



# Housing of farrowing sows in pens with opening crates - piglet losses in relation to pen dimensions



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## Introduction

- The permanent restriction of movement of sows during the entire suckling period is increasingly criticized.
- While labor productivity and avoidance of losses through crushing (overlying) by the sow have been the main focus of development of farrowing pens, efforts are being made today to reduce the sows' confinement to a tolerable minimum.
- Opening crates (OC) allow sows to move after a short period of confinement post-farrowing, preventing piglets to be crushed and overlaid.
- The OC systems available on the market differ drastically in their design features.
- Supported by the European Innovation Partnership (EIP) initiative different types of OC tested on farm.

## Material and Methods

4 variants of OC pens (all crates opened 7 days after farrowing) were tested in 11 trials in the same stable (using Topigs Norsvin genotype), with a special focus on piglet losses during the suckling period.

Two Modifications (MOD) of the OC had a **narrow pen design**:



**MOD 1:** 10 pens  
W: 2.35 m, L: 2.8 m, pen size 6.6 m<sup>2</sup>  
space allowance sow ~2.9 m<sup>2</sup>  
n= 100 sows/1397 piglets



**MOD 2:** 3 pens  
W: 2.15 m, L: 3.0 m, pen size 6.4 m<sup>2</sup>  
space allowance sow ~3.1 m<sup>2</sup>  
n= 32 sows/420 piglets

Two types of the OC had a **square base area**:



**MOD 3:** 3 pens  
W: 2.5 m, L: 2.7 m, pen size 6.7 m<sup>2</sup>  
space allowance sow ~3.0 m<sup>2</sup>  
n= 30 sows/390 piglets

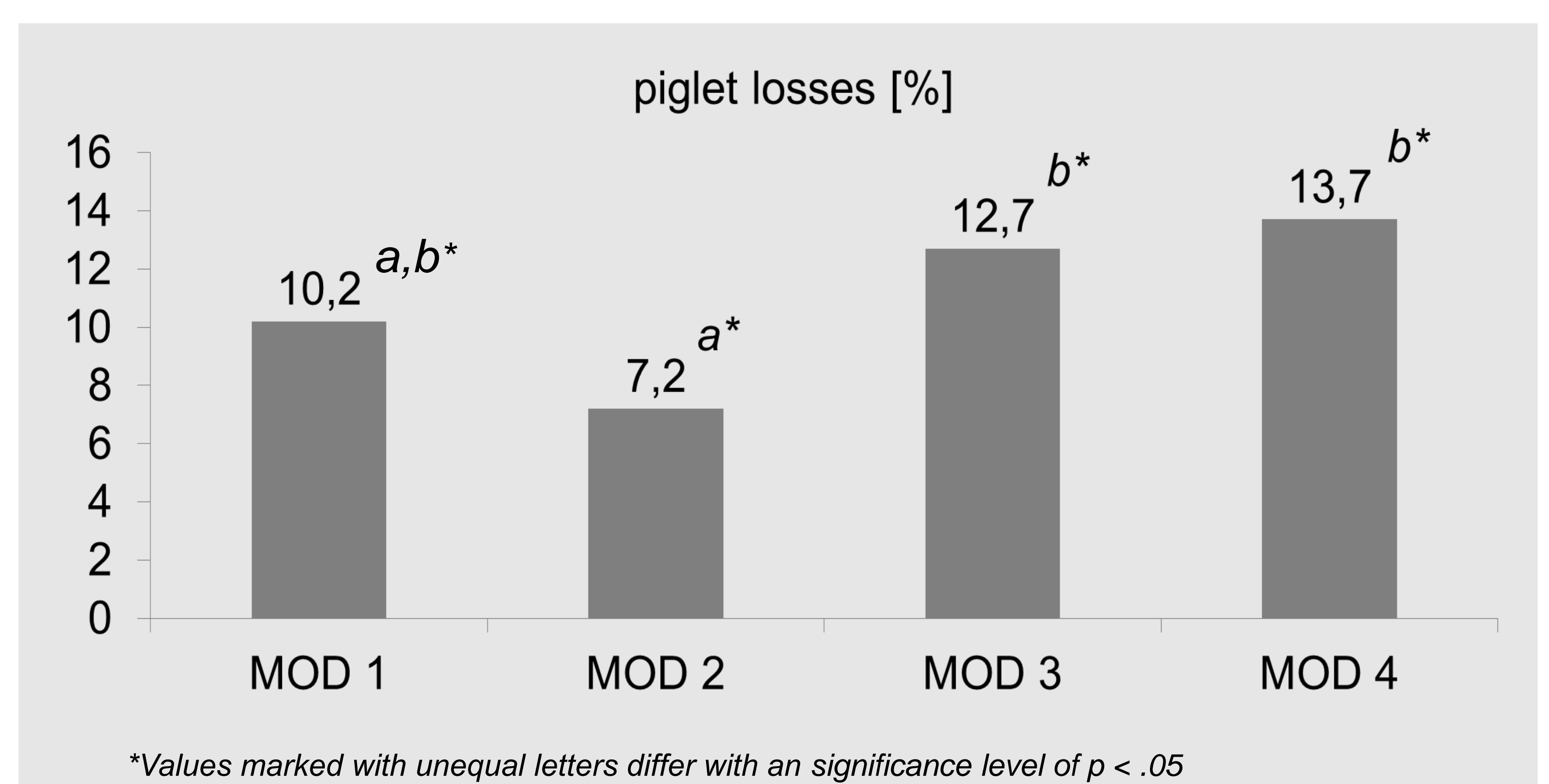


**MOD 4:** 3 pens  
W: 2.35 m, L: 2.6 m, pen size 6.1 m<sup>2</sup>  
space allowance sow ~3.7 m<sup>2</sup>  
n= 32 sows/413 piglets

The statistical analysis was carried out with the procedure GLIMMIX (SAS 9.4, 2012, SAS Institute Inc., Cary, NC). The piglet losses were modeled as binomially distributed, using a logit link function. F-test and adjusted t-test were used to analyse the fixed effects pen design/ pen modification, number of litters and litter size.

## Results

- **Less piglet losses were seen in OC pens with a narrow design (9.5% SE=0.8%)** compared to those with a square base area (13.4%, SE=1.3%, p =.003).
- **Pens with a square base and greater space allowance for sows provoke higher piglet losses**  
MOD 1: 10.2% (SE=0.92%) and MOD 2: 7.2% (SE=1.2%), MOD 3: 12.7% (SE=1.7%) and MOD 4: 13.7% (SE=1.7%).
- **Piglet losses in pens with the smallest width (MOD 2) were significantly lower** compared to the two types of pens with a square base (MOD 3, p = .026 and MOD 4, p=.007).



## Outlook

The aim of further investigations is to test whether the opening of the crates 5 days **after farrowing** causes more piglet losses and if the **duration of the fixation of the sow before farrowing** affects the height of the piglet losses.