

Is your equipment allowing breeders to achieve their full production potential?

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Aviagen has been producing parent stock management guides for more than 35 years. The latest release (2013) is a comprehensive guide of recommended management practices for all Aviagen broiler breeder products.

However, even with the best management practices, if poultry house equipment specifications are incorrect for bird characteristics (head width, shoulder width and body length), full breeder potential may not be achieved.

References made in the Aviagen Parent Stock Handbook, highlight the importance of providing the correct equipment for bird age, sex and size during the production cycle.

Genetic selection criteria to produce a more efficient modern broiler have had an impact on parent stock body weights, although the growth profile itself remains the same. Throughout the years, female feeder space, male exclusion grills, nest box space and overall house design and layout has been modified

in relation to current growth profile trends.

This helps to ensure that bird physical requirements (ability to eat, naturally mate, drink, lay eggs comfortably, etc) are being met.

This article discusses body measurement information from data collected at Ross Breeders, South Africa and Aviagen facilities in Holland and the USA. These observations were used to determine if current recommendations for equipment specification are correct in meeting the demands of the modern broiler breeder.

Recommendations

Since 1978, there have been gradual changes to recommended equipment specifications (Table 1). Requirements for female feeder space and male excluder grill size are the two most significant changes.

When looking at the drinker specifications it should be noted that all birds do not drink at the same time so the recommendations for drinker space are seen as adequate as long as stocking densities remain the same. To determine if current



Females feeding uniformly around a track feeder.

equipment specification recommendations are adequate to meet bird physical requirements, parent stock birds had body measurements taken from 5-60 weeks of age.

The same flocks of birds were measured at five and 10 weeks and then every 10 weeks until 60 weeks of age.

Head width, shoulder width and body length (from tip of the top mandible to end of the tail (excluding tail feathers) was measured immediately after feeding.

Measurements were taken using

the same equipment and by the same personnel each time. The body weights of the birds were within $\pm 5\%$ of the 2011 Aviagen recommended bodyweight profile.

Male head width

If the excluder grill width is too narrow, then, although exclusion of males will occur, females may also be excluded out of their feeders.

When comparing actual head width

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Table 1. Recommended equipment specifications from 1978 to 2013.

Year	Feeder space		Drinker space (mm)	Grill size (male excluder) (mm)	Nest box space
	Female (mm/bird)	Male (mm/bird)			
1978	100-150	100-150	25 trough/bird	w42 x h50-55	4 birds per nest hole (w30 x d35 x h25cm) for manual collection nests
1994	0-5 wks: 50 6-23 wks: 130 23 wks to depletion: 150	0-5 wks: 50 6-23 wks: 130 23 wks to depletion: 150	25/bird or 8-12 birds/nipple	w45 x h50-55	4 birds per nest hole (w30 x d35 x h25cm) for manual collection nests
2002/06	0-5 wks: 50 5-10 wks: 130 10 wks to depletion: 150	0-5 wks: 50 5-10 wks: 130 10-20 wks: 150 20 wks to depletion: 180	0-20 wks: 15/bird (bell) 20 wks to depletion: 25/bird (bell) 15-20 wks: 8-12 birds/nipple 20 wks to depletion: 6-10 birds/nipple	w45 x h50-55	3.5-4.0 birds per nest hole for manual collection nest 40 birds per linear meter for mechanical collection nest
2013	0-5 wks: 40 (pan) 50 (track) 5-10 wks: 80 (pan) 100 (track) 10 wks to depletion: 100 (pan) 150 (track)	0-5 wks: 50 (pan & track) 5-10 wks: 90 (pan) 100 (track) 10-20 wks: 110 (pan) 150 (track) 20 wks to depletion: 130 (pan) 200 (track)	0-20 wks: 15/bird (bell) 20 wks to depletion: 25/bird (bell) 15-20 wks: 8-12 birds/nipple 20 wks to depletion: 6-10 birds/nipple	w45-47 x h60	3.5-4.0 birds per nest hole for manual collection nest 40 birds per linear meter for mechanical collection nest

Age (weeks)	Head width (mm)		Shoulder width (mm)		Body length (mm)	
	Female	Male	Female	Male	Female	Male
5	26	28	74	76	240	245
10	30	36	99	100	320	340
20	42	44	145	148	470	495
30	43	46	151	154	500	530
40	44	47	153	159	530	575
50	45	50	155	175	570	605
60	46	55	158	183	585	608

Table 2. Head width, shoulder width and body length measurements.

Continued from page 15 measurement data with recommended grill exclusion dimensions, there are two key areas of importance.

First, a grill width of 45-47mm will allow females to comfortably eat while excluding males and ensuring secure separate sex feeding.

Secondly, if older or narrower grills are being used, then some female exclusion will occur from approximately 20 weeks of age.

This will lead to a reduced production level, poorer bird uniformity and increased difficulty in maintaining body weight.

Shoulder width

If stocking densities are too high or feeder space per bird is too low, a negative impact on feeding behaviour may occur. This can increase feeding time, causing poorer uniformity levels and reducing egg production.

A feeder space recommendation of 150mm per female from 20 weeks of age assumes that the

shoulder width of the female is either below or a maximum of 150mm.

When comparing shoulder width measurement data to recommended feeder space per male and female, there are no adverse effects when using the recommended feeder space of 150mm (females) and 200mm (males).

Table 2 shows that female shoulder width does increase above 150mm, however, with naturally decreasing livability within the flock, this will still allow adequate feeding space.

Ensuring adequate feeder space, particularly as birds come into peak production, is the most critical area to consider.

When looking at the body measurements in the table, in comparison with the recommendations, shoulder width is less than 150mm per female up to 30 weeks (as the birds come into peak), allowing them to feed uniformly.

If using pan feeders rather than track, it is important to remember that birds may, theoretically, feed more evenly as they are stationed

Measuring head width.



Measuring shoulder width.

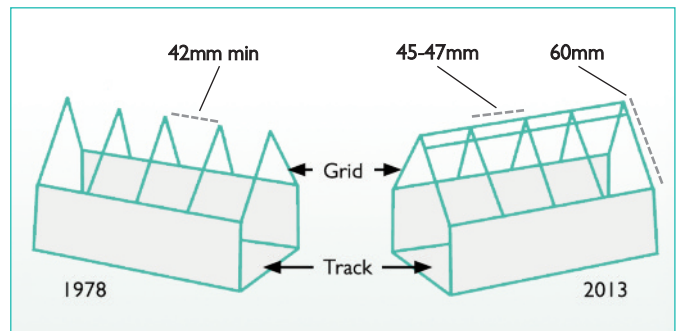


Fig. 1. The change in excluder grill dimensions from 1978 to 2013.

equally around each pan. However, as with feeder track, if stocking densities are too high feeding may be restricted. It is important to monitor feeding activity closely to identify any potential issues.

If there are a large number of birds still looking for feeding space five minutes after the feed tracks have been filled then it may be necessary to adjust total feeding area or increase exclusion grill sizes.

Body length

Body length is a measurement that may be used to determine if recommended nest box size is adequate and to aid in the correct design and layout of feeders, drinkers and nest boxes within a production facility.

It is obtained by measuring from the tip of the top mandible to the base of the tail, excluding the tail feathers.

If body length is not taken into consideration, it may potentially lead to incorrect house design, and in turn, an increase in floor eggs, reduced overall egg production, poorer flock uniformity and extended feeding times.

For example, if feeders are too close together then birds will not be able to eat comfortably, as tails may be touching or too few birds will be able to fit around a pan feeder at the same time.

Feeders and drinker may become obstructions to nest box areas if placed too close to nest box open-

ings and scratch areas will be overcrowded.

Summary

Parent stock broiler breeder body weight has increased in line with genetic selection. It is, therefore, important that poultry house equipment specifications account for this. Head size, shoulder width and body length are increasing as expected for age and selection criteria. Following Aviagen's current recommendations will accommodate birds as they grow and change.

However, if current equipment specification recommendations are not in place or bird stocking densities are too high, this will have detrimental effects on production performance, livability and flock uniformity.

Inadequate feeder space and older or narrower male exclusion grills will have a negative impact on both peak and post-peak production persistency. When retrofitting older houses or building new ones, it is important to take bird length into consideration, ensuring that there is adequate space between feeders, drinkers and nest boxes. Properly maintaining the birds environment is key to the success and productivity of the flock. ■

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