

## PERFORMANCE EFFICIENCY FACTOR

Live weight is measured in kilograms and the age at depletion is measured in days. Liveability is measured as a percentage and is calculated as the percentage of the flock that has survived over the growing cycle (i.e. the survival rate). Mortality amongst birds within a broiler flock over the growth cycle is normal and attributable to a number of factors, with producers normally guided by a European welfare standard in this instance. Feed conversion efficiency is a calculated figure based on the amount of poultry feed measured in kilograms that have been used to gain 1 kilogram of live weight in the broiler. This is more commonly referred to as the “FCR”, and is a measurement of how efficiently the broiler has deposited body weight gain against the amount of poultry feed consumed (i.e. how efficiently the broiler converts poultry feed into meat).

Producers aim to maximise live weight for age, maximise the liveability of the broilers and minimise the amount of feed used to achieve the final or terminal live weight. To facilitate the comparison of live bird performance amongst flocks, between producers or against breed standards and international benchmarks, the PEF incorporates these individual biological components. The formula to calculate PEF is:

$$\frac{\text{Live weight (kg)} \times \text{Liveability (\%)}}{\text{Age at depletion (days)} \times \text{Feed conversion efficiency}} \times 100$$

Producers aim to maximise the PEF achieved, and following on the explanation of the various factors in the preceding paragraph one can see that maximising the live weight and liveability, whilst at the same time minimising or optimising the age at depletion and feed conversion efficiency, will produce a result where the PEF will improve (as a natural consequence of the structure of the formula applied above).

Measuring the average PEF can be likened to the precise evaluation of the various production parameters incorporated in the measurement, all of which can be influenced by management, environmental conditions, poultry diseases and poultry feed quality. Any deterioration in the PEF must be investigated to determine the likely causes of the inferior broiler production. PEF is therefore a tool that an integrated broiler producer can use to set a benchmark or standard which all employees can strive to achieve. Under the system a flock with good growth and liveability parameters should achieve a good PEF.

What does the PEF tell us about the profitability of an integrated broiler producer? Broiler producers strive to maximise the terminal live weight of a broiler (maximising the average daily growth rates), and through good bird management improve the survival rate of the birds through the growing period. If this is achieved two important key performance indicators can be optimised; the first is that the broiler producer will maximise the bird weight measured in kilograms produced per square meter in the broiler sheds (i.e. will produce as much weight off the asset base as possible), and secondly the broiler producer can produce more birds through the facilities in a given year (i.e. more broiler cycles can be achieved through the asset base if terminal live weight for a lower age is optimised).

A number of key input costs including fixed overhead costs, and variable costs in energy and feed are incurred to produce a flock of broilers or complete one growth cycle. It is recalled that feed conversion efficiency is an important variable in broiler production and that if less feed is used to produce every kilogram of live weight gain, it goes without saying that the potential margin over feed cost will improve (i.e. the feeding cost will improve). Maximising the amount of kilograms

produced per square meter in the broiler sheds will serve to dilute all other fixed input costs per kilogram of weight produced. A combination of the feeding cost and non-feed costs per kilogram of the live broiler produced is generally known as the live cost, and measured in Rand per kilogram of live weight produced.

Naturally, a higher PEF will point to an improved live weight gain (or a higher terminal weight for age) and a good survival rate amongst the flocks produced. This would correlate to a higher number of kilograms produced off the cost base, which would ultimately lead to a lower live cost due to the dilutive effect of the higher volumes achieved. The lower the live cost the better the opportunity to improve profit margins in the business. PEF as the ultimate measurement of live bird performance incorporating terminal live weight and age (and hence the broiler growth rate), in addition to liveability (the survival rate) and feed conversion efficiency, will reflect any inefficiencies or improvement in broiler growth and provides a good guide to the likely deterioration or improvement in the final live cost achieved. Astral's strategy to be the best cost integrated poultry producer is largely driven by the live cost of a broiler which makes up a sizable portion of the final cost of all poultry products.