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CHROMOSOMES OF FOUR SPECIES OF APHIDS (HOMOPTERA : APHIDIDAE)

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ABSTRACT

Chromosomes of four species of aphids viz. *Aphis gossypi* Glover (2n=8) ; *Aphis craccivora* Koch. (2n=8) ; *Lipaphis erysimi* Kalt. (2n=10) and *Greenidea* (*Trichosiphum*) *formosana* (Maki) (2n=18) were studied and their morphometric analysis was carried out.

INTRODUCTION

Chromosomes of aphids have attracted the attention of cytologists from as early as 1905 (Stevens 1905, 1909 ; Morgan, 1909). The first detailed account on aphid chromosomes, with emphasis on their evolutionary significance was given by Shinji (1931). Handling of aphid chromosomes posed a considerable problem. Many efforts were made to device the suitable methodology and evaluate their phylogenetic significance (Colling 1955 ; Dionne and Spicer 1957). Recently Rou Yen Sen & Robinson (1966) attempted to study the chromosomes of fifty species of aphids and their possible application in systematics of Aphidoidea.

Behura (1978) enumerated work on Indian species. We have studied the chromosomes in the embroys from apterous viviparous females of four species of aphids, namely, *Aphis gossypii* Glover ; *Aphis craccivora* Koch ; *Lipaphis erysimi* Kalt. and *Greenidea* (*Trichosiphum*) *formosana* (Maki).

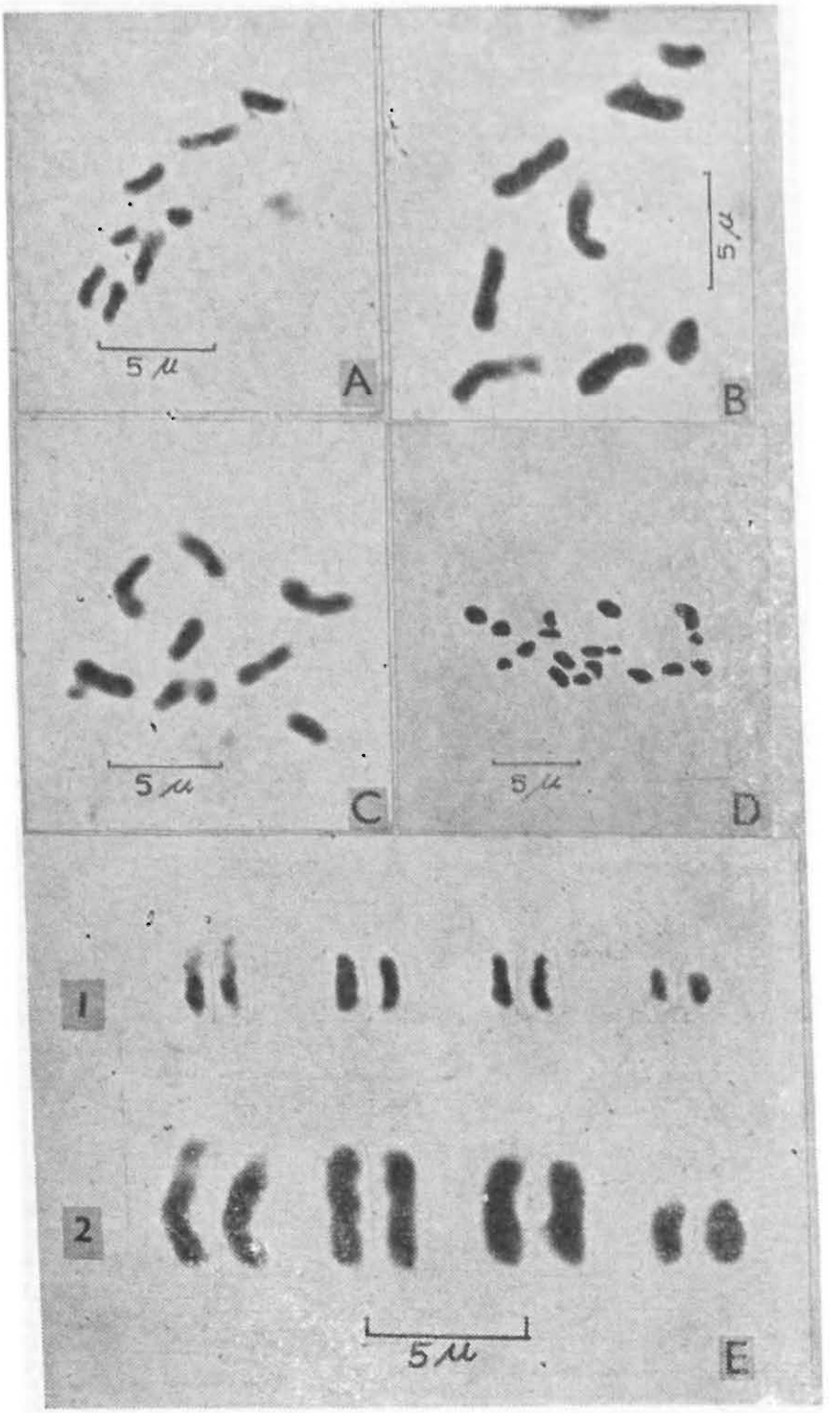
MATERIAL AND METHODS

Only apterous viviparous females were used in our studies. Their details are given in Table 1.

The embryos were dissected out in 0.67% NaCl and were treated with 0.56% KCl for 2-3 minutes and finally fixed in 1 : 3 aceto-alcohol for nearly an hour. The embryos were kept in 50% acetic acid till they became soft and then were squashed on albuminized slides. The slides were kept in the vapours of 50% acetic acid over night at 5°c. The following day, the slides were brought to room temperature and immersed in 1 : 3 aceto-alcohol for one hour. Cover slips were removed carefully. The slides were air dried for 6 hours. Staining was done in 2% giemsa.

OBSERVATIONS AND REMARKS

Diploid number in *Aphis gossypii* Glover & *Aphis craccivora* Koch were observed to be $2n=8$ (Pl. I A & B). This confirms to the earlier observations of Behura (1978). *Lipaphis erysimi* Kalt. and *Greenidea* (*Trichosiphum*) *formosana* (Maki) have 2n= 10 and 18 respectively (Pl. I C & D).



A—*Aphis gossypii* Glover. ($2n=8$), B—*Aphis craccivora* Koch. ($2n=8$), C—*Lipaphis erysimi* Kalt. ($2n=10$), D—*Greenidea.* (*Trichosiphum*) *formosana* Tak. ($2n=18$) (Camera lucida drawing), E—Karyotypes : 1—*Aphis gossypii* Glover ; 2—*Aphis craccivora* Koch.

TABLE 1

Sr. No.	Name of the species	Host	Date of Collection	Locality
1.	*Aphis gossypii* Glover	*Solanum melongena*	8. 8.1977	Baruipur, 24-Parganas
2.	*Aphis craccivora* Koch	*Cassia festula*	22. 7.1977	Science College Campus Ballygunge, Calcutta
3.	*Lipaphis erysimi* Kalt	*Brassica oleracca*	16.11.1977	Barrackpur, 24-Parganas
4.	*Greenidea (Trichosiphum) formosana* (Maki)	*Psidium guajava*	8.11.1977	Rautara, 24-Parganas

TABLE 2. Relative percentage length of autosomal pairs

Sr. No.	Name of the species	Autosomal pair nos.			
		1	2	3	4
1.	*Aphis gossypii* Glover	33.85	27.03	23.94	15.02
2.	*Aphis craccivora* Koch.	30.72	28.06	24.42	17.09

All these species are chromosomally distinct. The two congeneric species of Aphis having similar diploid number (2n=8) show difference in the relative percentage lengths of their pair numbers 1 and 4 (Pl. IE.). The mean relative percentage lengths of their pairs are given in Table 2.

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EFFECT OF MILD FUMIGATION ON THE PATTERN OF EGG LAYING AND ADULT EMERGENCE IN THE RICE MOTH, *CORCYRA CEPHALONICA* (STAINTON) (LEPIDOPTERA).

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ABSTRACT

Observations on the effect of mild fumigation on the gravid females during egg laying and on the eggs produced by the fumigated females of the rice moth, *Corcyra cephalonica* (Stainton) are noted. Seven to ten percent of the emerging adults displayed deformities in the nature of atrophied or curled wing and underdevelopment of its antennae and limbs.

The Rice moth, *Corcyra cephalonica* (Stainton) was first described in 1866. Chittenden (1919) mentioned that as regards work and injury the moth resembles *Ephestia cautella* Walk., its related species and *Plodia interpunctella* Hbn. It was observed that the caterpillars of *Corcyra*, which feed and live mainly in and around dried-vegetable products, are by far most destructive. The species is present at times in practically all the warehouses where grains, seeds and dry fruits are handled or stored.

Information concerning different aspects of the species has been published from time to time. Mukherjee (1971) recorded *Reduvius* sp. as predatory to *C. cephalonica*, which could share in the biological control of the latter. Joshi (1976) while working on the moth noted that the larvae had a special liking to feed from towards the plane surface of the pulse-halves.

This paper is intended to account for the fumigatory effect on gravid females during egg deposition and also on the eggs produced in consequence.

MATERIALS, METHODS AND RESULTS

A sample of pulse-halves of *Cajanus indicus* Sprengl. which was infested by the rice moth, was collected from the local Kidderpore market, from a retailer. The inedible product comprised of larvae, their faecal granules, cocoons with pupae and dead adults. A rich pure culture of the moths was prepared by 'inoculating' forty-one active and healthy larvae to some fresh, dry and uninfested pulse-halves of *C. indicus*. The implanting of small larvae to the food was made through and on cotton-wool. The entire rearing was brought in the specifically designed, wooden sleeve cage (Pl. IIA).

The fumigant chosen for these trials was