

## 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: Effect of perch arrangements in furnished cages on KBD (n°10)**

**STSM start and end date: 01/08/2017 to 29/10/2017**

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### PURPOSE OF THE STSM:

Serbia followed the EU model and banned battery cages on January 1, 2012. However, in everyday practice implementation of the regulation was not controlled and also other mechanisms necessary for successful implementation (applied in the EU) were also missing. Because of that, even two years after relevant Directive became valid, it stayed only a dead letter and the number of hens in enriched cages and alternative (non-cage) systems has been and remains negligible. In June 2014, due to the growing awareness of the unreality of a given (two-year) period for transition with one and the pressures of primarily large manufacturers, on the other hand, the Regulation has been changed, i.e. battery cages allowed until 2020. However, in Serbia, change from the conventional cage system to the alternative systems is still in progress. 90% of producers who have switched to alternative systems opt for enriched cages, but in these system mostly KBD in laying hens was observed. According to the literature, one of key roles for large differences between housing systems in the incidence of KBD is the housing design. Higher rates were reported at end of lay for hens in cages with metal perches, compared to those without metal perches. This is an indication that perches have a causal role in the occurrence of KBD. They will define a new solution for reduction of causes of keel bone damage, and their severity and frequency. This solution is reflected in the improvement of the housing system of laying hens, by improving the structure of the enriched cages.

### DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

Detailed survey on egg producers and customers had been made, to hear their opinion about KBD or they know what KBD is, and for which production system they will decide when the directive 74 / EC comes into force (on 01.01.2021). We wanted to make a clear picture on how many hens are still in conventional cages, and how many producers already have completed enriched cages, in order to estimate the further development of avian systems for egg production.

We participated at a regional meeting of poultry production "Savetovanje živinara" (ex Yugoslavian countries) and presented COST KBD action and our problem. It was very important because most of people and also poultry producers in Serbian have never heard for the KBD.

The 21 farms with different housing systems were visited in the whole Serbia. Three farms with enriched cages (full equipment furnished cages), two farms with enriched cages without

equipment, five farms with conventional cages and one organic farm (free range) were included in the research. Also 10 households/family husbandries (free range system, freely outdoors) with around to 300 layers rearing domestic breeds, pure races (Laghorn, Partridge colored Italian) and autochthonous breeds (Banat Naked Neck and Sombor Crested) were visited. We made palpation of keel bones of 50 (on small farms) or 100 (on big farms) of layers on each farm in all mentioned systems.

In laying hens we also recorded/measured some others parameters on legs (foot pad dermatitis, toe), comb condition (comb was red or anaemic) and feather scoring (Tauson et al., 2004) on all birds with the neck, breast, tail, wings, back and cloaca/vent being scored. Feather scoring ranged from 1 (severe feather damage) to 4 (perfect feather coverage). On the farms we took the feathers from hens with/without KBD with different stocking density to later determine the level of cortisol.

We also took samples of bones of one year old hens of different breeds and hybrids from different housing systems (with/without KBD): enriched cages (Isa Brown), conventional cages (Lomann Brown) and free range (pure race Partridge colored Italian) and traditional free range (our domestic autochthonous breed Sombor crested chicken) and later mineral bone structure will be done.

#### **DESCRIPTION OF THE MAIN RESULTS OBTAINED**

At the regional meeting of poultry production “Savetovanje živinara” (ex Yugoslavian countries) the COST KBD action was presented and also KBD problems. It was very important because most of people in Serbian have never heard for the KBD. However, we saw, that KBD is also the problem on Serbian farm where layers were housed in enriched cages.

Our survey was carried out on randomly chosen farms to find out more about the management processes, housing conditions, materials of camps, status, hybrid, the age of layers and performance of hens. The results of our survey obtained that a large number of producers, especially smaller ones do not even know that there was a ban of conventional battery cages. Generally they considered that the introduction of such regulations is matter of 'copying' the EU practices, rather than the real concern for the hens welfare, which in their opinion is not seriously threatened.

A survey has been undertaken also to determine how laying hens are kept in Serbia and or and how the alternative systems have fared. The results of survey on egg producers has been conducted in order to find out to what eggs producers in Serbia are familiar with the welfare regulation and what do they think about it and in order to estimate the further development of avian systems for egg production in Serbia. The results of the survey showed that in year 2017 around 2,5 million of laying hens were housed in different housing systems on the farms with more than 5000 number of laying hens per farm. Only three big eggs producers in Serbia laying hens were housed in enriched cages with whole equipment, what is about 250.000 hens (only 3 % of all of the laying hens). The rest of hens in Serbia were housed in enriched cages without equipment, in traditional conventional cages or in free range system (40%). However, around 50 % of laying hens in Serbia is rearing in households/small farms on floor/free range system with about to 300 laying hens in the heard. Most used breeds are Hyline brown, Lohmann brown and Tetra SL. The results show that in Serbia conventional cages or enriched cages without all equipment (perches) are still very common. There are a few % of laying hens in free range system. The results also showed that aviaries are still not used.

They also have been asked about KBD damage problem. However producer in Serbia don't now the problem of KBD, they mainly haven't heart for KBD. Also customers are not familiar with the KBD problem.

The main goal of our STSM were to evaluate the prevalence of keel bone deformities of laying hens in Serbia. Statistical analysis is still outstanding and full analysis should be awarded before any final conclusion can be made. The overall range of keel damage observed in conventional cages were only 1% and in enriched cages without equipment 3%. However, KBD of laying hens in enriched cages were present. In the first week of production 1% KBD in laying hens was

observed (22 week old), in the middle of egg production 35% (hens were 45 week old) and at the end of production 43% (hens were 76 week old). On the farm where laying hens were housed in free-range system KBD wasn't perceived. The same results we were also found on households with different material of perches, usually home-made from the wood, where KBD wasn't observed.

In laying hens we also recorded some others parameters on foot, comb condition and feather scoring, but only results relating to keel bone fracture are discussed in this short report.

#### **FUTURE COLLABORATIONS (if applicable)**

Both Institutions University of Novi Sad, Faculty of Agriculture Department of Animal Science, Novi Sad, Serbia and University of Ljubljana, Biotechnical Faculty, Department of Animal Science, Ljubljana will continue on finding causes and solutions for keel bone fractures in laying hens.

Within the STSM training many data have been collected, which need to be detailed statistically analysed. Data will be used for the basic (in Serbia) and academic publications.

Both institutions agreed for the future collaboration on mentioned experiment on laying hens. In the framework of the KBD we agreed in the slaughterhouses to visit from November to April, because egg producers will begin to slaughter laying hens, and we will evaluate KBD damages on the same hens like on the farms.