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Short Communication

Comparison of Floor Microbial Load in Different Systems of Floorings in Weaner Pig Sheds

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ABSTRACT

The livestock are housed on concrete floor, which imparts various ill effects on the welfare of animals housed. Pigs on concrete have greater odds of developing or exacerbating existing foot erosion and favour bacterial growth. An attempt has been made to evaluate and compare the floor microbial load between concrete floor and polyurethane slatted floor in weaner pen. The floor microbial load was determined by dilution method. The result indicated that the microbial load was lower ($P<0.01$) polyurethane slatted floor when compared to concrete floor.

Key Words: Concrete floor, Polyurethane slatted floor, weaners

INTRODUCTION

Intensification of animal housing in India is gaining popularity in order to mechanize the livestock production activities. Consequently, the livestock are housed on concrete floor, which imparts various ill effects on the welfare of animals housed. Pigs on concrete have greater odds of developing or exacerbating existing foot erosion and favour bacterial growth. Although concrete has distinct advantages as a building material, it can be harsh and abrasive to the cow's hooves. Likewise in the case of pigs, the concrete flooring has major impact on the foot impairing their weight gain (Heyde and Hendricks, 1984). In the present study, an attempt has been made to evaluate and compare the floor microbial load between concrete floor and polyurethane slatted floor in weaner pen.

MATERIALS AND METHODS

The experiment was conducted in Instructional Livestock Farm Complex, Madhavaram, Chennai-51. A conventional concrete floored weaner pen which housed 12 piglets with a floor space of 0.9 m ^{2}/ piglet and a polyurethane slatted weaner pen which housed the same number of animals were selected has the experimental site. Floor swabs were taken in three different places (feeding area, standing area and defecating area) before and after water wash during the morning hours, inside the shed with individual sterile cotton tipped swabs by swabbing within 10 cm^2 area as per Gibson *et al* (1999). The sample was transported aseptically from sampling site to the laboratory within one hour and the test was carried on. The samples were collected twice in a week and the procedure was continued for a period of one month. The floor microbial load was determined by dilution method where serial dilutions were done with sterile normal saline. An aliquot of 1 ml was taken from dilution and poured in sterile petri plates in triplicate and mixed with 20 ml of liquefied sterilized plate count agar. After solidification of agar, the plates were incubated in inverted position at 37^{o}C for 24 hours. After incubation, bacterial cells grow into distinct colonies, which were counted with colony counter. The data collected were subjected to statistical analysis as per the method of Snedecor and Cochran (1994).

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Table2. Mean ± S.E. of floor microbial load in concrete and polyurethane slatted floor in weaner pen

Treatment	Concrete Floor		Polyurethane Slatted Floor	
	Before wash	After wash	Before wash	After wash
Feeding area	$1.52x10^{11b}$±0.30	$2.34x10^{10ba}$±0.81	$7.49x10^{10b}$±0.40	$4.26x10^{8c}$±0.35
Standing area	$2.09x10^{11b}$±0.30	$1.36x10^{10b}$±0.30	$3.17x10^{10b}$±0.46	$3.63x10^{9b}$±0.47
Dunging area	$3.12x10^{12a}$±0.33	$1.27x10^{11a}$±0.28	$7.12x10^{11a}$±0.26	$1.94x10^{10a}$±0.29

Means bearing different superscript in the same row and column differ significantly

RESULTS AND DISCUSSION

The mean ± S.E of the microbial load of concrete floor vs. polyurethane slatted floor is presented in Table 1. By statistical analysis it was found that there was highly significant difference ($P<0.01$) in microbial load between before and after water wash of the floors in concrete and slatted floors. There was highly significant difference ($P<0.01$) between the sampling areas within a floor type. This indicated that the microbial load was lower in polyurethane slatted floor when compared to concrete floor. This concurs with the findings of Blessey (2014) who compared the microbial load between concrete and slatted floors in goat pen. It was evident that the microbial load in conventional pen with concrete floor was higher than polyurethane slatted floors. The reason may be due to presence of feed left overs and direct contact of floor with faeces and urine. Similarly higher microbial load was observed in conventional floor in poultry house by Madelin and Wathes (1989) and in sheep pen by Yasotha (2000). The higher microbial count in dunging area may be due to the accumulation of faecal matter and the presence of moisture which favours the multiplication of bacteria at a faster growth. This was in agreement with the findings of Gautam *et al* (2011) who mentioned that the slower water replacement and available standing water leads to a greater pathogen load. In polyurethane slatted floor the dung and urine gets settled at the bottom of the slat which facilities easy washing which slows down the microbial growth than concrete floor. Hence, it could be concluded that floor microbial load in polyurethane slatted floor is significantly lower when compared to conventional concrete floor. Therefore, the livestock flooring could be designed with polyurethane slatted floor instead of conventional concrete cement floors.

CONCLUSION

A study was conducted to compare the floor microbial load on polyurethane slatted floor in farrowing pen with conventional concrete floor. The microbial load was found using dilution method. It was concluded that the microbial load was much reduced in polyurethane slatted floor than the conventional concrete floor indicating their use in modern livestock houses.

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