Is breeder efficiency being sacrificed?

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Over the past 10 years geneticists have been under pressure to select for an ever widening range of broiler traits. As well as the more traditional broiler characteristics such as skeletal integrity, liveability, meat yield, growth rate and feed conversion, increasing research is being done in the areas of traits related to improved meat quality, cardiovascular fitness, bird mobility and disease resistance.

A greater demand for efficiency in the processing plant requires more precise data about the meat yield down to the 'footprint' of the breast and dimension of fillet and other parts – coupled with, of course, a uniformity that will facilitate the growing need for automation.

Selection for improved feed conversion is especially important today given high commodity prices, fuelled in part by increasing demand for bioenergy, likely to remain a factor for the next few years at least.

Impact on performance

So, just how has this drive for broiler growth and efficiency had an impact on breeder performance? Less than one might suppose.

Dr John Hardiman, vice president of research and development at Cobb Vantress Inc is adamant that there has been no let up in the gains in breeder efficiency which he points out have been part of the breed progress since the 1970s.

"With the Cobb 500 we are continuing to see the equivalent of an extra hatching egg per year and we expect this improvement to go on – with no sign of any slowing down," he says confidently.

"It is true with our other products like the Cobb Avian 48 which is typically our most prolific egg producer, we are seeing a similar improvement year on year. Our product for the high breast meat yield market, the Cobb 700 is now laying seven to eight eggs more than it was seven years ago, due to improvements to the product."

He says that chick numbers do vary considerably around the world, depending on local conditions and management.

"You will probably find the highest numbers in Brazil, where they are achieving even with the slow feathering Cobb 500 eight to 10 eggs more than in the US," says Dr Hardiman. "The excellent results you find all round in Brazil seem to be related to the way they grade the birds according to weight during rearing and then cater separately for each group."

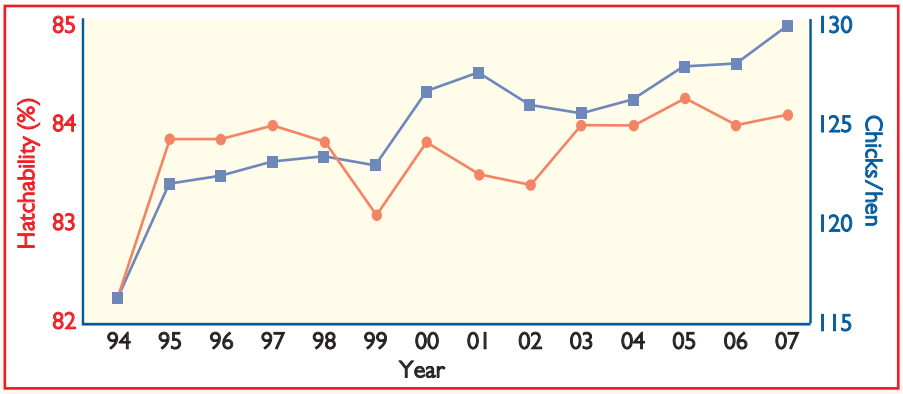
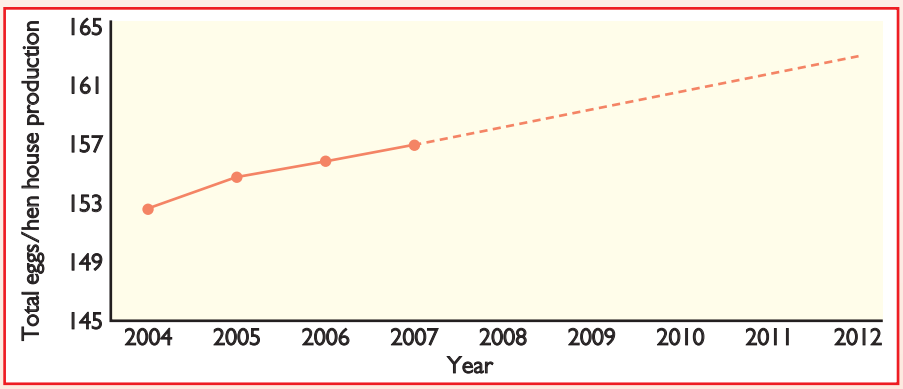


Fig. 2. US sold flock data for the Cobb 500. Hatchability +1.97% from 1994-2007, chicks/hen +13.71% from 1994-2007.

Fig. 1. Total eggs per hen house production for the Cobb 500 (US field data).



Research into hatchability

Cobb has also done a great deal of research on hatchability, now at the molecular level using markers to identify genes related to fertility and hatchability. "With the new Cobb 500 male we are seeing superior hatchability, 1-3% extra hatchability, really quite huge numbers, through the hybrid vigour we are getting in using a different cross-bred male," says Dr Hardiman. "And, of course, fertility is not just a trait associated with the male – we are seeing this, for instance, in the Cobb Avian 48 which is naturally a very fertile female."

"It is important to relate what we are doing to what is happening in the market place generally and in the last two years we have seen Cobb making substantial gains relative to the average performance of all breeds. The Cobb 700, in particular, is looking relatively prolific in the sector for high meat yield breeds."

How do his comments about the ongoing progress in breeder efficiency stand up in particular markets? Ken Semon, director of Cobb technical service for the US and Canada, has been closely analysing Cobb

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500 breeder performance in the US since 1994, when Cobb began collecting customer sold flock data and compiling it into an annual survey that coincides with the end of the fiscal year each September. He says he has been getting an excellent return on field data the past several years to make this survey as complete and accurate as possible.

"Based on my knowledge of the selection pressure placed on egg production, and from my previous experience working in research and development, I am expecting one additional hatching egg per year from the Cobb 500. Our data show that over the past 13 years, hatching egg production on the Cobb 500 has actually increased by approximately 13.17 hatching eggs – perhaps hard to believe, but that is what the industry has reported."

Influencing factors

He points out several factors that may have some influence on this data:

- The US market has gradually transitioned from being a fairly equal mix of fast feather and slow feather Cobb 500 parent stock, to almost entirely fast feather over the past several years. Fast feathering Cobb 500 flocks have held an edge in egg production on the most recent Cobb sold flock surveys, although it is difficult to say for sure how much this has influenced the trend in egg production. It is interesting to note that Cobb 500 slow feathering flocks in South America routinely produce more hatching eggs than fast feathering flocks in the US. Data on the table reflects the performance of all US Cobb 500 flocks, fast and slow feather combined.
- Cobb 500 market share in the US has grown substantially since the inception of the Cobb Sold Flock Survey in 1994, effectively placing Cobb 500 flocks in the hands of many customers new to Cobb. Despite the inevitable 'learning curve' that many of these new customers have undergone, the hatching egg production trend has continued in a positive direction.
- There have been considerable husbandry improvements made during the past 15 years, including perfecting blackout, tunnel ventilation and feed delivery systems.

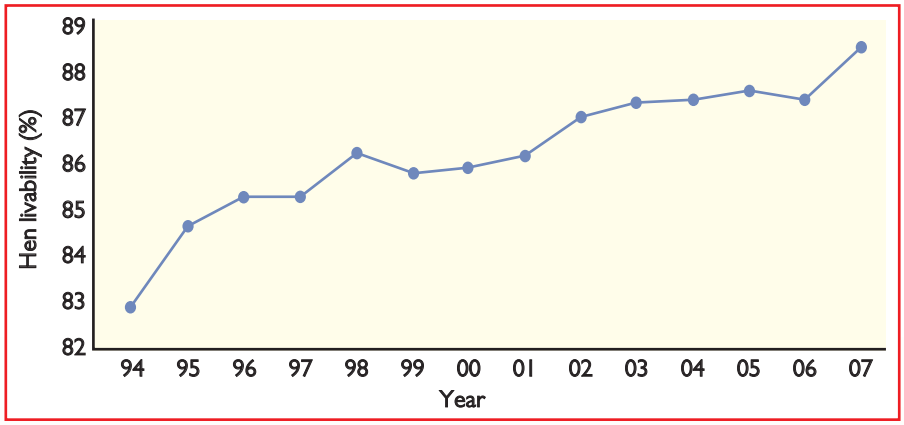

Fig. 3. Cobb 500, US sold flock data. Hen livability +5.56% from 1994-2007.

However, with the large volume of data collected year after year, the survey reflects the performance of all customers from the most to least technologically advanced throughout the US industry.

"This leads me to believe that the egg production trend is as much due to genetic advancement and the selection pressure for egg production as it is to improved technology," Ken added. "Based on the flocks I am seeing in the field today, I expect egg production to continue moving in a positive direction for the foreseeable future."

Turning to the broiler side, he says he and his colleagues continue to see excellent results with the Cobb 500.

"Growth rate, daily weight gain and feed conversion are outstanding with many customers that manage this part of business well. On a 1.8kg (4.0lb) bird, we routinely see feed conversions in the mid 1.60s with flocks achieving this weight in as little as 35-36 days.

"Looking at this question from a different angle, assuming the future of our business calls for continued selection for heavier broilers with an increasing amount of white meat and total carcase yield, I would expect to see some trade off in egg production if primary breeders were to remain 'single product' companies.

"This is why Cobb has rapidly moved in the direction of becoming a multiple product company, enabling us to be competitive in all market segments of the world. Each of the Cobb commercially available products has been genetically selected for the performance characteristics that are required by specific markets to be competitive and provide value to our customers worldwide.

"It is still possible to have a 'balanced breeding programme', within reason, for each product with each product fitting its own market," Ken added. ■