



# Assessing an improved nestbox design for laying hens within a commercial setting

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## Key words

Laying hens, nestbox, partitions, animal welfare, aggression

## Aim of the study

The provision of attractive nestboxes for laying hens allows them to perform highly motivated pre-laying behavior. In line with this, the welfare of the hens can be improved and less floor eggs are laid by the animals. A previous study in an experimental set-up exhibited that hens prefer smaller nests with additional partitions inside the nests. Additionally, large laying hen farms often observe an unequal distribution of hens with an increased number of birds in the nestboxes at the end of the nest rows in comparison to nests in the middle of the nest rows, indicating that the end-nests are the more attractive ones. This can lead to aggressive behavior and piling at the end of the nest rows which affects the welfare of the animals. The aim of the present study was therefore to improve the nestbox design of the nests in the middle of the nest row to improve welfare and reduce mislaid eggs by installing partitions inside the nestboxes or on the nestbox balconies.

## Material and methods

The study was divided in two parts with different methods to improve the attractiveness of the nestboxes: 1) installation of wooden partitions inside a nestbox and 2) installation of wooden partitions on the nestbox balconies. The first part took place on a laying hen farm with 2296 Brown Nick birds separated in 4 side-by-side pens per barn side. Each barn side included 3 (Exp. A) and 4 nests (Exp. B) per nest row level and per pen, respectively. Partitions were installed inside one middle nest of each nest row only. The experiments took place at 65 and 67 weeks of age.

The second part of the study was performed on an external laying hen farm with 2688 Brown Nick and 372 Super Nick laying hens (Exp. C). In this experiment, the partitions were placed on the balcony of specific nests in the middle of the pen (vs. inside the nestboxes). Nests at the end of a row without partitions were compared with nests in the middle of the nest row with and without partitions. Observations were done at 27 and 34 weeks of age and 100 hens per test week were scored for feather and footpad health.

In both study parts, aggression in front of the nest and the number of nest visits (number of nest entrances + number of nest leavings) was recorded by video observations on three consecutive days in the first five hours after the lights were turned on. Additionally, the total number of eggs per nest was counted. Using this design, a correlation between nest visits and eggs laid per nest and differences between nest visits in nests with or without partitions could be calculated.

## Results and significance

In all three experiments, the number of nest visits changed in relation to the time of the day and was highest after three to four hours after the lights were turned on. A similarly timed peak was also observed in the number of recorded aggressions in Exp. A and C, where most aggressions were observed. The coinciding of these events was observed in a statistical correlation between nest visits and the number of aggressions on the nest balcony.

The placement of partitions inside the nestboxes to improve the attractiveness of the nest resulted in ambiguous results (Exp. A & B). While the installation of a partition inside the middle nest in Exp. A had no effect on the number of nest visits, Exp. B results observed more nest visits in the middle nests with partitions compared

to the middle nests without partitions and compared to the end-nests. The latter result seems to support our hypothesis that a partition inside the nestbox increases the nestbox's attractivity. However, the difference in the results of Exp. A and B suggests, that the length of the nest row may influence the behavior of the hens, as the only difference between Exp. A and Exp. B was the number of nests per pen (3 vs. 4 in Exp. A vs. B).

No correlation could be found between the number of nest visits and the number of eggs in the nest in both experiments (Exp. A & B). In Exp. A, less eggs were found in in the middle nests than in the end-nests, irrespective of if there was a partition inside the middle nest or not. Also, the more nest visits which occurred in the middle nests with partitions than in the end-nests of Exp. B had no effect on the number of laid eggs; more eggs were laid in the end-nests compared to the middle nests (with or without partitions). Generally, more eggs were laid on the upper nest row level, irrespective of the horizontal position in the room.

The installation of partitions on the balcony, as performed in Exp. C, had no effect on the number of nest visits or the amount of aggression observed on the balconies. Most eggs were laid on the lower nest row level and in the front nests (end-nests) of the nest row. No statistical differences could be found between the two nest positions in the middle of the nest rows. However, slightly more eggs were collected in nests with partitions on the balcony than in nests without partitions. During both weeks of observation, all hens had good feather and foot-pad score, so no differences could be found.

In conclusion, the installation of a partition inside the nest or on the balcony only had consequences on the number of nest visits but not on the number of aggressions or the number of laid eggs in the respective nests. Therefore, no improvements could be found with the installation of partitions inside the nestboxes or on the nestbox balconies in respect to animal welfare.

### **Publications, posters and presentations**

None.

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