



Poultry production

Lecturer

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Layer Poultry Farming

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- -Layer poultry farming means raising egg laying poultry birds for the purpose of commercial egg production.
- Layer chickens are such a special species of hens, which need to be raised from when they are one-day old.
- **About 5%** of hens start laying eggs within the first 18-20 weeks of age.
- **About 10%** birds start laying at their 21-24 weeks of age.
- When they reach **26 to 30** weeks of age, they produce highly. Although, it may be different depending on their strain.
- Egg laying **rate and size** of eggs increases gradually.
- The hens grow till their **40 weeks** of age.
- ➔ • **Weight and size** of eggs increases till their **50 weeks** of age.

-Egg Producing Cycle

- ▶ The age at **point of lay (POL)** is between 22-24 weeks of age depending on the breed. Light breeds begin to lay first. The **end of lay (EOL)** is a year or two after point of lay. However, layers are culled after one year in lay i.e. at **18 months** of age.
- ▶ -When egg production starts, it reaches a **peak (about 80%) at about 42** weeks of age. This marks the end of the **first phase** of the pullet year laying cycle and the start of the **second phase** (**43-62 weeks of age**) during which there is a gradual fall in production to **about 65%**. After this, the laying hens enters into the **third phase** of its first year in lay which is up to 72 weeks. This phase terminates in the moulting of the fowl. Egg production becomes practically nil.

Layer Breeds

- ▶ According to the nature and color of egg, layer hens are of two types.
- ▶ **1-White Egg Laying Hens:** This type of hens are comparatively **smaller in size**. Relatively eat less food, and the color of egg shell is white. Isa White, Lohman White, Nikchik, Bab Cock BV-300, Havard White, Hi Sex White, Sever White, Hi line White, Bovanch White etc.
- ▶ **2- Brown Egg Laying Hens:** Brown egg laying hens are relatively **larger in size**. They eat more foods, compared to white egg layers. Lay bigger eggs than other laying breeds. Egg shell is brown colored. There are many types of brown layer available. Among those Isa Brown, Hi Sex Brown, Sever 579, Lohman Brown, Hi Line Brown, etc. are very suitable for commercial layer poultry farming.

What's the Difference Between Brown Eggs and White Eggs?

- ➔ White and brown eggs taste the same and have the **same nutritive value**. The color difference is due to the breed of the hen.
- ➔ You can tell what color egg a hen will lay by looking at **her feathers and ear lobes**.
- ➔ A hen with **WHITE** earlobes and feathers will lay **WHITE** eggs.
- ➔ A hen with **RED** feathers and matching earlobes will lay **BROWN** eggs.
- ➔ The difference is purely cosmetic.... usually, people in the North prefer brown eggs while people in the South like white eggs.

Layer Breeds



**WHITE CHICKEN
WITH
WHITE EARLOBES = WHITE
EGG**



**RED CHICKEN
WITH
RED EARLOBES = BROWN
EGG**

-Most Commercial Layer Breeds:

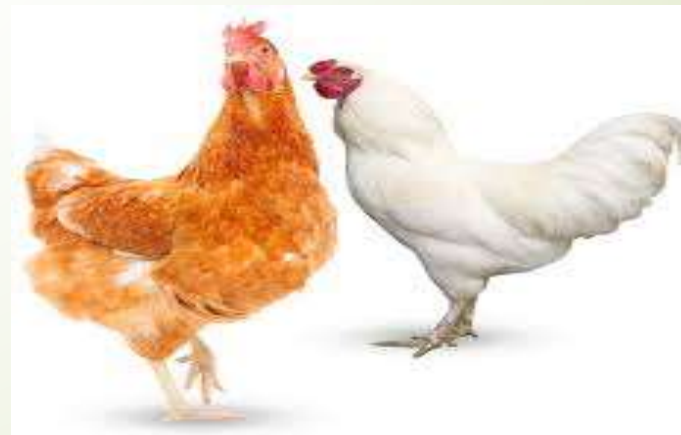
a. White Leghorn,



b. ISA Brown,



c. Cari Gold, d. Coloured Layer, etc.





-Systems of Housing:

- **A. Intensive system (commercial)of housing includes:**
- 1) Cage system:
- 2) Deep litter system: Covering of floor with litter materials like saw-dust, rice-husk, chopped wheat straw.

Cage system



Deep litter system



B. Back-Yard system.





Layer Farm Sequence:

- A standard procedure is followed for the Layer Farm Sequence. This procedure starts when female chicks are raised into pullets for commercial egg production. This stage is called 'rearing.

1- A Brooding period:(Day-old to 6 weeks):

- The brooding period extends from the age of one day to six weeks, during which the chicks need heat sources for heating and need good nutritional rations that keep pace with the body's nutritional needs, which are high during this period because it is one of the periods characterized by **rapid growth**.



2- The Rearing period (6 to 18 weeks):

- The rearing period extends from six weeks to 18 weeks of age and is considered a preparatory period in which the birds is prepared for the production season.





-In large projects laying hens are raised in two types of halls:

- 1-Rearing houses.
- 2-Production hall.
- Pullets are usually moved into their laying quarters, at 16-18 weeks of age, before they reach sexual maturity. This ensures that they are settled in before egg production begins. Handling birds at any time must be done with care to avoid injury. As **pullets mature into laying hens** they are fed a layer ration designed to enable them to perform best.

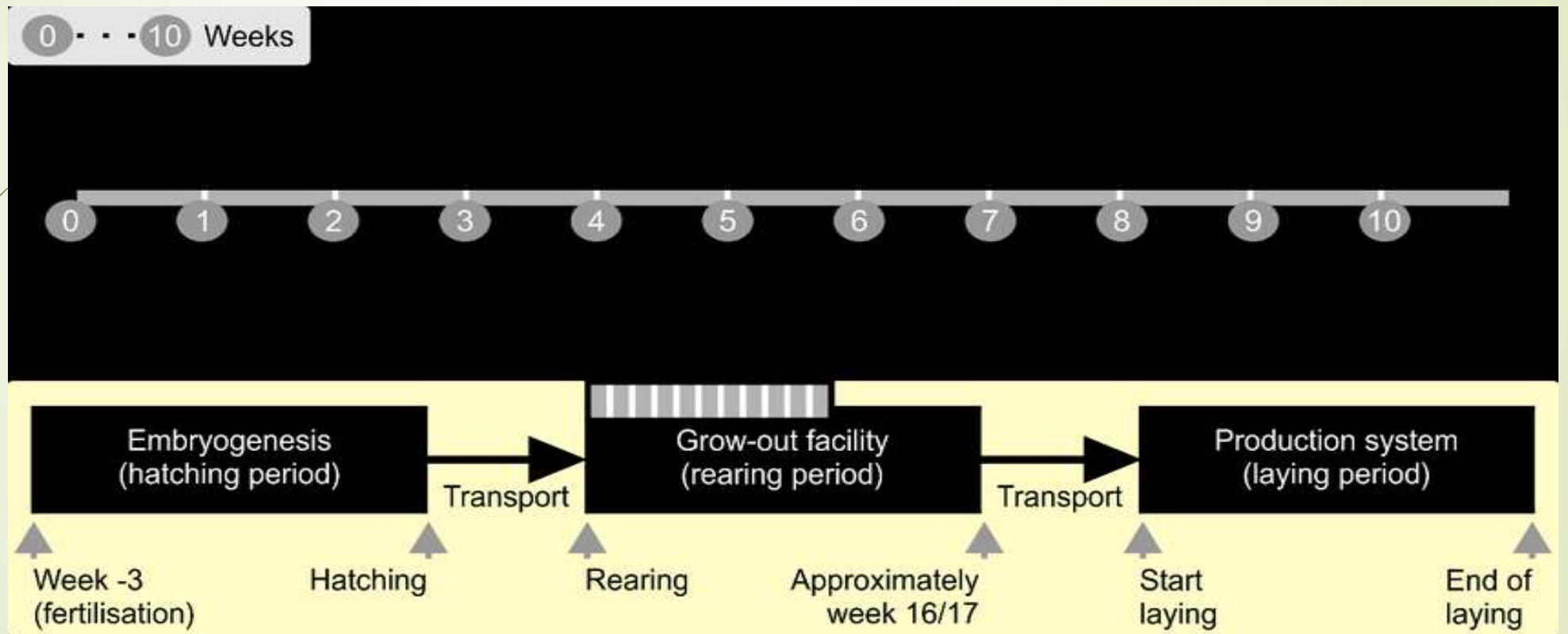




3-Production period(18 to 80 weeks);

➤ Egg production period, it is called the productive period or production year. It extends from the date of sexual maturity and the beginning of laying the first egg in the flock(at the age of 18 weeks) until the time of marketing the laying flock (at the age of 80 weeks).

Production period(18 to 80 weeks);






Egg Collecting and Grading:

- ▶ Mechanical collection of eggs is common in modern layer farms. It takes about 24-26 hours for each egg to develop and each hen lays an egg a little later each day. This is not an exact thing and most eggs are laid in the morning.
- ▶ Eggs should be collected regularly and transferred from the hen house to an egg room where they are graded or checked for weight and for damaged shells. A sample of eggs is often broken open to check internal quality. Eggs are packed into cartons for 12 eggs or trays of 30 eggs for sale.
- ▶ Prices vary with egg size, so eggs must be separated on the basis of egg weight. This is done automatically by a machine called an egg grader.


- Factors Affecting the Performance of the Layer :

- **1. Temperature:** Hens need a moderate temperature for optimal performance. The thermo neutral zones of the adult fowl within which performance is not adversely affected by temperature is from **12.8C to 26.0C**. This temperature range supports the **highest egg qualities**.
- **-When temperatures fall below the thermo neutral zone, feed consumption increases while egg production drops and shell thickness is reduced. Temperatures higher than 26.0C as in the tropics depress egg yield and egg qualities.**





2. Relative Humidity: High relative humidity (RH) impedes evaporative cooling and therefore makes panting virtually ineffective. This aggravates thermal stress. **High RH may increase** the risk of wet and mouldy litter. The recommended RH is **50-80%** for layers.

➤ **3. Ventilation:** The fowl is a small animal with a rapid metabolism hence its air requirements per unit of body is high compared with that of other animals. The requirement can be met by straight through passive ventilation in the hen houses. A good ventilation is also needed to purify the air of carbon dioxide, ammonia and noxious gases. The fowl can withstand a high rate of air movement, especially when the temperature is high because of its cooling effect.




4. **Light:** Light has been shown to stimulate egg production in all birds and chicken is no exception. This is achieved by stimulating the pituitary gland which releases certain hormones necessary for ovulation. The process requires couple of hours for completion of the job up to egg laying. **Increasing day light advances sexual maturity and vice versa.** Precocious maturity tend to result in a depressed rate of lay, and reduced egg size because of low POL body weight, light requirement considered enough for production is about 10 lux (one foot candle). The use of artificial light to



give **14 to 16** hours light period helps to overcome the problem with natural day length which varies with seasons. The standard practice is to place one ceiling outlet for each **18.6m²** of floor and artificial lights should first be used on pullets after 5 months of age by giving 1 hour additional light to the day light.


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- **5. Noise:** Intermittent noise impacts negatively on egg production. A continuous noise however, neutralizes the shock effect of sudden noises.
 - **6. Floor, Feeding and Drinking Space:** These factors interact with temperature, ventilation, RH to affect the performance of the fowl. It is therefore important to adhere to the established floor, feeding and drinking space requirements per bird.


Layer (Egg) Production Index

- 1) Egg production
- The egg industry has two principal methods of measuring daily, weekly, and total egg production
- i.e. the hen-day and hen-housed systems.
- Hen-Day Egg Production (HDEP)
- For a particular day
- **HDEP = Total number of eggs produced on a day / Total number of hens present on that day * 100**

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- For a long period
 - This may be calculated by first computing the number of hen-days in the period by totaling the number of hens alive on each day of the period. Then calculate the number of eggs laid during the same period.

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- ▶ **HDEP = Total number of eggs produced during the period / Total number of hen-days in the same period * 100**
 - ▶ HDEP is usually expressed in percentage. HDEP is an excellent indicator of how well the live birds are laying; it does not consider egg size and egg quality. It is mostly used for the scientific studies and truly reflects the production capacity of the available birds in the house. A farm average of 85% or more per year is desirable. HDEP is also known as **Rate of Lay**.
 - ▶ **-Hen-Housed Egg Production (HHEP) For a particular day**
 - ▶ **HHEP = Total number of eggs laid on a day / Total number of hens housed at the beginning of laying period * 100**

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- ▶ Desirable HHEP value is 80%
 - ▶ For a long period $HHEP = \frac{\text{Total number of eggs laid during the period}}{\text{Total number of hens housed at the beginning of laying period}}$
 - ▶ This value is 295 or higher is desirable in one year. It also fails to account for past mortality. However, it is another egg production index universally used by the poultry industry. **If there is no mortality during a period, the HDEP and HHEP are equal.**



➤ - **Egg Mass** The use of egg mass rather than egg numbers will lead to better comparisons of flocks or strains of birds. To calculate egg mass it is first necessary to determine the average weight of eggs by weighing representative samples of the eggs produced.

➤ **Average egg mass (Per hen per day in grams) = Per cent HDEP X Average egg weight in grams.**

➤ -**FCR (Per Kg egg)**

➤ **FCR (per kg egg mass) =Kg of feed consumed/Kg of egg produced**

➤ A value of 2.2 or less is desirable

➤ -**FCR (Per dozen eggs)FCR (per dozen eggs)=Kg of feed consumed x 12**

➤ **/Total eggs produced**

➤ A value of 1.5 or less is desirable