

# Pullet Development: Control Egg Size

## How can a Pullet Producer Influence Egg Size?

With proper management and husbandry skills, along with nutritional know how pullet producers can influence the size of eggs produced by the modern, very efficient layer pullet. Basic information essential for the pullet producer to know to make proper decisions concerning pullet development are:

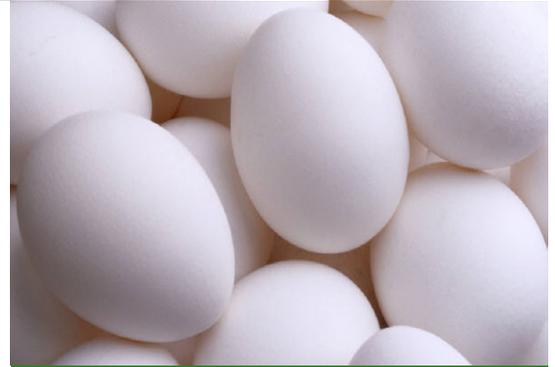
- Body weight
- Flock uniformity
- Feed intake
- The level of energy, protein and calcium in the feed
- Light period & intensity
- Pen/barn temperature

## Start with the Day Old Chick

The full potential of the pullet flock has been predetermined by their genetic make-up. It is up to the pullet grower to ensure the pullet has every opportunity to demonstrate this when reaching the layer barn. Pullet development is best monitored through pullet growth, specifically pullet body weight.

Early pullet growth will influence bird weight throughout the growing and laying cycles.

During the first few weeks the lighting program can be used to manipulate pullet growth. Lighting pullets using a longer step down program will allow more time for feed consumption during the day and therefore bird growth. Depending on the strain of bird this light period step down process can be quickened to reduce or control growth. Once the step down is complete the best results for birds that are on target for body weight is to hold the light period at 8-10 hours/day (depending on the strain) until mature target weight is reached.



*"Early pullet growth will influence bird weight throughout the growing and laying cycles."*



Ensure pullet growth is on target by providing the proper nutrition for the pullet at the different growth stages.

**Starter Ration:** It is of ultimate importance to ensure that the early starter ration has a level and quality of protein that allows for tissue and organ growth (liver, heart, kidneys). This is usually to a target body weight (varies depending on strain) at about six weeks. Maintain the starter diet until this recommended weight is reached (usually around 1lb or 450gm). From experience, the best performers in the laying barn meet this target weight prior to being shifted to a less dense grower ration.

**Grower Ration:** Feed the grower ration until the 12 weeks (around 2 lb or 900 gm) target weight is reached. Most pullet strains will have developed 90%+ of their body structure and tissue by this weight/time. A reduced body weight at this age will have a lasting effect as birds continue to develop and come into lay. Smaller birds in the early weeks of the lay cycle will not be able to eat on a daily basis enough to sustain normal egg production. Nutrients to sustain the ever increasing egg production levels will be pulled from body reserves to meet egg development needs. These young smaller layers will be in a negative energy and calcium balance at peak and may develop production problems (decreased egg numbers, egg weight and body weight) and prolapse problems. Again, only switch to the pullet developer ration once grower target weight is reached.

**Developer Ration:** This ration is a less dense ration than the grower ration and is fed until the pullet flock reaches the mature target weight or 7-10 days prior to light stimulation. The developer ration is more than just a holding ration as the reproductive tract development occurs during this time period (around 15+ weeks) leading up to the mature body weight. When the pullet reaches target mature body weight, light stimulate to begin the reproductive cycle and ensure the flock is on an early layer production type ration.

**Early Layer Production Ration:** The pullet needs to build a calcium reserve for shell formation during the production cycle. It is imperative to build this calcium reserve as it influences calcium usage throughout the lay cycle of the egg layer. Without this calcium reserve early in the lay period some birds may succumb

to cage layer fatigue where too much calcium has been taken from the birds bones for shell formation. The calcium reserve will help birds later in the lay cycle to maintain shell formation and egg shell integrity with less egg losses because of poor egg shells.

This ration with a calcium level of 3.5%, usually needs to be fed in the pullet barn where the flock is moved into the lay barn at 19 weeks. This ration has to be fed at least 7-10 days before the first egg is laid. Monitoring bird weight and condition are extremely important at this stage of development as today some strains of pullets when reaching mature body weight may start into egg production without light stimulation.



### 1. Monitor Body Weight

Monitor pullet weights every three weeks starting at three weeks of age. Use body weight targets to trigger ration changes as the pullet flock develops. Bird growth from 12 to 15 weeks usually is minimal but will show a noticeable increase in growth as the reproductive tract begins to develop for reproductive purposes.

When the target mature body weight is reached, light stimulate the pullet flock using a step up light program. As the pullet flock is growing make sure the number of light period hours (8-10 hrs) for the strain of bird is low enough to hold the pullet flock from coming into production on its own. A light period of 12 hours may be enough for some strains to begin egg production early. Egg production may commence at an earlier or later age than normal depending on how the flock is growing.

When pullet flocks are light stimulated prior to reaching the mature body weight the laying flock will lay smaller eggs than normal.

**Smaller bird = Smaller eggs  
Larger bird = Larger eggs**

When light stimulation is delayed beyond the

mature target body weight the flock will tend to lay larger eggs than normal.

## 2. Monitor Flock Condition

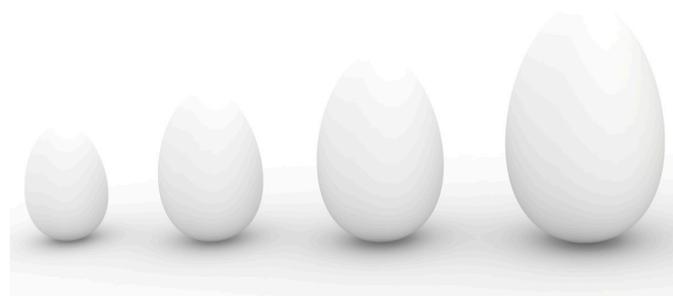
Late in the pullet development while monitoring the pullet body weight for reproductive tract growth, also monitor flock condition for signals of a maturing flock like a smoothing of feathers as birds “plume” and comb and wattles enlarge and redden. The abdomen area of the bird will become enlarged and pliable as the reproductive tract develops.



For a fast growing pullet flock plan to move the pullet flock into the layer facility early, so as not to affect the laying pattern of some birds. Moving birds after they start egg production may delay eggs and disrupt the early egg clutch. When the next clutch begins the bird will be laying bigger eggs. For today’s early maturing layer strains waiting until 19 weeks to move pullets to the layer facility is not an option. Pullets need to be housed in the layer barn at 16-17 weeks of age to avoid disrupting or delaying early egg laying patterns. Once the laying cycle begins it’s too late to solve pullet growing problems stemming from poor grow-out nutrition and husbandry.

## Big Birds = Big Appetites = Big Eggs

It’s difficult to control egg size with overweight birds. Any attempt to reduce body size inevitably will lead to egg production loss. The onus then is on the pullet grower and egg producer to maintain birds at target or optimum body size.



During the pullet growing cycle the pullet grower must ensure a proper mature pullet at the right age. With a properly prepared pullet flock, in the layer barn the egg producer then has the ability to effectively manipulate bird and egg size.

### References:

ISA, A Hendrix Genetics Company  
[www.isapoultry.com](http://www.isapoultry.com)

Lohman Tierzucht  
[www.ltz.de](http://www.ltz.de)

Commercial Poultry Nutrition 3rd Edition, Leeson & Summers

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