The feedsaver concept – new opportunities for Mini broiler breeders

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According to a recent report of EFSA (2010) the so called 'dwarf' or 'Mini' type broiler breeder females represent 18-20% of the broiler breeder parent stock population in the European Union. This population can be split in two main categories: coloured broiler breeders (7%) and conventional broiler breeders (11-13%).

Historically Hubbard has always been deeply involved in the development and implementation of the 'feedsaver' concept. In this article we will just focus on the conventional Mini breeders.

The feedsaver concept was introduced in the poultry industry in the late 1960s. Since then it has been used in not less than 30 countries and currently it has gained interest in the rest of the world. In some countries, like Russia, France, North Africa and India it is well established, while in some others, key players are at various stages in the process of large scale field evaluation.

Why do these big players now look at a breeder with the name 'Mini'? The poultry industry is more familiar with names like 'heavy' and 'big' than 'dwarf' or 'Mini'. Would big not be beautiful any more?

Answering this question requires broader thinking, to consider the evolution of the production systems in developing as well as developed countries and the expected evolution of raw material prices.

The concept

A female carrying the recessive 'dw-' gene on the single sexual chromosome is a dwarf and is used at parent level. When this female is mated with a standard 'DW DW' male, the broiler progeny are 'DW dw' for the males and 'DW-' for the females.

Both are of standard size, the dwarf gene is not expressed in the broiler male. A large number of genetic, zootechnical and physiological studies have already been carried out and results suggest that broiler production may benefit from the use of the dwarf character from a viewpoint of lower feed consumption of the female breeder combined with good performances on the breeder and broiler level.

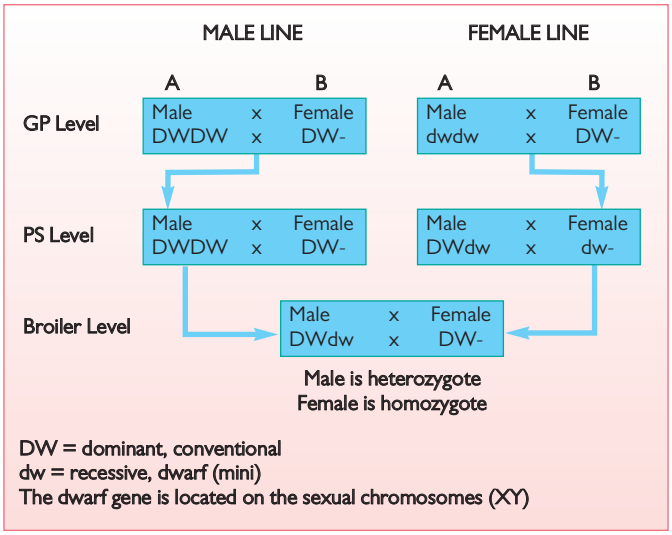


Fig. 1. Dwarf gene transmission from GP to broiler.

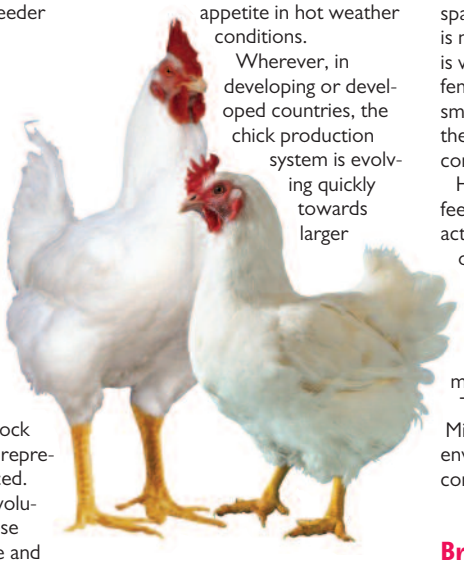
Broiler breeders

A Mini breeder female will always need less feed than a standard breeder female due to the lower maintenance requirements. In the production period the bodyweight of the Mini female is about 700g lower and the energy saving is about 70Kcal per day (400Kcal vs. 470Kcal at peak). This results in a total feed saving for the life of the flock of about 8-10kg (15%), which represents 60-80g per chick produced.

Considering the expected evolution of raw material prices these feed savings will become more and more important in the near future.

As the daily egg mass productivity is similar to standard breeder females, the protein and amino acid levels in the feed need to be adjusted, especially from the onset of lay up to 35 weeks of age.

Adaptation to hot climates, and especially the ability of the breeder female to eat the daily feed amount quickly enough, is practically not an issue any more, as the selection for growth has also improved the appetite in hot weather conditions.



Wherever, in developing or developed countries, the chick production system is evolving quickly towards larger biosecure farms using the latest technologies. The threat of avian influenza is one of the reasons, but not the only one.

The fact that broiler production is developing in areas where breeders and hatcheries had been established tends to drive the construction of new breeder farms in poultry free areas to secure the business.

Environmentally controlled houses become a standard for better productivity and disease control. The cost of buildings and infrastructure (worker accommodation, water supply, roads, electricity network and generator) in isolated/remote areas is very high. All these expenses are fixed costs.

The only way to compensate these increased costs, is to increase breeder productivity.

The industry standard for measuring the effectiveness of a breeder operation used to be the number of chicks per hen housed. With the evolution of the cost structure towards higher fixed costs besides feed, this measure should change to the number of chicks produced per m^2 per year.

As Mini breeder females weigh 700g less than conventional breeder females, the stocking density can be increased by about 20%, so the fixed costs per chick produced will be reduced by 20%! What about feeder space? Practically, the feeder space is never a problem if the equipment is well fitted for conventional females. The Mini breeders are smaller and less feed restricted, so they eat less quick, alleviating the competition between birds.

However, the number of male feeders has to be adjusted to the actual density. The main issue is often the grill size to exclude males from eating the female feed. The grill size to be used should be 42mm wide and 55mm high for efficient exclusion of the males.

The technical performances of the Mini breeders, recorded in various environments, are very similar to conventional breeders.

Broilers

Recent studies comparing the embryo physiological parameters of progeny broilers from Mini breeders and their relationship with their hatching and post-hatch growth per-

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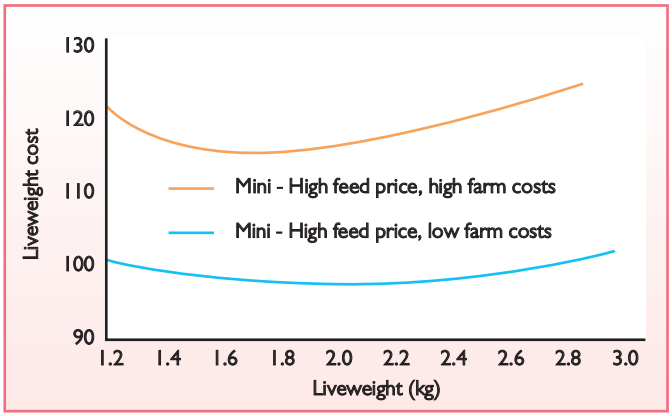

Fig. 2. Broiler liveweight costs in high feed price conditions. Base 100 = Mini cost per kg at 1250g LW with low farm cost.

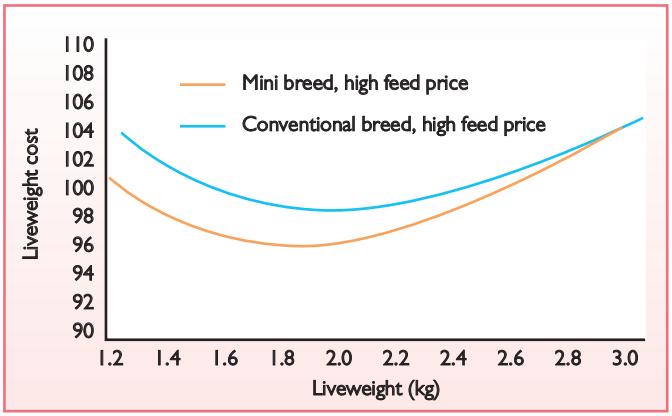

Fig. 3. Broiler costs/kg LW (high feed price conditions). Base 100 = Mini breed cost per kg at 1250g LW.

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formances have showed similar growth rate to the progeny of conventional breeders.

The interest of using broilers from the feedsaver lines is not just limited to the lighter broiler weights, where the economic advantage of the lower chick cost is better valued.

Field reports show very similar broiler performances up to 2.0-2.5kg on all major technical criteria (growth, FCR, liveability, condemnation and yield) and an advantage in FCR is frequently observed.

Representing the broiler live weight cost pattern is always controversial because the cost structure varies from one country to another and among companies and markets in each country. For example, farm costs vary a lot between countries according to labour and housing price (ratio of 1:4 or more per kg of live weight).

Low farm costs tend to increase the optimal live weight and smooth the curve for feedsaver breeds (Fig. 2).

When the feed price is high and farm cost average (Fig. 3), the lowest live weight cost is achieved at quite low bodyweights whatever the breed type (1.8-1.9kg). Feedsaver type breeds tend to have its optimum at lower bodyweights due to chick cost savings, but it remains competitive until 2.6-2.7kg.

Chick cost is to be considered as a derivative of feed and farm costs, so it does not have an effect by itself in integrated operations. In some speculative markets, chick price may scrape the sky for a while but the average price is rarely much higher than the derivative cost.

Future opportunities

Consumer demand, yields and processing requirements are the main deciding factors for the optimal broiler weight, but live cost plays its game in many countries. The forecasted high feed prices, along with the evolution of the structure of the poultry industry towards more technology and health control, should be a reason for the industry to look at the feedsaver concept using the Mini breeders' characteristics with a different perspective.

Saving 15% of breeder feed and 20% more output per m^2 of breeding space, must appeal to everyone trying to optimise the use of available resources and production surfaces. ■

References are available from the authors on request