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

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

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. 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

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

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.

Say initial number of female chickens was 1000 and in layer house the number of hens was 950.
They laid 25,000eggs in that year.

$$\textbf{HHEP} = \frac{25{,}000}{950} \times 12 = 315$$

So, Yearly HHEP is 315 which is above 295.

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.

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

FCR (Per Kg egg)

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

A value of 2.2 or less is desirable

FCR (Per dozen eggs)

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

A value of 1.5 or less is desirable

Net Feed Efficiency Index (NFEI)

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

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

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.