
EXPERIMENT 5 ESTIMATION OF LARVAL DENSITY AND SHOOT QUANTITY REQUIRED FOR LATE AGE REARING (SHOOT FEEDING METHOD) FOR 100 DFLS

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5.1 INTRODUCTION

Rearing of III, IV and V instar larvae is called as late age rearing. The late age silkworms are stronger and easier to rear, but require large quantity of leaf for feeding. Out of total consumption of leaf, 94% of the leaf is consumed and 50% of total labour is required during the late age. Late age worms are less tolerant to high temperature, high humidity and poor ventilation. Digestion is less than that of young age silkworms and consumes coarser and matured leaves rather than tender leaves.

Objectives

After studying and performing this experiment, you should be able to:

- estimate larval density for 100dfls late age rearing; and
- estimate shoot quantum required for 5th instar rearing (shoot feeding method) for 100 dfls.

5.2 EXPERIMENT

5.2.1 Principle

Late age silkworm rearing is very much important because 94% of leaf is consumed in this stage. Sufficient quantum of feed and bed spacing is essential for the proper development of silkworm. If not provided, larvae will become weak and it will affect total cocoon yield. It is very much essential to provide sufficient feeding and spacing. During 5th instar, labour requirement is more and to save labour, shoot rearing method is followed. In shoot feeding method, shoots are harvested and fed to silkworm 3 times per day.

5.2.2 Requirements

- Shoot Rearing Racks
- Late Age Silkworm (5th instar)
- Weighing Balance (50 kg capacity)
- One Square Feet Cut Paper Board Frame
- Plastic Basin

5.2.3 Procedure

A) Estimation of Larval Density

- Place 1 sq. ft of paper board frame on the rearing bed.
- Take out all the larvae found in the square board.
- For 100 dfls, collect larvae from 5 spots; calculate average number of larvae per spot.
- Measure total rearing bed area maintained for 100dfls.

B) Estimation of Shoot Quantum

- In 5th instar, follow 3 feed schedule (6am, 5pm and 10pm) per day till spinning.
- During every feeding, feed sufficient quantity and take the weight of shoots.
- Utilized quantity of shoot should be recorded.
- Add the total quantity of shoots fed in 5th instar.
- The same procedure should be continued up to the end of 5th instar.

5.2.4 Observations

A) Larval Density

Sample number	Number of larvae /sq. ft
1	A
2	B
3	C
4	D
5	E

$$\text{Average number of larva/sq. ft (F)} = \frac{A + B + C + D + E}{5}$$

Total Bed Area for 100 dfls = G

B) Shoot Quantum

Days	Feeding time			Total (Kg)
	6 am	5 pm	10 pm	
1	A ₁	B ₁	C ₁	D ₁
2	A ₂	B ₂	C ₂	D ₂
3	A ₃	B ₃	C ₃	D ₃
4	A ₄	B ₄	C ₄	D ₄
5	A ₅	B ₅	C ₅	D ₅
6	A ₆	B ₆	C ₆	D ₆
7	A ₇	B ₇	C ₇	D ₇
Total			D ₁ +D ₂ +D ₃ +D ₄ +D ₅ +D ₆ +D ₇	

5.2.5 Calculations

Larval Density per 100 dfls = Average number of larvae per sq. ft x Total bed area for 100 dfls

$$= F \times G$$

Shoot quantum fed for 100dfls = D₁+D₂+D₃+D₄+D₅+D₆+D₇

5.2.6 Results

The larval density per 100 dfls is _____.

The shoot quantum fed for 100 dfls is _____.

Inference:

The ideal larval density is 70 larvae/sq.ft. and around 50,000 larvae/ 100dfls, 700 sq.ft. bed area in 5th instar (shoot rearing method) is optimum.

2,880 kg of shoot is ideal for 5th instar silkworm rearing (shoot feeding method). If the quantum is less than this, feeding is not sufficient and further it will affect larval growth.

5.3 PRECAUTIONS

- For more accuracy, more samples should be taken from different spots of the rearing bed.