

Furnished cages / Colony systems: Welfare, environmental and food safety aspects

Thea Fiks - van Niekerk
Researcher laying hens



Changes in housing systems for laying hens



Conventional cage



Enriched cage



Aviary



Barn / deep litter

Europe: Council Directive 1999/74

Laying down minimum standards for the protection of laying hens

3 categories of housing systems:

- Unenriched cages
- Enriched cages
- Alternatives
 - with or without free range
 - (organic)



Photo
ADAS

Other related EU-regulations

- Commission Regulation (EC) 589/2008
 - Marketing standards for eggs
 - Quality+weight classification, marking, packing, etc.
 - ANNEX I: identification of the farming method:
free range - barn - cage (enriched cage)
 - ANNEX II: Minimum requirements for systems of production for the various egg farming methods

- Commission Regulation (EC) No 889/2008
 - organic production of agricultural products including livestock production

Enriched or furnished...

- Legislation: Enriched cage
 - space - nest - litter - perch
- Science:
 - is it really an enrichment?
 - more neutral terminology:

Furnished cage

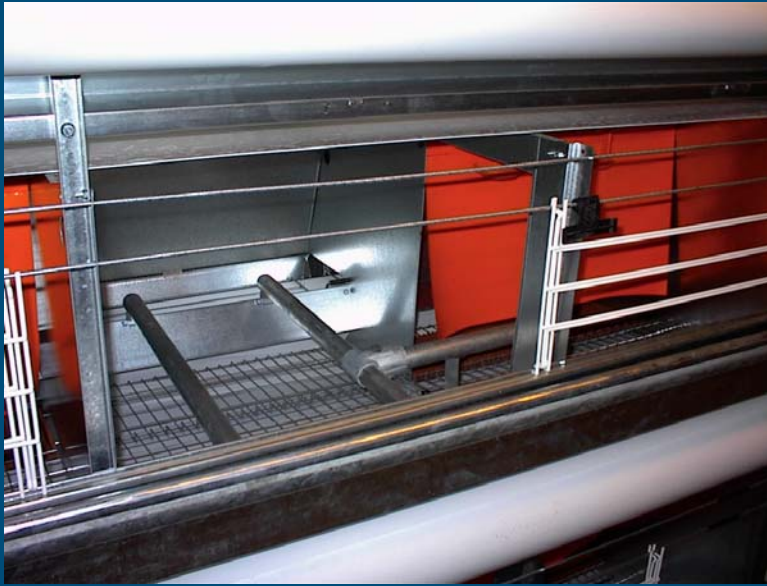


Technical details cages

(EU-Directive 1999/74)

	Conventional cage	Furnished cage	Colony cage
usable area (cm ² /hen)	550	750	800
height	40 (35)	45 (20)	60
perch	-	15 cm	15 (1 elevated)
nest	-	present	90 cm ² /hen
litter	-	present	90 cm ² /hen
minimal size (cm ²)	-	2,000	25,000

Small furnished cages



Aviplus (Big Dutchman)
5 hens



Comfort cage (Victorsson)
8 hens

Large furnished cages

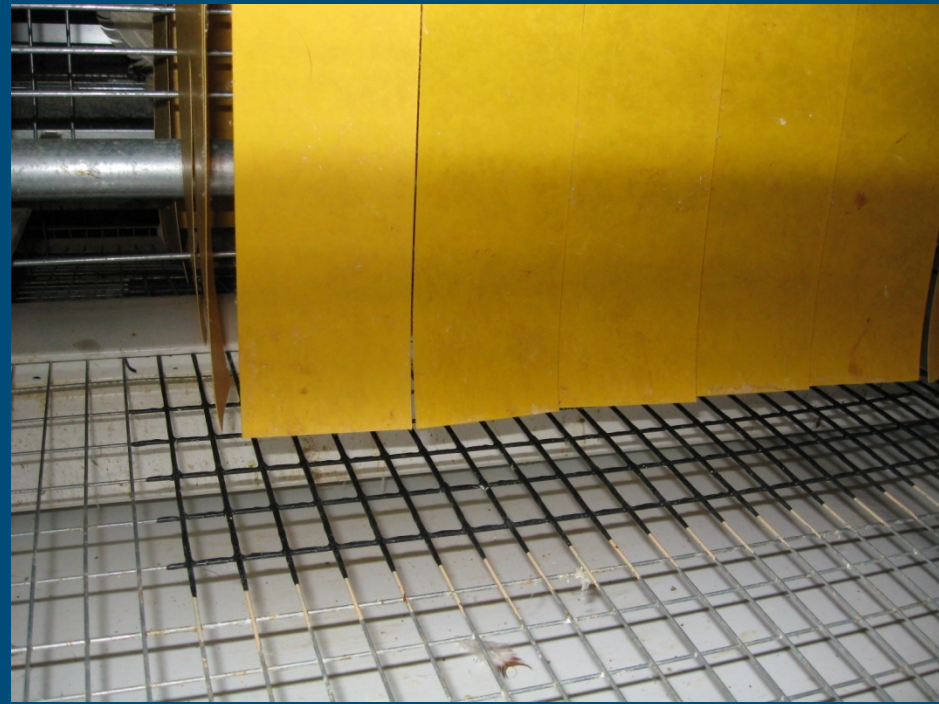


Some details furnished cages



Artificial grass mat
or
wire with
plastic coating

Nestboxes



Some details furnished cages



Litterbox

or

Litter mat

Litter provision



Some details furnished cages



Perches

Angled to feed trough
or parallel
 ± 6 cm high or 30 cm high
(elevated perch)



Behaviour in furnished cages



Do hens use the facilities?

■ Nestboxes:

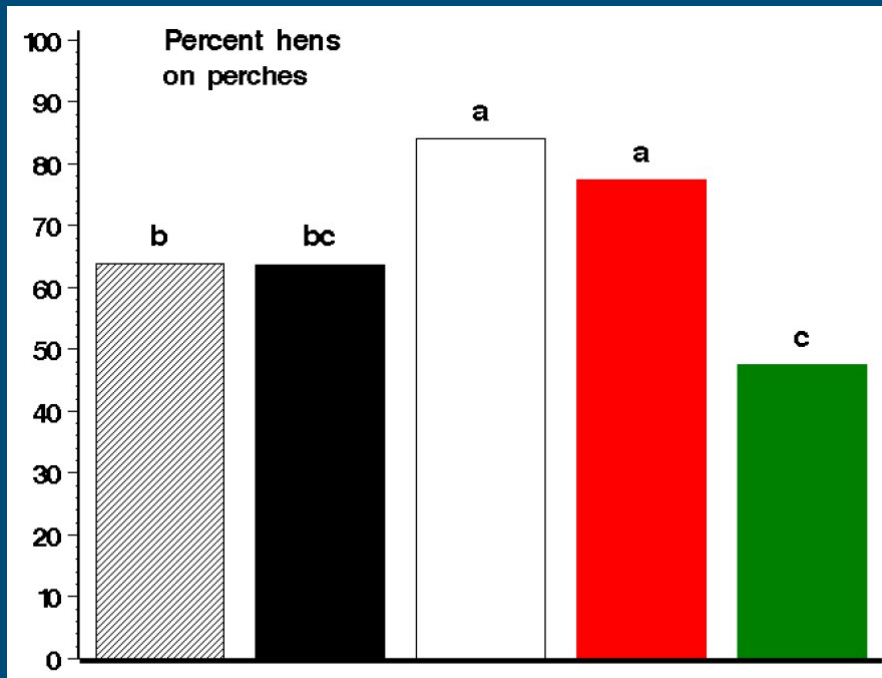
- 95-99 % eggs in nests
- high stocking density or problems with pecking:
 - more hens resting in nest
 - dirty nests
 - expell system



Do hens use the facilities?

■ Perching:

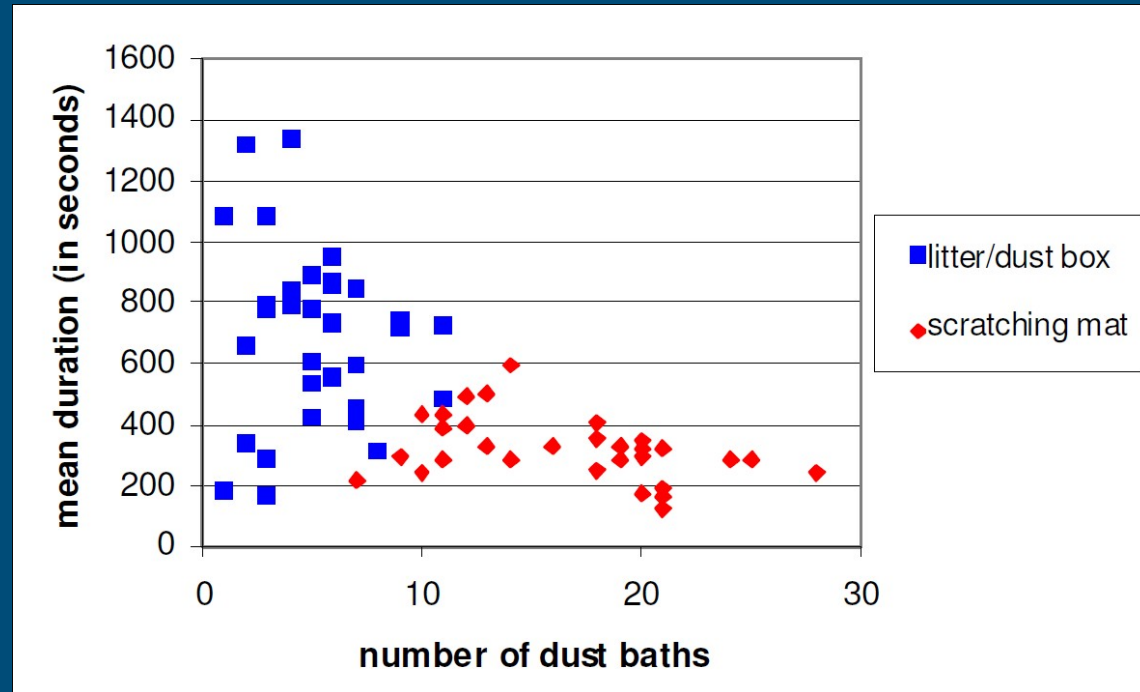
- at day time: 40 - 50% of hens
- at night time: 80 - 90% of hens



Laywel, 2006

Do hens use the facilities?

- Litterbox or litter mat:
 - behaviour mostly incomplete
 - design influences use
 - mats enable synchronisation behaviour



Applied Poultry Research,
Belgium, 2009

CONCLUSIONS

- Hens do use the facilities
- Litter provision: still some discussion on suitability



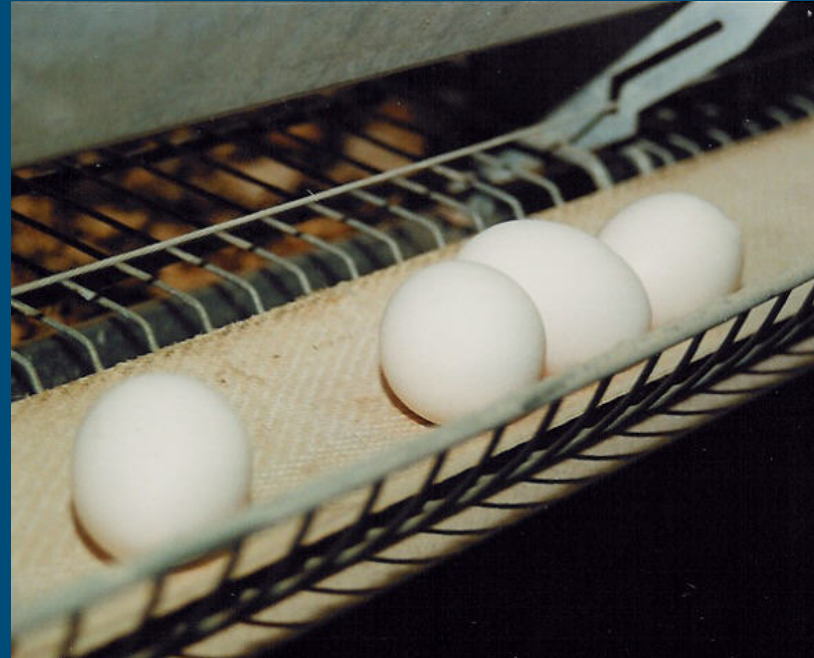
Production results



Egg saver + time clock

■ Egg saver

- **Wire lifted frequently**
 - Breaking speed of eggs
 - Egg dries before rolling onto egg belt
- **Plastic flaps**
 - Breaking speed of eggs



■ Time clock

- moves egg belt 2-3 times short distance
- prevents eggs from hitting each other



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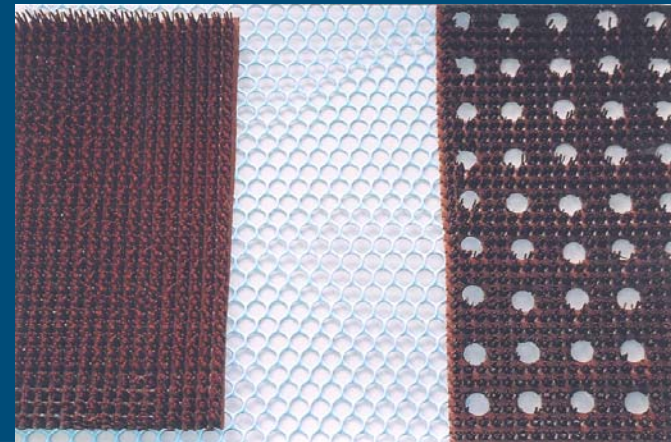
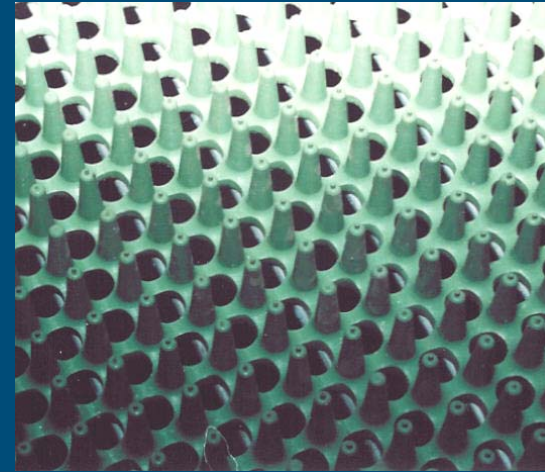
Egg quality

■ How to obtain a good egg quality?

- good nest acceptance
- moving egg belts
- clean nests + wire floors

■ Risk for egg quality:

- over 50 cm rolling distance eggs
 - egg saver necessary
- nest in back of cage
 - wire in front should be clean
- dirty nest mats
 - more open material



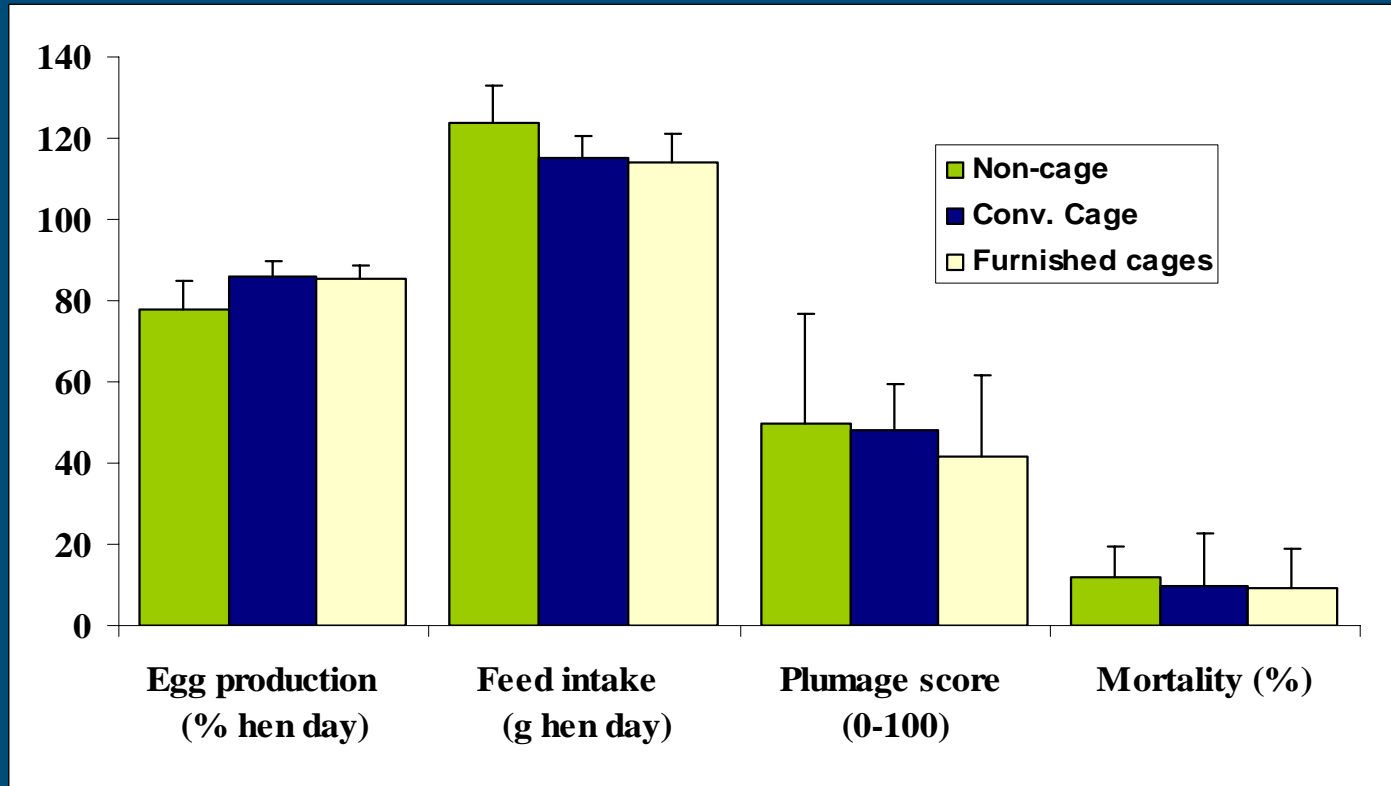
Egg quality

	1st grade eggs (%)	
	Mean	SD
Conventional cage	93.29	6.95
Furnished cage	92.27	6.67
Non-cage	91.5	7.93

(Laywel, 2006)



Egg production, feed intake, plumage score and mortality



(Laywel, 2006)

Plumage: 100=fully feathered

CONCLUSIONS

- production results similar to those in conventional cages



Health and hygiene



Health of hens in furnished cages

	Conventional cages (5 hens /cage)	Small furnished cages (\leq 15 hens /cage)	Large furnished cages ($>$ 15 hens /cage)
Parasites			
Worms	++	+	+
Red mites	0	0	0
Flies	+	+	+
Viral and bacterial infections			
Salmonella	+	0 (?)	0 (?)
IB	0	0	0
E.Coli	+	+	+
AI	+	+	+
Other			
Mortality	+	+	+
Bone strength	--	-	0
Bone fractures	-	-	-

Hygiene of eggs

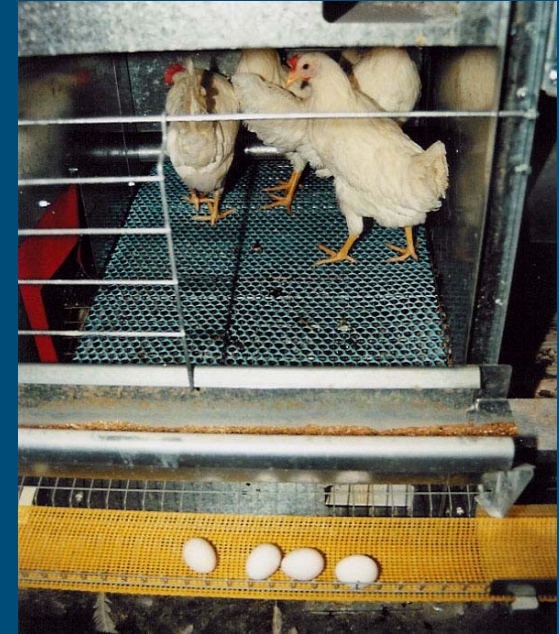
■ Theoretically:

- higher bacterial load
 - floor eggs → dirty eggs
 - nest boxes → dirty mats
- no differences in diseases between conventional cages and furnished cages → no higher risk in furnished cages

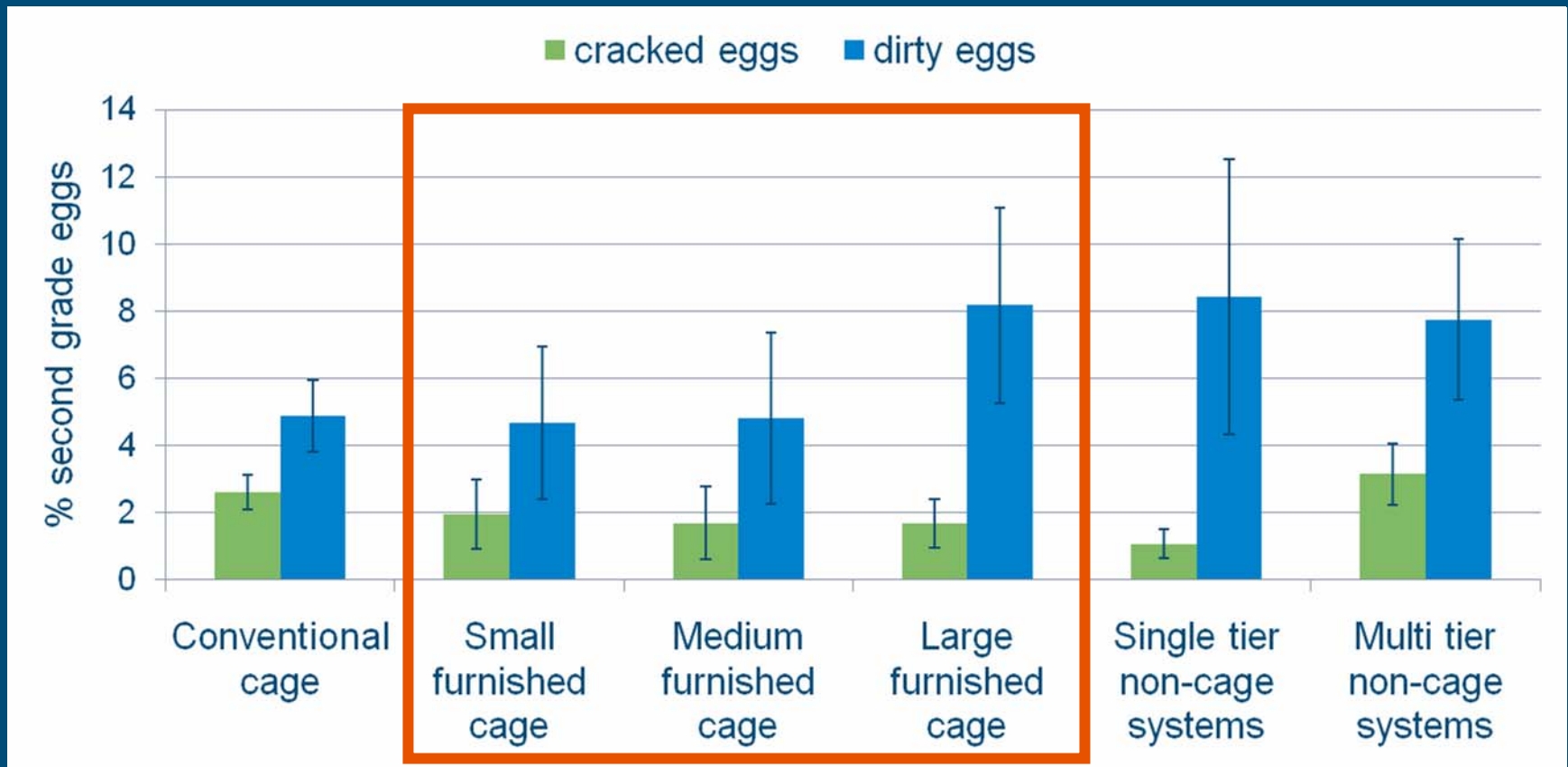


Hygiene of eggs

- Dirty eggs
- Bacterial load on eggs:
 - not much work done
 - 1 paper: 2 models furnished cages
 - more dirty eggs in furnished cages
 - higher bacterial load on eggs
 - Laywel:
 - collection of data from both experimental farms and commercial units
 - larger furnished cages more risk for dirty eggs



Hygiene of eggs



(Laywel, 2006)

Overall conclusions

■ Behaviour:

- Hens use facilities
- Litter provision: still some discussion

■ Production:

- Similar to conventional cages

■ Health:

- Similar to conventional cages

■ Hygiene eggs:

- Similar or slightly more dirty eggs

(this may improve as system is still in development)





**Thank you for
your attention**



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