

## Laying hen husbandry: group size and use of hen-runs

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### Introduction

With regard to welfare reasons, various label productions limit the number of laying hens allowed per flock. The question arose whether the group size has an influence on the use of laying hen runs.

### Materials and methods

The use of the hen run was investigated in a total of 12 holdings with 3 different group sizes (50, 500, 3000 laying hens). The hen-run was optically divided into 12 sections (3 parts in the width, 4 parts in the length). The natural and artificial structures in each section were recorded. On 3 days during the summer of 1999 each group was observed during the entire daylight period. The number of hens on the different sections were recorded twelve times throughout the day (Scan sampling).

### Results and discussion

Table 1: The actual area per hen was smallest in flocks with 3000 laying hens. The larger the group size, the shorter the hen-runs were open. During the time the hen-runs were available to the laying hens, animals in smaller flocks used it more often. Most of the laying hens stayed in the first quarter near the stable. Even in the small flocks only few laying hens used the most distant quarter of the hen-run. To see which structure in the run had an influence on the distribution of the hens, we chose 12 (which were complete from scan 3 to 11) of the 36 sampling days. The 9 scans were summed up and the percentage of all the hens in each of the 12 sections of a specific hen-run was calculated. We did a multiple linear regression. Possible structures were "wall of the poultry house", "fence", "hide-outs", "dustbath", "grains feeding", "watering-place", "trees" and "bushes". Additionally we determined the distance of each section to the poultry house. The chosen variables explain 70% of the variance. A significant effect was found with the variables "wall of poultry house", "hide-outs", "dustbath", "grains feeding" and "bushes".

**Table 1.** Use of hen-runs in 3 different group sizes. Average (min - max).

	50 animals/flock	500 animals/flock	3000 animals/flock
area (m <sup>2</sup> /hen)	6.05 (1.58-11.07)	5.06 (1.68-7.93)	0.74 (0.38 - 1.88)
opening duration (h)	11.9 (9.5 - 13.75)	7.5 (4.5 -10.5)	5.9 (2 - 7.75)
average percentage of the hens outside:			
on the total area	41.2	29.5	19.5
on the nearest quarter	26.4	15.4	10.3
on the most distant quarter	2.3	1.8	2.6

### Conclusions

The larger the group, the less access they had to the hen-run. Laying hens in larger groups did not use the hen-run as often as laying hens in smaller groups. This corresponds with data from Häne (1999). The influence of the group size on the use of hen-runs is unclear. The main problem in all groups was the uneven use of the area. This leads to overuse of the pasture (see also Maurer *et al.* 2000) and overfertilisation of the soil near the hen house. Although the multiple linear regression requires independent replicates, we believe that it was legitimate to apply this method in order to get hints for possible preferred structures. There will now be further investigations to test if the found structures might have an influence on a more even distribution of the animals in the hen-run.

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### References

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