

# Investigating poor performance in broiler breeder production

During my career in breeder management and technical support for producers over the past 20 years, I have seen many obvious mistakes and not so obvious mistakes that had negative effects on breeder production.

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Changes in genetics often cause challenges as the old practices become outdated. There are basically two types of problems with production: sharp drops in production over a short period and poor performance trends across many flocks.

The sharp drops in production over a few days are mostly related to management, nutrition, disease, water shortages, feeding and labour problems, or inclement weather. These flocks recover, and over a few weeks return to a higher level of production.

These are the easier problems, and with short term actions in place, can be resolved. Some problems are more difficult to solve as the flock may have experienced something a few weeks earlier which only shows up now.

However, when you have flock after flock with poor production, high mortality, poor persistency or poor weight control, you have a 'system' that is causing the problem. This problem needs to be identified and the system corrected, or you will keep on producing the same poor flock results.



When investigating a production problem, check the obvious things first and eliminate them as potential causes. These are feeding problems like distribution and space per bird, feed quality, water availability, accuracy of scales, and counting and weighing procedures. Also check for any changes in work routines, vaccination and

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POTENTIAL CAUSE	REMEDIAL ACTION REQUIRED
<b>Poor uniformity of live weight to 21 weeks</b>	
<ul style="list-style-type: none"> <li>• Brooding conditions and low seven day weight</li> <li>• Poor growth management</li> <li>• Physical form of the feed</li> <li>• Lack of sufficient water and feeder space</li> <li>• High stocking density</li> <li>• Reactive feed allocation</li> <li>• Feed density</li> <li>• Flock health/disease challenges</li> <li>• Poor vaccination and technique</li> <li>• Feeder system or method</li> <li>• Feed distribution time too long</li> <li>• Chick quality</li> <li>• Too high feeders</li> <li>• Open sided rearing housing</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure correct floor temperatures and correct temperature profile for brooding to stimulate appetite</li> <li>• Work hard at improving uniformity with additional grading/segregation of birds</li> <li>• Use recognised modern feeding system</li> <li>• Get a customised health monitoring and vaccination program</li> <li>• Change to mash feed or use a lower energy ration</li> <li>• Ensure feed is distributed in &lt;2 minutes</li> <li>• Address chick quality issues with your supplier</li> <li>• Consider investing in black out rearing facilities</li> </ul>
<b>Incorrect condition and readiness for photo stimulation</b>	
<ul style="list-style-type: none"> <li>• Poor uniformity of live weight</li> <li>• Not using a pre breeder ration</li> <li>• Disease challenge late in rearing</li> <li>• Poor feed allocation decisions</li> <li>• Incorrect light program</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the pullets gain 36% weight from 16-20 weeks</li> <li>• Ensure birds are reared on short days with low light intensity</li> <li>• Do make use of a pre breeder type ration</li> </ul>
<b>Poor hatchability as a result of declining fertility</b>	
<ul style="list-style-type: none"> <li>• Mating ratio</li> <li>• Weight differential between male and female</li> <li>• Overweight males</li> <li>• Large males that are underfed for size</li> <li>• Incorrect use of a male ration</li> <li>• Disease challenge</li> <li>• Poor male development and maturity from 18-29 weeks age</li> <li>• Poor male feeding practices</li> </ul>	<ul style="list-style-type: none"> <li>• Do not rear large framed males</li> <li>• Control the weight of males</li> <li>• Start using the male ration as early as possible and if required, do not use the pre breeder for males</li> <li>• Males' energy requirement is related to their weight/size so do not underfeed large males. Use 3.2% of weight as daily feed (g) for males</li> <li>• Ensure young males get enough feed – do not overestimate how much they can 'steal'</li> <li>• Ensure enough male feeding space and feeder system allows good even feed distribution</li> </ul>

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feed supplier. It is important to get to the root cause of the problem and not just attend to the symptom, otherwise the problem will repeat in the next flock.

There are a few rules of thumb that can be used to identify problem situations. Any deviation from this needs investigation:

- Peak feed calories: 450-465 kcal/bird.
- Peak feed to be achieved by 60-70% daily egg production.
- Peak feed consumption time: 1.5-3.0 hours.
- Double yolk: 2-3% of daily egg production.
- Mortality by 30 weeks age – not to exceed 1.5-2.0%.
- Male feed 3.0-3.2% of liveweight in feed (grams) or 90kcal/kg (feed efficiency of the male line can play a big role).
- Space:
  - 15cm feeder space/bird.

- Rearing seven female birds/m<sup>2</sup>, four males/m<sup>2</sup> and in production five birds/m<sup>2</sup>.

The next step in my investigation process is to check the 'system'. By this I mean to check the facilities, equipment and space. Open or black-out rearing, open or controlled environment house production, light programs, selection procedures, type of feeding system, feeding space per bird, floor space per bird, etc.

The next step is to scrutinise the management practices that go with the facilities and equipment. At this point you would have seen the quality and condition of the young breeder hen and male that is produced by this management and 'system' at 21 weeks age.

This is followed by good data analysis of the rearing and production weekly performance by house. When you separate the top quartile performers from the

bottom quartile performing flocks, you can dig deeper into the reasons of the good vs the bad flocks. Here we look at the differences in bodyweight, feeding programs and feed allocation, uniformity of liveweight and mating ratios.

The top quartile flocks will tell you what the ideal weight profile is, how much to feed, when to photo stimulate young hens, how they respond to this stimulation, and the ideal feeding regime to bring them into production and peak egg production. This should then form the foundation of your management program. The bottom flocks will show you what is not desired and then you avoid these situations by improving the management, facilities or equipment that creates these problems.

The most common problems we find in the broiler breeder industry are summarised in the table. ■

POTENTIAL CAUSE	REMEDIAL ACTION REQUIRED
<b>Increased mortality of young hens</b>	
<ul style="list-style-type: none"> <li>• Poor uniformity</li> <li>• Excessive light stimulation</li> <li>• Too early light stimulation</li> <li>• Using a breeder ration before egg production commences</li> <li>• Mineral imbalance of Ca, P, K or Ca:P</li> <li>• Availability of P in the ration</li> <li>• Large feed increases and aggressive feeding practices</li> <li>• Insufficient feeding space</li> <li>• Too fast growth and weight gain</li> <li>• Untreated diarrhoea that leads to E. coli infections</li> <li>• Male related injuries</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the young hen is ready for egg production at 21 weeks</li> <li>• Photo stimulate the hens after 21 weeks</li> <li>• Slow feed increases until 35% daily production</li> <li>• Control weight gain to 100g per week once egg production commences</li> <li>• Ensure the males are not too sexually advanced over the females</li> <li>• Ensure you have 15cm feeding space per bird</li> </ul>
<b>Flocks that commence production late</b>	
<ul style="list-style-type: none"> <li>• Poor uniformity of live weight</li> <li>• Underweight young hens</li> <li>• Incorrect condition and development from 16 weeks of age</li> <li>• Seasonal effect in open sided houses</li> <li>• Delayed feed increases</li> <li>• Not using a pre breeder ration to stimulate growth and development</li> <li>• Poor light stimulation program</li> <li>• Low light intensity</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the young hens develop well and are on target weight</li> <li>• Follow the feed program supplied by breed company and do make use of a pre breeder ration</li> <li>• Young hens must gain 36% in weight from 16-20 weeks of age</li> <li>• In open sided houses, ensure the birds are on a constant photo period for at least the last 12 weeks of rearing</li> <li>• Use good light intensity for photo stimulation (80-100 lux) and ensure the initial day length increase is at least three hours</li> </ul>
<b>Poor peak egg production</b>	
<ul style="list-style-type: none"> <li>• Poor uniformity of sexual maturity/live weight</li> <li>• Delayed feed increases</li> <li>• Insufficient feed energy (low peak feed or low energy ration)</li> <li>• Slow weight gain weekly towards 30 weeks of age</li> <li>• Water restriction practices</li> <li>• Poor light intensity at stimulation and thereafter</li> </ul>	<ul style="list-style-type: none"> <li>• Improve the uniformity as indicated above</li> <li>• Ensure your feed program is on time and monitor the weight gain to achieve 100g per week to maturity and adjust feed as required</li> <li>• Ensure a good light intensity and day length increase to stimulate the young hens</li> </ul>
<b>Poor persistency of egg production post peak</b>	
<ul style="list-style-type: none"> <li>• No reserves (fat) on the young hens</li> <li>• Low energy intakes/underfeeding</li> <li>• Overweight hens</li> <li>• Disturbances in routine</li> <li>• Pullet uniformity of live weight</li> <li>• Weather conditions with open sided houses</li> <li>• Fast feed removal and leading the decline</li> </ul>	<ul style="list-style-type: none"> <li>• Check the fat deposition from 22 weeks age and increase feed if required</li> <li>• Control bodyweights of hens</li> <li>• Do not make big changes in work routine or vaccinate birds during peak production</li> <li>• During extreme hot weather and humidity, ensure the hens are eating the daily allocation of feed. If not, adjust feeding to early morning or change the sources of energy in ration</li> <li>• Feed reduction in 1g increments for 3% less production</li> </ul>
<b>Small hatching eggs</b>	
<ul style="list-style-type: none"> <li>• Young hens</li> <li>• Extreme hot weather and feed refusal (low energy intake)</li> <li>• Nutrition</li> <li>• Not using a pre breeder ration</li> <li>• Underweight young hens</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the young hens are on target weight</li> <li>• Increase feed levels in 18-23 week age period</li> <li>• Ensure the hens gain sufficient weight in early stages just before egg production begins to ensure sufficient energy intake</li> <li>• Monitor the body weight gain as above</li> <li>• In older flocks in summer time, ensure they eat the daily feed allocation and consider a cooling system for temperature control</li> </ul>