



Angoumois Grain Moth *Sitotroga cerealella* (Oliv.)

Appearance:

The moth has a wing expanse of 13-19 mm and a length of 6-9 mm. The forewings are clay-yellow and without markings; the hind wings are grey. The rear edges of the forewings and hind wings have long fringes.

Life History:

The female lays an average of 150 eggs. The caterpillar bores into a grain kernel after emerging from the egg, remaining there until fully developed. The development period depends on temperature; in Central Europe one, in warmer countries several generations per year.

Distribution:

Temperate-zone countries and the tropics.

Damage:

A primary pest of grain, which may be attacked in the field, although most damage occurs in storage. Attacks all types of cereal grains, particularly corn and wheat. The weight losses can be as much as 50% for wheat and 24% for corn. Badly infested grain has a sickening smell and taste that makes it unpalatable.



Control:

Heating the grain to 60° C will kill all stages of development of the grain moth, but the germinative capacity of the grain is highly decreased and the flour no longer suitable for baking. It is advisable to fumigate infested mills, silos or storehouses with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Australian Spider Beetle *Ptinus tectus* Boield.

Appearance:

An oval beetle of 2.5-4 mm length, sharply waisted between neck shield and abdomen; dark brown, with flat-lying yellowish-brown hairs; the wing covers have fine lines of dots and no patches. The larvae are yellowish-white, grub-like, have a brown head and sparse hair growth, and grow to 5-7 mm length.

Life History:

After shedding 3 skins, the larva pupates, usually in a self-spun cocoon. One can expect 2 or 3 generations per year, depending upon whether rooms are unheated or heated. The pest survives the winter in all stages of development.

Distribution:

Originally only found in Australia, now practically world-wide.

Damage:

The beetles and larvae are omnivorous and attack grain and grain products, pulses, rice, dried fruit, cocoa, spices, herbs and animal products such as fish meal and casein.

Control:

In grain and grain products with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Cadelle *Tenebroides mauritanicus* (L.)

Appearance:

The slim, flat, 6-11 mm long beetle is brown to black, ventral side, antennae and legs are red-brown. A particular feature is the waisting between wing covers and neck shield, whose front outer corners extend towards the head. The dirty-white larva, 15-18 mm long, has a black head, behind this a black shield, two black hooks at the end of the body and long body hairs. The yellowish-white pupa is 7-10 mm long.

Life History:

The female deposits some 500-1,000 eggs in clusters in the grain or grain products over the course of several months. The entire development period is about 1 year in temperate zones, and up to 3 generations per year in the tropics. In mills, the larvae are mainly found in clumps of Mediterranean flour moth webs, but also in cracks in timber. Before pupation, the larvae bore into wood or make a bed of flour and other materials. The larvae hibernate before pupation. The adults are long lived, often more than a year.

Distribution:

World-wide.

Damage:

Is a serious pest in the tropics. The cadelle is found in mills, silos and warehouses, on grain, mill products, feeds, groundnut seeds, etc. Irregular borings are found in kernels; germs are preferred. The cadelle gnaws through the bolting cloths in mills, and through its tunnelling may weaken timber sections in mill equipment and storage bins.

Control:

With DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.





Carpet Beetle *Anthrenus scrophulariae* (L.)

Appearance:

The beetles are 3-5 mm long and of striking coloration. Wing covers and neck shield have black scales with a white, wavy design. The wing seam, margins and parts of the neck shield have marked red scales. The olive brown larvae have black-brown hairs and grow to a length of 6 mm.

Life History:

Beetles and larvae are found outside as well as inside. The eggs are deposited preferably on animal substances. The life cycle takes approximately 6 months, depending on climatic conditions.

Distribution:

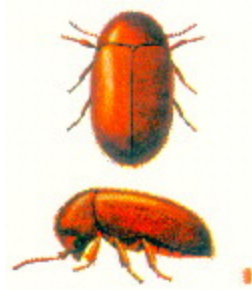
World-wide, mainly in Europe and North America.

Damage:

The larvae are found in woolen goods, rugs, upholstered furniture, feathers, etc. Through mass infestation they can cause great damage.

Control:

In warehouses and factories with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Cigarette Beetle *Lasioderma serricorne* (F.)

Appearance:

A 2-4 mm long, squat beetle, almost hemispherical, reddish-brown and covered with fine hairs; the head is hidden under the domed neck shield; the wing covers have no markings. The antennae are saw-like; the segments are practically identical. The larva is very hairy and grows to a length of up to 4 mm.

Life History:

The female deposits 20-100 eggs singly on the infested goods over a number of days (at temperatures of over 68° F). After about 7 days, the very mobile larvae emerge; as they grow older, they become less mobile and pupate in a cocoon of food or waste particles after about 6-10 weeks. 5-14 days later, the beetle emerges. The total development period is 8-13 weeks. The adults are strong flyers and are active in subdued light at temperatures above 65° F.

Distribution:

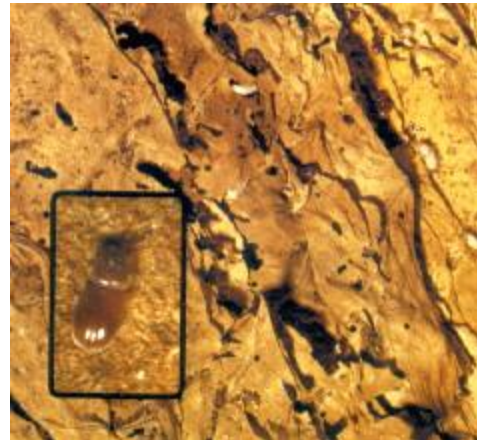
World-wide. They are frequently carried from warmer areas to temperate zones, where they can only survive in warm storages.

Damage:

Attacks not only leaf and processed tobacco but also a large number of other dry vegetable products such as herbs, oilseed cake, rice, cocoa, groundnuts, figs, dates, paprika, etc. Practically all damage is done by the larvae.

Control:

In warehouses, freight cars, boats and barges with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.





Coffee Bean Weevil *Araecerus fasciculatus* (Deg.)

Appearance:

This compact beetle is 1.5-4 mm long, dark brown with light brown spots and long antennae. The footless, slim larva is curved and hairy and grows to a length of 5-6 mm.

Life History:

The beetle flies to fields and lays its eggs on damaged cobs. Larvae bore into coffee beans in which they pupate.

Distribution:

Is found in coastal countries of the tropics and subtropics.

Damage:

Mainly to corn, cocoa, coffee beans, dried fruits, nutmegs, ginger, etc., in tropical stores. Is transported to the temperate zones in cocoa and coffee beans but generally does not survive there.

Control:

In warehouses and ships with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.





Common Bean Weevil *Acanthoscelides obtectus* (Say)

Appearance:

The weevil is 3-5 mm long, yellow-green to olive, mottled with darker brown and grey; the end of the abdomen is yellow-red. The grub-like white larvae are hairy and grow to a length of up to 4 mm.

Life History:

The female lays an average of 40-50 eggs loosely between the beans; in hot countries, also in the ripening pods in the field. The larva develops in the bean; several can develop in one bean. Before pupation, the larva prepares a circular exit hole which remains covered only by the skin of the seed ("window").

Distribution:

In most warm countries. In the temperate zones mainly in stored.

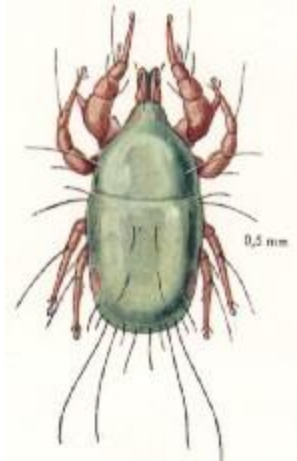
Damage:

Attacks all pulses, particularly beans. Can reproduce repeatedly in dried pulses in store.

Control:

In silos, warehouses and food processing plants with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.





Common Grain Mite *Acarus siro* L. (*Tyroglyphus farinae* [L.]

Appearance:

Because they are very small, grain mites are usually only detected when the infestation is severe. The infested goods then appear to be covered with a moving layer of dust. The female is 0.5 mm and the male is 0.4 mm long; the body is transparent white and sparsely covered with hair; the legs are pale violet. The adult mites have 4 pairs of legs, while the larvae have 3 pairs, like insects.

Life History:

Mass infestation by grain mites is only possible when the stored goods are very moist. A female deposits about 20 eggs. The white, six-footed larva is 0.15 mm long. Within a period of two weeks, it passes through two eight-legged nymphal stages before becoming an adult. Occasionally the mite passes through a long very resistant stage of development between the two nymphal stages, the so-called hypopus stage.

Distribution:

World-wide.

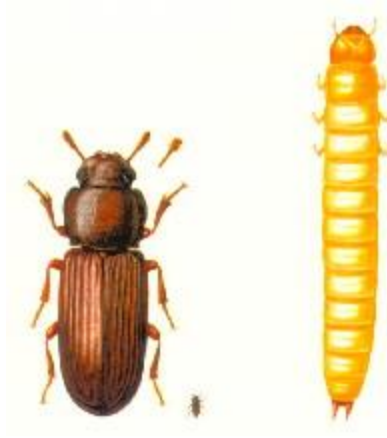
Damage:

Apart from grain and cereal foods, the mite also damages animal feeds, dried fruits, tobacco, etc. Infestation by mites leads not only to damage caused by feeding, but also produces a bad odor and rapid deterioration of foodstuffs.

Control:

In grain with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.





Confused Flour Beetle *Tribolium confusum* J. du V.

Appearance:

A slim beetle of 3-4 mm length, of uniform red-brown to black color. Remark to *T. confusum*: the segments of the antennae gradually broaden towards the tip.

Remark to *T. castaneum**: the antennae end in three-segmented clubs. The slim, freely-mobile larvae are whitish to yellow-brown and grow to 5-6 mm in length.

Life History:

The eggs, which are laid loosely on the stored product, are not readily discernible; the female deposits eggs for a period which can exceed 1 year, 350400 eggs on average. The total development period is 7-12 weeks, depending on temperature; the larvae pupate loosely in the infested goods. Sensitive to cold; high humidity favors development. The beetles seldom fly, and can live more than 3 years.

Distribution:

All parts of the world; in cooler climates, restricted to warm storages.

Damage:

Beetles and larvae feed on a very wide variety of dry vegetable substances, for example, milled cereal products, groundnuts, cocoa beans, legumes, spices, dried fruits, tapioca, oilseed cake, etc. A frequent mill pest; badly infested flour has a sharp odor and turns brown; its baking properties are damaged. This pest can also attach undamaged wheat kernels.



Control:

In mills, silos, warehouses, food processing plants, freight cars, ships and barges with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Copra Beetle *Necrobia rufipes* (Deg.)

Appearance:

The 3.5-7 mm long beetle is metallic green-blue in color and has red legs. When fully grown, the slim, grey-brown larva reaches a length of about 10 mm.

Life History:

The beetle can fly. The female deposits up to 300 eggs. The larvae also eat the larvae of other pests such as larder beetle and cheese skipper. They migrate before pupation. The entire development period is 6-14 weeks at 77° F, depending on nutritional conditions.

Distribution:

World-wide.

Damage:

Develops on skins, hides, guts and dried meat, on coconut and groundnut cake; often en masse on copra in ships' holds.



Control:

In ships, warehouses, factories, etc. with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Dried Fruit Beetle *Carpophilus hemipterus* (L.)

Appearance:

The beetles are approximately 3 mm long, black-brown with a yellow transverse band on the slanting wing covers. The yellow-white larvae grow to a length of 5-7 mm and have two short spikes at the abdominal end.

Life History:

The eggs are deposited loosely in the infested goods. The beetles seldom fly, are sensitive to cold and do not easily survive the winter temperatures in the moderate zones. Six generations may be expected in one year.

Distribution:

World-wide, but of importance only in temperate climates, the tropics and subtropics.

Damage:

The beetles and larvae are dangerous pests in the dried fruit industry. But they also infest oilseeds, dried vegetables and herbs.

Control:

In grain and foodstuffs with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Drugstore Beetle *Stegobium paniceum* (L.) (*Sitodrepa panicea* L.)

Appearance:

The beetle is 2-4 mm long, of reddish-brown color, with fine hairs on its oval body. The head is hidden under the uniformly-domed neck shield; the wing covers are finely patterned with lines of dots; the last three antennal segments are particularly long. The larvae grow to a length of 5 mm.

Life History:

The female deposits 20-100 eggs on suitable nutrients, either singly or in clusters. The tiny young larvae can penetrate even the finest cracks, for example, in foodstuff packaging; in the substrate they then form a cocoon of nutrient particles, in which also pupation takes place. The entire development period at 63° F is about 200 days, but only 70 days at 83° F.

Distribution:

World-wide

Damage:

An important household and warehouse pest, particularly when infested goods are left undisturbed for longer periods. The larvae are omnivorous and are found in all possible, vegetable substances such as bakery goods and other flour and cereal products, herbs, spices, oilseed cake, etc. When badly infested, solid products are full of small round holes. The beetles do not feed.



Control:

Heat treatment of 60-70° C over a period of 12-24 hours serves to kill all stages of the *Stegobium paniceum*. However, this treatment will also render most food unsuitable. DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Golden Spider Beetle *Niptus hololeucus* (Fald.)

Appearance:

A 3-4.5 mm long beetle, of spherical shape. The thick, flat-lying golden yellow hairs give the beetle a brassy shimmer; the neck shield is sharply waisted at the abdomen. The larva is whitish with a light brown head; the tip of the abdomen bears thick hairs which are sparse elsewhere; grub-like, up to 7 mm long.

Life History:

The female deposits 20-40 eggs singly. After shedding 3-4 skins, the larva pupates in a cocoon. Entire development period 4-6 months; usually only one or two generations per year in warm storages. The beetle is relatively resistant to cold. Usually develops in cracks and cavities in damp and undisturbed storages, and migrates to adjacent areas, etc., particularly when mass reproduction occurs.

Distribution:

Europe, Asia, America.

Damage:

The larvae show a preference for cereal wastes and other vegetable substances in hidden corners. Migrating beetles can cause considerable damage by eating holes in all types of textiles, furs, skins, etc. (omnivorous) in accommodation and stores.

Control:

In grain with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Granary Weevil *Sitophilus granarius* (L.)

Appearance:

A weevil of 3-5 mm length; black-brown (red-brown shortly after hatching); the head ends in a slightly curved proboscis; the neck shield has depressed markings and is almost as long as the longitudinally-grooved wing covers.

Life History:

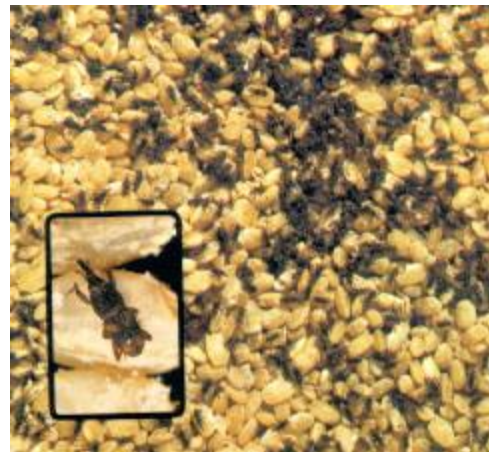
The entire development takes place within the kernel of grain and is not discernible from the outside; the completely developed weevil then eats its way out of the kernel; the duration of the development phase depends on temperature, normally taking about 8-16 weeks; under favorable conditions it may be as short as 5 weeks. 2-3 broods per year are possible in temperate zones; the weevil cannot fly.

Distribution:

World-wide; importance is, however, limited to temperate zones.

Damage:

The main stored grain pest in countries of the temperate zones. Damage is caused by the adults, but the larvae cause the main damage. Prefers wheat and rye, but also feeds on corn, barley, millet, rice and buckwheat, less on oats; the weevil also occasionally eats flour, whole meal or pasta; after mass infestation, the grain becomes warm and damp, this leading to the formation of mold; kernels damaged by granary weevils offer points of attack for secondary pests.



Control:

In mills, silos, warehouses, ships, barges, freight cars and food processing plants with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Groundnut Bruchid *Caryedon serratus* (Oliv.)

Appearance:

These dark reddish-brown pests has smudgy black spots on the wing covers and is 3-7 mm long.

Life History:

It is found in the tropics on whole and shelled groundnuts, both in the field and in store. Pupation occurs outside the seed and also outside the shell, in a thin cocoon.

Distribution:

All tropical countries.

Damage:

To groundnuts, pods of tamarinds and other types of acacia found in the tropics. Is carried into the temperate zones with groundnuts, but does not become established.



Control:

Bagged goods with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®..



Indian-Meal Moth *Plodia interpunctella* (Hübner.)

Appearance:

The moth has a wing expanse of 14-20 mm. When at rest with closed wings, it is 8-10 mm long. The outer halves of the forewings are bronzy; the inner halves light grey to ochre yellow. The caterpillars are yellowish-white, sometimes reddish or greenish, with a brown head; they grow to a length of 17 mm.

Life History:

The female deposits between 60 and 300 eggs, singly or in groups, on suitable nutrients. The grown caterpillars are active spinners; before pupation, they leave their food sources and climb up walls. Pupation occurs in a cocoon. The life cycle depends on temperature and is 2-6 months in Central Europe; in warm climates it can be completed in 3-4 weeks.

Distribution:

World-wide.

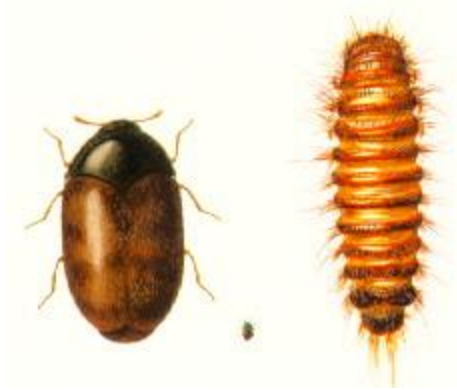
Damage:

In warehouses, silos, mills, food processing plants and households, a large number of dry vegetable materials are infested; for example dried fruit, in particular figs, groundnuts, almonds, cocoa beans, marchpane, various seeds, herbs, etc.; more seldom; grain and grain products, whereby only the germs are eaten.



Control:

In mills, silos, warehouses and food processing plants with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Khapra Beetle *Trogoderma granarium* Ev.

Appearance:

The oval beetles are dark brown, have smudgy yellowish-brown and reddish-brown transverse stripes on the wing covers and are covered with fine hairs. The male is about 2 mm long, the female, up to 3 mm long. The yellowish-brown, spindle-shaped larvae grow to a length of up to 5 mm; they have thick, reddish-brown hairs, characteristic bunches of tail hairs growing at the rear end. Pupation takes place in the last larval skin which is split open along the back.

Life History:

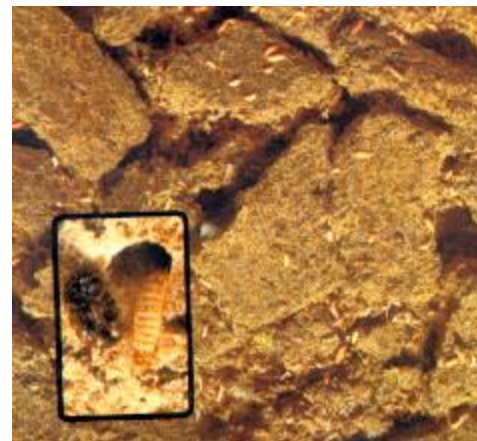
A female deposits up to 125 eggs, these being placed singly in the infested goods. The larvae can withstand unfavorable conditions such as lack of nutrition and low temperatures for long periods. The entire development period is 30 days at 90° F, about 2 months at 77° F, and a number of years under unfavorable conditions.

Distribution:

Originated in India, but has been introduced into several countries of the tropical, subtropical and temperate zones.

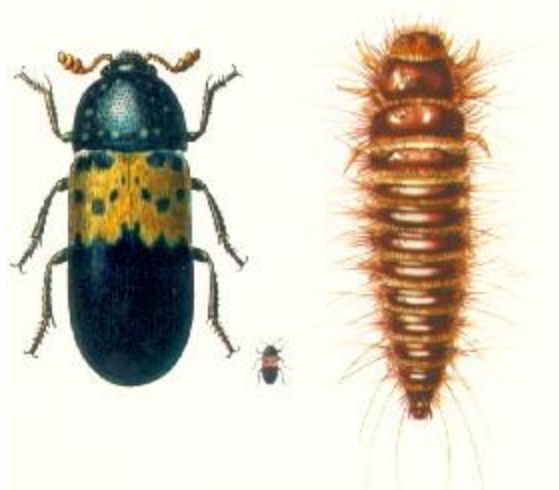
Damage:

The larva is a very serious stored product pest; the beetle itself does no damage. It is found in warehouses, silos, mills, breweries, malt factories. It attacks all types of grain, malt cereal products, pulses, oilseed cake, groundnuts, fish meal, etc. Grain kernels are often hollowed out until only the husk remains. The edges of jute sacks are often found to be thickly populated with larvae in infested stores.



Control:

In mills, silos, warehouses, ships, barges, freight cars, breweries and malt factories with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Larder Beetle *Dermestes lardarius L.*

Appearance:

The beetle is 7-9 mm long, black, but the front halves of the wing covers are yellowish-brown and bear hairs. The larva grows to 12-15 mm length, is reddish-brown to dark brown, with brownish bristles.

Life History:

The female deposits about 150 eggs in small heaps or singly on suitable nutrients. The grown larvae migrate

to pupate, boring their way into wood, cork or other solid materials. Both beetles and larvae cause damage in feeding.

Distribution:

World-wide.

Damage:

By eating into animal products such as skins, hides, guts, dried egg yolk, meat, preserves, etc.

Control:

In factories, warehouses and households with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.





Lesser Grain Borer *Rhizopertha dominica* (F.)

Appearance:

A beetle of 2-3 mm length, red-brown to black-brown, slim, cylindrical in body. The hood-shaped, rounded neck shield extends beyond the head; the spots on the shield gradually become smaller towards the rear. The three last segments of the antennae form a loose club. The larvae are white, similar to grubs, and have brown head capsules; the white pupal stage is passed inside the grain kernel.

Life History:

In sufficiently warm climates, the beetle can fly well. A female deposits 300-500 eggs in grain and similar crops. The larvae can eat their way into grain kernels, and also pupate there. Development is only possible above 73° F; the development period is approximately 4 weeks at 83° F.

Distribution:

In warmer countries. It is carried into the temperate zones in goods, where it can only survive in warm warehouses.

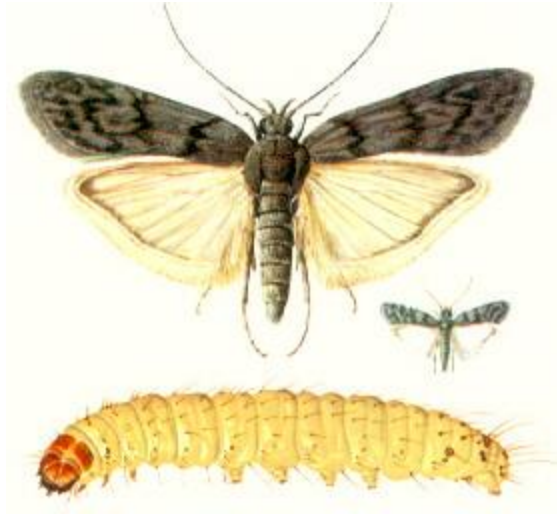
Damage:

Mainly attacks wheat, rye, corn, rice and millet. Badly infested wheat takes on a honey-like odor. Also attacks whole kernels as a primary pest. Both larvae and beetles bore into grains; irregularly-shapes boreholes are made and the flour produced by boring appears on the surface. Also attacked are beans, lentils, chick-peas, dried potatoes, tapioca and herbs.



Control:

In grain and food storehouses with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Mediterranean Flour Moth *Ephestia (Anagasta) kuehniella* Zell.

Appearance:

The moth has a wing expanse of 20-22 mm. When at rest with the wings forming a roof over the body, it is 10-14 mm long. On the blue-grey background of the forewings are transverse, dark, wavy bars, with a row of dark spots at the tips. The caterpillars are white, sometimes pinkish or greenish; head and neck shield are brown. They grow to 15-20 mm. The brown, spindle-shaped pupa in the cocoon is about 9 mm long.

Life History:

During the day, the moth usually clings to ceilings and walls, and flies about at dusk. The female lays an average of about 200 eggs. The caterpillars are very active spinners. Pupation occurs in a cocoon covered with nutrient particles. The total development period in Central Europe is about 3 months. In warmer climates it may be completed in 4-6 weeks.

Distribution:

In most countries with temperate climate.

Damage:

The caterpillars live on flour, bran, whole meal, flakes, grain, nuts, etc. They are serious pests in mills where their webbing may clog machinery.



Control:

In mills, silos, warehouses and food processing plants with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Rice Weevil *Sitophilus oryzae* (L.)

Appearance:

The appearance of this weevil is similar to that of the granary weevil; it is however smaller (2.3-3.5 mm long), and differs from the granary weevil in that it has four reddish spots on the brown wing covers.

Life History:

Develops within the kernel of grain, like the granary weevil; requires greater warmth than the granary weevil as it first develops at temperatures of above 55o F. Only few weevils survive the winter temperatures of the temperate zones; in tropical climates, the development of a brood may take only 1 month. The weevil can fly; in hot countries, the rice weevil flies to the fields and lays its eggs on cereal crops.

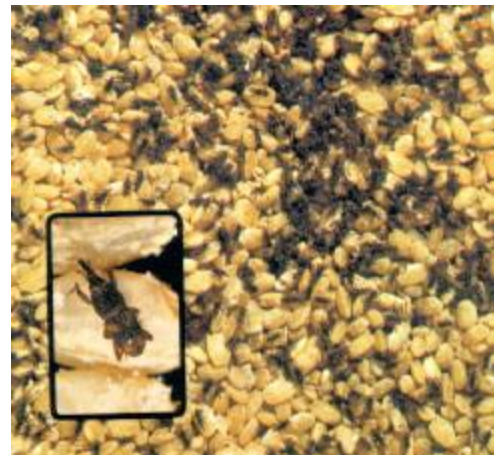
Distribution:

World-wide, through cereal trading. Of great importance in tropical and subtropical countries.

Damage:

A dangerous stored grain pest in warmer countries; it infests all types of grain. The larvae can also develop in farinaceous products, buckwheat, peas, acorns, chestnuts and cottonseed; the weevil also feeds on flour, hemp-seed, biscuits, waffles, white bread and tobacco; often found together with granary weevils.

The maize weevil (*Sitophilus zeamais* Motsch.) is very similar to the rice weevil, but larger (3.3-5 mm), and the reddish markings on the wing covers are more clearly defined. Otherwise, as for rice weevil.



Control:

In mills, silos, warehouses and food processing plants with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Rusty Grain Beetle *Cryptolestes (Laemophloeus) ferrugineus (Steph.)*

Appearance:

A 1.5-2 mm long beetle, flat, wing covers almost twice as long as wide, reddish-brown, head and neck shield relatively large; long, fine antennae. The slim yellowish-white larvae are freely mobile and grow to 3-4 mm length. The yellowish-white pupa lies in a cocoon.

Life History:

The female deposits some 100-400 eggs loosely in the infested goods. The development period from egg to beetle is 5-12 weeks, depending on temperature. The beetles develop either inside or outside of grain kernels. They can withstand relatively low and high temperatures.

Distribution:

World-wide, but found mainly in the temperate zones.

Damage:

Mainly to all types of grain and grain products, but also to rice, dried fruit, groundnut seeds, herbs and oilseed cake, is found both as a secondary pest, i.e., together with other grain pests, and as a primary pest in grain, as the larvae and beetles damage the whole kernels. Rapid mass reproduction leads to great heat generation in the grain. Severe damage can be done to seeds and brewing barley, as this pest feeds also on the germs.

Control:

In silos, mills, food enterprises, warehouses, ships, barges and goods vans with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Saw-Toothed Grain Beetle *Oryzaephilus surinamensis* (L.)

Appearance:

A slim beetle, 2.5-3.5 mm long, dark brown; neck shield has two deep, longitudinal grooves and 6 sharply-pointed projections on each side. The slim, whitish-yellow larvae are freely mobile and grow to a length of 3.5-4 mm; the pupa lies free or between adhering food particles.

Life History:

The female deposits an average of about 150 eggs loosely in the infested goods. The total development period is 3-10 weeks, depending on temperature, nutrition and moisture; the lower development boundary is approximately 65o F. In the temperate zones, the beetle can survive the winter and live to an age of about 3 years.

Distribution:

World-wide.

Damage:

Found in warehouses, silos, mills, food-processing plants; infests grain and grain products, flour, oats, semolina, pearl barley, malt, whole meal and other vegetable stocks such as feeds and dried fruit. In granaries, it is usually found as a secondary pest together with other grain pests; is, however, occasionally found alone, as primary pest.



Control:

In warehouses, plants and mills with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.



Warehouse (Stored Tobacco) Moth *Ephesia elutella* (Hübner.)

Appearance:

The moth has a wing expanse of 14-17 mm; when at rest, the wings folded to a roof over the body, it is 8-11 mm long. The grey to brown-grey forewings have wavy transverse bands with dark borders. The caterpillars are whitish, yellowish or reddish (depending on nutrition) with brown head and neck shields. They grow to a length of 10-15 mm.

Life History:

The female deposits about 100 eggs, singly or in small clusters. The caterpillars cover the infested goods with webbing. Pupation occurs in a cocoon. The development period depends on warmth and nutrition. Depending on the season, complete development takes 2-6 months. Mass reproduction only in temperate climates, here also in outside locations.

Distribution:

Practically all temperate-zone countries.

Damage:

The caterpillars live on dry vegetable materials such as grain, nuts, cocoa beans, chocolate goods, tobacco, herbs, dried fruits, mainly in such places as warehouses, chocolate factories, drugstores.

Control:

In warehouses, candy factories and in grain with DEGESCH PHOSTOXIN®, DEGESCH FUMI-CEL®, DEGESCH FUMI-STRIP®, DEGESCH MAGTOXIN®.

