
EXPERIMENT 7 CANDLEING AND GRADING OF EGGS

Structure

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7.1 INTRODUCTION

Candling is the procedure for examination of egg by holding the egg in between eye and a source of light to evaluate its quality. Grade indicates superiority of external and internal quality of egg for marketing purpose. Higher is the grade, better is the egg quality. Eggs of high quality gets higher price and can be stored for a longer period than those which are of poor quality.

Objectives

After performing this experiment, you will be able to:

- evaluate the quality of egg;
- identify abnormalities in the shell and content of the egg, if any, like blood and meat spot; and
- classify eggs into different grades.

7.2 EXPERIMENT

7.2.1 Principle

When egg is stored for longer periods under improper conditions, albumen (white portion made up of protein) liquefies and the yolk, which is normally at the centre of the egg, comes to surface and moves freely. The extent of visibility and movement of the yolk in an intact egg when seen with a source of light under dark conditions indicates its internal quality.

7.2.2 Requirements

- Egg
- Egg Candler
- Egg weighing balance
- Air-cell gauze

7.2.3 Procedure

(i) Candling

- 1) Switch on the egg candler.
- 2) If it is an individual egg candler, keep the broad end of the egg into the space (from where light comes out) provided in the egg candler (Fig. 7.1).

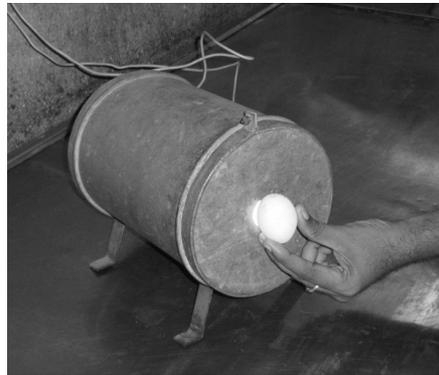


Fig. 7.1: Individual Candler



Fig. 7.2: Mass candler

- 3) If it is a mass candler, place the egg tray in line with the light (Fig. 7.2).
- 4) Note different abnormalities (Fig. 7.3 and 7.4) like size of air-cell, thin and cracked shell, blood spot, meat spot etc.



Fig. 7.3: Thin and Shell-less eggs



Fig. 7.4: Misshapen eggs

- 5) Give a rotation to the egg keeping it in position and observe for visibility and yolk movements.
- 6) The egg can be tested for its fertility only if it is incubated for about 5 to 7 days; observe for blood vessels in fertile egg as against a clear view in case of infertile eggs.
- 7) Using an air-cell gauge, measure the air-cell depth.

(ii) Grading

There are several methods for grading of eggs. Among them, two methods are used commonly, viz., based on egg weight and internal quality of egg.

(a) Egg Weight

- 1) Switch on the weighing balance.
- 2) If it is an electric balance, bring the reading to zero by using tare option.
- 3) Place the egg in the tray and note down the egg weight in grams.
- 4) Classify the grade of the egg based on the standards developed by Bureau of Indian Standards (BIS) presented in Table 7.1.

Table 7.1: Different Grades of Table Eggs on Egg-weight

Weight of an Egg (g)	Grade
Above 60	Extra large
54 to 60	Large
48 to 53	Medium
Less than 48	Small

(b) Internal Quality of egg

- 1) Switch on the egg candler.
- 2) Roll down the egg on the egg candler.
- 3) Check the location of albumen uniformly placed.
- 4) Check the location of yolk uniformly placed.
- 5) Check for any blood or meat spots.
- 6) Note down the qualities of shell, Aircell, Albumen and yolk.

Based on the observations made during candling of eggs, grade them on the basis of internal egg quality (air cell, albumen and yolk) based on the Bureau of Indian Standards (BIS) presented in Table 7.2.

Table 7.2: Different Grades of Table Eggs on Shell, Aircell, Albumen and Yolk Quality

Grade	Shell Quality	Air Cell	Albumen	Yolk
A	Clean, sound, smooth, brightly coloured	Fixed, regular depth up to 4 mm	Clean, properly firm, free from blood and meat spots	Centrally placed, free from blood or meat spots, outline invisible
B	Clean to slightly stained, slightly rough and dull coloured	Fixed, practically regular, depth up to 8 mm	Reasonably firm, free from blood spot and meat spot, slightly opaque	Fairly placed at centre, free from blood and meat spots, outline slightly visible

7.2.4 Observations

- i) Weight of the given egg is g.
- ii) Observe for the following:
 - Shell quality
 - Air cell
 - Albumen
 - Yolk

7.2.5 Results

- i) Indicate the grade of egg based on egg weight
- ii) Indicate the grade of egg based on internal qualities

7.3 PRECAUTIONS

- All the measurements/observations should be taken carefully and accurately.
- Eggs should be kept on egg-candler gently otherwise there may be breakage.
- Thin shelled or cracked shell or shell-less eggs should be avoided for candling.
- Eggs should be marked as per different grade separately.