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THE SAW-TOOTHED GRAIN BEETLE (ORYZAEPHILUS SURINAMENSIS L.) AS A PEST DAMAGING STORED AGRICULTURAL PRODUCTS

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Annotation
This article provides information about the types of pests that infect replacement products during storage and the types of products that damage them.

Keywords: Template, microflora, reserve, endosperm, nuclear, flour eater, grain weevil, beetle, leatherworm, acatelidon, larvae.

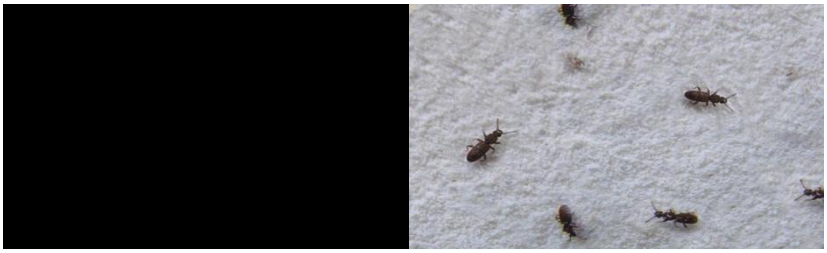
The sharp emergence of global environmental problems has led to various challenges in agriculture, necessitating the development of new technologies and their implementation in practice, as well as the continuous improvement of the scientific and practical level in this field.

The rapid development of the world has disrupted the ecological balance of the planet, resulting in the complete disappearance of many living organisms. Therefore, it is necessary to continuously study the development of living organisms and their interaction and interdependence with other environmental factors.

When tombs dating back to the 9th–7th–3rd centuries BC in Israel were studied by archaeologists, various scientific sources reported that grains and food products buried together with the deceased contained insects and beetles. The first scholar to scientifically investigate these organisms was the well-known naturalist Carl Linnaeus (1707–1758). He studied the life, body structure, feeding behavior, and the damage caused by insects, and for the first time listed more than 30 Latin names of storage pests in his works.

O. surinamensis L. (synonyms: Silvanus frumentarius F., S. surinamensis L., Mercator Fauv., Lyctus frumentarius F.) — the saw-toothed grain beetle — in both its adult and larval stages can infest almost all types of plant-derived products, as

well as insect residues, the shed skins of various storage pest larvae, and even entomological collections. It commonly damages flour, grain, rice, tobacco, bran, rice products, dried fruits, nuts, peanuts, and many other stored commodities.


Agricultural products such as cotton, wheat, maize, barley, oats, rice, cocoons, and dried fruits are stored in collection centers and processing facilities for several months—and in some cases, even for years—until they are consumed or used for planting. During the storage and processing of agricultural products, not only numerous types of pests (insects and mites) but also rodents cause significant damage.

O.surinamensis L. (Silvanus frumentarius F., S.surinamensis L., mercator Fauv., Lyctus frumentarius F.) surinam unxo'ri – qo'ng'iz va lichinka deyarli barcha o'simlik mahsulotlariga shuningdek hasharot qoldiqlariga. turli xil ombor zararkunandalarining lichinkalarining terilariga, enotomologik kolleksiyalarga zarar yetkazishi mumkin: ko'pincha un, don, guruch, tamaki, don, kepak, guruch, takaki, quritilgan mevalar, yong'oq, yeryong'oq va boshqalarga zarar yetkazadi

O. surinamensis L. (synonyms: Silvanus frumentarius F., S. surinamensis L., Mercator Fauv., Lyctus frumentarius F.), commonly known as the saw-toothed grain beetle, in both its adult and larval stages, can infest almost all types of plant-derived products. It can also damage insect remains, the shed skins of various storage-pest larvae, and even entomological collections. It frequently infests flour, grain, rice, tobacco, bran, rice products, dried fruits, nuts, peanuts, and many other stored commodities.

Ombor kanalari esa urug‘likka katta ziyon yetkazib, uni unib chiqish qobiliyatini keskin kamaytiradi. Kanalar bilan zararlangan donni 2 oy zaxirada saqlanganida donni unib chiqish qobiliyati - 5.5% sulida, 24.5% lavlagida, 13-25% bug‘doyda kamayib ketadi. Namligi 15.7% bo‘lib, kanalar bilan zararlangan bug‘doy 40 kun ichida, uni kleykovinasi (yopishqoqligi) yomonlashdi, bunday dondan chiqqan unda katalazaning faolligi kamayib, amilazaning faollini 26% ko‘tarilgan. Uzunburunlar bilan zararlangan don olti oy zaxirada turganida, undagi kleykovinaning miqdori 31.3-11.6% kamaygan

Storage mites cause severe damage to seed material, sharply reducing its germination capacity. When mite-infested grain is stored for two months, the germination rate decreases by 5.5% in oats, 24.5% in beet seeds, and 13–25% in wheat. Wheat with a moisture content of 15.7% that is infested with mites shows deterioration of gluten quality within 40 days, while flour produced from such grain exhibits reduced catalase activity and a 26% increase in amylase activity. When grain infested with weevils is stored for six months, the amount of gluten decreases by 31.3–11.6%.

The pests that damage grain and grain products—reducing their quantity and deteriorating their quality—are insects and mites. They consist of numerous species and cause substantial harm. The most destructive among them are the saw-toothed grain beetle, the granary weevil, the rice weevil, grain borers, and grain moths. Their life cycle and reproduction generally occur inside the grain, making it extremely difficult to separate infested kernels from healthy ones. Weevils consume the endosperm inside the grain and replace it with excrement, larval skins, uric acid, and other waste products. Such grain becomes completely unsuitable for consumption, becomes toxic, and cannot be separated during processing. It also loses its ability to germinate and cannot be used to produce flour.

Mites enter the cottonseed kernel through the chalaza on the seed coat and completely consume the kernel, leaving only the outer shell. The empty seed coat becomes filled with various waste materials. Infested cottonseeds are usually much lighter in weight compared to healthy ones.

The saw-toothed grain beetle (Oryzaephilus surinamensis L.) feeds by gnawing the embryo of cereal grains. Both the adults and larvae cause substantial damage to

cottonseed, oilseed cakes, vegetable and melon seeds, as well as various grain products. It is one of the most dangerous pests of dried fruits (raisins, dried apricots, dried apples) and dried vegetables.

Scientific research was carried out to determine the damage caused by the major storage pests during the preservation of agricultural products.

Experiments to determine the harmfulness of storage pests such as the confused flour beetle, saw-toothed grain beetle, rusty grain beetle, and grain borer were conducted under laboratory conditions. Reserve products were placed in special plastic jars covered with a fine cloth (syrup) and monitored. Adult saw-toothed grain beetles (one pair: ♂, ♀) were introduced into the jars containing the stored products to artificially infest them. The infestation of the stored products in the jars was observed and recorded daily.

As a result of the research, storage pests were observed in various warehouses storing reserve products at an average density per 100 m² as follows: the confused flour beetle occurred on average 5.2 individuals in wheat, 4.5 in flour, 1.3 in rice, and 3.7 in barley; the saw-toothed grain beetle averaged 9.7 in wheat, 7.3 in flour, 2.7 in rice, 5.6 in barley, and 1.5 in oats; the rusty grain beetle averaged 7.5 in wheat, 3.2 in flour, 1.5 in rice, 3.7 in barley, and 2.8 in beans; the grain borer averaged 4.6 in wheat, 2.1 in flour, 3.7 in rice, and 2.7 in barley.

Conclusion. The main three types of harmful organisms belong to the families Cucujidae (flat beetles), Tenebrionidae (darkling beetles), Bostrichidae (false powderpost beetles), and Dermestidae (skin beetles). Among stored products (grains and dried fruits), the saw-toothed grain beetle was observed very frequently, while the rusty grain beetle and the flat rusty grain beetle were found at moderate levels.

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