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Dirt Score in Large White Yorkshire Piglets during the Postweaning Period Reared on Different Floor Types

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ABSTRACT: An experiment was carried out on 24 Large White Yorkshire piglets of either sex at the pig unit of LFC of C.V.Sc., Rajendranagar, Hyderabad from weaning (56days) to 126 days. Piglets were reared on four types of flooring systems i.e., T1 (control group) reared on the concrete floor, T2 rubber mat, T3 elevated slatted floor, and T4 reared on soil floor. The floor space provided was 1.5 m^2 per piglet during the post-weaning period. Pig cleanliness was assessed using a five-point scale on 4 anatomical areas: rear, back, and both flanks, and each area was given a score from 0 to 4. The cleanliness score was increased as the age advanced from first to ninth fortnight in all floor types. The overall mean cleanliness scores of LWY piglets maintained on four different floors was 2.21 ± 0.06, 2.57 ± 0.04, 0.63 ± 0.02, and 2.44 ± 0.03 in concrete, rubber mat, elevated slatted, and soil floor respectively. The overall mean dirt score of piglets reared on rubber mat floor was significantly (P<.0.01) higher than the piglets on the elevated slatted floor, but it was comparable with concrete and soil floor. The higher cleanliness score of the piglets reared on rubber mat floor were dirtier than piglets on concrete and soil floor whereas, the piglets reared on elevated slatted (low score) were cleaner than rubber mat, soil, and concrete floors.

KEYWORDS: Large White Yorkshire piglets, dirt score, elevated slatted floor, rubber mat floor, cement concrete floor, soil floor

1. INTRODUCTION

Large White Yorkshire is a large sized and most extensively used exotic pig breed in India. In recent years there has been a growing concern about animal welfare due to the undesirable consequences on general productivity performance (Miro *et al*., 2016). Animal welfare, among other things, depends on the type of floor in their housing (Mills *et al*., 2010). A dirt score is a good general indicator of hygiene status. Dry feet have greater integrity than wet and the hoof horn and the barrier of the skin between and above the claws in dry feet are intact reducing the chances of bacteria invading the tissue. In wet conditions, slurry and water soften the horn and weaken or even disrupt the skin barrier; slurry may also corrode the horn. Lesions associated with exposure to slurry are digital dermatitis and heel erosion (Rantzer and Svendsen, 2001). Proper flooring management and design are critical for better health care, longevity, comfort, and increased productivity. A balance must exist between animal comfort and well-being, cleanliness, and feed digestibility and efficiency.

2. MATERIAL AND METHODS

The present study was undertaken at the Livestock Farm Complex pig unit, College of Veterinary Science, Rajendranagar, Hyderabad. During the experiment weaned 24 piglets were reared on four types of flooring systems each consisting of 6 piglets i.e., T1 (control group) reared on the concrete floor, T2 rubber mat, T3 elevated slatted floor, and T4 reared on soil floor. The floor space provided was 1.5 m^2 per piglet. All the piglets were dewormed at the start of experiment. All the experimental piglets were kept under hygienic conditions throughout the experimental period. Healthy surroundings and proper cleanliness were maintained in the experimental sheds. Proper feeding and watering arrangements were made hygienically. An evaluation of cleanliness (dirt

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scoring) was performed fortnightly during the experimental period. Pig cleanliness was assessed using a five-point scale on 4 anatomical areas: rear, back, and both flanks, and each area was given a score from 0 to 4, according to the following criteria suggested by (Minvielle and Le Roux, 2009). The evaluation of cleanliness was performed by the same person to avoid individually subjective differences.

Table 1. Evaluation of dirtiness (cleanliness) score

Score	Visual scoring of cleanliness
0	No visual contamination
1	< 25% of the surface considered dirty
2	25 to 50% of the surface considered dirty
3	50 to 75% of the surface considered dirty
4	> 75% of the surface considered dirty

3. RESULT AND DISCUSSION

The dirt score of LWY piglets reared on four different floor types is presented in Table 2. The dirt score of LWY piglets was statistically significant ($P<0.05$) during all the fortnights among the four-floor types. Significantly ($P<0.05$) lowest cleanliness score was recorded in LWY piglets reared on elevated slatted (T3) than in concrete (T1), rubber mat (T2), and soil floor (T4) during all fortnights. The highest cleanliness score was observed in piglets maintained on the rubber mat floor from the first to fifth fortnight whereas, from the sixth to ninth fortnight, the highest cleanliness score was observed in piglets reared on the soil floor. The cleanliness score was increased as the age advanced from the first to the ninth fortnight in all floor types. The overall mean cleanliness scores of LWY piglets maintained on four different floors were 2.21 ± 0.06, 2.57 ± 0.04, 0.63 ± 0.02, and 2.44 ± 0.03 in concrete, rubber mat, elevated slatted, and soil floor respectively. The overall mean dirt score of piglets reared on the rubber mat floor was significantly ($P<.0.01$) higher than the piglets on the elevated slatted floor, but it was comparable with concrete and soil floor. The higher cleanliness score of the piglets reared on rubber mat floor were dirtier than piglets on concrete and soil floor whereas, the piglets reared on elevated slatted (low score) were cleaner than rubber mat, soil, and concrete floors. It might be due to the fact that soil floor could not be kept clean as the rooting behavior by the piglets leads to creation of potholes holding more dirt whereas the rubber mat and concrete floor holds moisture for longer time compared to elevated slatted floor.
Present findings are in agreement with the findings of Courboulay *et al.* (2003), Scott *et al.* (2006) and Minvielle and Roux (2009) who have reported cleaner pigs reared on slatted floor. Graunke *et al.* (2011), Earley *et al.* (2015), Keane *et al.* (2017) Murphy *et al.* (2018), and Magrin *et al.* (2019) have reported similar results in cattle. Hansen *et al.* (2012) reported cleaner sheep reared on straw bedding. Lowe *et al.* (2019) reported no effect of different types of floors on cleanliness of bulls.

Table 2 Mean ± SE value of dirt score of LWY piglets during the postweaning period

Floor type	Dirt score									Overall dirt score
	F1	F2	F3	F4	F5	F6	F7	F8	F9	
T1	0.70 ± 0.04^{a}	1.00 ± 0.07^{a}	1.47 ± 0.10^{b}	2.40 ± 0.15^{ab}	2.45 ± 0.10^{b}	2.63 ± 0.10^{b}	2.90 ± 0.09^{b}	3.17 ± 0.12^{a}	3.21 ± 0.11^{a}	2.21 ± 0.06^{a}
T2	0.77 ± 0.06^{a}	1.30 ± 0.13^{a}	2.13 ± 0.07^{a}	2.78 ± 0.09^{a}	3.00 ± 0.05^{a}	3.13 ± 0.07^{a}	3.13 ± 0.07^{ab}	3.40 ± 0.10^{a}	3.50 ± 0.08^{a}	2.57 ± 0.04^{a}

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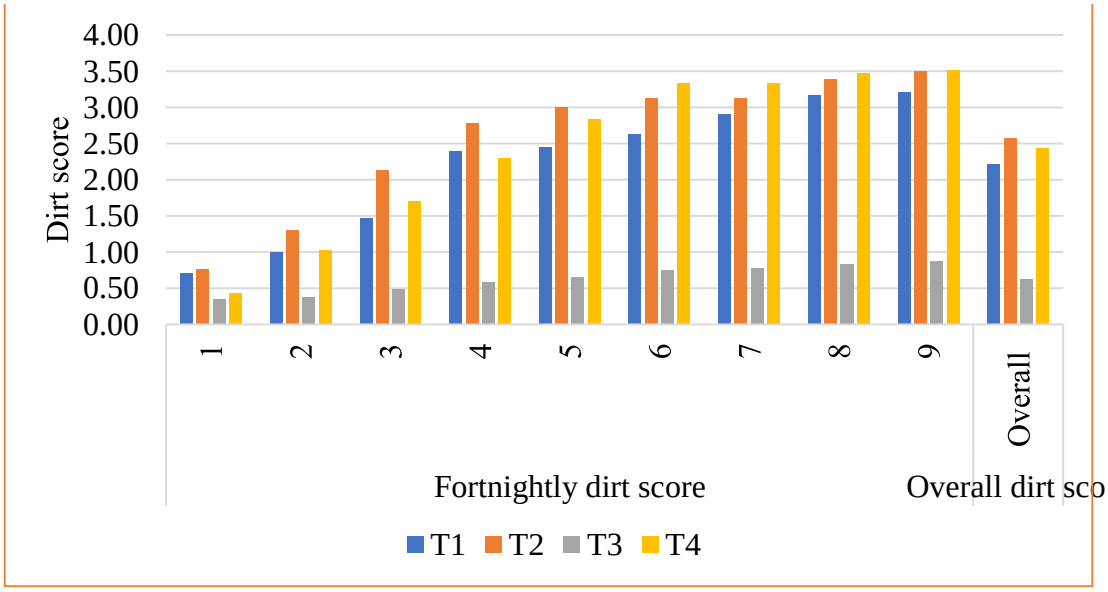
T3	0.35 ± 0.04^{b}	0.37 ± 0.04^{b}	0.48 ± 0.03^{c}	0.58 ± 0.05^{c}	0.65 ± 0.04^{c}	0.75 ± 0.06^{c}	0.78 ± 0.07^{c}	0.83 ± 0.06^{b}	0.87 ± 0.05^{b}	0.63 ± 0.02^{b}
T4	0.43 ± 0.04^{b}	1.03 ± 0.10^{a}	1.70 ± 0.12^{b}	2.30 ± 0.11^{b}	2.83 ± 0.10^{a}	3.33 ± 0.10^{a}	3.33 ± 0.07^{a}	3.47 ± 0.10^{a}	3.52 ± 0.09^{a}	2.44 ± 0.03^{a}
N	6	6	6	6	6	6	6	6	6	6
SEM	0.042	0.083	0.133	0.183	0.198	0.216	0.216	0.232	0.234	0.164
P Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Means with different superscripts column wise differ significantly: P<0.05; P<0.01

T1: Concrete Floor **T2**: Rubber Mat Floor **T3**: Elevated Slatted Floor **T4**: Soil floor

N: No. of animals in each treatment **SEM**: Standard Error Mean **P Value**: Probability Value



Graph 1 Dirt Score of LWY piglets during the postweaning period fortnightly

Concrete floor (T1)

Rubber mat floor (T2)

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Elevated slatted floor (T3)

Soil floor (T4)

Dirt score of piglets in different floor types during postweaning period

4. CONCLUSION

There was a continuous increase in dirt score as the age advanced on all floor types. The piglets reared on rubber mat floor were dirtiest and the piglets reared on elevated slatted floor were cleanest compared to other floors.

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