

Personal-Computer-Based Processing Technique for Analyzing Insect Mating Behavior in Response to Sex Pheromone Odor

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Recently, video techniques are being more frequently applied to the analysis of animal behavior, including insects. We have developed an inexpensive and effective technique for data acquisition and quantitative analysis of insect behavior which involves superimposing video recorder images onto a personal computer (PC). The PC video signal and video recordings of the behavior were superimposed on a video monitor through a video-converter board. Consecutive locations of several measuring points on an insect for behavioral analysis were digitized and input into the PC. The positions of the points on the insect were selected and digitized as x/y coordinates on the screen, using the PC "mouse" accessory. We have applied the technique to further analyze the highly sensitive olfactory behavior of male silkworm moths *Bombyx mori* triggered by conspecific sex-attractant pheromones.

1. Introduction

Like males of many other species of moths, male silkworm moths of the *Bombyx mori* species respond to the sex-attractant pheromones⁽¹⁾ released by conspecific females with a characteristic behavioral repertoire called the "mating dance" which includes wing vibrations, upwind zigzag walking, and abdominal curvature.⁽²⁻⁸⁾ The upwind response of male moths to windborne plumes of pheromones has long been the subject of observation and experimentation.⁽⁹⁾

The sex pheromones are legendary for their extremely high potency. It has been