Layer (Egg) Production Indices

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

$$HDEP = \frac{\text{Total number of eggs produced on a day}}{\text{Total number of hens present on that day}} \times 100$$

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.

$$HDEP = \frac{\text{Total number of eggs produced during the period}}{\text{Total number of hen-days in the same period}} \times 100$$

HDEP is usually expressed in percentage. 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

$$HHEP = \frac{\text{Total number of eggs laid on a day}}{\text{Total number of hens housed at the beginning of laying period}} \times 100$$

For a long period

$$HHEP = \frac{\text{Total number of eggs laid during the period}}{\text{Total number of hens housed at the beginning of laying period}}$$

It is usually expressed in numbers. HHEP values of 80% or 295 or higher are desirable. Although HDEP is an excellent indicator of how well the live birds are laying, it does not consider egg size and egg quality. Since these factors help in determining the income from eggs, HDEP is often misleading from a profit standpoint. It also fails to account for past mortality. However, it is the best egg production index available and is universally used by the industry. From a cost of egg production standpoint, HHEP is good as it measures the effects of both egg production and mortality. If there is no mortality during a period, the HDEP and HHEP are equal.

2) 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.

$$\text{Average egg mass (Per hen per day in grams)} = \text{Per cent HDEP} \times \text{Average egg weight in grams}$$

3) Feed efficiency (Feed conversion ratio – FCR)

Feed efficiency per kg egg mass

This takes into consideration of the feed intake, egg weight and egg production. It is the ratio between the feed consumed and the egg mass.

$$\text{FCR (per kg egg mass)} = \frac{\text{Kg of feed consumed}}{\text{Kg of egg produced}}$$

A value of 2.2 or less is advantageous to the farm.

Feed efficiency per dozen eggs

This takes into consideration of the feed intake and egg production. It is the ratio between the feed consumed and the number of eggs produced.

$$\text{FCR (per dozen eggs)} = \frac{\text{Kg of feed consumed} \times 12}{\text{Total eggs produced}}$$

A value of 1.5 or less is advantageous to the farm.

4) Net Feed Efficiency Index (NFEI)

This is based on egg production, egg weight, feed intake and body weight gain.

$$\text{NFEI} = \frac{(\text{EM} + \text{BW}) \times 100}{\text{FC s}}$$

Where,

EM = Mean egg mass in g during a specific period
BW = Mean body weight gain or loss in g during a particular period
FC = Mean Feed consumption/hen in g during a particular period
NFEI value of 45 and above is desirable.

5) Egg: Feed price ratio (EFPR)

It is used to find out the ratio between the receipts from egg and expenditure on feed.

$$\text{EFPR} = \frac{\text{Total value of egg produced}}{\text{Total value of feed consumed}}$$

An EFPR ratio of 1.4 and above is desirable.