Investigation of Jute to Stimulate Sow Nesting Behavior in Farrowing Crates

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Introduction

- **Domesticated sows are highly motivated to perform nesting behavior prior to farrowing.**
  - Although sows are hormonally driven to perform nesting behavior regardless of environment, farrowing crates hinder suitable nesting behavior due to lack of space and lack of nesting material.
- **The ability to perform nesting behavior can be an effective way to reduce sow farrowing duration.**[1]
- Due to the potential for clogging liquid manure systems, large amounts of nesting material, such as straw, are not practical to use in most production systems.
  - A novel material and way to present nesting material is needed.

Objective

- To assess an alternative nesting material provided prior to farrowing on sow welfare and reproductive outcomes.

Hypothesis & Predictions

- We hypothesized that the provision of jute nesting material would affect sow stress and reproductive outcomes.
- We predicted that sows would have decreased stress, measured by salivary immunoglobulin A (IgA) and salivary cortisol, have a shorter farrowing duration, have less stillbirths, and crush less piglets prior to weaning.

Materials and Methods

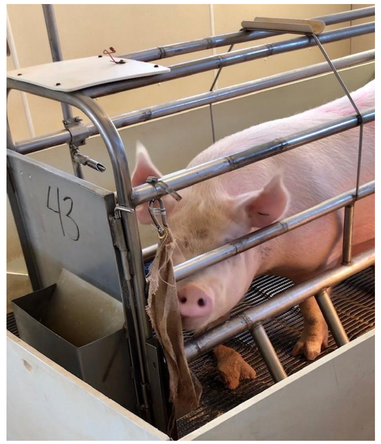

Figure 1. The jute nesting material was attached to the front of the crate to prevent substrate from falling through the slatted floors and disrupting the liquid manure system.

- Twenty-one sows, parity 2 through 8, were randomly assigned to 1 of 2 treatments: farrowing crate with jute nesting material (**NEST**, n=11, Fig. 1) or farrowing crate without nesting material (**CONTROL**, n=10).
- Sows had access to the jute from the time they were moved into the crates (112.4 ± 0.5 d of gestation) until the end of farrowing.
- Video was continuously recorded to determine farrowing duration and nesting behavior.
- Saliva samples were collected, as a non-invasive way to measure stress, from sows on d -1, 0, 1, and 2 relative to farrowing, and a final sample was collected at weaning (d 18).
- Data were analyzed using a general linear mixed model in JMP with $P < 0.05$ denoting significance.
- Data are presented as LS Means ± SE.

Results

- In the 12 h prior to farrowing, sows spent an average of 30.02 ± 33.12 min interacting with the jute nesting material.

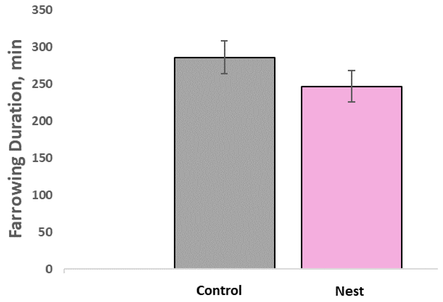

Figure 2. Effect of jute treatment on farrowing duration ($P > 0.05$).

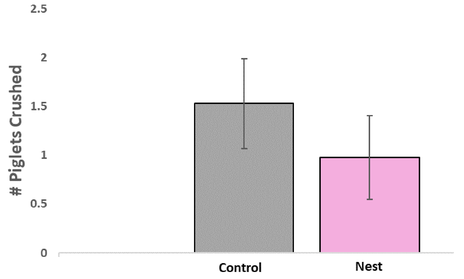

Figure 3. Effect of jute treatment on the number of piglets crushed prior to weaning ($P > 0.05$).

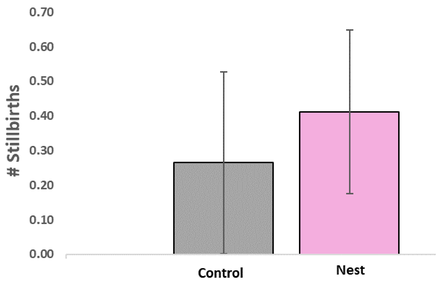

Figure 4. Effect of jute treatment on the number of stillbirths ($P > 0.05$).

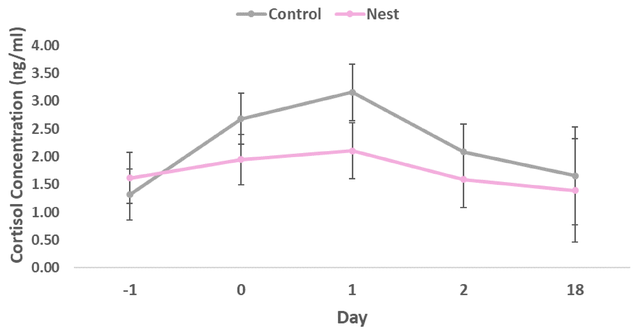

Figure 5. Effect of jute treatment on sow cortisol ($P > 0.05$).

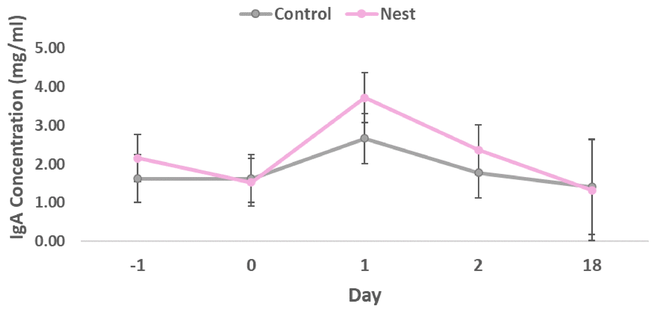

Figure 6. Effect of jute treatment sow IgA ($P > 0.05$).

Conclusions

- Although number of stillbirths were unaffected by treatment, farrowing duration had a significant effect on number of stillbirths, with longer farrowing duration causing increased stillbirths.
- Provision of nesting material is an important factor in improving sow welfare.
- Although nesting material was provided to the sows, the amount and presentation of the material was likely not robust enough to satiate the sows' nest-building needs and cause significant effects.
- In a natural environment, sows typically spend at least 3.5 h on nest-building activity[2]. Since the sows in this experiment spent drastically less time, it's possible there was not enough material provided for the sows to able to spend that amount of time on nesting behavior.
- Alternative nesting materials that provide a better outlet for sow nest-building behavior, while avoiding negative effects on the liquid manure system, or ways to present that material should be evaluated to improve sow welfare and piglet survival.

References

[1]Cronin, G.M., Schirmer, B.N., McCallum, T.H., Smith, J.A., Butler, K.L., 1993. The effects of providing sawdust to pre-parturient sows in farrowing crates on sow behaviour, the duration of parturition and the occurrence of intra-partum stillborn piglets. Appl. Anim. Behav. Sci. 36, 301–315.

[2] Dr. A. Stolba, Dr. D.G.M. Wood-Gush. THE IDENTIFICATION OF BEHAVIOURAL KEY FEATURES AND THEIR INCORPORATION INTO A HOUSING DESIGN FOR PIGS. Annales de Recherches Vétérinaires, INRA Editions, 1984, 15 (2), pp.287-302. ffhal-00901508f