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INDIVIDUAL REARING AND SINGLE PAIR OVIPOSITION RESULTS OF PECTINOPHORA GOSSYPIELLA (SAUNDERS) DEVELOPED ON BEAN CONTAINING DIET LEPIDOPTERA: GELICHIDEA

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The apparatus and procedure used in rearing of *Pectinophora gossypiella* (Saunders) from 1st instar to full grown larvae including data on full grown larval recovery percentage, number of larvae recovered, temperature range and total larval period are described. Studies on single pair oviposition experiments include informations on fecundity, longevity of the adult pink bollworm female and ranges of temperature and humidity.

INTRODUCTION

Pink bollworm *P. gossypiella* (Saunders) is a well-known and major pest of cotton in some parts of the world including Pakistan. The development of different artificial diets enabled entomologists to maintain a continuous insect culture in the laboratory under controlled and disease-free conditions. The present study and its results elaborate on the tools and techniques that can be successfully used when this pest has to be subjected to bioassay experiments with respect to microbial insect control measures.

MATERIAL AND METHODS

Individual Vial Rearing Technique. In this technique a sterile homoeopathic vial (4.5 cm height and 1.4 cm diameter) was used. The inside of the vial was coated with approximately 3 g of freshly prepared diet [1], leaving 0.5 cm wide length-wise uncoated strip for visual observation of the developing larva. Then the vial mouth was closed with very thin layer of sterile absorbent cotton wool for checking airborne contamination. The vial was left for about 24 hr at room temperature so as to remove excessive moisture from the coated diet. Next day after removing the thin cotton wool layer, the vial was infested with a newly hatched 1st instar larva with the help of a disinfected artist's brush. After infesting larva, the vial mouth was tightly closed by inserting sterile thin polythene-covered absorbent cotton wool plug up to the end of the vial neck in order to make it completely airtight. Then the vial was inverted and placed in the darkness for about 4 or 5 days. Visual observation of the larva was taken from time to time until it reached the full grown stage and found to be ready for pupation.

The results of different batches of vial (one larva per vial) obtained by using this technique are given in Table 1.

Single Pair Oviposition Experiments. These experiments were done by an ordinary test tube(B) 15 cm length and 3 cm diameter (Fig. 1). A pair of two-day old adults was released in the test tube. The mouth of the test tube was covered with nylon net piece (C) which was tightly held in position by mounting rubber bands round the test tube neck. Feeding of adult pair was done by putting a pad of sterile absorbent cotton wool soaked in 10% sucrose solution on the nylon net. The adult pair was allowed to feed on for 1½ h. When the feeding was over, the soaked cotton pad was removed and the tube was kept undisturbed until the nylon net surface dried. Then a 2.5-cm thick round absorbent cotton wool piece, equal to the diameter of the tube mouth, was kept on nylon net which acted as oviposition pad(D). This oviposition pad was covered from above by a muslin cloth piece (E) which was tightly held in place by rubber bands like that of the nylon net in order to keep the oviposition pad pressed against the nylon net surface.

Six or more such test tube cages could be fixed into

Table 1. Individual rearing carried out through vial technique.

Batch of vial 1 larva/vial	Full grown larvae recovered	Larval recovery %	larval period (days)	Temp. (°C)
104	62	59·6	35	24—28
110	92	83·6	34	24—28
105	66	62·8	33	26—28
106	69	65·0	32	26·28
111	81	73·8	31	26—28
104	82	78·8	28	24—28
103	40	38·8	19	31—34
106	61	57·5	18	29—32
104	79	75·9	17	30—33

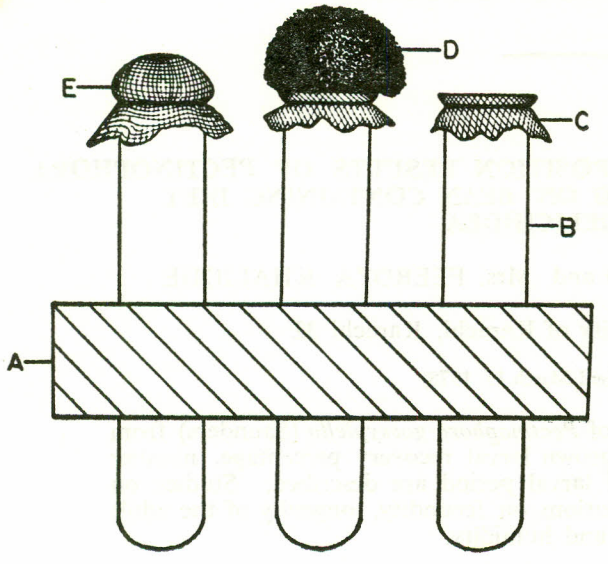

Fig. 1. A, packing foam sheet; B, test tube; C, nylone net; D, cotton wool oviposition pad; E, oviposition pad covered with muslin cloth.

holes of a rectangular or square shaped packing foam sheet (A). The fixed tubes were kept in an inverted position in darkness or wrapped around with black paper. Feeding was done daily and oviposition pads were taken out, checked and replaced with new one every day.

A total number of 63 single pair oviposition experiments were carried out using technique on 2nd generation adult developed on bean-containing diet.

RESULT AND DISCUSSION

The study on different batches of vials in Table 1 shows a significant relation between range of temperature and duration of larval period indicating that as the temperature gradually increased the larval period decreased accordingly. Maximum and minimum larval periods were observed to be 35 days at 24–28° and 17 days at 30–33° respectively but there appears no effect of temperature on percentage yield of full grown larvae which was 66.2% on an average.

In single pair oviposition experiments a single female laid 7 eggs (minimum) and 255 eggs (maximum) while average per female was found to be 80.3. Preoviposition period ranged from 2 to 15 days and average remained 4.6 days. It was also noted that females with more than 3 days preoviposition period laid less of eggs than those females having 3 days preoviposition period. Female longevity was noted to be 6 days (minimum) to 29 days (maximum) having an average of 18.7 days. Duration of maximum oviposition periods extended from 1st day of oviposition to 6th day when its average remained 1.7 to 2.3 days. Number of eggs laid during maximum oviposition period also varied from 6 to 156 eggs and its average was calculated to be equal to 53.5 eggs. Temperature and humidity ranged from 29-37° and 50-90% respectively.

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