
EXPERIMENT 1 ESTIMATION OF HATCHING AND BRUSHING PERCENTAGE OF SILKWORM EGGS

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1.1 INTRODUCTION

Silkworm eggs are supplied in the form of loose eggs and sheet eggs. The eggs are incubated at optimum temperature (25°C), relative humidity (75%), 16 hours of light and 8 hours of darkness till pin head stage. At pin head stage (2 or 3 days before hatching), the eggs are black boxed. On the expected date of hatching, the eggs are exposed to light. After brushing, hatching and brushing percentage is calculated. More than 90 % of hatching is indication of good incubation.

Objectives

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

- carry out the brushing activity; and
- determine hatching and brushing percentage of silkworm eggs.

1.2 EXPERIMENT

1.2.1 Principle

The care provided during the period for hatching is known as incubation. Incubation has a profound influence on the growth and development of silkworm embryo, in turn cocoon yield and cocoon quality.

1.2.2 Requirements

- Hatched Silkworm Eggs (Loose eggs and sheet eggs)

- Colour Sketch Pens
- Cellophane Tape
- White Paper

1.2.3 Procedure

Loose Eggs

- After brushing, observe the hatching pattern and randomly select 1-2 incubation frames.
- Selected incubation frames should have hatched, un-hatched and unfertilized eggs.
- Spread the egg shells uniformly in the incubation frame with the help of a feather.
- Take a piece of white paper and make a cut of 2 cm width and 8 cm length in the centre of the white paper.
- Remove the cut piece of white paper, paste the cellophane tape such a way that the sticky side faces up (Fig. 1.1).
- Each tape can accommodate about 500 eggs.

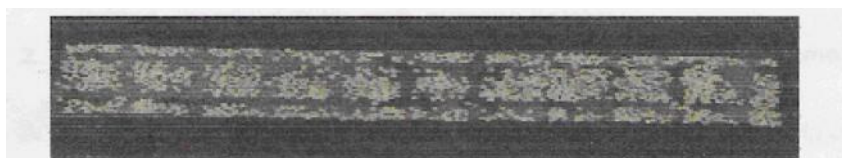


Fig. 1.1: Cellophane tape with loose eggs

- Place the sticky side of the cellophane tape on the frame and press gently with finger, so that all type of silkworm egg shells (hatched, un-hatched, late-born larvae and unfertilized eggs) will stick to the cellophane tape. Prepare such a tape from each frame.
- Now, count the number of hatched, un-hatched, late-born larvae and unfertilized eggs separately by using sketch pen of different colours and record it.
- Take the average of all types of eggs.
- Calculate the overall hatching/ brushing percentage of the lot.

Sheet Eggs

- If you are brushing 100 dfls, randomly select 5 hatched silkworm eggs. Count the number of hatched, un-hatched and unfertilized eggs separately by using sketch pen of different colours and record it.
- Take the average of all types of eggs.
- Calculate the overall hatching percentage of the lot.

1.2.4 Observations

Number of unfertilized eggs - A

Number of un-hatched eggs - B

Number of hatched eggs	-	C
Number of late-born larvae	-	D
Total number of eggs	-	E = A+B+C

1.2.5 Calculations

$$\text{Hatching \%} = \frac{\text{Number of eggs hatched}}{\text{Total number of eggs}} \times 100$$

$$= \frac{C}{E} \times 100$$

$$\text{Brushing \%} = \frac{\text{Number of eggs hatched} - \text{Number of late-born larvae}}{\text{Total number of eggs}} \times 100$$

$$= \frac{C - D}{E} \times 100$$

1.2.6 Results

The hatching percentage of the given sample is _____%.

The brushing percentage of the given sample is _____%.

1.3 PRECAUTIONS

- Select the eggs randomly and take more sample size to obtain correct data.
- Count the eggs immediately after brushing.