More about the

Damaging Khapra Beetle in Arizona

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These are the cast skins of the Khapra Beetle, in barley. This destructive pest is spreading in the United States. The Department of Entomology, University of Arizona, would appreciate reports from anyone finding evidence of this beetle for the first time. Actual length of the larva is 1/8 inch; of the adult, 1/16 inch. (Photo courtesy U.S.D.A.)

In January 1954 the khapra beetle, the last of the major stored-grain pests of the world not previously known to be present in the United States, was found in Arizona. A few weeks earlier it had been recognized in California and it has since been found in New Mexico. It has been previously known in various countries in Asia, Europe and in Australia.

The problem of control is made difficult because of the ability of the larvae to penetrate deeply into cracks and crevices in storage buildings, often beyond the reach of insecticides, where they are able to remain inactive but alive for even several years. In Arizona, the khapra beetle has thus far been more important as a pest of large mills and warehouses than as a pest of farm-stored grain.

Investigations of the nature and control of this new pest in Arizona have been conducted by the United States Department of Agriculture and by the University of Arizona Agricultural Experiment Station. Federal workers have made surveys to determine the extent and severity of infestations and have investigated control methods. At the University Research Laboratory at Mesa the food preferences of the khapra beetle have been investigated, with particular reference to materials of importance in Arizona and in areas to which the pest might spread.

Food Preferences Tested

Recent studies in Arizona have shown that khapra beetle larvae which were fed on processed cereal products developed into mature beetles in less time, in greater percentages, and became larger individuals than similar larvae fed on whole grain or other unaltered materials. The larvae preferred cracked grain or grain dust to sound grain.

The most rapid growth and highest rates of survival occurred, for the processed materials, in corn meal, wheat flour, and rolled oats. Of the unprocessed materials black-eyed peas, sorghum, and barley were the most favorable for rapid growth and survival. Field-run wheat was more favorable for beetle development and survival than was cleaned whole wheat. Lowest development and survival rates occurred in processed rice, cotton seed meal, castor beans, raisins, cleaned whole wheat grains, whole cotton seed, and wool yarn. In tests to date no mature beetles have been developed from larvae fed solely on the three last-named materials.

Suggested Control Methods

The search for simpler and more effective control methods for use in Arizona conditions is actively in progress by Federal workers. Present suggestions for khapra beetle control include: (1) Maintain general cleanliness in storage areas, (2) Treat walls and floors of empty storage bins with insecticides, (3) Fumigate stored grain, (4) Remove cracked grain and grain dust from sills, beams, and corners of storage areas, (5) Take every possible measure to eliminate breeding or hibernation sites, (6) Never transport grain in used bags unless they have been properly fumigated or heat sterilized, (7) Construct storage areas, or remodel them, to eliminate as many cracks and crevices as possible, (8) Spray with malathion on the walls and floors of areas in which grain is to be stored (using five pounds of technical material in wettable powder form per 100 gallons of water), (9) Protect wood surfaces by using a similar quantity of technical malathion in emulsion form but diluted with diesel oil rather than water.

Grain Fumigation

The present recommendation for grain fumigation involves the forced circulation of methyl bromide within a tightly enclosed area at the rate of four pounds per 1000 cubic feet when temperatures are between 50 and 60 degrees, Fahrenheit, or higher. When temperatures are between 40 and 50 degrees a dosage of five pounds per 1000 cubic feet is suggested. Fumigants are extremely dangerous to humans and must only be used when proper safeguards are carefully followed. Tests of other fumigants against the khapra beetle are now in progress.

The newest information concerning the khapra beetle and its control may be obtained from the University of Arizona Agricultural Extension Service or from the Stored-Products Insect Laboratory of the U. S. Department of Agriculture, Box 857, Mesa, Arizona. For information concerning quarantines, representatives of the Arizona Commission of Agriculture and Horticulture or regulatory officers of the U. S. Department of Agriculture in Arizona should be consulted.

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