research, education, and assessment efforts.

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