Several insects commonly infest home-stored foods in Colorado, such as grains, flour, nuts, spices, packaged herbs and dried fruit. If infestations are prolonged, foods may be seriously damaged and may need to be discarded. Many people will discard food products that are even lightly infested by insects. These insects typically pose little health hazard, although some species (notably carpet beetles) can produce irritation or allergic reactions.

Indian meal moth, flour beetles and sawtoothed grain beetles are particularly common in Colorado homes and are found throughout most of the world. Sometimes insects that infest food, such as carpet beetles, enter homes through natural migrations. More often, insects enter homes on food already infested during storage or transportation.

**Description**

**Flour Beetles**

Flour most commonly is infested by either of two closely related beetles: the confused flour beetle and the red flour beetle (*Tribolium*, Figure 1). Small pieces of cracked grains also may be sources of flour beetle infestation. The adult flour beetles are reddish-brown and less than 1/8 inch long. They are sometimes called “bran bugs” because they are so common in milling operations. Both species of flour beetles have wings but rarely fly.

Immature stages are pale-colored and wormlike. On close inspection, a pair of pointed forks can be seen on the hind body segment. Development of the immature stage typically takes one to two months and adults lay eggs over a period of five to eight months. Both adult and immature stages feed on flour.

**Sawtoothed Grain Beetle**

The sawtoothed grain beetle (*Oryzaephilus surinamensis*) is the most common beetle found infesting household food in Colorado. It can develop in flour, but most infestations occur in processed grain products such as breakfast cereals, oatmeal, corn meal and pasta. Dried fruit and chocolate also may be infested.

The adult beetle (Figure 2) is about 1/10 inch long, similar in size to the flour beetles. It is elongate in body shape, flattened, and distinctively marked with a series of saw-like projections along the sides of the thorax. However, because of its small size, some magnification may be needed to detect these characteristics. Sawtoothed grain beetles have wings, but have never been observed to fly.
Eggs are laid in crevices in the food supply. The larvae are yellowish-white with a dark head and worm-like shape. Larvae feed on the same foods as adults. Under optimal conditions, they can complete a generation in less than two months. Adult beetles may live for a year or more.

**Carpet Beetles**

Several species of carpet beetles (Dermentidae) (Figure 3) occur indoors and outdoors in Colorado. They have extremely diverse feeding habits but prefer high-protein materials of animal origin, such as wool and skins. Household lint, dead insects or other debris are common materials on which large numbers of carpet beetles may breed. (See fact sheet 5.549, Carpet Beetles.)

Infestations of carpet beetles in pantries are less common than for flour or sawtoothed grain beetles. Carpet beetles are relatively slow to develop. On cereal products, they require about one year for a generation. However, because the insects are highly mobile, infestations may reoccur annually.

Carpet beetles are much more important as pests of woolens, furs and other materials of animal origin. They are far more common and damaging to fabrics than clothes moths in Colorado.

**Spider Beetles**

Spider beetles (Ptinidae) (Figure 4) are a relatively rare pest of stored food in Colorado. They are larger than the other common stored-products beetles and appear similar in shape to a spider. However, spider beetles have three pairs of legs, which distinguishes them from the eight-legged true spiders.

Spider beetles can potentially infest a wide variety of animal or vegetable products. They are most commonly associated with grains, although they can eat feathers, wool, dried meat and other products. Infestations mostly occur when these foods have been moistened and begun to mold.

Eggs of the spider beetles are white and may be conspicuously laid about the food products. The larvae are C-shaped and resemble small white grubs. Pupation of spider beetles often occurs in small cavities that they chew out of wood or other soft materials.

**Indian Meal Moth**

The Indian meal moth (Plodia interpunctella) is a common insect found infesting food products in Colorado homes. Almost any coarse grains (oatmeal, grits, etc.), nuts, seeds, dried pet foods, candy bars, spices, cocoa, dried fruits or vegetables (e.g., chilis) are suitable materials for Indian meal moth development. However, flour is rarely infested.

The adult stage of the Indian meal moth (Figure 5) is about 1/2 inch long and generally gray with bronze wing tips. The moth is the most common small moth found flying in Colorado homes. Feeding damage is done by the larvae (“worms”), which are usually pale yellow to pink with a dark head. When feeding, the larvae produce webbing that is mixed with food particles and droppings.

Indian meal moths occur throughout the United States and most household infestations originate from the inadvertent purchase of infested products. During warm months, localized movements of the moths also may occur outdoors, resulting in household infestations. Because of the broad distribution of the insect, it is rarely possible to definitely establish the original source of a meal moth infestation unless detected at purchase.

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When using insecticides in the home:

- Properly store insecticides within a home.
- Purchase only the amount of insecticide you intend to use.
- Store insecticides and other pesticides out of reach of children or pets.
- Store pesticides away from heat or high moisture.
- Never store pesticides with food or food utensils.
- Properly dispose of pesticides as indicated on the label or according to local regulations on hazardous waste disposal.

**Figure 3:** Larder beetle.

**Figure 4:** Spider beetle.

**Figure 5:** Indian meal moth adult.

Adult moths lay eggs near suitable food, such as along cracks or folds of packages. The newly hatched larvae are small and can penetrate loosely-closed packaging. When they reach a suitable food, they begin to feed. Development can be rapid under favorable conditions, and the larvae ultimately grow to about 1/2 inch long. Pupation occurs and the adult moths emerge. Adult female moths can lay 200 to 400 eggs during their lifetime of several weeks. Complete development of the Indian meal moth varies due to
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Insects Infesting Whole Grains
Several species of beetles can infest whole (unmilled) grains and beans. Among
the more common of these “direct pests” is the lesser grain borer (Figure 6), which
develops by tunneling kernels of wheat and other small grains. Other types of
beetles infest seeds of corn, rice, beans or other items.

Although relatively infrequent in homes, these insects can cause serious losses to
bulk-stored grains. They also produce grain particles that allow other insects, such as
the sawtoothed grain beetle, to become established in a food storage area.

Use of insecticides within the pantry
area is not generally recommended and
normally will give little additional control in the absence of sanitation.

Control
When insects are first detected in
food products, try to identify all sources
of infestation in the home. Check all
susceptible food items in cupboards. Pay
particular attention to items that have not
been used for a long time. Also check areas
of spilled foods.

If you know the identity of the insect, it will help you focus your search. If flour
beetles are present, look only through finely-milled materials including crumbs and
other spilled material. Sawtoothed grain beetles may infest a wider range of
food, including oatmeal and coarsely milled food. Indian meal moths or cockroaches
infest pet food or bird seed and other ornamental items that involve the use of
grains or dried fruits and vegetables. Carpet beetles most typically are established in
woolens, furs, among dead insects and household lint.

The physical presence of the insects is the most obvious means of detecting
areas of infestation. Also look for old cast skins left by flour and carpet beetles. The
presence of webbing is an easy means to detect items infested by Indian meal moth.

Items infested by insects that live within the food (carpet beetles, flour beetles or
Indian meal moth) should immediately be discarded or temperature treated to kill
the insect. To control with cold treatment, put infested items in a deep freeze for three
to four days. To improve the effectiveness of this treatment, alternate freezing
treatments with a period of rewarment to room temperature. For high temperature
treatments, heat the oven around 130 to 140 degrees F, introduce the food
items and hold for 20 minutes. Injury to the food is possible with excessive high
temperature treatment.

Heat- or cold-treated objects can be
reinfested. Keep them in the refrigerator
or store them in tight-fitting containers
until household infestations are eliminated.
Adult Indian meal moths and flour beetles
derived of food might live three to
five weeks. Carpet beetle and cockroach
infestations typically take much longer to
eradicite. Because insects also can develop
on spilled food, thoroughly clean areas
where food is stored by vacuuming or
sweeping all spilled food. Bleach or other
sanitizing agents often are used during this
cleanup phase but have little effect. These
agents can kill a few exposed insects and
eggs, but have no residual effect unless
spilled foods are completely eliminated.

As a routine precaution, materials
suspected of having insects can be treated
by freezing after purchase. Purchase
smaller amounts of food and use food
products directly after purchase to prevent
infestations from being established by
insects brought in on the food.

Use of insecticides within the pantry
area is not generally recommended and
normally will give little additional control in the absence of sanitation.

• Use of insecticides within the pantry
  area is not generally recommended and
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Figure 6: Indian meal moth.

Figure 7: Lesser grain borer.