

Successful management of modern table egg layers

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The world egg market is dynamic and has grown at 2-3% per year over the last 20 years. In some countries this growth is due to population expansion, whereas in other countries with more stable egg consumption, the key trends are increased production for egg processing or increased alternative, specifically free range, production. In the EU, recent data shows that 17% of all layers are in free range systems representing 50% of the growing alternative sector.

In Asia, growth is due to several factors but the main ones are the expansion of the population and the increase of the average table egg consumption per capita.

Today the total egg production in Asia represents more than 50% of the world egg production, with about 40 millions tons a year, while 10 years ago this was only at a level of 25 millions tons.

Genetics as a starting point

With an increasing number of worldwide production systems, all breeding companies have to demonstrate their breeds can perform under different conditions. Novogen recognises the need for ease of management and good behavioural characteristics under different systems giving versatility to



The Novogen Brown.

express performance potential in various production systems.

This general trend is of major interest for a breeding company like Novogen. Egg production systems, size of the farms, feed characteristics and environmental conditions of production are key points for the development of adapted layer breeds performing under these conditions.

All these criteria of production are included in the breeding programme of Novogen. For all the lines, in addition to the use of individual performances, the breeding programme of Novogen include performances of these lines in field conditions, which allows us to choose the families having an excellent potential of production but

which are also able to express it in the conditions of production they will meet at the commercial level.

Genetic potential of the breed and quality of the breeding programme are important parameters of success, but to maximise profitability we need to have an understanding of key management and technical factors which arguably have greater influence during the rearing and production periods. Some of these factors are discussed in this article.

In order to maximise the potential of the pullets at point of lay, brooding conditions, growth, frame development, control of the sexual maturity and control of appetite are of major importance.

The rearing period

Growth of the pullets depends on various factors. The first one is the quality of the brooding. In order to get the right body-weight at start of production, it is important to start the rearing period in excellent conditions. Stocking densities according to the age, quality of the equipment, distribution of the equipment, temperature and humidity directly affect the growth of the day old chicks during the first weeks and need to be well respected.

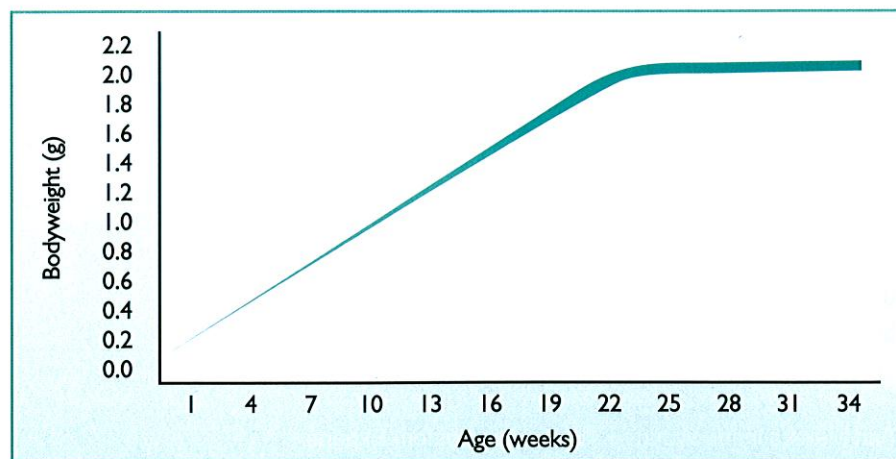
Frame development

Developing a pullet that reaches target body weight at transfer, but which has a small frame size also risks lower production after peak. Knowing that growth until eight weeks of age and frame development are strongly correlated, the use of a starter feed with adequate energy and protein level associated with a slow step down lighting programme will help to quickly achieve the expected growth and will optimise the potential of the pullets.

Adapted feeding programme

The feeding programme or feed characteristics during the production period vary quite a lot from one country to another in terms

Fig. 1. Novogen Brown minimum and maximum body weight targets.



Nutrient	Intake
Metabolisable energy (kcal/d)	330-350
Dig. lysine (mg)	800
Dig. methionine (mg)	430
Dig. methionine + cystine (mg)	690
Dig. tryptophan (mg)	180
Dig. arginine (mg)	990
Dig. threonine (mg)	550
Calcium (mg)	4150
Available phosphorus (mg)	475

Table 1. Typical optimum nutrient intakes at peak egg production.

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of the raw material and the energy level used. In addition, from transfer to peak production, the feed consumption must increase significantly to provide nutrients for increased egg numbers, egg weight and growth.

The definition of the feed amounts given during the rearing period should take into account these two parameters to ensure a good development of the digestive tract and the feed appetite during rearing and onset of lay.

Characteristics of the grower feed, the developer feed and the pre-lay feed have to be adapted to ensure a good development of the appetite, feed intake capacity and

should meet the characteristics of the layer feed the birds will be exposed to after transfer.

Feed presentation and feeding times should also be part of the management considerations of the pullet. A uniform coarse feed presentation and feeding during the cooler part of the day will directly impact the growth.

Remember that pullets will not achieve their adult bodyweight until they are approximately 35 weeks old. (See Fig. 1)

Control of sexual maturity

Sexual maturity and bodyweight at sexual maturity influence egg production, egg size, liveability and egg shell quality during the laying period.

As the sexual maturity is directly linked to the changes in day-length to which pullets are exposed, it is important to control the variation of light duration during the rearing period to avoid too early sexual maturity.

After a slow step down lighting programme during the first weeks to improve feed intake and growth, it is important to maintain an artificial light duration which covers the possible changes of natural day-length between eight weeks old and the production of the first eggs.

Lighting programmes are mainly affected by external seasonal factors, housing type and climate.

Where needed they must be chosen with the support of local advice taking the following points into account:

- Season of the year (increasing or decreasing natural day-length).
- Type of rearing house (dark or semi-dark rearing houses).
- At day old placement, ensure the natural day-length at transfer time is known to avoid a big increase of day-length at transfer causing over-stimulation of the pullets.
- Plan the light intensity programme during rearing to avoid a sudden dramatic increase of intensity at transfer. A slow step down lighting programme during the first weeks of the rearing period will encourage feed consumption and frame development during this period.
- Choose a plateau of day-length between eight weeks and time of photo-stimulation to control the desired sexual maturity well.
- Start the light stimulation according to bodyweight at stimulation and egg size required by the market.

Light stimulation is then adapted to the characteristics of the rearing and laying houses and also to the desired egg weight.

● In a hot climate, it is usually advised to wait for 2% of production before starting to increase light duration.

● In dark houses and controlled environment houses, light stimulation could be adapted to performances expected in term of egg size.

The transfer of the pullets is advised to take place before the production of the first

eggs. Part of the success of the production period is related to the capacity of the layers to quickly cover their daily requirements in essential nutrients to ensure an increase of the production, the egg weight and growth just after transfer.

Management of the light stimulation and intensity, increase of light duration, management of the light intensity, feed characteristics will help to obtain the growth and the desired performances (peak of production, rapid increase of the egg weight).

Liveability control

Liveability is an important criterion in the final economical performance of a layer flock.

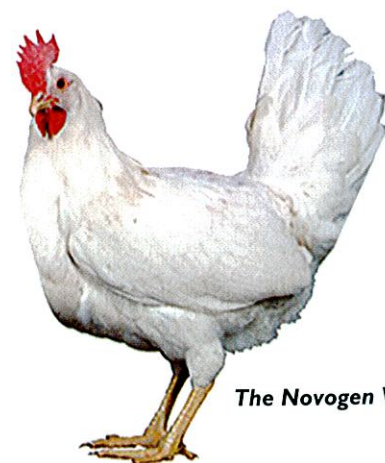
A particular attention to good beak trimming, to an optimum growth curve, to the management of light intensity needs to be considered. In addition to these factors, the quality of the vaccination programme (adapted to local disease challenges) and the integration of fibre in the layer feed could also reduce the mortality in production.

Shell quality

The egg shell quality of modern layers during the laying period is linked to various factors:

- Growth in rearing and during the first weeks of production and frame development are some of them.
- The use of a pre-lay feed will help to optimise the calcium reserves of the birds.
- The management of the calcium content in the feed according to the age of the birds and an adapted presentation of the calcium in the feed will optimise the expression of the genetic potential.
- The distribution of feed at the right time should help to reduce the natural deterioration of the shell strength and the shell colour during the laying period.

Good productivity of a layer flock is the final result of a complexity of factors and all of them should be analysed, addressed and adapted to local conditions to allow the maximum expression of the genetic potential. ■



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