

Data analysis – a modern step in troubleshooting breeder hen performance

Top breeding companies around the world become successful not because of luck but because business decisions are backed up by data and not by mere guesswork or gut feel.

This is also true of the primary breeding companies as they constantly test the performance of breeder hens and their progeny in their respective trial facilities.

Furthermore, the data obtained from these trials becomes an important basis for selection to get the optimum performance for future generations.

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Unfortunately, more often than not, the performance results from the commercial breeder flocks do not always match with the genetic potential of the breed.

The performance difference can vary because of factors such as housing/equipment, flock management programs, health, location and diet, to name just a few.

This variation in flock performance can also happen even within the

same company and within the same farm complex.

This is how data and data analysis will come into play to help us in troubleshooting breeder hen performance by identifying the best practices and establishing programs within the same company.

Data gathering and data analysis for broiler breeders

Data analysis is a process to organise, describe, evaluate, and interpret data provided. This includes the process of evaluating data by using analytical and logical reasoning.

Data will help us break a certain issue into a micro picture to improve and help us understand the problem and acquire meaningful insights into the real status of the operation.

Data gathering will also rule out human bias through proper analysis of facts. This will prevent pointing fingers and concentrate on what the data are telling us rather than focusing on human faults so that decisions made will be based on facts and not mere opinion.

Data will correctly identify the root cause of a problem and identify performance trends, which is critical in establishing management programs in the future.

Fig. 2. Early pullet weights. The seven day weight for the bottom flocks is 110g and 156g for the top flocks.

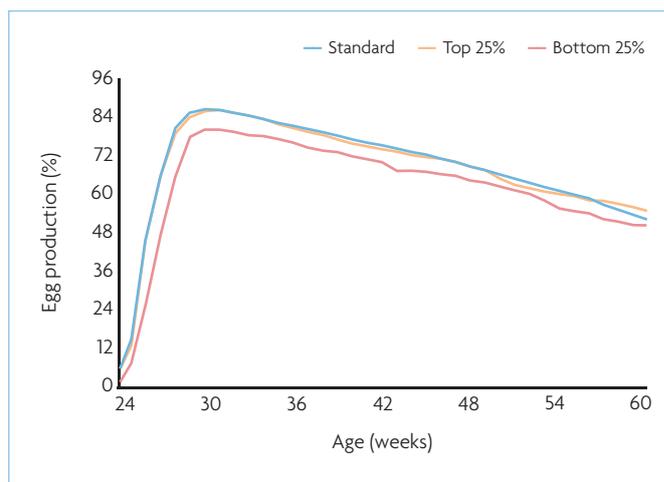
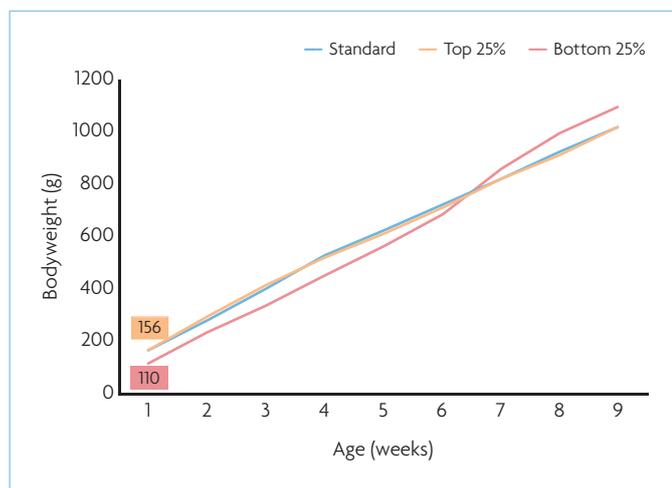


Fig. 1. The weekly egg production trends for both the top and bottom flocks.

Clean and accurate data

One of the major duties or responsibilities of today's breeder manager is to spend time analysing the details of the existing and previous breeder performance and this includes in-depth investigation into the critical aspects of both rearing and laying management.

The most important tool for the managers to do this is to have clean

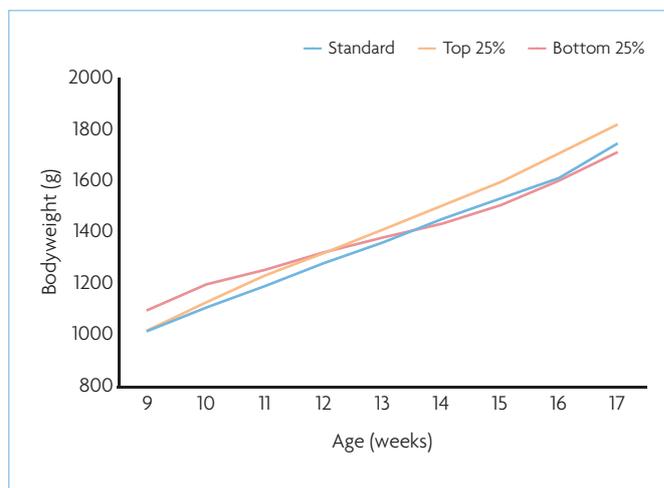
and accurate record keeping. With the help of computers, it is now easier to formulate our own formats for analysis.

Production data analysis

The primary goal in doing production analysis is to find ways to further improve and maximise

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Fig. 3. Mid pullet weights in rear. The bottom flocks go underweight after 12 weeks. The top flocks show weight acceleration after 12 weeks of age.



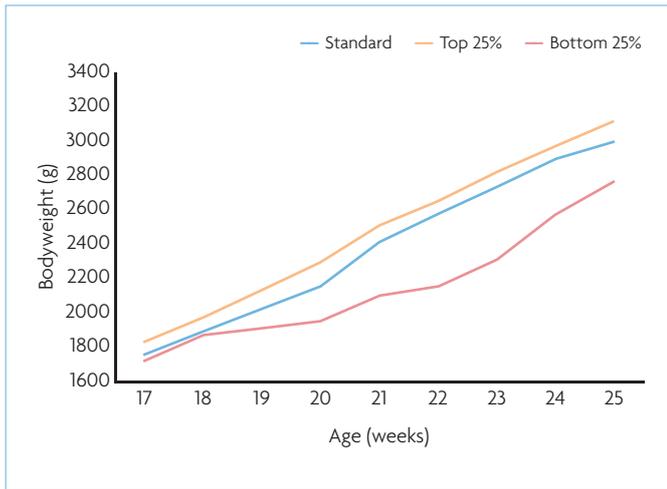


Fig. 4. Weight before lighting through to 5% HD. The bottom flocks become severely underweight at light stimulation. The top flocks remain 4% overweight up to 25 weeks.

Continued from page 7 breeder performance. This can be done by looking at the current and sold flock information. In this way, we can develop 'trends' between the best and worst flocks.

This should be an ongoing process, perhaps every six months, to keep track of the rearing and production programs which have achieved the best results.

Firstly, flock ranking should be done based on the achievement of Total Egg Production/Hen Housed, (TEP/HH) as this is the most accurate way to evaluate the breeder hen performance.

Chick/Hen is not commonly used as a parameter to rank flocks because it would include additional variables like male management as well as hatchery performance.

After ranking the flocks based on TEP/HH, we can now identify the top 25% and the worst 25% performing flocks. The most important trends that we need to analyse and establish are egg

production, body weight and feed curves and hen mortality.

Fig. 1 is an example of comparing egg production between the top performing flocks against the bottom performing flocks. In this exercise there are a total of 50 flocks that underwent data analysis.

It is clear that the top flocks are performing very close to the breed standard, while the bottom flocks are 6-10% off the production target.

In this example, the total egg per hen house results are 179 and 159 for the top flocks and bottom flocks respectively.

There is a total of 20 eggs difference between the two.

DETAILED ANALYSIS

Rearing pullet weight profile

When analysing rearing weights it is best to divide the analysis into three major phases (early pullet weight 1-9 weeks, mid pullet weight 10-17 weeks

and weights through light stimulation to 5% HD 18-25 weeks).

● Early pullet weight analysis:

It is clear that the bottom flocks did not start well, just getting to 100-110g at seven days and remained 50-70g underweight until four weeks of age but it is noted that there was a strong weight acceleration after seven weeks of age.

The top flocks have an excellent seven day weight of 156g and it is steadily parallel with the target weight.

● Mid pullet weight analysis:

After 12 weeks of age the bottom flocks slow down on weight gain and continuously go underweight going to light stimulation. The top flocks slowly accelerate in weight after 12 weeks of age and stay 3-4% overweight going to 20 weeks.

● Weights going light stimulation to 5% HD:

The bottom flocks go severely underweight going towards light stimulation until 25 weeks of age, while the top flocks are 4-5% overweight and parallel to the target weight until the start of production.

Rearing feed curve analysis

After establishing and analysing the rearing weight, the next step is to determine and confirm the weight profile by analysing the feed curve.

● Feed curve of young pullets:

The low seven day weight was due to the low feed consumption of the bottom flocks as they consume only 15g in the first seven days.

However, there was a huge push on the feed amount at 3-4 weeks which confirms the increase in weight after seven weeks of age (see Fig. 2).

The top flocks have a good feed consumption of 22g in the first seven

days which eventually converted into a good seven day weight. And since there was a good start the weekly feed increase went smoothly up to eight weeks of age.

● Pullet maintenance feeding:

After nine weeks of age, there was no weekly feed increase for four weeks in the bottom flocks (9-13 weeks of age).

This can be the response since the birds are getting overweight at 10 weeks (see Fig. 3).

This long period of no feed increase eventually affects the weight gain at 17 weeks until light stimulation.

The top flocks continue to have a smooth feed increase from 9-12 weeks and start giving a higher feed increase after 14 weeks of age.

● Pullet feeding until start of production:

The bottom flocks have late feed turn up from 16-20 weeks and this eventually affects the weight gain towards light stimulation and they remain underweight until 25 weeks of age.

To compensate for being underweight (Fig. 4), a high feed increase was given (6-7g) until 25 weeks.

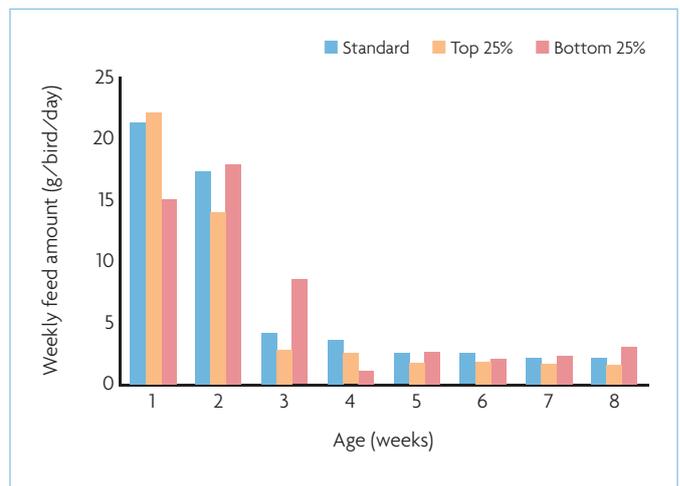
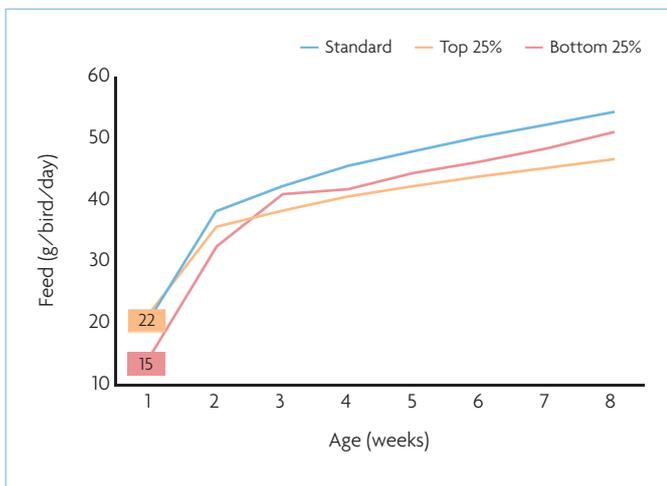
For the top flocks, after giving the highest feed increase at 17 weeks, it slows down going to 25 weeks of age.

Hen mortality

One important criteria to be analysed is hen mortality. In most cases poor weight profile flocks are ones that normally show higher hen mortality, not because of disease but because of metabolic issues.

They are also the ones that do not uniformly respond to light stimulation and show higher cases of peritonitis going to peak production.

Fig. 5. Feeding young pullets. The bottom flocks consume low feed at seven days (15g), causing a low seven day weight. The top flocks have good feed consumption at seven days (22g).



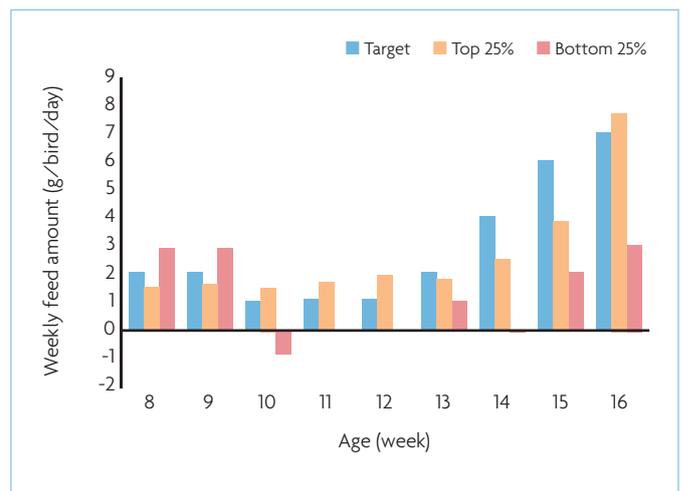
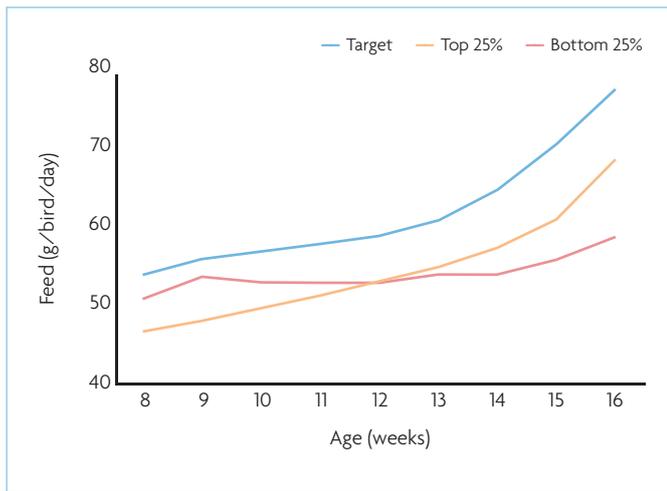


Fig. 6. Pullet maintenance feeding. The bottom flocks did not increase feed amount for four weeks (9-13 weeks of age). The top flocks continue to have a smooth feed increase from 9-12 weeks of age.

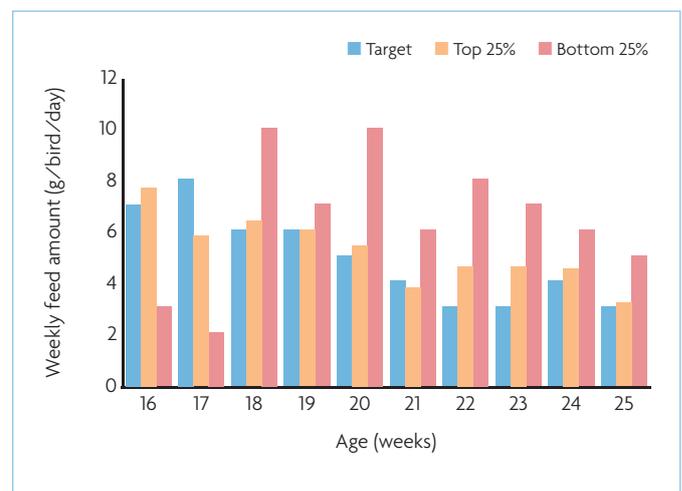
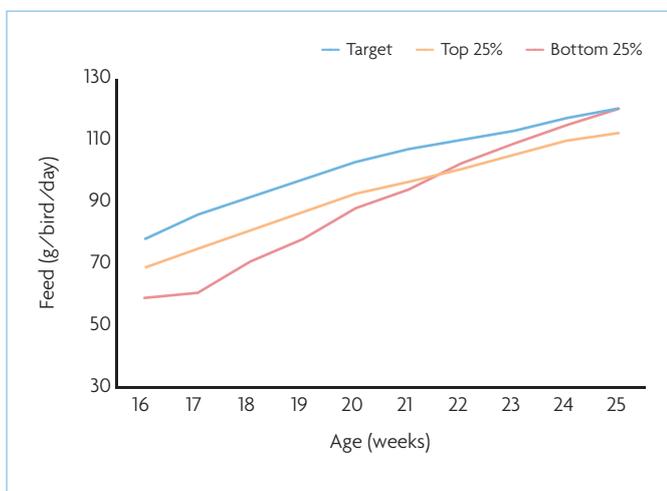


Fig. 7. Feeding through 5% HD. The bottom flocks have a late feed turn up from 16-20 weeks. The top flocks have a good feed turn up by giving the highest feed increase at 17 weeks.

● Pre-peak mortality:

It is quite normal to see a spike in hen mortality (0.5-0.6%/week) going to peak but if the mortality increases more than 0.8%/week it warrants investigation.

The bottom flock showed an

average of 0.90%/week hen mortality before peak (25-30 weeks), while the top flocks have 0.4%/week.

● Post-peak mortality:

The bottom flocks showed a

lingering mortality (0.60%/week) at post peak, while the top flocks have a normal mortality (0.23%/week) pattern until the end of the flock.

Data interpretation and conclusion

By looking at the major parameters, such as production trends, rearing weight profile, rearing feed curve and hen mortality, we can now conclude on what could be the possible cause(s) of poor performance of the bottom flocks and why the top flocks showed good and persistent production.

The final step is to establish a program that will make sure that the best practices of the top flocks are implemented.

This includes:

- Attaining the right feed intake in the first week is critical in attaining the seven day weight.
- Factors to look for, but not limited to, are:
 - Feed stimulation at the first 24 hours.
 - Crop fill evaluation.

- Floor temperature.
- Transportation.
- Chick quality.
- Avoid too much feed restriction that will lead to low weight gain going to 16 weeks.
- Have a smooth feed curve that will provide the pullets with a proper frame development at 12 weeks.
- Pullets should never go underweight after 12 weeks of age.
- Slowly accelerate the feed amount after 13 weeks with the highest increases at 15-17 weeks of age.
- Never overstimulate flocks with too much feed after light stimulation as this will contribute to high pre peak mortality.

Listed above are the obvious factors to look for based on the data analysis, but there are other factors that also need to be evaluated, such as:

- Flock uniformity or CVs.
- Feeder space.
- Floor space.
- Vaccination.
- Nutrition.
- Ventilation.

Fig. 8. Hen mortality. Bottom flocks = 24.8%; top flocks = 9.37%.

