

Hans-Werner Rauch, Celle

# Aviaries – an alternative to battery cages?

*As a type of on-floor housing for layers, aviaries offer through their more intensive stocking possibilities between floor and roof an increased stocking rate per m<sup>3</sup> with higher room temperatures in winter. To accept this system as an alternative to cages involves having to deal with greater variations in bird behaviour and performances and having to balance profit differences per egg with market price. Animal welfare problems which could occur through the related freedom of movement and group size should be solved as soon as possible. Only part of the problems can be minimised by the stockperson having more qualifications.*

Diploma farmer Dr. Hans-Werner Rauch is a member of the scientific staff at the Institute of Animal Breeding and Behaviour, FAL, Dörnbergstr. 25 -27, 29223 Celle; e-mail: [hans.rauch@fal.de](mailto:hans.rauch@fal.de)

## Keywords

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Conventional battery housing is to be phased out in the EU by the end of 2011. Does the aviary system offer an equally viable alternative?

The success of batteries was assured by serious housing problems in on-floor layer systems with or without outdoor runs – and not only in the western countries. Targeted improvement with on-floor systems was based on two advantages: Avoidance of disadvantageous hen behavioural trends and the reduction of building costs per hen place through tighter stocking. The result is aviary production – with mandatory litter in the near future.

### Past problems?

Many farms were encouraged to use battery housing in the past because of two particular problem areas in in-floor system stemming from poor standards of litter and the large bird groups involved (table 1). The results of those threatened increased production costs and complicated production.

### Problems with battery systems

Normally from today's point of view battery production is regarded as the safest and most easily managed form of quality egg production with the least environmental disadvantages. Bird performance is, on average, much better than in systems. The main problems with cages are concerned with the limitations of area/space and bird reaction, or



even suppression of certain behavioural traits, to this and lack of surrounding stimulation. This appears to have no, or at least only a small, affect on performance or else have disadvantages that are not apparent. These limitations aggravate the welfare lobby through exceeding the established bounds. In the current political discussion the question is raised whether the earlier disadvantages of litter and large groups still exist nowadays following the further development of on-floor systems to aviaries with generous amounts of litter available.

### Viable alternative?

Production cost comparisons can be made from Dutch results from a total of 29 flocks in aviaries and 50 spot checks of selected

Table 1: Comparison between wire floor and litter and between small and big groups

With littering increased risks through.....
Picking-up pathogenic organisms via droppings; intestinal parasites such as worms, coccidia.
Dust: Human and animal pathogenic organisms and allergy sources
Harmful gases, especially ammonia: illnesses, disadvantages for humans, animals and environment
Floor eggs: egg losses, dirty eggs, working place disadvantages
Reduced product quality through increased microbial contamination
More medicine applied: disadvantage for product quality
Carry-over in bodies, eggs and droppings
Recycling from droppings in bodies, eggs and droppings after the end of the treatment
In large groups, increased.....
Meetings of strange birds; confrontations, pecking-order fights, agitation
Injurious behaviour against many birds
Transference of intestinal parasites to many birds



battery flocks [1]. While the aviaries were installed in new buildings, and so started under favourable hygienic conditions, this represented an advantage for the aviary systems. On the other hand, the highly motivated farm manager had at first no practical experience with aviaries. With an average flock size of 17000 hens and span from 4000 to 27000 birds, stocking density averaged 20 hens/m<sup>2</sup> floor.

Aviary birds returned the same laying performance with an extra feed requirement of 2g/bird/day plus a reduction in egg weight of more than 1 g. Production costs per egg were 12.7 cents and thus on average 6 to 7% above the battery hen figures. Aviary mortality was substantially less, probably through prophylactic debeaking. Earlier trial results

had convinced that debeaking in aviaries was indispensable.

### Bird behaviour, health, performance: a network

Exact comparisons of the systems with same-source birds similarly reared were conducted by Abrahamson and Tauson [2] in five consecutive 80-week cycles in a Swedish aviary variant. The results confirm that aviaries also reflect the general experience with large groups with a greater variation of production and mortality between the years than with battery systems. These birds were not debeaked. Performance fluctuations were probably mainly due to coincidental emergence of cannibalism encouraged through coccidiosis outbreaks. Lange [3] found differences, as did Abrahamson and Tauson [2], between birds of different source and a greater cannibalism risk with brown birds compared with white ones.

### Bird health

Comparisons between battery cages and three aviary variants showed Schaller [4] that fatty liver syndrome and wing fractures were more prevalent in cages. Cannibalism, coccidiosis, football abscesses, bursitis and breastbone deformation occurred more in aviaries.

On coccidiosis, Matter [5] showed after the investigation of 163 littered Swiss commercial flocks a higher oocyst value where

litter quality was bad. Oocysts were not apparent in most flocks. In 10 flocks, treatment was given against coccidiosis and, in five from 16 positive herds, against worms. In the future special attention should be given during rearing to the development of a sufficient immunity status and, where required, according to the recommendations of Long [6] this should be supported by vitamin supplementation before or during stress situations such as, e.g., re-housing. In their young phase birds should definitely learn short-flying and balancing, avoidance of attack and the ability to easily reach all areas of the house to minimise the risk of the establishment of cannibalism and the laying of floor eggs and thus dirty eggs. The development of aviary systems is not yet concluded.

A major proportion of sporadically-appearing *football abscesses* could also often depend on litter quality in combination with use of perches. *Breastbone deformations* are not seldom in all systems with perches. Here, rearing is closely associated when perches are available. Breastbone deformations can be easily overlooked and can be quite common during rearing and the laying period when the birds fail to reach their flying target with a subsequent hard landing. Easily-frightened flocks are especially disadvantaged for this reason.

### Bird care

Overall, there's more requirement for bird care in aviaries than in cages. Attention, good judgement ability and reliable handling have to be supplemented in large groups with knowledge and experience so that negative developments can be recognised in time.

### Working place quality

Working conditions are also affected where litter is used. Proportion and accessibility of floor eggs and mortality are not the only detracting factors. There's also much higher dust content in the atmosphere with larger amounts of particles which can enter the lungs. The higher pathogen content of the litter presents considerable staff health risks.

In avoiding bad litter, Groot Koerkamp [7] is optimistic that large amounts of ammonia emissions from litter can be substantially reduced through rapid aeration supported in winter by the higher house temperature in aviaries. So far, however, the technology is still not available. The drier the litter, the more dust is produced through hens scratching and dust bathing.

### Alternative?

To what extent aviary production represents an economically viable on-farm alternative to battery cage production depends on the political framework conditions, especially through the market. This can be markedly different for individual farms. Aviaries offer hens all the advantages in the exercising of their broad behavioural spectrum. However, this also includes disadvantages which will have to be solved as quickly as possible on grounds of welfare and economic viability. The clearly larger freedom of hens in aviaries when compared with conventional cages still demands tribute from man and beast especially in terms of health risk. There's a chance that the economy risks can be balanced by asking more from the market. The importance of the advantages and disadvantages of aviary systems is in the end decided by the quality of management applied by the poultry farmer.

### Literature

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