Managing broiler breeders from transfer to peak production

Many factors influence health, yield and overall production of broiler breeders, but none may have as significant an impact as atmosphere and nutrition. The way these factors and broiler breeders are managed from transfer to peak production will directly influence final production.

by Paul Welten,
Senior Breeder Specialist for EMEA,Cobb Europe.
www.cobb-vantress.com

As modern broiler breeders are highly feed efficient, it is important to achieve a good peak production and ensure they have appropriate body weight, light stimulation and feed allowance.

Transfer until light stimulation

From the moment the birds are transferred to the production house, many changes are taking place for the broiler breeders. The birds have to adjust to the new layout of the farm as soon as possible. When there is a community nest, they have to find the water and sometimes a part of the feed on the slats. Additionally, they will be mixed with males.

To avoid stress and ensure the birds do not lose body conformation and uniformity, it is important that changes are completed as smoothly as possible. Using the same feeding and drinking equipment as in rearing and production gives the least possible stress for the birds at transfer and will help the birds adapt sooner. Ensure there is enough feed space – a minimum of 15cm is required – and a fast feed distribution, preferably three minutes or less. Feed distribution should be conducted in the dark to maintain a low-stress environment.

Until early production, feed clean up time is very fast. At this stage, having the correct feed distribution is critical. In long houses, extra satellite hoppers can be installed to expedite feed distribution.

An example of a calculation for a house with chain feeding is shown in Table 1.

A 100m house with one circuit has approximately 200m of feed length. With one hopper and a distribution time of 36m/min, it takes 200/36 = 5.6 minutes before the complete chain is filled with feed. With two hoppers and the same circuit, it will take 200/36/2 = 2.8 minutes.

Water is one of, if not the, most important nutrients, so birds must be able to find this immediately. Provide water as long as possible throughout the first few days after transfer. In houses with slats, it is recommended that all the birds are unloaded on the slats near the water system.

To measure whether or not all birds have received enough food and water in the first days after transfer to the production house, conduct a crop fill assessment in the afternoon after feed is cleaned up. The crop should be pliable. Using a random sample of 100 females and males, a general rule of thumb with a good feed distribution is that 99% of the birds should have a large to medium-large crop and only 1% with a small crop.

Another key factor to consider is that females and males are sexually synchronised. At 24 weeks, the general recommendation is to have a maximum of 8.5% quality males. Be aware that some males are able to eat among the females from transfer until 25-28 weeks. Monitor feeding behaviour and weigh females and males at least weekly, acting accordingly.

The moment of light stimulation

In general, birds are stimulated with light between 147 and 154 days of age. Flocks with highly uniform sexual maturation will reach higher peak production and persistency levels. The birds must meet all their required criteria before photo stimulation is given. If they do not meet these criteria, light stimulation should be delayed one week.

This delay will deliver more uniform sexual maturation and result in the birds responding more quickly when photo stimulation is given.

The required criteria include:

- Pelvic fat on pelvic bones greater than 90%.
- Average dry body weight (body weight without feed and water) of 2,400-2,500g for fast feathering.
- All females should have a fleshing score of 3-4 (60-40% range).
- Uniformity greater than 75% (±10%).

Increase light over a period of three to four hours with a light intensity of 50-100 lux to activate the birds' reproductive systems. While 15 hours is sufficient, many flocks do well with only 14 hours of artificial light. In houses with curtains and natural sunlight, birds' condition at transfer is very important because they may start with more than 11-12 hours of light, depending on the time of the year.

Feeding program toward peak production

After light stimulation, females will partition the nutrients between maintenance, growth and development of the reproductive system. From light stimulation to onset of production, birds should be fed according to their body weight.

Sampling body weight is extremely important because feeding decisions are based mainly on this. Many mistakes can occur during bird weighing, including not sampling enough birds and sampling from the wrong places.

To prevent this, growers should:

- Weigh the birds individually in a small catching pen.

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Table 1. A guide to the number of hoppers and the speed of the chain on feed distribution time.

Hoppers per circuit	Recommended distribution time (m/min)	Length of house (m)	Length of feed distribution by hopper (m)	Speed of chain (m/min)	Distribution of time (min)	Max house length for 3m/min
1	3	100	200	36	5.6	54
2	3	100	100	36	2.8	108
1	3	100	200	18	11.1	27

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- Take a random sample of a minimum of 70 birds.
- Take a representative place in the house, not close to the hopper or back end.
- If automatic weighing systems are used they should be frequently checked by hand weighing. Males are recommended to always be hand weighed.

Low mortality toward peak production contributes to a high number of total eggs per hen housed. After light stimulation until onset of production, an aggressive feed program will lead to higher mortality rates and lower number of eggs and lower peak production. In general, from 24-30 weeks of age, every 1% of additional mortality equals 1.5 hatching eggs per hen housed.

The females are most sensitive to circulating oestrogen levels during the first two to four weeks after photo stimulation. Overfeeding in this period will cause a super ovulation of follicles on the ovary, which can increase the number of unsettable hatching eggs and decrease persistency in lay. This period is not the right time to correct wrong pullet management.

Flocks where the body weight is controlled to onset of production show higher productivity. Our best fast feather flocks showed a body weight increase of 20.5% between 21-24 weeks of age. A conservative feeding program will reduce:

- Percentage of double yolks.
- Floor eggs, especially with community nests.
- Mortality percentage (egg peritonitis, prolapse, SDS, heart attacks and fatty liver).
- Production persistency issues.
- Overweight and longer stealing of the males in the female feeders.

From 5% production onward to peak, feed should be given according to production. A program should be developed and, at 75% daily production, peak feed should be given (Table 2).

To avoid overfeeding, the feed increases should be done every three days and not on a daily basis. The daily energy recommendation at peak is about 450-460 kcals.

The birds should be able to have a sustainable peak production with 24-25g of protein per day. Fast feather flocks show a body weight gain of 19% between 24-30 weeks.

When individual birds get too much or too little feed, the follicles regress between 24-36 hours. Providing enough daily nutrient intake is crucial.

Table 2. Example of different feeding programs with different energy levels (Cobb Breeder Management Guide 2016).

Production (%)	Feeding with mash feed at 20-22°C house temperature				Feed increase	Increase (kcal/day/♀)
	2,900 kcal/kg	2,800 kcal/kg	2,700 kcal/kg	2,650 kcal/kg		
5	111	115	119	122	3	322
15	114	118	122	125	3	330
25	117	121	125	128	3	339
35	123	127	132	134	6	356
45	130	135	140	143	8	378
55	140	145	150	153	10	406
65	150	155	161	164	10	434
75	157	163	169	172	to max.	455

Conclusion

As soon as females and males are placed in the production house together, several additional factors must be considered.

These include avoiding stress factors when birds go toward peak production, providing light stimulation when females meet required criteria, and having a well-designed feed program in place to avoid expensive mortality.

Follow these strategies and you will see great technical results. ■