

How to compile breeder flock results and rankings

by Pete Sbanotto, product manager, Cobb-Vantress.

Primary breeder companies have been very successful in developing strains of meat-type poultry which balance the requirement of excellent broiler performance with the need for good breeder flock results.

They constantly test the performance of breeder hen genetic lines and their progeny in trial facilities.

Data gleaned from these trials become the basis of the selection pressure to obtain the desired traits in future generations.

These results, done under very strict diet, housing and management growing conditions, show what can be considered the 'genetic potential' of a line or strain.

Commercial potential

When the performance is deemed good enough to market the product, very often the results from commercial flocks do not match the genetic potential.

The flock results can vary widely due to differences in location, equipment and housing, diet formulations, quality of ration ingredients, disease challenges, growing programmes and management.

For a more realistic idea of what the breed can do commercially, field



Cobb500 broiler breeders. Flock results will always depend on factors such as housing, diet and management as well as genetic potential.

data need to be collected to determine the 'commercial potential'.

The parent stock manager responsible for commercial flocks can then use this data as a guide of what those flocks can reasonably be expected to produce so he is confident the needs of his broiler grow-out and processing divisions are met.

The best way to discern the commercial potential is to gather and analyse timely and accurate data from recent flocks.

Almost all poultry companies have databases recording production results on an individual flock basis.

These flocks can be ranked and

the commercial potential determined by whatever parameters each company chooses. Important items for completed flocks may include:

- Number of hens capitalised.
- Number of hens sold.
- Age at flock capitalisation (usually determined to be at 5% hen-day [HD] production).
- The amount of feed/female needed to raise the pullets to capitalisation age. This also includes the feed used to feed the males in the flock.
- The amount of feed used in production to produce 12 hatching eggs. Again, this would include the male feed consumed.

- Number of total eggs/hen.
 - Number of hatching eggs/hen.
 - Life of Flock (LOF) hatch percent.
- From these numbers, one can calculate:

- Hen LOF mortality.
- Total eggs/hen adjusted to a common age.
- Hatching eggs/hen adjusted to a common age.
- Chicks/hen.

Ranking flocks

Flocks can then be sorted according to the chosen parameters. The most common category to pinpoint hen performance is total eggs/hen capitalised (or hen housed, [TE/HH]) adjusted to a common sell age.

Hatching eggs/hen housed could be used, but adds the variable of how strict the removal of cull eggs is, which could vary from company to company.

Chicks/hen is also a good 'bottom line' number, but would include the additional variables of male health and activity level as well as hatchery performance. So to evaluate the hen performance by itself, TE/HH is the most accurate item.

Each company or complex can collect this information, sort how they choose and then identify which overall management programme attained the best performance.

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Fig. 1. Actual production graph.

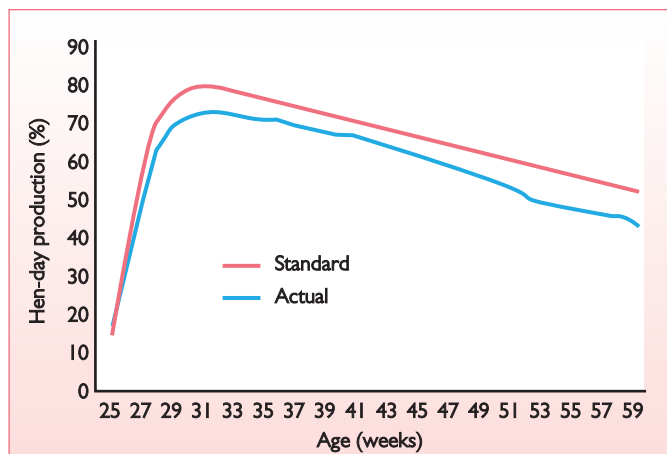
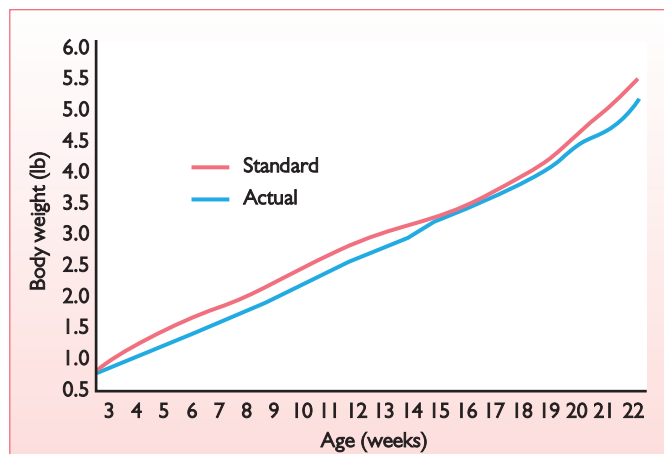


Fig. 2. Female body weights.



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To avoid earmarking one or two outstanding flocks, it is best to recognise that there are probably exceptional flocks at the very top of the performance table as well as 'disaster' flocks at the bottom.

A larger group needs to be considered such as the top 25% or top 33% of all flocks. Then the growing programme, including the weight curves attained, vaccination programmes, housing details such as space/bird and age of light stimulation can be evaluated and applied to subsequent flocks.

This can be an ongoing process, perhaps every three or six months, to keep abreast of the rearing and production programmes which have achieved the best results.

A location can also compare the top 25% results with similar data from the bottom 25% of flocks.

This exercise is often very revealing, as the better flocks can point out what should be done, and the poorer flocks indicate what to avoid in the future.

Meaningful differences are found through solid data and not from opinion. Also, many times it becomes clear that what was thought to be carried out in the growing programme turns out to be very different from what actually happened.

Detailed analysis

An excellent way to utilise the data is to take the top 25% of flocks in a particular location and do a detailed analysis of the actual growing programme for these flocks.

Very often it is assumed that the farms with the best performance were better managed or considered to be housed on a 'good grower' farm. The real factors resulting in better performance are then overlooked. While management is always important, a flock data analysis blending the best flocks' weights, feeding and light programmes can remove the farm management differences and uncover the individual items responsible for the better results.

Factors to measure need to include:

- Amount of protein and energy consumed/pullet at benchmark ages. This should be recorded at least at four weeks and 20 weeks of age.
- Amount of energy in Kcals/hen, also at least at four and 20 weeks.
- Whether the birds were graded for weight or composition, and the age and procedure of the grading.
- The weekly weights and weight curves, with emphasis on particular ages where weight gain is critical for skeletal and reproductive development.
- Feed amount allocations, noting when feed increases and when with-

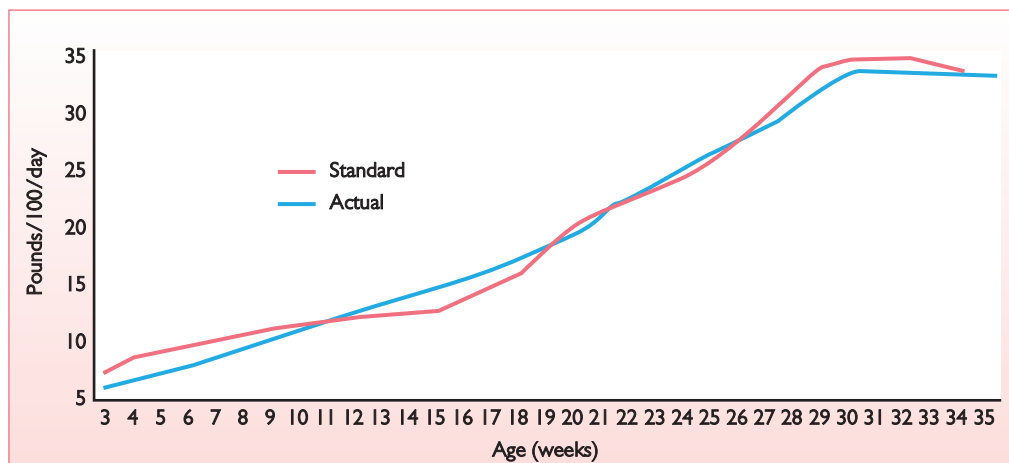


Fig. 3. Feed allocation amounts.

drawals were made and the amounts at each change.

- Lighting intensities in rearing and production, especially the time of the initial light stimulation and how this corresponds with the weights and feeding.

In this example of actual performance, the company average production compiled from several flocks was compared to the standard suggested by the primary breeder company (Fig. 1).

The performance was disappointing, and the records were used to point out what actually happened. Fig. 2 shows the actual weights during the rearing phase of these flocks.

Notice that the weight compilation of all flocks ended up consistently below the recommended targets.

From examining the flock growing data, it became clear that the pullets were raised at a lower weight than recommended for most of their life until 17 weeks of age. This would result in a less uniform flock creating variation in the birds' response to light stimulation.

Also, where the standard weight curve indicated a turn-up of weight just prior to light stimulation (18-21 weeks of age), this was not attained in the actual flocks.

Therefore, the pullets most likely did not have the proper body composition at lighting, both in fleshing and fat deposition – critical items to

induce the proper response when increasing the day lengths to stimulate maturity and egg production.

To determine how the weights were attained, we can then look at the feeding schedule (Fig. 3).

The sigmoidal feeding curve recommended by the primary breeder company to supply the needed nutrients and still control pullet weight was not followed.

Future flocks were improved by understanding the feeding programme and how it related to weight gains. These graphs are actual examples of the methods to analyse flock performance. Many other parameters can also be examined.

Benchmarking results

The primary breeder companies are also very interested in collecting this data from as many customers as possible. The most important aspect that the company has to guarantee to customers who supply the data is confidentiality. The results are compiled from several and varied customers and locations to determine how the selection process is working in the commercial setting.

To keep location identities private, the source of the flock results will never be divulged. The overall averages will reflect the total perfor-

mance of the line. The top 25% group, compiled from several companies and locations worldwide, is the reflection of the realistic commercial potential, and is used by primary breeder companies to compare with the internal trial data used at selection.

It is also verification to a parent stock location with below average performance of what the genetics of the bird can realistically be expected to attain.

Once the potential is determined and documented, then success just becomes a matter of fine-tuning the growing programme. Another advantage of consistent data collection is to build trend lines over time.

Benchmarking genetic potential and field results allows primary breeder companies and their customers to see clearly the advantages and disadvantages of the breed, the direction and rate of change of individual traits and how a breed fits into a particular location's product needs.

Focus on flocks

In the United States, a monthly agricultural poultry performance statistical reporting service, Agristats, and their marketing division, Express Markets Inc, provide a very in-depth and excellent analysis of production, processing and financial parameters concerning the poultry industry and competing meats.

While this is a service which charges a fee for the analysis, Cobb-Vantress works with customers on the flock results at no charge, but with a lot less detail and with a focus primarily on breeder programmes and flock results. All of these services use a performance data set that allows the ranking from the best flocks to the poorest, with resulting analysis showing strengths and opportunities at each location.

Again, the flock ranking comparison has been recognised as a valuable and powerful method to allow managers to make programme decisions based on actual data. ■

