



Entomological Notes

Department of Entomology

FLOUR OR GRAIN MITES

The grain or flour mites are one of the most important mites infesting food and feed products, cereals, dried vegetable materials, cheese, corn and dried fruits. Grain mites proliferate under high moisture conditions and are often found in conjunction with fungal growth. Severe infestations result in brownish tinge over the commodity, called “mite dust” because of the light brown coloring of the mite legs. This “mite dust” gives off a “minty” odor if the mites are crushed. Grain mites are widely distributed throughout the temperate regions, but only occur in tropical areas unless a constant influx of new mites is supplied via contaminated goods.

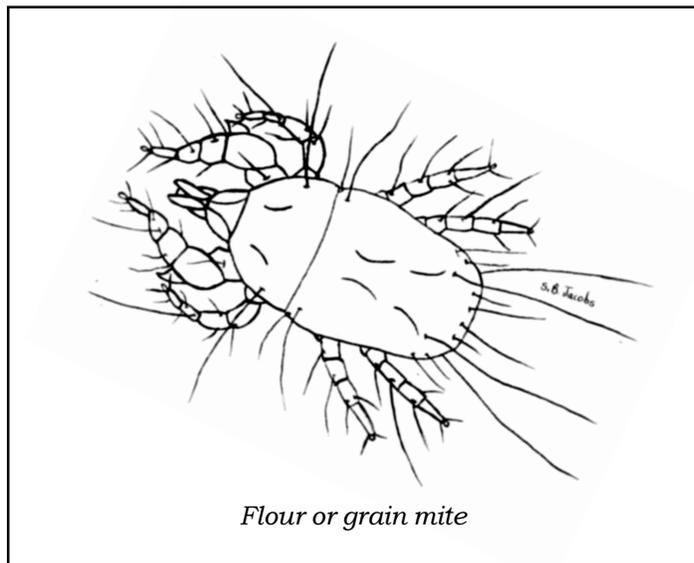
DESCRIPTION

Flour or grain mites are pale, pearly or grayish white, with legs varying in color from pale yellow to reddish-brown. Each leg has one claw at the end. As with all mites, they are smooth, wingless, soft-bodied creatures. The males are from 0.013 to 0.017 inch long, and the female is from 0.014 to 0.026 inch. The males have enlarged forelegs which bear a thick spine on the ventral side. These two characters can be used to separate *Acarus* sp. from other genera. Juvenile mites are similar in appearance to the adults. The first or larval stage has only six legs. However, when they molt into the nymphal stage, they have eight legs like the adults. Mite eggs are oval, smooth, white, and are 0.12 mm long.

LIFE HISTORY

Female grain mites may lay up to 800 eggs, which are deposited on the surface of food material at the rate of approximately twenty to thirty per day. The eggs may be deposited singly or scattered at random over the food material. The entire life cycle may take only nine to eleven days to complete under the optimal conditions of ninety percent humidity and seventy-seven degrees F. The life cycle is completed in seventeen days at sixty-four to seventy-one degrees F, and twenty-eight days at fifty to sixty degrees F.

At some time during the juvenile period, grain mites may change into a stage known as the hypopus. During this unique stage, the body wall hardens and suckers



appear on the underside. These suckers allow the mite to attach to insects and other animals for dispersal. The eggs and especially the hypopuses appear to be more tolerant of insecticides than other juveniles or adults; and they may be the primary stage responsible for resurgences in mite populations after chemical control appeared to have been successful.

DAMAGE

Grain mites primarily attack the germ. However, they will feed on other parts of the kernel, as well as mold growing on the grain. These mites are responsible for the spread of various fungal spores throughout a grain mass and into adjoining bins. When present in large numbers, the flour or grain mites promote sweating and impart a disagreeable odor to the grain. Grain mites can cause “grocer’s itch” in humans exposed to the mites. Some persons may be allergic to mites.

MANAGEMENT

Prevention is the best strategy to avoid mite problems in stored grains. Proper bin sanitation before introduction of new grain minimizes the need for pesticides. Good sanitation involves the removal of old grain and dust in and around the grain bin. This includes removal of old grain from corners, floors, and walls and grain that may have spilled on the exterior of the bin.

Any grain remaining when a bin is emptied can harbor insect infestations which will move into the new grain.

After the bin is cleaned, and all needed repairs have been made, the floor and wall surfaces both inside and outside the bin should be treated. Take special care to treat all cracks, crevices, and areas around doorways and other places where insects hide or enter. Spray the bins about four to six weeks prior to storing grain if the grain is to be stored longer than six months.

Before grain is placed in a bin it should be screened to eliminate fine materials and broken kernels. Grain placed in a clean bin should be checked at two week intervals during warm months and at one month intervals during cooler months for the presence of hotspots, moldy areas, and mite activity. If any of these conditions exist, the grain should be aerated to lower the moisture level and temperature.

At humidities less than fifty-five to sixty percent (commodity at twelve percent moisture content or less) grain mites can not survive. Grain that is to be stored for longer than six months may need a protective application of an approved insecticide. Treatments can be applied as the grain is loaded into the bin through the use of a metering device calibrated to apply the proper amounts. After the grain is binned and leveled, a surface dressing can be applied to prevent insects from entering the grain on the surface.

If infestation occurs in spite of these precautions, fumigation of the grain will be necessary. Because of the higher tolerance of mite eggs to fumigation, the concentration of gas introduced will need to be fifty percent greater than that for insect control. Fumigants are highly toxic, and technical knowledge is required for their proper use. A qualified, licensed pesticide applicator should be contacted to perform the fumigation.

WARNING

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

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Entomological Notes are intended to serve as a quick reference guide and should not be used as a substitute for product label information. Although every attempt is made to produce Entomological Notes that are complete, timely, and accurate, the pesticide user bears the responsibility of consulting the pesticide label and adhering to those directions.

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