

# EpiLeg- Exploratory Epidemiological Analysis on Health Status, Behaviour and Productivity of Laying Hens in Different Housing Systems in Germany

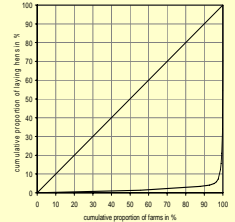


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## Introduction

- egg production in Germany is hosted in approx. 97 000 farms with 41 Mio. hens (> 1/2 years)
- most egg production is concentrated: 1268 farms with more than 3000 hens host 36 Mio. hens (see figure)
- usual housing system are: conventional cage (CC), furnished cage (FC), free range indoors (FRI) and outdoors (FRO), aviary indoors (AI), and aviary outdoors (AO)
- no data is available on health status, behaviour and productivity in commercial farming structures



## Material and Methods

### Design

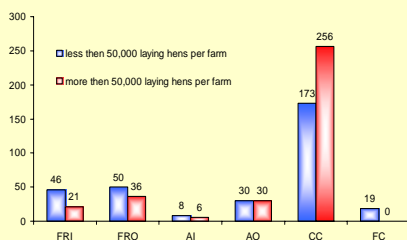
- cross-sectional study of egg-production farms in Germany with more than 3000 hens
- field work conducted in 2003 / 2004
- data from 675 production periods in 405 flocks available
- self-reporting questionnaire by the farmers
- validation of the information in a random sample of farms

### Questionnaire with information on

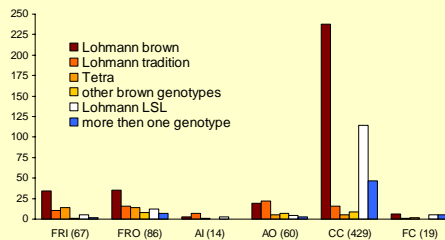
- farm characteristics (region, housing system, genotypes, ...)
- medical treatments (vaccinations, antibiotics, ...)
- mortality per week
- cannibalism, picking (farmers personal observation)
- productivity (eggs per week, egg weight, body weight)

## Results

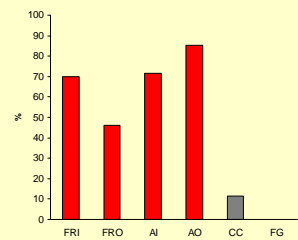
### Distribution of Housing Systems



### Genotypes by Housing System

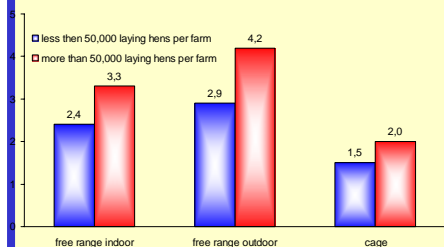


### Treatments with Antibiotics by Housing System



### Mortality per 1000 Hens and Week:

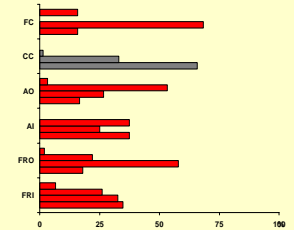
#### Estimated Mortality by Housing System



#### Analysis of Variance

S o u r c e	DF	SQ	MQ	F-Value	Pr > F
Housing System	2	347.93	173.96	95.39	<0.0001
Farmsize	1	76.10	76.10	41.73	<0.0001
Interaction	2	21.04	10.52	5.77	0.0033
Rest	653	1190.89	1.82		
All	658	1635.96			

### Cannibalism by Housing System



cannibalism on a semi-quantitative scale +++/++/+/- as reported by the farmer

## Discussion & Conclusion

In Germany laying hen husbandry is concentrated in large farms with more than 3000 animals. Within these farms conventional cages are the most used housing system and furnished cages are rare in 2003 / 2004. In a cross-sectional study in commercial farms the influence of different housing systems was investigated. In commercial farms conventional cages result in lower mortality and lower rates of veterinary treatments during the production period. Cannibalism, picking and other observations of animal behaviour appear much more frequent in free-range and aviary systems.

In the light on discussions on animal welfare these results contrast to results in experimental stations. Therefore additional research both in commercial farms and research stations is necessary to optimise housing systems of laying hens on the background of the German production structure..