Successful management of the Star 53 breeder duck during pre-lay

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The end of the rearing phase and start of lay is a critical period for pekin duck breeders as they have to face several challenges. From 17 weeks of age up to 32 weeks of age, breeders have to finish up their growth, start their egg production and reach peak of lay. Then, in case of transfer from young breeder shed to layer building, they also have to adapt to a new environment. During this period, both males and females are also developing their reproductive organs and will reach their sexual maturity.

In view of these challenges, management must adapt to overcome these events. Future performances of the breeders will definitely be influenced by management during this period.

Growth follow up

The importance of body weight at 10 weeks of age is well known. It defines whether birds will have a strong skeleton or not. Correct carcase size ensures high resistance and longevity, but bodyweight at the end of rearing (20 weeks of age) is also important for sexual maturity and egg size. During this rearing phase, from 10-20 weeks of age, growth itinerary is very important. Growth is very slow and bodyweight should never decrease, even if live weight at 10 weeks of age is above standard target weight.

Thus, in such situations, the best option is to keep the same gap between real weight and the standard. It is not recommended to bring back live weight close to the theoretical target weight.

From 20 weeks of age up to peak of lay, growth again becomes more significant, especially when females reach 10% of lay. At this stage, weight gain should be correlated with egg production increase so it must take off.

Another factor influencing laying performance is uniformity at the end of the rearing phase. If body weight is uniform within the breeder flock, all birds will start laying at the same time, which guarantees a good peak of egg production and better persistency. This is the reason why it is crucial to control female weight during the young breeder stage following supplier's standards (Fig. 1).

The weakest subjects must be sorted out into a hospital pen to let them get a chance to recover and rejoin the rest of the group after weight recovery.

Technical discussion is always based on female data as they are producing eggs and not males, nevertheless male body weight management should not be neglected.

Male bodyweight at the end of the rearing stage is important for testicle development and sexual maturity but the gap between male and female body weight is also very critical. As an example, in case females have been raised above weight target and males below their target, problems could appear during mixing. Females could dominate males and pick up more weight delaying males' sexual maturity and creating trouble for natural mating afterwards.

Male and female mixing

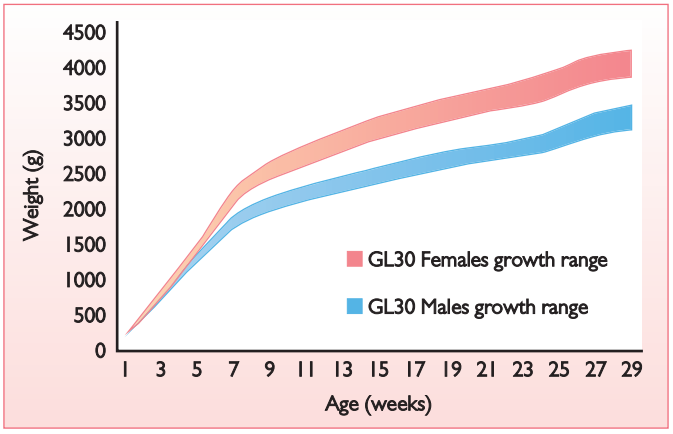
Male and female mixing is an important event which influences breeder flock management. This step is crucial for male sexual development taking into consideration that after mixing there is no possibility to separate daily feed intake of males and females.

Moreover, rule number one is to maintain bodyweight on target before male and female mixing, with uniformity of 80% considering all birds in range of ±10% of average weight to be in the acceptable range. If this is not the case, it will be very difficult to manage two different growth profiles as daily feed intake management will be based on female needs.

With regard to male sexual development, two methods exist and are currently commonly practiced. The first is the 'in-breeding method' which consists of integrating some females with males from one day old at a proportion of one female for five males or one female for 20 males. In this situation general mixing can happen at 19 weeks of age.

The other method consists of breeding males and females in completely separate pens and proceeding to global mixing at 17 weeks of age at the latest. These two methods give similar results in terms of fertility rate. The disadvantage of the first method would be that females mixed with males from day old are raised on a male diet so they will be most likely overweight, which is negative for their egg production. On the other hand, this first method gives two more weeks to manage daily feed intake separately and influence bodyweight to compensate or increase the eventual gap.

Fig. 1. Star 53 breeders growth chart.



Housing systems

The approach of this new production phase is a source of stress for

Continued on page 25

Continued from page 23
both males and females because of development of sexual organs, because of mixing after being raised separately and because of increased nutritional needs. Obviously, additional stresses are not necessary. However depending on the rearing method, two major events can, and sometimes must, happen.

Furthermore, when the farm is equipped with two totally different duck shed models between the rearing and production period, physical transfer of ducks has to happen.

Birds are grabbed and loaded into crates or containers to be unloaded in a new duck building and into new environmental conditions to which they have to adapt.

In order to facilitate adaptation, birds should ideally get the same type of housing, same drinking and feeding equipment in rearing and production buildings to avoid troubles due to difficulties with drinking for instance.

In certain production systems, breeders are raised in the same building from day old to depletion so no transfer occurs. Nevertheless, manure will be piling up during the 80 weeks, reaching an important height and becoming an issue to manage. Thus, there could be a necessity to remove manure during breeding. If one of the above events happens, antioxidant vitamins must be administered through the drinking water, for prevention, three days prior to the event.

Whatever the situation, this kind of duty must be scheduled before 20 weeks of age. This will leave some time for breeders to recover from stress and avoid any negative effects on egg production (Fig. 2).

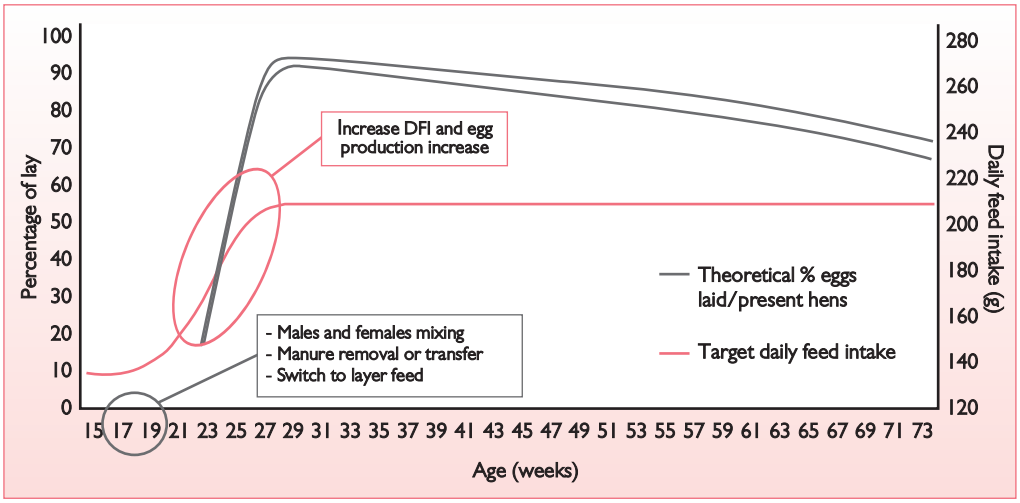


Fig. 2. Chronology of the major events prior and during onset of lay.

Feeding management

Daily feed intake (DFI) management during onset of lay is definitely the most crucial issue to deal with as well as the most difficult.

Females must create some energy storage, mainly through fat deposit, for further laying production. During this phase, energy supplied through feed must ensure a positive balance, which means females should get more energy than they will export.

In addition, females must build calcium reserves in the medullary bones for further egg shell production. Nutrients and energy intake have to cover physiological needs which are increasing as birds are getting older, and production needs linked to egg production are increasing as well. There will be no more nutritional needs for growth after peak of lay as females are not supposed to increase their bodyweight.

In regard to these requests, it is wise to switch from maintenance feed formula to layer feed formula from 19 weeks of age at the earliest to 21 weeks of age at the latest. Layer feed formula must definitely bring more protein and calcium than maintenance feed.

The key is then daily feed quantity management and more precisely daily protein (amino acid) intake which must be as gradual as possible (Fig. 2).

Two factors have influence on grams of daily protein intake. The first is the difference in protein concentration between maintenance feed and laying feed. Average layer feed has a protein concentration 4% higher than maintenance feed. Thus, as a simple example, keeping identical DFI of 160g, protein intake will make a jump of 6.4g/day, just by changing feed formula.

The second factor is DFI, which is influenced significantly by the feed distribution method. Most likely, feeding is managed by grams per day per bird in the young breeder phase. Feed is delivered on the floor or into pan feeders.

During onset of lay feeding is managed by hours and feed distributed into pan feeders, which can be closed and opened automatically by a time clock.

The feed quantity, which was restricted in the growing stage, making birds starving, becomes more or less fully available. As a consequence, breeders can eat much more than they need and could double their feed intake from one day to the next.

This over feeding is negative for females as it could generate digestive disorders and loss of appetite, even if DFI is stabilising within a few days. It is then crucial to proceed to increase DFI step by step to let birds get used to the new feeding method.

As well as the feeding method and feed transition to consider, the gap between DFI during the young breeder stage and DFI during the laying phase has to be taken into account.

DFI targeted during egg production is, on average, 200/210g per bird. In some situations, DFI during the young breeder age could be low in order to stick to growth profiles but DFI targeted while laying will remain the same. If there is a 40 or 60g gap between these two phases, DFI management cannot be the same: the higher the gap, the more gradually feed quantity has to be increased.

There are several options to increase DFI gradually during onset of lay, such as increasing 10/15g per week when females start laying eggs or correlating DFI and egg production increases by increasing DFI 1g/bird for each 2% of egg product increase (see Fig. 2).

In conclusion, during onset of lay DFI has to be managed gradually according to body weight take off which is imperative. In addition, it has to be compared to birds' appetite and behaviour and to egg production. On the other hand, prior to this stage, growth charts must be followed up scrupulously for both males and females avoiding major stress and respecting breeder birds' requirements. ■