

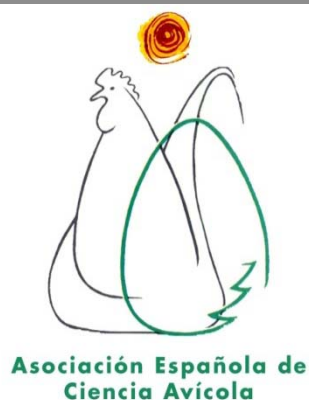
Welfare assessment in broiler farms: Transect walks vs. Individual scoring

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Introduction

- Need for practical on-farm animal welfare assessment protocols for meat poultry where large number of animals are maintained
- Main welfare challenges in meat poultry:
 - genetic potential for growth
 - decline of environmental quality
 - poor management
 - excessive density



Introduction



- Animal welfare has major economic relevance for the industry

Introduction



- Available scientific assessment protocols based in random sampling of ~ 150 birds
- Requires herding, enclosing and handling birds (stress?)
- High time and manpower demands



(Welfare Quality, 2009)

Objective



- Farmers conduct routine checks based on walks through the broiler house
- **Our goal:** to compare the welfare assessment results of broiler flocks evaluated according to two different approaches:

Transect walks vs. Classical Individual scoring



Methodology

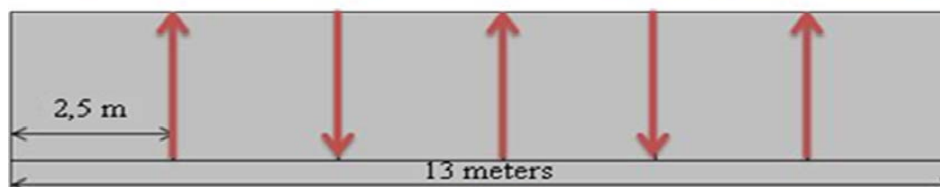
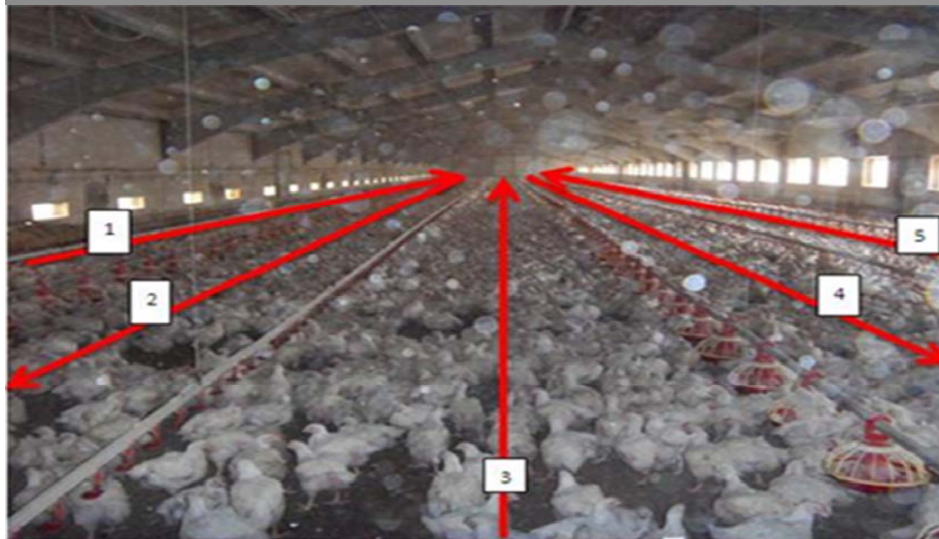
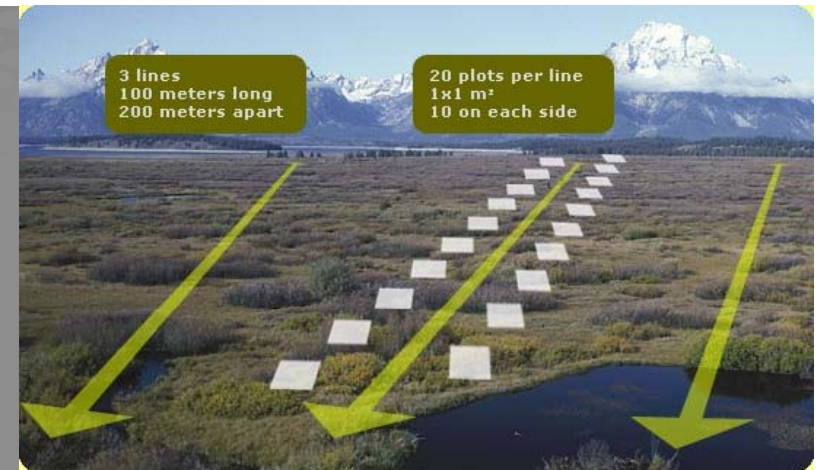


- Conducted from April to May 2012
- 6 commercial houses
Flock sizes/house:
13,220 to 27,540
broilers (COBB 500)
- Density of 17 birds/m²
- Identical management

Methodology

Transect Walks:

- The line transect methodology has been successfully used in wildlife studies for decades



Methodology



Individual Sampling:

- Sample consisted of 25 birds in 6 random locations within each house (0,55% to 1,13% of the total population)
- 3 trained scientist



Methodology



Transect walks

- immobile
- severe lameness
- dirty
- sick
- agonizing
- dead



Scored as
1 for presence or
0 for absence

Individual sampling

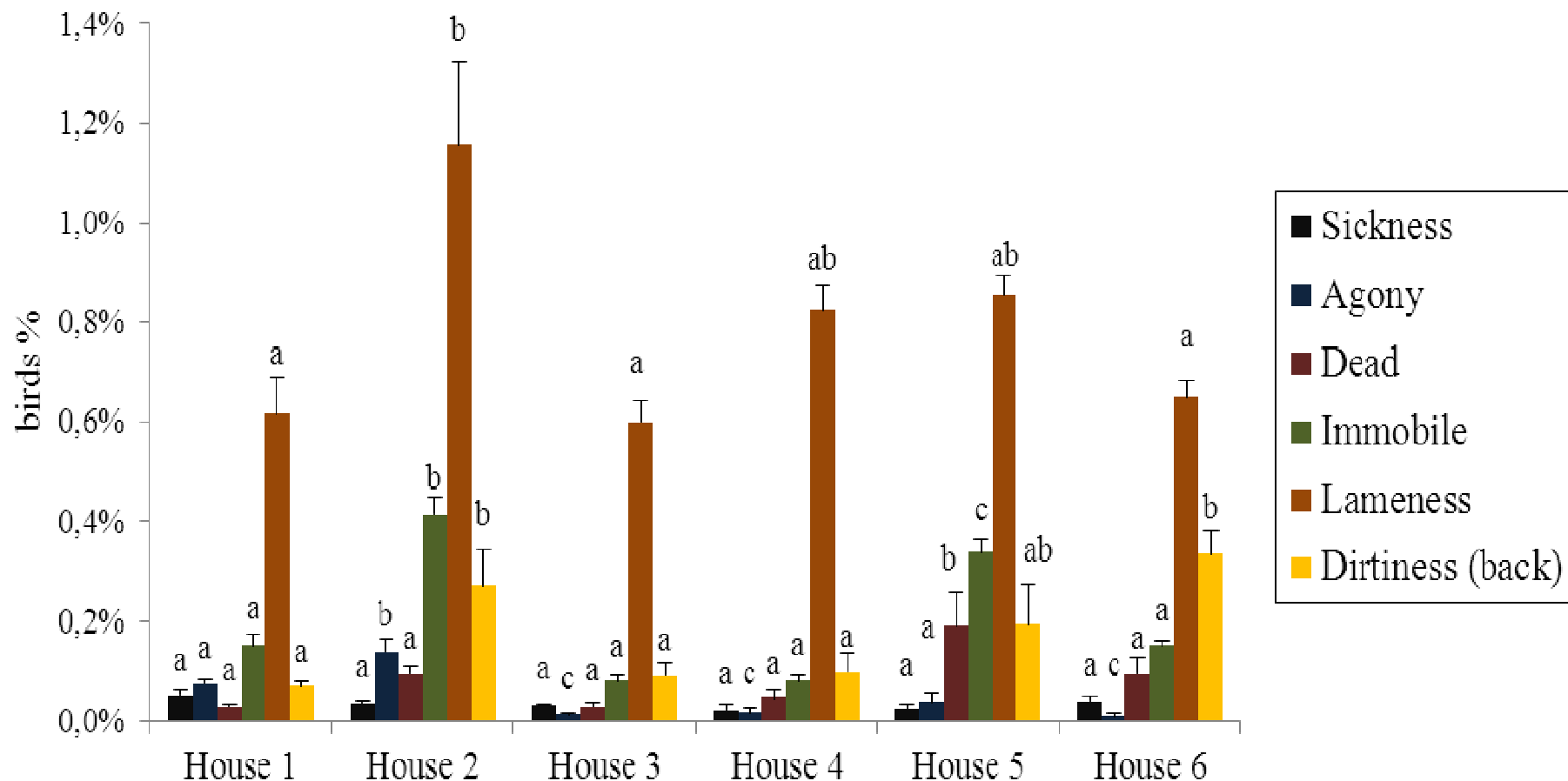
- body weight
- footpad dermatitis (0-4)
- hock burns (0-4)
- breast dirtiness (0-2)
- gait score (scale 0-5)

Statistical analysis:

- Frequencies transformed into **proportions/transect**, assuming random distribution of birds.
- **Mixed-model repeated measures ANOVA** for each welfare indicator.
- Transects: **bootstrapping** – To determine sampling requirements.

Results

Transects: Detection of small variations in the incidence of the welfare indicators



Results

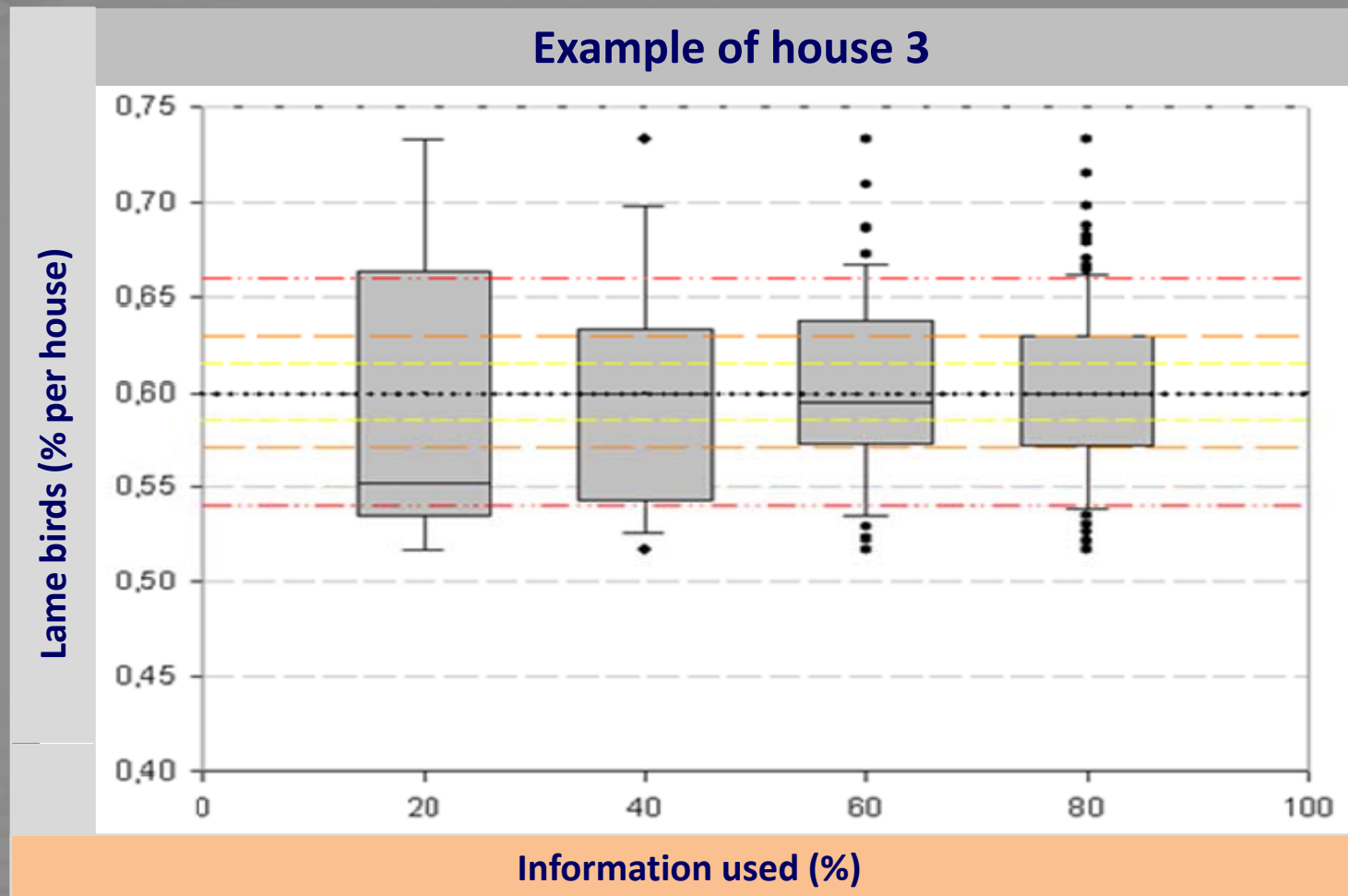


Transects : Welfare assessment across observers with the transect walk approach remained consistent for lame, dirty, sick, and dead birds

Welfare indicator	House	Transect	Observer	Transect*Observer	House*Observer	House*Transect
Immobile	<.00010	0.9033	0.0208	0.1915	0.1235	0.3163
Lame	0.0029	0.7996	0.8496	0.2447	0.0502	0.6451
Dirty	0.0005	0.1003	0.6832	0.1089	<.0001	0.2046
Sick	0.6293	0.6994	0.6009	0.8107	0.4978	0.9391
Agonizing	<.0001	0.3656	0.0479	0.7908	0.0604	0.3580
Dead	<.0001	0.0068	0.0502	0.6666	0.0015	0.0020

Results

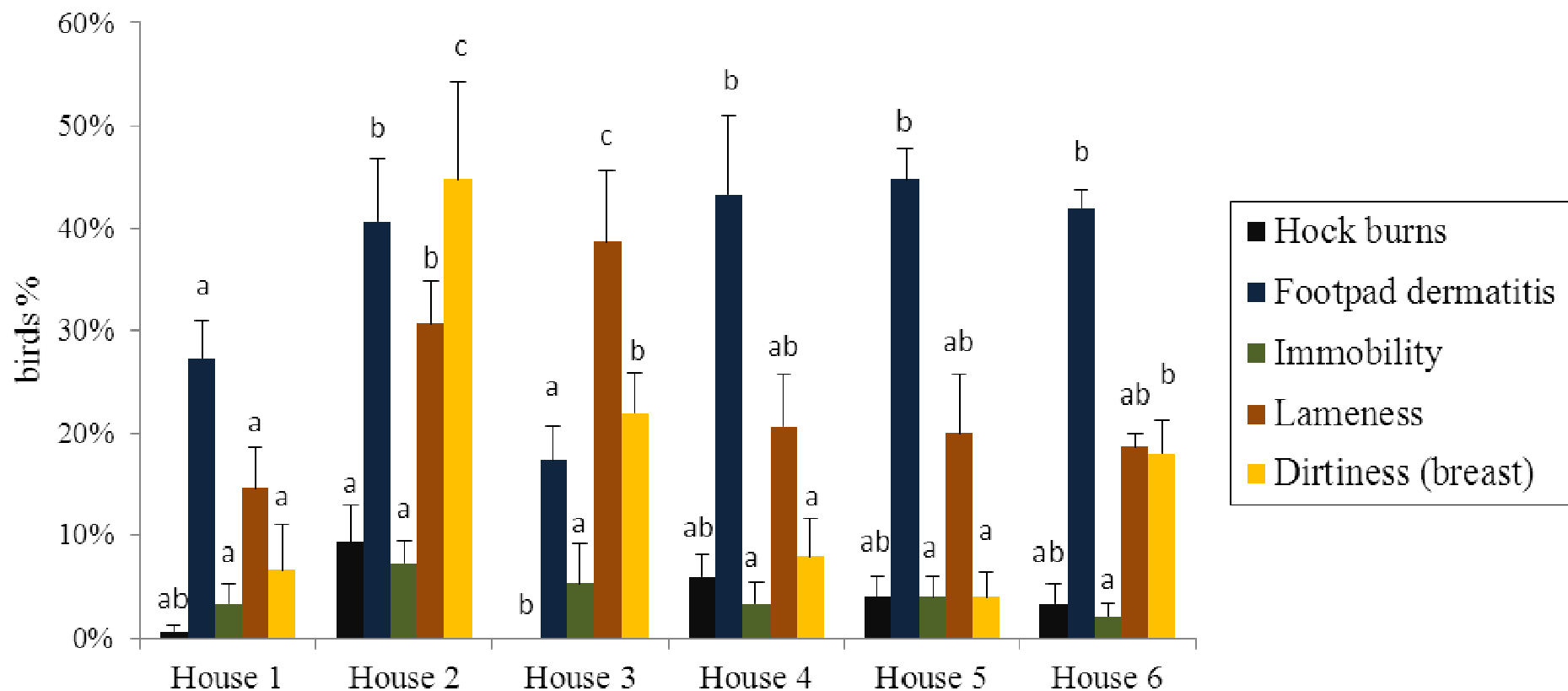
Transects: Expected mean for each house similar to the observed mean value by using as little as 20% of the information for all variables



Results



Individual sampling: Mobility problems seem very high considering economic consequences. Other indicators comparable with previous studies.



Results

Welfare indicator	<i>House</i>	<i>Transect</i>
Immobile	0.7839	0.8495
Lame	0.0017	0.2616
Dirty	0.0002	0.7103
Hock burn	0.0941	0.8095
Footpad dermatitis	0.0112	0.4577
Body weight	0.0010	0.8676

Individual sampling:

- **Sensitivity:** lack of significant differences across houses for immobility and hock burns.
- **No transect effect:** homogeneous dispersion of birds with welfare issues within the house.



Discussion

- Did observers fail to detect birds within the immobile or severely lame category during transect walks??



Discussion



Individual sampling:

- During individual sampling scoring just one bird out of 25 in a category increases the incidence to a 4% for this sample
 - Increasing sampling size would increase further time requirements-solutions?
-
- Herding, enclosing and handling may increase fear
 - Potential stress
 - Painful and tiring forced walking during herding
 - Randomness of the sampling may be compromised
 - 'Empty area' evaluation effect

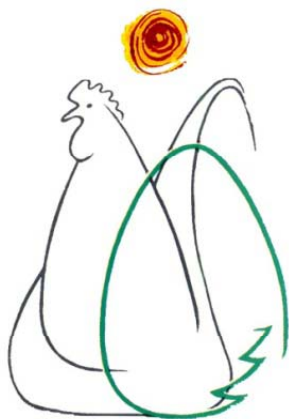
Discussion



Transect walks:

- Potential as prospective on-farm welfare assessment:
 - reduced time/manpower requirements
 - no bird disruption or handling
 - inter-observer reliability
 - easy to understand and accept by assessors and producers, even to accept it for economical reasons.
- Need improved detection sensitivity
- Validation of the methodology

Thank you for your attention!



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Results



Transects : Birds varying in welfare status seem to be homogeneously distributed within the house

Welfare indicator	Observer		Transect				
	1	2	1	2	3	4	5
Immobile	0,18% ± 0,02%	0,22% ± 0,03%	0,20%±0,04%	0,19%±0,05%	0,21%±0,05%	0,21%±0,04%	0,19%±0,04%
Lame	0,79% ± 0,06%	0,78% ± 0,07%	0,76%±0,10%	0,75%±0,07%	0,79%±0,09%	0,74%±0,09%	0,87%±0,15%
Dirty	0,18% ± 0,04%	0,17% ± 0,04%	0,21% ± 0,08%	0,21% ± 0,05%	0,09% ± 0,03%	0,14% ± 0,04%	0,23%±0,09%
Sick	0,03% ± 0,01%	0,04% ± 0,01%	0,05%±0,01%	0,04%±0,01%	0,03%±0,01%	0,03%±0,01%	0,03%±0,01%
Agonizing	0,04% ± 0,01%	0,06% ± 0,01%	0,06%±0,02%	0,03%±0,01%	0,06%±0,02%	0,04%±0,01%	0,05%±0,02%
Dead	0,09% ± 0,02%	0,07% ± 0,01%	0,12%±0,05%	0,08%±0,03%	0,05%±0,01%	0,05%±0,01%	0,10%±0,03%

→ possibility of transects number reduction