

# Successful layer production begins in rearing

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Good productivity in layer flocks is widely influenced by the quality of the pullet at the end of rearing. So the preparation of the pullet during this rearing period is critical.

The main key point to control is the bodyweight. Table 1 shows the influence of some bodyweight parameters in rearing on production during the laying period.

Bodyweight at any age influences the sexual maturity (the heavier the bird, the sooner production will start). Bodyweight at five weeks old will influence most of the other production parameters (livability, production and persistency), while bodyweight at 10 and 16 weeks old has much less impact. At 16 weeks old, the most important parameter is in fact uniformity. So the main target regarding bodyweight is a good average weight at five weeks old and a high uniformity at 16 weeks old.

The origin of this is the fact that growth evolution is different depending on the age of the birds: the first five weeks of age are mainly dedicated to internal and immune organs development. A low bodyweight at five weeks old means a poor organ development with less metabolic efficiency during production.

As a consequence, bodyweight should be checked every week during the rearing period, but also at point of lay, which is a critical period as pullets have to finish their growth and start production in the same

Bodyweight of the pullet (g)	Age at 50%	Laying rate (%)	Egg weight (g)	Egg mass (g/day)	FCR (kg/kg)
1535	141	91.3	60.5	55.3	2.081
1585	141	92.1	60.65	55.8	2.014
1620	143	91	61.8	56.1	2.012
1665	142	91	61.65	56.2	2.027

Table 2. Influence of pullet bodyweight at 127 days on performance (Bougon, 1996).

time. Uniformity calculation is also necessary to get a good evaluation of the growth performance.

A flock with a good uniformity will be easier to manage as most of the birds are at the same physiological stage.

The bodyweight at sexual maturity will also influence the egg weight and the egg mass exported by the layers. The lighter the birds at first egg, the smaller the egg for the whole life of the flock (see Table 2).

The lighting program will have an impact on production. Applying a slow step down program will improve bodyweight in rearing by encouraging feed intake (Table 3).

In the absence of light stimulation, lay will start depending on bodyweight. Applying light stimulation at the end of rearing will give an earlier production. An early light stimulation will influence the sexual maturity and as a consequence the egg weight. Midnight light (1.5-2.0 hours, three to four hours after light off) can also be implemented (from 6-8 weeks of age) to improve feed intake. If you start the lighting stimulation on the birds at the end of rearing, the artificial hours of light should be implemented as much as possible

in the morning, especially in hot countries. In that way, birds benefit from the cooler period of the day as temperature is, in general, lower in the early morning than in late evening.

Age (week)	Normal (hours/day)	Slow step down (hours/day)
1	20	20
2	16	16
3	12	15
4	8	14.5
5	8	14
6	8	13.5
7	8	13
8	8	12.5
Bodyweight at 56 days (g)	678	731

Table 3. Lighting program.

Feeding techniques will also influence rearing and production technical results. Feeding the birds by meal (2-3 distributions per day) and getting the feeders empty during 2-3 hours will improve feed consumption and bodyweight at end of rearing (see Table 4).

The natural behaviour of birds is to eat during the afternoon. More than 60% of the daily feed consumption is ingested during the last six hours of the day. On top of that, during the laying period, eggshell quality is better if the birds are fed mostly during the afternoon. The birds should be trained to such a feeding program during the rearing period.

In addition to the feeding techniques, feed formulation must be adapted in order to prepare the pullet to express their potential.

We recommend using a pre-starter pelleted feed during at least the first four weeks of age. This improves the bodyweight at four weeks of age (see Table 5). The pullets must also be prepared regarding the calcium

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Table 1. Influence of bodyweight on production during the laying period.

	Bodyweight (weeks)				Uniformity 16 weeks	
	5		10			
Sexual maturity (% lay 20-24 weeks)	+++	0.63	+++	0.59	++ 0.39	0
Laying persistency (% lay 68-72 weeks)	++++	0.82	0	0	++	0.46
Livability 60 weeks	+++	0.71	0	0	++	0.40
Livability 72 weeks	+++	0.65	0	0	+++	0.61
Production per HH Until 60 weeks	++++	0.83	++	0.30	0	+++ 0.54
60-72 weeks	++++	0.94	0	0	+++	0.60
Until 72 weeks	++++	0.93	0	0	+++	0.72

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metabolism. Using a pre-lay feed (with 2-2.5% calcium) two weeks before start of lay will improve the calcium that will be stored in the medullary bones. During lay, the bones will be one of the sources of calcium used to produce the egg shell.

The water given to the pullets must be of good quality. Providing fresh water during the hot period improves feed consumption.

The sanitary environment is also very important to get a good development of the birds during the rearing period and help them to express their genetic potential. Some environmental parameters influence general performance such as multi-age farms or location in a high poultry density region.

	Ad libitum	Two meals/day	Difference (%)
Bodyweight at 8 weeks (g)	580	617	6
Bodyweight at 12 weeks (g)	1005	1061	6
Bodyweight at 17 weeks (g)	1340	1435	7
Uniformity at 17 weeks (%)	83	87	4
Total consumption at 119 days (g)	5780	5947	3

**Table 4. Feeding techniques will influence production results.**

A good vaccination program must be implemented on the flock in rearing in order to get the best protection of the birds during production. It is based on the farm sanitary history and good vaccination practices must be applied. Be careful of too heavy vaccination programs that can disturb growth. The

vaccination program must be finished before start of lay, otherwise the start of lay will be delayed.

Some vaccines can induce reactions that will be responsible for growth retardation by lowering feed intake (ILT vaccination for example). The poultry house environmental parameters must also be managed in order to get the best growth performance. In hot countries or season, particular attention should be given to the control of the temperature and ventilation inside the house (fans, pad cooling).

A good beak trimming quality is necessary to control a few parameters:

- Mortality in rearing: the beak trimming operation can be a source of contamination that may be responsible for an increased mortality during the rearing period.
- Mortality in production: if there is ever some pecking behaviour of the birds, bad beak trimming will induce an increased mortality during the production period.
- Growth in rearing: birds have a reduced feed intake after beak trimming. If beak trimming quality is too poor, farmers will have to get a second debeaking with further consequence on feed intake and growth.

A late transfer in production will have an impact on the mortality at start of lay. We consider that such a late transfer can be responsible for up to 80% of the mortality of the first 6-8 weeks after transfer. We would observe intra-abdominal lay and internal yolk breakage with E. coli surinfection and/or peritonitis.

Birds may also have adaptation problems to their new house if transferred too late: they may suffer from dehydration. Birds should be transferred in the production house before start of lay (less than 2%).

Year after year, genetic potential of the layers is improving, but the expression of this potential depends on the management techniques applied not only during the production period, but also during the rearing period.

So, successful layer production does not begin at point of lay but much sooner, during the rearing period. ■

**Table 5. The benefit of using pre-starter feed.**

	Quantity of pre-starter feed (g)	Bodyweight at four weeks (% of standard bodyweight)
Flock A	0	86
Flock B	300	95