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Effects of type of floor and feeding system during pregnancy on performance and behaviour of sows

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Context and objectives

- Context
  - New regulation on sow housing (since January 2013)
  - Different systems available for the farmers
  - Adaptation of management and practices
- Long term comparison of contrasted group housing systems for gestating sows
  - Different types of floors
  - Different arrangements of pens
  - Different feeding systems
- Evaluation
  - Production performance
  - Behavior
  - Health and welfare

Materials and methods

- **System experiment**
  - Long term evaluation of housing and feeding systems in combination with their specific practices.
- **Experimental design (2 x 2)**
  - Two types of floors
    - Fully slatted floor
    - Straw bedding

SF

SB

  - Two types of pens arrangement
    - Large groups (20) with electronic sow feeders
    - Small groups (6) with individual feeding stalls

EF

IS

=> Comparison of fours systems

Materials and methods

- **Sows**
  - Large-White x Landrace, average parity : 2,5
  - Performance from 545 litters
- **Measurements**
  - Performance
    - Sow feed intake, body weight and backfat (mating, farrowing, weaning)
    - Litter size and piglets weight (birth, weaning)
  - Sows behaviour (on 3 batches)
    - During gestation (1 hour after the morning meal, 3-6-9 weeks of gestation)
      - standing behaviour and activity
      - Investigation behaviour and stereotypies
    - Farrowing behaviour
  - Sows body lesions
    - Body lesions
    - Body cleanliness

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Results – Animal performance

	Straw		Slatted floor				
	EF	IS	EF	IS	Floor	Pen	FxP
nb cycles	89	188	88	180			
Sows weight, kg							
farrowing	230	248	234	248	-	***	t
weaning	215	225	216	230	-	***	-
Sows backfat, mm							
farrowing	15.9	15.9	16.1	15.6	-	-	-
weaning	12.8	12.8	12.8	12.8	-	-	-
Piglets							
n° total born	12.9	13.2	13.2	13.3			
n° weaned	11.2	10.9	10.5	10.8	-	-	t
weaning weight, kg	8.1	7.9	8.0	8.3	-	-	t
Weaning-oestrus, d	5.1	4.6	6.2	4.6	-	*	-

EF : Electronic feeder & large pens – IS individual stalls & small groups

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Results – Posture and activity

	Straw		Slatted floor			
	EF	IS	EF	IS	Floor	Pen
Posture (% obs)						
standing	65.3	81.3	69,2	62.6	*	t
lying	32.8	14.1	30.8	34.5	*	t
in the stall (% of lying)	-	45,3	-	75.3	***	-
in the pen (% of lying)	-	54.7	-	24.7	***	-
Activity (% obs)						
walking	8.3	7.2	7.2	8.4	-	-
investigation	29.0	39.5	39,2	17,3	-	-

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Results – Body lesions and cleanliness

	Straw		Slatted floor			
	EF	IS	EF	IS	Floor	Pen
Animals with lesions (%)						
schoulders	52.4	16.0	56.1	33.3	*	***
flank	19.0	6.7	38.6	20.8	***	*
vulva	38.1	1.7	28.1	2.0	-	***
Severity of lesions body (n/12)	2.5	1.4	2.5	1.4	t	**
Lameness	2.0	1.0	89.3	3,3	**	
Cleanliness (% sows)	100	99.1	100	98.9	-	-

EF : Electronic feeder & large pens – IS individual stalls & small groups

Results – Stereotypies

	Straw		Slatted floor			
	EF	**IS**	**EF**	**IS**	Floor	Pen
Stéreotypies (% obs)	44.4	64.7	71.9	85.4	***	***
Types (% of Stereot.)						
litter investigation	12.3	10.5	-	-	***	
straw chewing	35.7	73.7	-	-	***	*
floor licking	9.3	0.3	23.1	5.8	***	***
chewing	26.0	7.9	65.6	54.0	***	**

Discussion

- Animal performance
  - Effect of pen design and feeding system on BW of sows but not on backfat thickness
    => could be related to a higher standing activity
  - No significant effect of systems on prolificacy at birth
  - A tendency for an interaction effect on litter size and piglets weight at weaning : sows with EF perform better on straw, the opposite is found on slatted floor
    => effect of gestation housing on performance during lactation
    => effect on occurrence of nervous sows at farrowing sows and piglets crushing

=>The optimal pen design for performance might depend on the type of floor

Conclusion

- Behaviour
  - Standing posture is more frequent on straw bedding with individual feeding stalls
  - Stereotyped behaviour is more frequent with slatted floor
  - The type of stereotypies is highly affect by the type of floor

  ⇒ A clear positive effect of type of floor on sows behaviour
- Body lesions and lameness
  - Body lesion are more frequent with the electronic feeding stall, especially on the vulva with no clear effect of type of floor
    => competition for the feeder (one feeder per pen)
  - Lameness more frequent for slatted floor in association with electronic feeding stalls
    => long waiting time for feed on slatted floor

  ⇒ The system with electronic feeding stall has still to be improved, especial on slatted floor

Conclusion… a clear interaction type of floor x feeding system

	Straw bedding		Slatted Floor	
	EF	IS	EF	IS
Performance				
Behaviour				
Body lesions				
Lameness				

Thank you for your attention

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