

**UNIT:4TH (ANIMAL
HUSBANDRY &
POULTRY)**

**Preservation
Of
Eggs**

Subject: Applied Zoology (ZOOLOGY)

Course: DSE (1Z00DE0601)

Unit - IV

Sem - VIth

2.4 Processing and Preservation of eggs (1)

The production of clean and whole some eggs is required to meet the urban demand all over the world. About 95% of the eggs are used for table & cooking purposes & remaining 5% for confectionery.

To avoid spoilage of eggs, they should be collected within a few hrs after being laid.

The following measures are found to be useful in preserving the eggs

1) Egg Cleaning: About 30% of chicken eggs become soiled or show dirty spots on the shell. These soiled spots attract the microorganisms and promote their growth & multiplication, leading to spoilage of the eggs on storage. That is why cleaning of eggs is carried out immediately after their production by chicken. Washing the eggs with 1% Sodium hydroxide & then immersion in detergent containing warm water (40°C) for 5-10 min is helpful in cleaning the eggs. Manual cleaning & wiping is done but it can cause breakage. In India egg washing machine designed by Central Food Technological Research Institute Mysore is widely used on commercial scale & it cleans about 1500 eggs within one hour.

(2)

B) Egg deterioration: starts immediately once laid by the hen. The eggs start losing wt due the evaporation of the moisture with the passage of storage time the thick yolk disappears completely & mixed up with the thin albumen.

C) Preservation of eggs: should be undertaken immediately after laid by the hen. The eggs are collected in a wire basket and taken to a cooling room where temp is below 16°C .

After cooling, any dirty material on the egg shell should be cleaned off manually or mechanically as discussed earlier.

Generally eggs are infertile but under rural rearing mixing of infertile & fertile eggs are possible. So fertile eggs are first defertilized before ~~fresh~~ preservation. This is done by dipping eggs in hot water ($57-62^{\circ}\text{C}$) for about 15 min for 2-3 minutes. This high temp treatment is called pasteurization, can be given to infertile eggs as well as to destroy the microorganisms present on the egg shell surface.

The preservation measures of eggs on a commercial scale include cold storage, sealing of eggs with oil, super cooling, storing under CO_2 atmosphere etc.

a) The cooling-treatment becomes natural during winter months when the temp does not go beyond 16°C . However, during warmer months refrigerated coolers are suited for egg storage.

Besides, cold storage of eggs at around -10°C keeps the eggs fresh for a very long period of more than 9 months. The relative humidity of the egg storage place should be 80-85%, so as to reduce the evaporation of moisture from the eggs during storage period.

The other methods of cooling the eggs, include storage of eggs in cool rooms or underground pits / earthen pots.

b) Oiling of eggs also lowers the risk of deterioration in their quality. The oil coat on egg shell prevents the entry of microorganisms, besides reducing the evaporation of moisture and loss of CO_2 during storage. The surface of egg shell should be dry before oiling. The oil should be colourless & tasteless. Light mineral oils of food quality, refined from paraffin and coconut oils are safely used for sealing the egg shell. The wire basket containing eggs is dipped in coating oil for about 10 seconds. The oil coated eggs can be stored for 3 months at $10-13^{\circ}\text{C}$.

At farm level, the preservation equipments like refrigeration coolers etc may not be available, the preservation

of eggs is brought about by using lime-water^(u)
water-glass etc.

Lime water is made from 4 parts of slaked lime, 20 parts of cold water & 1 part of salt.

The contents are stirred thoroughly to produce lime-water. The clear part of the solution is decanted and poured over the eggs contained in earthen / cemented / wooden container till they get submerged in the lime-water.

Similarly, equal parts of sodium silicate and water are mixed to produce water-glass for preservation of eggs. Only 5% of water-glass is used for pouring it over the eggs contained in earthen, cemented / wooden containers.

The containers should be kept covered to prevent the loss of moisture due to evaporation.

c) Freezing of eggs: It is one of the best means of conserving the quality of eggs. In this method deterioration is arrested & the frozen eggs can be held in cold storage for an extended period until needed. For this shell eggs are placed in cold storage to preserve the quality. After thorough chilling, eggs are taken to candling room. After the eggs are candled, the shell is broken against a blunt knife above a small tray which is supplied with cups to hold

the contents of the egg. Separated yolk^⑤ and white are mixed yolk & whites can be preserved through freezing which checks the growth of bacteria. Frozen whole eggs are used for preparing cakes, pastries, ice cream etc.

d) Drying of Eggs: is more convenient way of preserving the eggs than even freezing. The drying process reduce eggs to about one-fourth of their original wt so that about 70 normal sized eggs make 1kg of dried product. In this method the egg pulp is forced under pressure into a drying chamber & sprayed through a nozzle. The incoming air is held at higher ranges of temperature while the exhaust air has a temperature of lower ranges.

The spray dried product is usually a fine powder while the pan dried product is made up of flakes / scales which can be ground into powder.