

Effects of dietary protein level and amino acid supplementation on performance of mixed-parity lactating sows in a tropical humid climate

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Abstract :

Eighty-six mixed-parity Large White sows were used to determine the effect of diets with reduced CP content or supplemented with essential AA on 28-d lactation performance under humid tropical climatic conditions. This experiment was conducted in Guadeloupe (West French Indies, latitude 16°N, longitude 61°W) between February 2007 and January 2008. Two seasons were distinguished a posteriori from climatic measurement variables continuously recorded in the farrowing room. The average minimum and maximum ambient temperatures and average daily relative humidity for the warm season were 20.5 and 28.2°C, and 93.8%, respectively. The corresponding values for the hot season were 22.7 and 29.4°C, and 93.7%, respectively. The dietary experimental treatments were a normal protein diet (NP), a low protein diet (LP), and a NP diet (NP+) supplemented with essential AA. The NP and LP diets supplied the same levels of standardized digestible Lys (i.e., 0.80 g/MJ of NE), and the NP+ diet supplied 0.95 g/MJ of NE. No interaction between season and diet composition was noted on any response variable evaluated. The ADFI was decreased ($P < 0.05$) in the hot season (i.e., 3.69 vs. 4.72 kg) and therefore decreased by 500 g per °C increase of ambient temperature under high relative humidity conditions. The ADFI tended to be greater with the LP and NP+ diets when compared with the NP treatment (i.e., +10%, $P = 0.08$). Litter BW gain and mean BW of piglets at weaning were greater ($P < 0.05$) during the warm season than during the hot season (2.3 vs. 1.8 kg/d and 7.5 vs. 7.1 kg, respectively). Milk production and composition were not affected by dietary treatments but were affected by season (8.1 vs. 6.8 kg/d, for warm and hot seasons, respectively; $P < 0.01$). The sows fed LP and NP+ diets tended to have decreased backfat thickness losses (3.3 and 3.8 mm, respectively; $P > 0.08$). In conclusion, the hot season in humid tropical climates, which combines high levels of temperature and humidity, has a pronounced negative impact on performance of lactating sows. Diets with low CP content or supplemented with essential AA can attenuate the effects of hot and humid season by increasing ADFI in lactating sows.

Key Word :

feed intake, lactation, lysine, protein, sow, tropical climate