

New methods of testing performance in layers

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Until now, traditional laying performance tests have been based on data from single and group cages. The cages provide a testing environment in which it is relatively easy to record the relevant traits of each hen.

It is very important for successful breeding selection that an exact, individual performance testing takes place in an environment which is similar to the later production environment and this challenges the breeding companies to have alternative testing possibilities.

It is also preferred to record further traits, like the nest acceptance, which is of high importance in alternative housing systems.

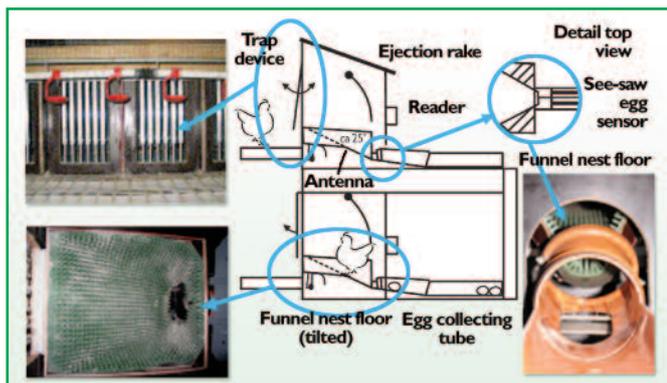
Taking up the challenge

This challenge was taken up by Lohmann Tierzucht GmbH who developed, in close co-operation with the Bavarian State Research Centre for Agricultural Engineering, the so called 'Weihenstephan Funnel Nest Box' (FNB).

This is a single nest box, which has trap devices at the entrance to select one single hen from the whole flock.

When a hen enters the FNB, she would be immediately identified and monitored during her stay with the

The Weihenstephan Funnel Nest Box.



aid of a transponder, tagged at her leg. Simultaneously, the transponder signals and exact timings are constantly sent to a computer software until the hen exits the nest box.

The same procedure occurs when the hens lay an egg. Due to the slanting conception design of the nest floor, the egg rolls directly after oviposition over an egg seesaw into an egg collection tube. This triggers off a contact which transmits the signal as well as the timing to the software.

Individual performance

This system makes it possible to record the individual laying performance and egg quality data of each single hen in group housing systems with reasonable effort. Furthermore, the system automatically records interesting nest behaviour traits, such as nest acceptance, the duration of stay in a nest box and the exact oviposition time.

At the Technical University of Munich's experimental station, Thalhausen, 48 FNB in two rows were installed and various flocks and strains were tested for several months. Initial results showed significant differences in the oviposition time and the duration of stay in a nest box between the strains – Lohmann Silver and Lohmann Selected Leghorn.

Most of the Silver hens began laying eggs two hours after the light was switched on, whereas a large

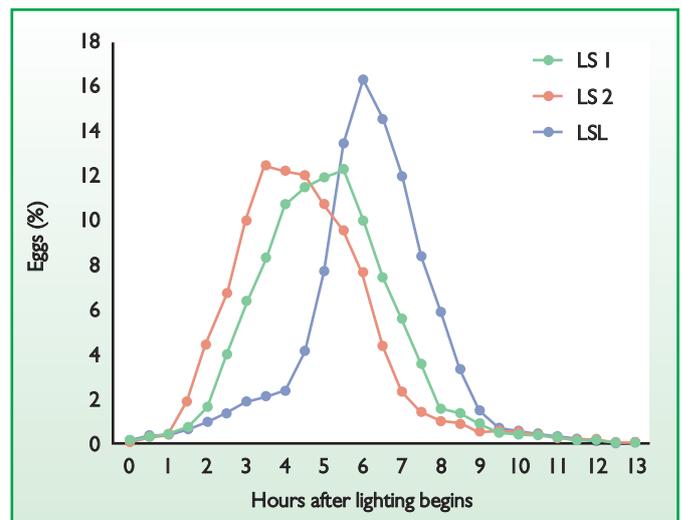


Fig. 1. Comparison of different flocks in their oviposition time.

number of Leghorn hens began looking for the FNB three hours after the light was turned on.

At this point of time, the Silver hens reached their laying peak in terms of oviposition time. The Leghorn hens, on the other hand, reached their laying peak six hours after lighting began.

They paid more attention to visiting the nests which was also in a considerably shorter time frame (two hours) as opposed to the Silver hens.

Oviposition time

The nest capacities were fully occupied by the LSL hens during their laying peak between 9 and 10am, five hours after lighting began which caused a few hens to lay their eggs on the balcony just in front of the nest entrance.

These problems did not occur with the strain of LS hens. They were more flexible in their oviposition time.

Furthermore, the exact oviposition time makes it possible to analyse the laying pattern of the hens. The fraction of hens (up to 22%) was unexpectedly high with a mean time interval of less than 24 hours between two consecutive laid eggs.

This means that laying hens are able to produce an egg of good egg quality, in less than 24 hours. A comparison of the mean time intervals and the individual laying performance of each hen, showed that hens with a time interval of just over 24 hours (~24:10), had the best laying performance.

The FNB showed that laying performance testing of hens in alternative housing systems is possible.

Furthermore, it provides interesting information about the oviposition time and the duration of stay in the single nest box which is of economic relevance.

As this form of performance testing is carried out on pedigree hens, the data is directly integrated into the ongoing selection programme.

This once again shows that Lohmann Tierzucht uses broad based performance tests as a foundation for the selection of white and brown egg layers.

Aside from feed conversion and egg quality, the number of saleable nest eggs also has a high priority. Other breeders do not have the possibility to conduct tests as precisely as Lohmann Tierzucht can, and will therefore have more problems in the future to generate progress in adapting their strains better to aviary systems. ■