



Pest Facts

Cigarette and Drugstore Beetles

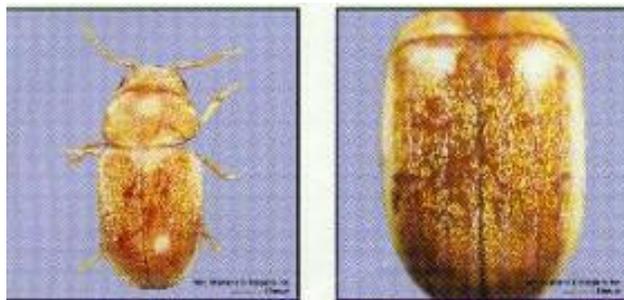
Both cigarette (*Lasioderma serricorne*) and drugstore (*Stegobium paniceum*) beetles infest a wide array of foods, especially dried plant and animal products. Cigarette beetles may even feed on pyrethrum powder strong enough to kill cockroaches, and drugstore beetles may feed on rodent baits containing strychnine. Both may also may chew through furniture, fabric, books, manuscripts and similar materials. They do not, however, bite or sting humans or pets, spread disease or feed on or damage facilities.

Identification

Adult cigarette beetles are yellowish- to reddish-brown, oval-shaped and about 1/10" long. The head is bent sharply downward, nearly at right angles to the body, giving a humpbacked appearance when viewed from the side. The wing covers (elytra) are smooth, and the antennal segments are uniform and saw-like (serrate).

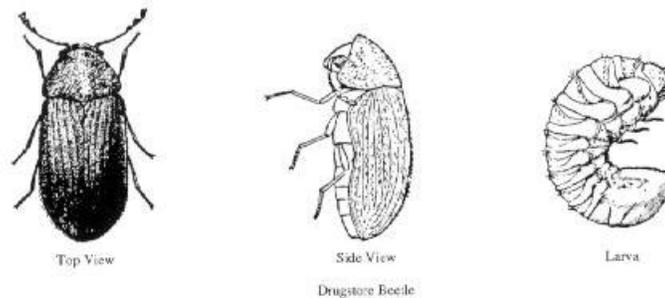
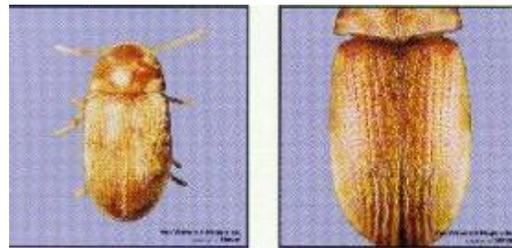
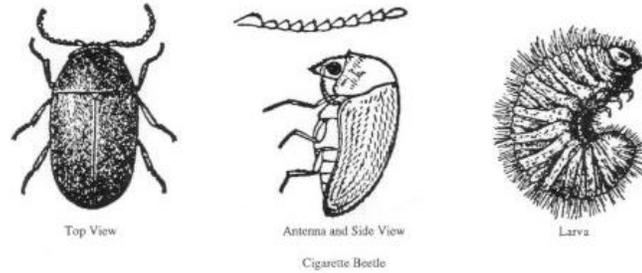
Adult drugstore beetles are reddish-brown, more elongated and about 1/10" long. The head is deflexed, but does not result in a distinct humpbacked appearance. The wing covers have faint lines running lengthwise (striated), and the antennae have three enlarged segments at the tip.

Eggs of both beetles are pearly white, and not easily seen without magnification. When fully grown, both beetle larvae are C-shaped (grub-like) and about 3/16" long. Cigarette beetle larvae are creamy white and covered with long, yellowish-brown hairs. They have



Adult Cigarette Beetle

brown head and legs. Drugstore beetle larvae are similar but do not have the fuzzy appearance.



Life Cycle and Habits

Female cigarette beetles lay up to 30 eggs during a period of 3 weeks. Eggs hatch in 6 to 10 days. The photo sensitive larval stage lasts from 5 to 10 weeks. The pupal and prepupal periods last 2 to 3 weeks are passed in a larval constructed cell. The life cycle lasts from 70 to 90 days, with 5 to 6 overlapping generations per year in warm areas and only one generation in more temperate regions. Adults are strong fliers and are often active in reduced light at temperatures above 65 degrees F. Adult beetles may live from 23 to 28 days. In temperate climates, beetles begin swarming in May and then again in August. Overwintering may be passed in the larval stage, with some adults not too resistant to cold

hibernating in cracks and crevices. In warehouses, the life cycle may be completed in about 52 days.

Female drugstore beetles lay eggs singly in foodstuffs. The larval period ranges from 4 to 5 months, with the pupal stage lasting from 12 to 18 days. The complete life cycle requires about 7 months. Larvae form a little round ball or cell which becomes its cocoon and in which it pupates. Some have succeeded in rearing the beetle from egg to larvae in about 2 months, with 4 broods per year in warm summer months. In cool climates, there is one generation per year.

Cigarette beetles commonly infest dried tobacco and tobacco products. They also infest raisins, figs, dates, ginger, pepper, nutmeg, chili powder, curry powder, cayenne pepper, paprika, yeast, drugs, legume seeds, barley, cornmeal, flour, soybean meal, sunflower meal, wheat, wheat bran, rice meal, beans, cereals, fish meal, peanuts, dry yeast, dried flowers, leather, woolen cloth and bamboo. They also may damage the leaves and bindings of books when feeding on the paste, or overstuffed furniture when infesting the straw, hair, etc.

Drugstore beetles feed on many drugs in the pharmacy, such as laxative teas and even strychnine. They also infest almonds, peanuts, paprika, red pepper, alfalfa meal, cornmeal, flour, milo, wheat, wheat bran, wheat germ, dry dog and cat food, bread, birdseed, beans, coffee beans, fish meal, spaghetti, instant chocolate, powdered milk, books, manuscripts, dried flowers, certain fillers and fabric coverings of furniture, leather, museum specimens and other foodstuffs.

Integrated Pest Management Program

The following information describes guidelines followed during the development and implementation of comprehensive Cigarette and Drugstore Beetle management programs. While an effective program will contain many of these elements, every program is dependent on site specific parameters and should be reviewed by a pest management professional before and after implementation.

1. Specific Program Recommendations

Drugstore Beetle- The drugstore beetle feeds on practically anything that is edible to humans and some non-edible things as well. Successful control is only achieved by identifying, discarding or destroying infested material. Examine all packaging of infested and uninfested material as well as the surrounding area, shelving, etc. Clean thoroughly. Immediately segregate infested material to an isolated morgue location and heat, if practical, at temperatures of 140-180 degrees F for several hours to kill all stages. Ensure untreated discarded material is immediately removed from the facility. If necessary, treat shelving units (i.e., cracks, crevices and supports) with an insect growth regulator. Begin active surveillance using pheromone traps combined with periodic visual surveillance to monitor for insects as well as sanitation problems

Cigarette Beetle- As with the drugstore beetle, excellent sanitation is extremely important in developing a successful management program. Through routine surveillance (pheromone and visual) identify and examine infestible products and storage areas.

Examine for infestation. If identified, immediately segregate the product to an isolated morgue area and heat, if practical, at temperatures of 140-180 degrees F for several hours to kill all stages. Ensure untreated discarded material is removed immediately from the facility. Examine all product packaging of infested and uninfested material as well as the surrounding area, shelving, etc. Clean thoroughly. If necessary, treat shelving units (i.e., cracks, crevices and supports) with an insect growth regulator.

2. General Program Components

A. Surveillance: Identifying the Problem

Visual Inspection

All facility areas (inside and outside) must be thoroughly reviewed to identify active/potential problem areas and to document program effectiveness. Include the following:

-Outside of the facility: Keep the area around the facility clean. Keep vegetation trimmed. Do not let pallets and debris collect. These are potential harborage for rodents and insects. Eliminate horticultural plantings that attract insects (i.e. pittosporum shrubs attract flies, many flowers attract warehouse beetles). Replace any outside mercury vapor lights with sodium vapor lights which attracted fewer insects.

-Bulk display bins and dispensers: Clean around, underneath and in. Take special care to clean all inside corners.

-Shelving and display cases: Clean and dust under, on and around shelves and display cases. Prevent food particles from collecting by sealing cracks with silicone or other flexible caulk.

-Infestible Products: Check for torn bags and buildup of debris. Monitor shelving for individual insects. Inspect all infestible foods before stocking on shelves. For a list of target products, see insect description section.

-Checkout counters: Keep clean. Do not allow build-up of food matter behind or underneath scales, cash register and counter.

-Floors: Fill or eliminate cracks. Sweep and mop regularly. Inspect corners and edges for insect activity. Keep free of dust and debris. Inspect old drain holes and clean out or eliminate them if possible.

-Cellars: Keep clean and well organized. Do not allow refuse to build up or storage of damaged or returned product. Examine for pest accesses such as holes around utility lines, poor fitting doors, window screens absent or in disrepair and pest harborage such as crevices around utility boxes, sinks, door frames, etc.

-Product storage areas: Keep food off floor on pallets or shelving made of non-porous materials at least 18" from the wall. This provides an inspection and cleaning corridor. Dust ledges and window sills, examine for signs of insects. Return or discard damaged/infested stock immediately. Place in isolated (morgue area) away from other

products. The longer infested product remains in the facility, the better chance the infestation will spread. Practice sound product rotation (first in, first out).

Pheromone Trapping

Pheromones are scents (chemicals) used by insects for communication. Some pheromones are emitted by female insects to attract the male for mating. These are called sex attractants. Some insects also produce aggregation pheromones. These chemicals attract both males and females to areas favorable for living and hiding.

Pheromones are generally species specific. Each pheromone attracts only insects of one species or those of closely related species.

Pheromone traps consist of a two part system: the lure which attracts insects to the trap and the trap which captures insects once they have been attracted to it. Neither the lure nor the trap contains chemicals that kill insects. The lure is simply an attractant. The trap employs a sticky substance to which the insects adhere to, thus preventing escape.

Pheromone Trap Monitoring

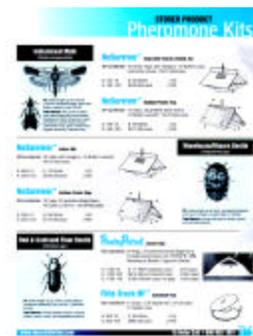
The following provides general information concerning pheromone surveillance. Additional information may be obtained from the Armed Forces Pest Management Board publication Technical Information Memorandum Number 27, Stored-Product Pest Monitoring Methods. Before implementing a pheromone surveillance program, consult your local pest management professional for guidance.

-Monitoring for an infestation (preventive): With traps in place, any increase in the size of a moth population will be detected. If this occurs, it is an indication that a general infestation is being established or infested merchandise has been imported into the facility

-Locating an Infestation: If an infestation is located in a specific area, traps closest to the vicinity of the infestation may have a higher than normal catch. Manual searches for the infestation may then be concentrated in this area.

-Determining the Effectiveness of Control Management Measures: When management measures are implemented and prove to be effective, traps will indicate a population reduction. If numbers remain stable or increase, control measures must be re-evaluated.

-Indication of Need for Improved Protection: A trend indicating elevated trap counts may



signal a need to improve/modify of preventive measures. This may mean removal of infested merchandise and elimination of an infestation site (i.e., spilled merchandise)

B. Exclusion/Sanitation

Seal off/repair/pest proof possible entry points and eliminate harborages. These include improperly stored or excess equipment, poorly fitted doors/windows/screening, cracks, crevices and holes, vents, etc. Ensure high levels of sanitation. (See inspection/monitoring)

C. Preventive Inventory Stocking Procedures.

a. Warehouse and Receiving Area

-Date stock as it enters warehouse or receiving area. Rotate on first in, first out basis.

-Rotate entire inventory on a regular basis

-Keep excessive inventory down to help facilitate rotation. Buying a large lot on sale and storing it may lead to problems unless it can be rotated quickly.

-Keep slow moving products under constant surveillance

D. Suppliers/Distributors

Suppliers/distributors are an important link in the food distribution chain and must be considered when planning a pest management program. Suppliers have their own pest management problems to handle and sometimes are, unavoidably, the source of infestation/re-infestation.

Keep excellent documentation. If you are regularly receiving infested merchandise from a particular supplier/distributor, consider the following actions:

-Carefully examine incoming merchandise

-Document all problems, offer suggestions to the distributor/supplier. Change the label of a consistently infested product.

-Change supplier/distributor if the problem is not resolved

E. Climatic Manipulation

Climatic conditions have an important impact on insect populations. Cool and dry conditions tend to suppress growth and development and may result in mortality. Warm

and humid conditions tend to speed development, increasing the number of generations produced per year. If possible, place infestible products (i.e., pet foods, pasta) in cool/dry storage areas or, if possible, refrigerator/freezer.

F. Chemical Control

Chemical control should only be considered in conjunction with other techniques and performed by a certified applicator. Crack and crevice (residual) treatments are often used in areas where adult arthropods rest or larvae migrate to pupate. Space sprays or fogs are used periodically in isolated areas, mainly to reduce adult density (space sprays are not residual insecticides and only affect those insects which directly contact the chemical during application). Trapping may also be used for surveillance and in isolated areas to reduce the size of isolated or small populations. **Remember, application of insecticide without addressing the causes of an infestation will result in limited short-term success.**

For additional information regarding stored product pest management, contact your local pest management professional or DSCP at 510-337-8122, DSN 686-8122 or email paa5245@exmail.dscp.dla.mil.

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