

SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: CA15224

STSM title: Identifying causes and solutions of keel bone damage in laying hens

STSM start and end date: 15/06/2019 to 30/08/2019

Grantee name: Anne van den Oever

PURPOSE OF THE STSM:

The purpose of this STSM was to gain new insights as part of my PhD study, collaborate with a team of poultry researchers and learn new techniques (keel bone palpation, bone strength testing). The topic of my PhD study is optimising housing design to facilitate nesting behaviour of broiler breeders. During this STSM I performed an experiment investigating the effects of two housing lay-outs on nesting behaviour, mobility and bone strength in broiler breeders.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSM

The experiment consisted of ten pens holding 33 females and 3 males of the Ross 308 breed. In half the pens the nests and drinkers were directly accessible from the litter and in the other half the nests and drinkers were on a raised slatted area. The study lasted from the age of 20 weeks until 32 weeks.

Floor and nest eggs per nest were collected daily from the moment the first egg was found at the age of 23 weeks until the end of the experiment. Video recordings were made at three timepoints to observe nesting behaviour and agonistic behavior in front of the nest during one hour in the morning. Mating behaviour was studied with direct observations during one hour in the afternoon. In order to gain insight into individual variation, 10 focal hens per pen were fitted with marked backpacks to observe the movement between different zones of the pen. During the ages of 25-31 weeks the focal hens were weighed and scored for feather condition, leg health and keel bone damage every week. The focal hens were killed at 32 weeks of age to remove the humerus and tibia, which were sent to a lab to measure the bone strength.

Through out the different phases of the study, I worked together with different team members. I also participated in meetings and discussion groups of the host institution in order to learn more about poultry research.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

The wooden nests were preferred over the plastic nest with an average of 64% of the eggs laid in the wooden nest. This was stable from the age of 25 weeks onwards, when more than 25% of the hens were producing eggs. The percentage of floor eggs appears to be higher in the pens with nests on the litter compared to the pens with raised nests, with an average difference of 7%.

Furthermore, the pens with nests on the litter showed more mating activity. This was reflected by more copulation attempts, as well as more successful copulations. The males were most active at the age of 27 weeks.

The health assessments of the focal birds suggest a difference in pododermatitis between the different pen designs, where the pens with more litter had a higher average score. Keel bone damage was present more than expected, as by the end of the experiment an average of 15% of the focal birds were found to have keel bone damage.

The results from the bone strength measurements will follow later this month and the video recordings have not been observed for nesting and agonistic behaviour yet. All data has to be statistically analysed for final results.

FUTURE COLLABORATIONS (if applicable)

N.A.