

TIME AT WHICH INDIAN-MEAL MOTH FLIGHT OCCURS

By

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INTRODUCTION

The dried fruit and tree nut industry spends much time and money to control insects in its processing plants. The most common means of insecticide application is with an aerosol generator. Present use of pyrethrins + piperonyl butoxide is effective only if the insects are contacted by the aerosol. The insecticide aerosol leaves no effective residue. Research has shown that cigarette beetles prefer to fly in the evening, and that application of insecticide aerosols at approximately the peak time of flight controls this species more effectively.

The research presented today was conducted to determine if the Indian-meal moth has a peak time of flight within each day, and if so, the time at which it occurs.

METHODS

The test consisted of placing 25 pairs of adult Indian-meal moths on 500 g each of nutmeats or inshell Nonpareil almonds. Two chambers containing the moths and nuts were maintained at 80° F. and 60% R. H. The chambers were artificially lighted from 6 a.m. to 8 p.m. and were dark from 8 p.m. to 6 a.m. The moths and nuts in these chambers were photographed at 1-minute intervals for 6 days.

RESULTS AND DISCUSSION

The film you will see is a negative, thus all dark surfaces in the picture are actually light and vice versa. The right chamber contains nutmeats, and the left chamber inshell almonds. The clock in the center foreground shows the time. A light spot above the clock shows that it is a.m., and a dark spot shows it is p.m.

In this film you will be looking for two things:

(1) A time at which the most adults are flying (between 9 p.m. and 1 a.m.), and (2) the number of adults on or over the surface of the nutmeats and inshell almonds. The adults move down into the inshell nuts more than they do into the nutmeats.

As you saw, in the inshell nuts, most of the moths were out of sight and probably would be out of contact with an aerosol applied during the day (Fig. 1). An aerosol applied between 9 p.m. and 1 a.m. would probably contact more adult moths.

I want to caution each of you that this research was in a laboratory under artificial light. These findings will have to be verified under field conditions with natural light.

Further research will be conducted to determine the flight times of Indian-meal moths under actual warehouse conditions.

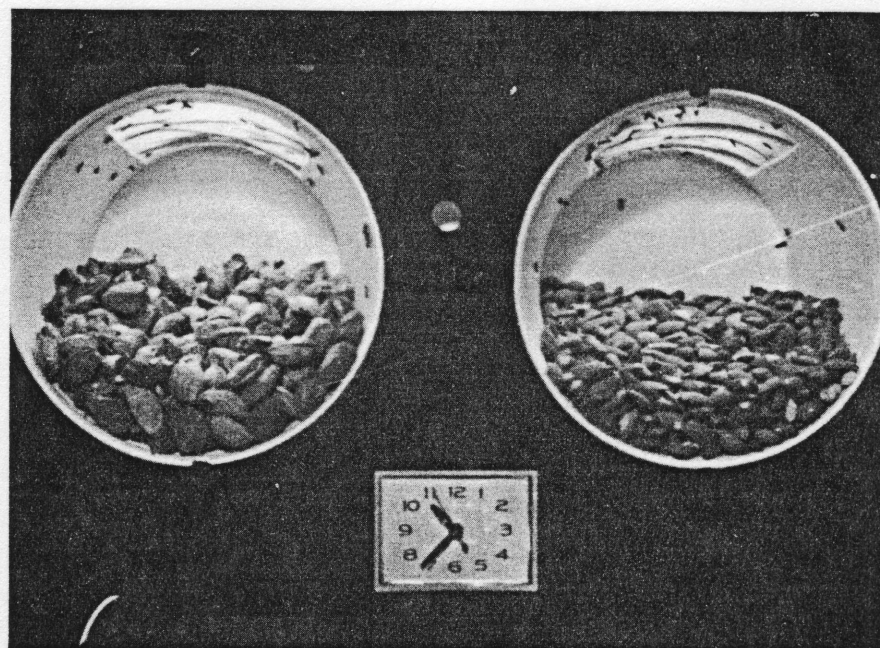
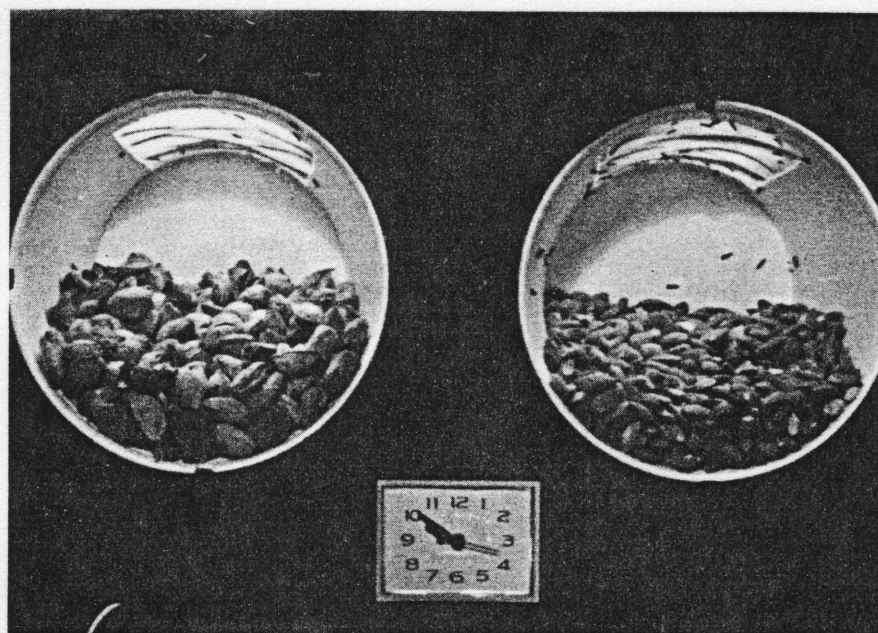


Fig. 1--Indian-meal moth adults in space over nutmeats (right chamber) and inshell Nonpareil almonds (left chamber). A - 9:51 a. m., B - 10:36 p.m. Pacific Standard Time.