

Performance of reproductive sows

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Analysis of factors affecting performance in a tropical humid climate

The objectives of this work were to determine and to characterize factors affecting lactating and reproductive performance of sows reared in a tropical humid climate. A particular attention was paid to parity and breed effects and their respective interaction with season in Guadeloupe.

Abstract

Tropical areas are detrimental to pig production, and so economical losses are incurred by farmers. When ambient temperature is above 22°C, lactating sows are heat stressed. As a consequence, sow voluntary food intake is reduced, with subsequent negative consequences on performance during lactation, and on post-weaning reproductive performance. However, most available studies were performed in temperate countries with conditions difficult to transpose to those encountered in tropical humid climates. The objectives of this work were to determine and to characterize factors affecting lactating and reproductive performance of sows reared in a tropical humid climate. We particularly paid attention to parity and breed effects and their respective interaction with season. Two seasons were determined a posteriori from climatic measurements recorded from a meteorological station within 50 m of the experimental unit: a warm season and a hot season. Relative humidity was comparable for both seasons (83%), so that seasonal difference was more attributable to difference in ambient temperature (23.7°C for the warm season and 26.0°C for the hot season). Sow performance were measured during 5 years on two 'extreme' breeds, Large White 'conventional' breed (LW) and Creole local breed (CR). First, we studied the effect of season and parity on the performance of 106 lactating LW sows (301 lactations). Experiment 2 was conducted to take into account the effect of breed on performance and feeding behaviour of lactating sows (a total of 179 lactations obtained on 30 CR and 41 LW). The effects of season on reproductive performance were studied in experiment 3 (a total of 1,181 mating on 255 LW sows). Finally, factors affecting rectal temperature (RT) of lactating sows were investigated in experiment 4 (a total of 222 lactations obtained on 43 CR and 42 LW).

The performance of lactating sows were lower during the hot season than during the warm season: sow food intake, litter growth rate were markedly reduced and the mobilisation of body reserves was higher during the hot season. RT of lactating sows was higher during the hot season than during the warm season (38.9 vs. 38.6°C) and it was lower in multiparous than in primiparous sows (38.7 vs 38.9°C). CR sow is characterized by a lower body weight and a greater adiposity (-70 kg and + 20 mm of backfat thickness at farrowing) than LW sow. CR sows had a lower food intake than LW sows (3.4 vs. 4.8 kg/d), which is related to a lower rate of food intake (80 vs. 150 g/min). Consequently, CR meal size was reduced (390 vs. 550 g/meal) and was not compensated by an increase in the number of meals (9.0 meals on average in both breeds). During the hot season, the reduction of sow food intake was more pronounced in LW multiparous than in primiparous sows (-1.0 vs. -0.4 kg/d) and in LW than in CR sows (-1.0 vs. -0.5 kg/d). The post-weaning reproductive performance of sows were lower during the hot season than during the warm season, and particularly in primiparous sows. Weaning to oestrus interval and weaning to conception interval increased, and farrowing rate decreased during the hot season. Season had a lower effect on CR reproductive performance. The lower effect of season on CR performance during lactation suggests a superior thermoregulatory ability of CR as compared with LW sows. This result was confirmed by the fact that during the hot season, the increase of RT was lower in CR than in LW sows (+0.2 vs. 0.4°C).

In conclusion, our results contributed significantly to characterise the performance of reproductive sows reared in a tropical humid climate. In our experimental conditions, we found a large

between individual variability for sow's response to heat stress, with a significant genetic part (preliminary results). It may be of interest to establish selection programs integrating adaptive traits to heat tolerance to improve the efficiency of pig production in tropical humid areas.

Keywords :

tropical humid climate; sow; reproduction; lactation; food intake; feeding behaviour; rectal temperature; heat tolerance; genetic parameters; parity; breed; Creole; Large White.



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Yes