

## **Furnished cages for laying hens: effect of group size and litter provision on laying, feeding, perching and dust bathing behaviours**

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In the context of the Directive 1999/74/EC, we plan to compare furnished cages in term of animal welfare, health and zoo technical performance. In the experiment, six treatments of 18 furnished cages were compared in a 3x2 experimental trial: 3 group sizes with the same space per hen (small (SC, 20 hens per cage), medium (MC, 40) and large (LC, 60)), with or without litter (feed) distributed automatically on a mat in the pecking and scratching area (PSA). The impact of group size and litter distribution was evaluated on laying (rate, eggs laid in the nest or outside the nest), feed intake, perching and dust bathing. Litter distribution did not influence laying rate, location of eggs nor number of hens in the nest. Group size influenced the laying location but not the laying rate: percentage of eggs laid outside the nest was higher in SC and MC (8, 4 and 4, 5% resp.) compared to LC (3, 9%,  $p < 0, 01$ ). This was confirmed by video analyses on space occupation: percentage of hens in the nest was higher in LC (39, 9% vs. 25% in SC and MC), especially during laying period (7-10am). Feed intake, from the feeder, was lower for hens receiving litter (116, 7 vs. 119, 3 g/hen/day), but the difference is only significant on the first measure at 25 weeks of age (W25), and did not persist at W48 (109, 2 vs. 110, 9 g/hen/day). As provided litter was feed, hens ate most of it, giving a higher total feed intake (distributed litter is around 5g/hen/day). Percentage of perched hens in SC was lower (56% during the night) compared to other cages (60% and 67% for MC and LC respectively). Rate of hens dust bathing in the PSA was neither affected by litter provision, nor group size. Advantages of the large group size consisted in more frequentation of and laying in the nest, more perching behaviour (in LC and MC) without changing laying rate, feed intake or dust bathing behaviour. Mortality was neither affected by group size nor litter provision. Litter provision did not affect laying, perching or dust bathing data, except for a slight difference in feed intake, probably balanced by litter consumption (some litter is scattered, most of it seems to be eaten). Observations of PSA showed that occupation was high, and seemed better with litter. Future results regarding pecking, scratching and extra-PSA dust bathing behaviours will provide us more conclusions on the subject of litter provision in furnished cages.

**Keywords:** group size, litter provision, laying performances, perching, dustbath