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: Measuring health and welfare benefits of elevated platforms in fast-growing broilers 2019-06-20 - 2019-08-10
STSM start and end date: 20/06/2019 to 10/08/2019
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PURPOSE OF THE STSM:

(max.200 words)

The STSM enabled me to stay in Zollikofen for two months to participate in a collaborative research project with the Center for Proper Housing of Poultry and Rabbits, VPH Institute, Vetsuisse Faculty, University of Bern. The study was conducted at the Aviforum facility in Zollikofen, Switzerland, under the supervision of Dr. Sabine Gebhardt-Henrich and Dr. Michael Toscano. The research project measured health and welfare benefits of elevated platforms on fast-growing broilers over one growth cycle, with a special attention to bird behavior on the platforms, and bone strength and walking ability.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

The study measured health and welfare benefits of elevated platforms of two designs in fast-growing broiler chicks under Swiss commercial conditions, over one growth cycle. We deployed a completely randomized design with three treatments (with platforms of the sloped Swiss design (height from 14 to 34cm) / with platforms 34 cm high with short ramps, Finnish design / without platforms) and five replicates (15 pens in one barn for one trial in total). Each pen contained 250 birds (30 kg / m^2). In platform-equipped pens, the birds had access to platforms from the first day. At 15 days of age, the birds got access to a veranda. In particular, we paid attention to bone health and locomotion abilities but also other common health problems, such as pododermatitis, hock burns, and breast blisters were assessed for groups of birds with and without platforms, according to the Welfare Quality® (WQ) assessment protocol for poultry. Walking ability, footpad and hock skin health and the presence of breast blisters were assessed at 4 weeks of age and a day before slaughter. In pens with platforms, we scored birds both using platforms and the litter area. The birds observed to use

platforms were marked and the same marked birds were scored on both occasions. After marking the birds, the location of marked birds was monitored on a daily basis during the following week until slaughter age. At slaughter age, humerus and tibia were collected from a sample of birds (4 broilers per pen) with different gait abilities to measure bone breaking strength, ash, and Ca and P contents. Direct behavioural observations, with the special focus on the use of platforms and behavior on platforms (resting, walking, standing, preening and foraging/ground pecking, and additionally, eating and drinking on the floor) were performed twice a week using scan sampling. At the same time, the individual use of the platforms was determined by Radio Frequency Identification (RFID) technology for a sample of chicks in one pen, between 18 and 31 days of age. Our hypothesis was that the different design in Swiss and Finnish platforms affects platform usage and may influence bird health and welfare. Furthermore, we expected better bone strength, gait, footpad and hock skin health in birds provided with platforms. Platforms with 30 cm height and ramps were expected to generate more benefits than sloped platforms. We further predicted that, in a pen with platform, the individual use of the platforms differs.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

We have not yet performed comprehensive statistical analysis on the data. The first birds on Finnish platforms were observed on the second day, mostly on the ramps but some individuals used the horizontal platform. The first chicks on Swiss platform were detected at 9 days of age. The use of Finnish platforms peaked at 22 and the Swiss version at 32 days of age. Throughout the growing period, more birds were using the horizontal part of Finnish platform than the Swiss platform, except on the last two observations, more birds were detected on Swiss platforms. On extremely hot afternoons (ambient temperature over 30°C), the platform use was exceptionally rare. After emptying the platform, an average time to mount the platform was 25s (0-180s) for the Swiss and 3.6s (0-30s) for Finnish platform. The average number of birds on platform, 5 minutes after emptying, was 7.8 birds (1-19 birds) on Swiss platform, 18.9 birds (6-38 birds) on the entire Finnish platform, and 12.4 birds (0-30 birds) on the horizontal platform. The birds accessed Finnish platform mostly via ramp, walking from the low end of the ramp or jumping from the ramp side. Birds usually jumped on the Swiss platform from the lowest end, but later in life, some individuals jumped from the high end to the platform. Especially younger birds actively used wings to assist walking up and down the sloped ramp, and jumping up or down the platform. On average, 79% of the birds spotted on platforms were resting, 10% walking, and 6% preening. Also, on the floor, the most common behaviour was resting (on average 53% of the birds detected on the floor). Walking and standing idle decreased with age (walking from 28% at 4 days of age to 5% at 34 days of age, and standing from 3% to 0.4% of all birds detected on the floor). Age and treatment affected bird behavior.

As expected, younger birds and females had better gait than older birds and males (mean 1.43 (0-3) for younger, and 2.23 (1-4) for older birds, 1.56 (0-3) for females, and 2.08 (0-4) for males). Walking ability was slightly worse in control pens without platforms compared with platform-equipped pens (mean 1.90 (0-3) for

control pens, 1.78 (0-3) for pens with Swiss and 1.80 (0-4) for pens with Finnish platforms). Footpad and hock skin lesions were rare findings. Breast blisters were not detected. The laboratory analyses of bones are not yet performed.

Regarding the individual use of platforms, monitored with RFID technology, we obtained information from 39 birds wearing tags for 14 days (age 18-31 days). Not many birds used the platforms every day (median 8 days, range 1-12 days). The number of tagged birds on the platform varied between 13 and 35 (median 28) during the test period. During the first two days, 15-13 tagged birds were detected on the platform, the number of birds peaked thereafter at 20-25 days of age (35-29 birds on platforms), thereafter decreasing slowly towards the end of recording period.

FUTURE COLLABORATIONS (if applicable)

A research proposal based on this STSM was submitted to the Swiss Food Safety and Veterinary Office (FSVO) including more growing cycles and the use of RFID in order to monitor individual platform use in all 20 pens.