

Getting the best results from today's modern breeders

The success in achieving good egg production depends on the program that was implemented during both the growing and laying periods. Unfortunately, there is no single program that fits all. Broiler breeders have been getting more efficient over time. Like the broilers, the broiler breeders have been changing rapidly. This is a result of continuous improvement in the pedigree breeding program.

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They are selected for an increase in egg numbers, but their main focus is still on broiler traits. In order to maximise the genetic potential, we need to adjust our management skills and practices to meet the bird's requirements as they change over time.

There are several programs seen to be effective in achieving the best results.

Achieving an optimum start

Having a good chick start is the first step in developing good and uniform pullets. The first four weeks of breeder life is very critical in achieving early uniformity of the flocks.

Chick quality and brooding plays a

very important role in flock uniformity. The concrete and litter temperature are vital during the early period.

The houses should be pre-heated for 24-48 hours before placement, not just to pre-warm the air and the contact surface areas but to actually penetrate the concrete floor.

The minimum acceptable concrete temperature is about 28°C and about 32°C for litter temperature.

This optimum concrete and litter temperature will stimulate early feed intake for the birds which is very important for organs such as the intestine, liver and pancreas to develop properly. This is also important in stimulating the proper absorption of the yolk.

Draughts in any part of the house will cause an unequal chance for the birds to consume feed because the birds will slow down or even stop eating when the litter temperature drops to <29°C.

This will be the initial cause for non-uniform flocks at four weeks of age. Crop fill checks at 24 hours give a good indication of whether the flocks were properly stimulated with feed, or not. It is a must to achieve a 95% crop fill (with feed and water) 24 hours after the feed was initially given.

In the first 24 hours after placement, a chick needs to consume 20-25% of its own body weight in feed; this equates to about 10g of feed in the first 24 hours for a 42g chick.

Age (weeks)	Feeder space/ bird (cm)
1-5	5
6-10	10
10 - culling	15-16

Table 1. Feeder space requirement for females

Another goal is to have the birds consume 1ml of water for every hour; this means 24ml of water for the first 24 hours after placement. Again this equates to 50% of its bodyweight with a chick that weighs 44g.

Flock uniformity essential

Improvements in growth rate, yield and reduced fat in broiler stocks results in more focus being needed to manage the pullets and breeders of these same stocks.

As broiler performance has improved, attaining good and acceptable flock uniformity is getting more challenging for breeders. Uniformity is an essential pre-requisite of a highly productive flock. A uniform flock will also give more eggs during the first 10 weeks of production.

High variation in sexual maturity will cause staggered entry into lay. Uniform flocks will have a more

Rearing	ft ² /b	b/m ²
Brooding area (first five days)	0.36	30.00
Open sided	1.75	6.00
Dark out rearing	1.50	7.00

Table 2. Floor space recommendations.

uniform, or predictable, response to feed changes.

We all know that equipment and house set-up (brood-grow-lay; all litter, or 2/3 slats) plays a very important role in achieving an acceptable uniformity. Breeders nowadays consume feed quickly; we can easily lose uniformity if the feed distribution is >3 minutes.

Once the feeder runs, it is very important that the birds find their own position along the length of the feeder lines as quickly as possible.

Good bird distribution over the whole length of the chain feeder will guarantee more uniform feed intake and maintain uniformity.

Proper feeder space and floor space is also an important part of achieving good uniformity. Some farms tend to overcrowd the house with more females that compromise both feeder and floor space.

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Fig. 1. Female weights – parents.

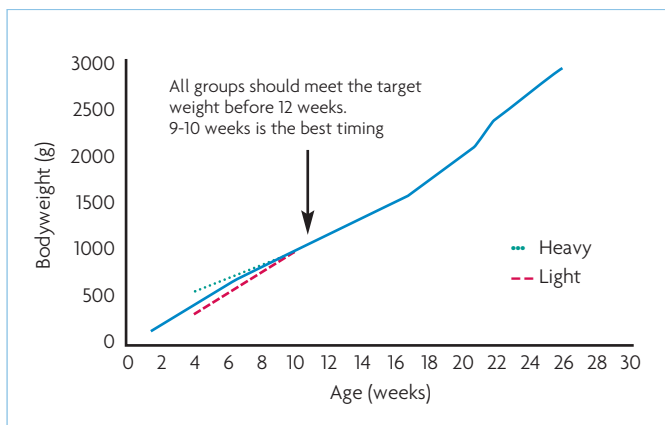
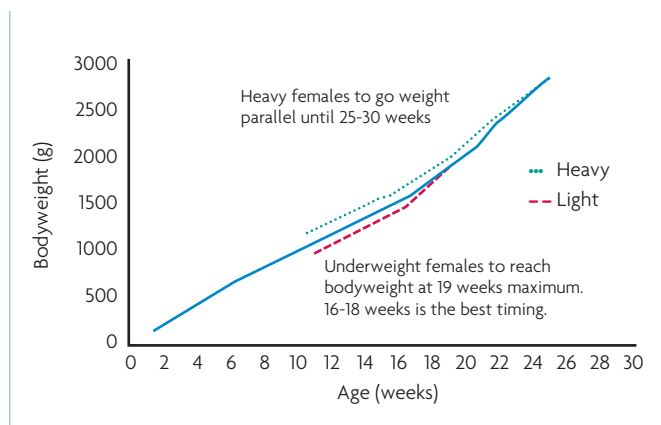
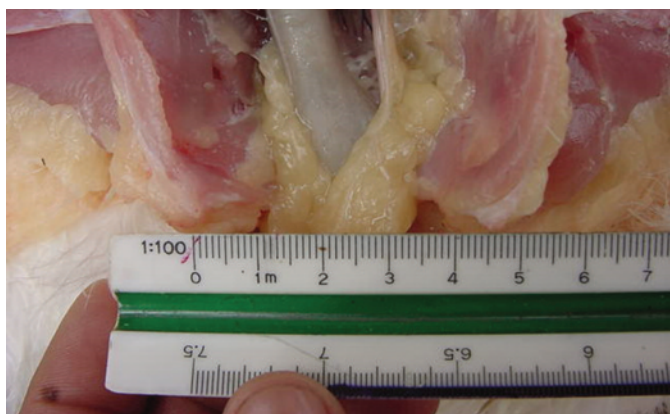


Fig. 2. Female weights – parents.





Left, an opening of 4cm, which is approximately two fingers. Right, proper fat covering over outside ends of the pelvic bones at lighting age.

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As pullets grow, they need proper space during feeding, which can improve maximum uniformity potential and feed conversion, and can help birds achieve their desired weights more easily. Adequate space is also necessary to reduce stress and chaos during feeding time. A good rule is to try to achieve the same feed space in the rearing house, from week 10 onwards, that is available on the production farm. Tables 1 and 2 offer a basic guide to female feeder and floor space.

Filling the feed pans in the dark is an effective way of helping distribute the feed while the birds remain calm; when the birds are calm they use more time to eat their feed. This is especially true if the house has a limited feeder space.

It is crucial for the house to be light proof so that all the birds are well distributed over the whole house or pens, and stay in place when the lights go off and the feed is being distributed. The lights should be on a timer switch. The first step is to turn the light on for several minutes, then turn the lights off for 40-45 seconds; turn the signal lights on (signal light position on

both end of the house) for 30-45 seconds before running the feeders. After the feeders are filled with the appropriate amount of feed, turn the house lights back on so the birds can begin eating calmly.

Feeding curve at rearing

Understanding the proper body-weight curve and feeding pattern in today's modern breeders is also very important. It is essential that the pullets have good skeletal development where the body weight profiles of the breeding companies are followed.

A pullet's growth is usually divided into four stages:

- **Growth and development stage (1-4 weeks)**

Achieving the target of seven days (at least 4 x the initial chick weight) is essential for proper growth and development. There is a strong correlation between attaining an early uniformity before grading and the achievement of seven day weight gain. This means that it is very important to achieve the seven day bodyweight to attain good early uniformity of the flock. With proper

nutrition, feed restriction usually starts at consumption of approximately 35-40g, or when daily feed is consumed in 5-7 hours.

- **Maintenance and controlled growth stage (5-15 weeks)**

This is the time that feed restriction takes place to control the body weight. Make a small but consistent feed increase during this stage. Attaining high frame uniformity at eight weeks of age is a must as non-uniform framed pullets are very difficult to feed during rearing and in production and the flock is normally not efficient. After grading takes place, wherein heavy and small birds are separated, try to re-draw the weight target achieving standard weight at 12 weeks (best is 9-10 weeks).

- **Preparation for light stimulation stage (16-20 weeks)**

After 15 weeks the development of sexual maturity increases. This is one of the critical periods of rearing wherein the flocks should have the higher degree of uniformity. Acceleration of growth is also necessary at this age to prepare pullets for light stimulation. This is the age where the highest feed is given to

be able to help the birds to develop the proper fleshing and accumulate fat reserve. The birds need to have a sufficient weight gain of about 33-36% at this age to maximise egg production and maintain good laying persistency after peak. The feeding pattern suggests putting the highest feed increase between 16, 17, and 18 weeks of age to support this concept. An underweight bird at 16 weeks needs to reach standard body weight at 19-20 weeks, while overweight birds need to go parallel to the standard until peak production.

- **Control the growth stage (21-24 weeks)**

The age of photo stimulation has an influence on sexual maturity, egg production and persistency, and egg weight. Overfeeding in this period leads to many follicles developing in the ovary; this will increase non-settable eggs, such as double yolks and soft shell eggs, and decrease production persistency. After light stimulation, slow down the feed increase while waiting for the first egg production. Pullets do not seem to have a good response to high feed increases at this age and will only convert feed to bodyweight

Fig. 3. Hen bodyweight gain of 19-20% from the start of production until peak feed.

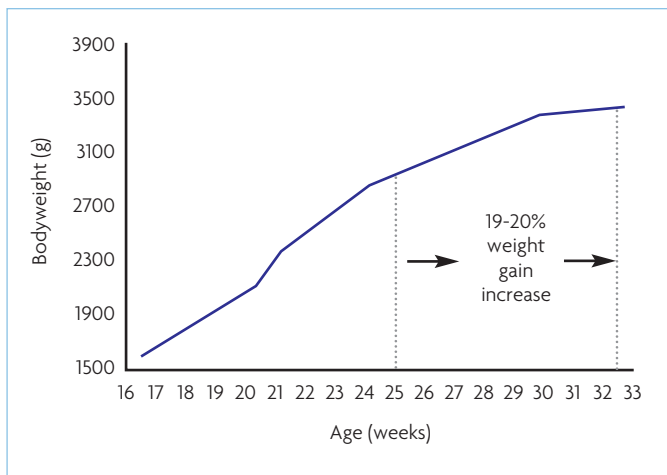
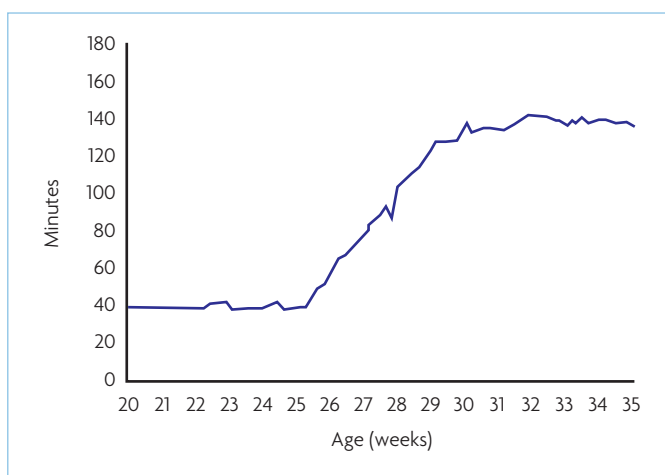


Fig. 4. Longer feed clean-up, depending on the feed texture – the feed clean time is between 2.5-3.0 hours.





An example of a good female breast conformation (left) and an over fleshed female (right) at 19 weeks of age.

rather than ovary development. Pullets should not go underweight at this age because then they will not respond properly to light stimulation.

Proper light stimulation

The best way to achieve good egg production is to produce uniform birds that will allow the flock to achieve a uniform response to light stimulation.

As mentioned, there is a goal to achieve 33-36% weight gain from 16-20 weeks of age. This gain is necessary for pullets to develop the proper fleshing, and to accumulate an appropriate amount of fat reserves before light stimulation.

Deciding on when to give the light stimulation is not that easy as it requires some additional information (aside from the bodyweight and uniformity) to be able to make sure that the flocks are ready to receive light stimulation.

Bodyweight is only a single tool to help evaluate the female's reproductive readiness. An equally important tool is an estimate of body condition, like the fleshing and fat reserve at various ages.

Some of the criteria and basis that we must see on the flocks before light stimulation are:

- Bodyweight of 2250-2350g (off-feed weight).
- Certain amount of wattle and comb development.

- Have enough fleshing and breast muscle development, at least 95% of the sample would show standard fleshing score.
- More than two fingers or 4cm of pelvic bone opening.
- Appropriate amount of fat deposit around the pelvic bones, at least 90% of the birds should show appropriate fat deposits.

If at some point the physical criteria shown above are not met, then light stimulation should be delayed for a couple of days, or until the criteria are met.

Feeding the hens

The most effective way to maximise breeder performance is to develop and implement a body weight and feeding program that produces a flock that responds uniformly to light stimulation. We all know that the success relies on how well we manage the birds during rearing.

Avoid overstimulating the birds after light stimulation. As mentioned, overstimulating the birds by feed or lights will cause an increased number of double yolks, rectal prolapse issues, and eventually spiking mortality before peak production.

Once the egg production starts, give slow feed increases rather than high feed increases during the first 35% of production. Give more aggressive feed increases after 35% HD production, which produces

good results with excellent body-weight control.

A progressive feed increase will help in preventing hens from becoming overweight without hurting egg production. Modern breeders now will peak at 440-450Kcal/hen day.

Feed increases and decreases have to be managed closely to maintain proper growth and egg production for the next 35 weeks post-peak.

Table 3 is an example of progressive feed increases going into peak production. As the bird's daily egg production increases so fast during this phase, this program will be helped by adjusting the feed increase about three times a week.

The most common issue during the post peak phase is uncontrolled weight gain. Some consequences of overweight hens at this age are; they are more prone to heat stress and respiratory problems; have higher mortality; are less fertile (trouble to accept males, and erratic ovulations); and will have more floor eggs towards the end of the cycle.

Proper timing of feed withdrawal will ensure that the birds continue to grow without being overweight.

Feed withdrawal is not an exact science but there are some basic guidelines as shown below:

- Hen day level off for 5-7 days. This requires an accurate recording of daily egg production.
- Hen bodyweight gain of 19-20%

from the start of production until peak feed.

● Longer feed clean-up, depending on the feed texture – the feed clean time is between 2.5-3.0 hours.

● Over fleshing of the breast muscle suggests an aggressive feed reduction.

The decision to start the feed reduction should be taken before the production starts to decrease.

Monitor daily egg production, weight gains, feed cleanup times, bird interest toward feed and use these indicators to determine when peak feed needs to be reduced. If the peak feed stays too long, the hens will become overweight.

Determining how much feed to reduce depends on different situations in the field. Feed reduction should be more aggressive on the first feed withdrawal (about 2g) especially for flocks which are overweight and are fed heavily towards peak production followed by slower reduction of about 1g/week until around 40 weeks, then go slower by reducing 1g/2 weeks until reaching the lowest feed amount, which is between 10-14% (of the peak feed).

Flocks which are on the weight target and are receiving correct feed amounts towards peak production should have a more conservative feed reduction during the first feed withdrawal (about 1g), with a total drop of feed of around 8-10% (of the peak feed). ■

Table 3. Example of feeding during production (crumble diet – 2780 ME and 15.5% protein).

Production	Feed increase	Feed	Calories/hen/day
5		120	334
15	2	122	339
25	3	125	348
35	4	129	359
45	6	135	375
55	7	142	395
65	9	151	420
70-75	11	162	450

Over-fleshed due to lack of aggressive post peak feed cuts.

