
Flock management: achieving uniform eggs from uniform hens

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Just like any industrial process, poultry production is routine based, with careful management to improve the predictability of the result. In this sector, achieving high uniformity in the day old chicks is of crucial importance to delivering predictable results.

Differences in chick size may result from factors related to the differences in embryo development, which depend on the quality of the incubation process.

Egg size

However even the best incubator cannot overcome high variance in egg size. This trait can only be influenced on the breeder farm, with the grading of hatching eggs being regarded as a technical correction of mistakes that have occurred in flock management. In short, from eggs that are not uniform, we can only expect to produce inconsistent chicks. Egg size depends on many factors – from genetic make-up, the age of the hen, its body size and feeding, to water consumption, environmental conditions and health status. The earlier in life the hen starts laying eggs, the lower initial egg size will be – and small eggs will be produced for longer in the cycle.

Suitable eggs for hatching are within the 50-70g range. The target is to produce most



eggs within that range, for which the whole flock should behave as a single unit: starting production at one time and following the same pattern to the end.

Uniform eggs can be produced only by a uniform flock: uniform by body size, maturing at the same age, free of diseases and physiological disorders.

The key to success

The key to success is the rearing. Hens developed in the same way will also mature uniformly and respond similarly to the signals inherent in the lighting and feeding programs.

Even the most uniform flock will demonstrate some differences in maturity, with spread in the onset of lay between the first and the last bird in the flock of up to 5-6

weeks. As the first hen reaches the end of her peak, the last is laying her first egg.

As we can apply only one management program to a group kept in the same poultry house, it is important that this program represents best case for the majority of the hens. Success in meeting the majorities' needs reduces spread in the onset of lay and will be rewarded by a higher uniformity of egg size.

The task therefore begins with rearing a flock of hens of the same size and physiological status – able to react in the same way and consequently maturing at the same age.

In all practical rearing programs, the trait in focus is body weight. It is easy to measure and gives a control for the birds' development, expressed as weekly growth.

In reality however, body weight is not a

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precise characteristic. A large, skinny hen can be the same body weight as a small, fat one. Yet their physiologies will be very different. For this reason, size as determined by the bird's 'frame' or skeleton size, matters. The skeleton develops surprisingly early, with its size already completely fixed at about 12 weeks of age.

The bird does of course still grow after this age, but only by developing its soft tissues: internal organs, muscles and fat. Only when the skeletons are the same size and body weights are equal, can we expect the birds to have similar physiological status.

To summarise, the following observations throughout the flock during rearing will result in uniform egg size:

- Uniform skeleton size at 11-12 weeks of age.
- Uniform body weight at 20 weeks of age.
- Production start-up should be programmed to meet the needs of the majority of the flock.

The first two weeks of a breeder's life are its period of most intensive growth. Substantial differences created at this age are difficult to overcome. Depending on conditions, the same chick has the potential to reach 80 or 180g at seven days old and the internal organs are a major contributor to this difference.

Birds of varied weight will have different physiologies from the beginning, which causes differing rates of growth. The time available to correct variation is limited.

To achieve uniform skeleton size in the flock at 12 weeks of age:

- Ensure a good, even start for the chicks as soon as they are housed. Pay special attention to reception, housing conditions, hygiene and other details that help to maximise growth in the first week. All chicks should start well, even those that are weak. Variation in day-old-chick weight as a result of differences in age (and thus egg size!) on the GPS level will become flatter if the chicks grow well in the first week.
- Start working on uniformity at the end of the first week. Select and protect smaller chicks, to give them the chance to catch up with the majority of the flock.
- Introduce feed restriction early, feeding ad libitum only in the first seven days of life.
- Grade for the first time as early as possible, ideally at four weeks of age. This ensures there is still time – eight weeks in fact – to compensate for differences in size before the skeleton is fully formed.
- Aim to maintain average body weight close to standard at six and 12 weeks of age. These are important check-points that determine future body size.
- Avoid the need to correct body weight. Regular increases in feed and accurate, frequent control are essential for linear growth.

Hens that were uniform at 11-12 weeks of age and having a similar frame size, will tend to maintain uniform body weight unless disrupted by, for example, limited access to



feed, too high stocking density, diseases or other management errors are involved.

Two key mistakes are possible when starting a young breeder flock for production: either starting the stimulation program too early, or starting too late. In both scenarios eggs will be lost, either as a result of too many small eggs being laid in the first weeks of production, or because no eggs are laid at all during this period.

The benefit of a very uniform flock is that production can be started earlier, gaining up to 10 eggs per hen more in the pre-peak period. In a uniform flock, where feed allocations are directed as a good fit for most hens, production becomes more effective, peaks higher and egg uniformity in terms of size is improved.

The same applies throughout the entire production period. A uniform flock is simply easier to manage.

Later, eggs gain weight and may exceed the maximum acceptable size towards the end of lay. Too high an egg weight can result from the wrong feed composition (for example levels of linoleic acid and/or methionine are too high) or overfeeding.

Oversized eggs are usually more fragile and do not fit well on the setter trays, which causes difficulties in the hatchery.

This makes control of egg weight an important part of flock management. Solutions are found not only in nutrition and feed management, but also in a well executed water restriction program, which can reduce egg weight 2-3g.

Limiting egg weight should always be a preventative action. Lower average means less space for spread. The recipe for uniform eggs is simple:

- Take care of uniformity in your breeder flock. Pay special attention to rearing – especially in the early days. Make sure the hens are uniform both by skeleton size and weight.
- Adjust programs that stimulate maturity to the average development of the flock.
- Keep egg size under control. Do not over feed and apply water restriction in the production period. ■