



AGRI MAGAZINE

(International E-Magazine for Agricultural Articles)

Volume: 01, Issue: 04 (November, 2024)

Available online at <http://www.agrimagazine.in>

© Agri Magazine, ISSN: 3048-8656

Courtship Behaviour in Cockroaches

(* Satya Narayan Satapathy¹, Chandan Kumar Panigrahi²,
Priyanka Bhowmik³ and Mansoon Kumar⁴)

¹Assistant Professor, Department of Entomology, Faculty of Agricultural Sciences, SOA-DU, Bhubaneswar-751029, Odisha, India

²Ph.D. (Agri.) Scholar, Department of Entomology, Faculty of Agricultural Sciences, SOA-DU, Bhubaneswar-751029, Odisha, India

³M.Sc. (Agri.) Scholar, Department of Entomology, Faculty of Agricultural Sciences, SOA-DU, Bhubaneswar-751029, Odisha, India

⁴B.Sc. (Hons.) Agri., Faculty of Agricultural Sciences, SOA-DU, Bhubaneswar-751029, Odisha, India

*Corresponding Author's email: satyanarayansatapathy40@gmail.com

Insect mating behavior consists of a series of behavioural interactions between the male and female individuals, finally leading to copulation. In general male plays the more active role being both the initiator of activities during the courtship and showing a greater variety of them. The various patterns of behavior observed during courtship and copulation in cockroaches are released in most cases by chemicals and/or tactile stimuli. Mating behavior has been studied in several cockroaches viz. *Byrsotria fumigate*, *Periplaneta Americana*, *Blatta orientalis*, *Periplaneta australiasiae*, *Periplaneta burnnea* and *Periplaneta fuliginosa*.

Responsiveness of Females

In *Nauphoeta cinerea*, *Leucophaea maderae* and *Byrsotria fumigate*, female sexual behavior (mounting and feeding on the male's terga) is released by a male pheromone. The female's ability to respond rapidly to the courting male can be correlated with distribution of thin walled chemoreceptive sensilla on certain segments of the antennae.

In females of both *N. cinerea* and *L. maderae*, the tactile stimuli from male stimulate the opposite female to mount and feed on male tergum. In *B. fumigate*, the antennae appear to possess the sole receptors for the perception of stimuli from the male, since antennectomized females fail to mate.

Responsiveness of Males

It has been pointed out that the antennectomized males of *P. americana* fail to respond to preparations of female sex pheromone. The behaviour of males of *N. cinerea*, *L. maderae* and *B. fumigate* after ablation of various sense organs, differs from that of the females of these species in that it was impossible to eliminate mating by removing the obvious sense organs. The male's antennae bear the receptors which affect the normal rapid response to females. However, the maxillary and labial palps and in some species perhaps the anal cerci as well many play a role in the reception of stimuli from females.

Role of the antennae in mating behavior

It has been observed that antennal fencing between the male and the female is an important aspect of precopulatory behavior in a variety of species of cockroaches. In cockroach mating behavior, as in many behavior patterns, there appears to be a summation of external stimuli from various sources which acting on the internal state of organism most probably hormonally determined, serve to release the appropriate behaviour.

Role of the Male's wing raising display in mating behaviour

With the exception of *P. surinamensis*, the males of *N. cinerea*, *L. maderae* and *B. fumigate* exhibits the wing raising maneuver which is followed in the courtship sequence by the mounting and “feeding” activities of the female. Receptive females of *L. maderae* have been observed pushing their heads under or between the wings of motionless anaesthetized males in an attempt to gain access to his abdominal terga.



Courtship behaviour of cockroaches

Role of the female's mounting and feeding activities in mating behaviour

The female's mounting and feeding activities are of considerable importance in all cockroaches showing this pattern of mating behaviour in that they orient the female correctly for copulation. If these activities are prevented, successful mating is rare or absent. The antennae serve as distance receptors for the male odour. The female's ability to detect and respond to the male rapidly can be correlated with distribution of chemoreceptive sensilla of the antennae. In *B. fumigate* females the antennae alone appear capable of detecting the male. *Pycnoscelus surinamensis* is unique in that headless females can mate. This is explained by the fact that the females do not “feed” on the male's terga prior to copulation. So various sensory receptors are responsible for carry over the sequential mating behaviour of cockroaches.

Reference

1. Awasthi, V.B. (2000). **In:** Principles of Insect Behaviour. The role of the sense organs in mating behaviour of Cockroaches, 2nd revised and enlarged edition, pp. 299.