

I. - HOUSING AND ENVIRONMENT

Colostrum consumption, thermoregulation and heat production in newborn piglets in relation with the climatic environment

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Colostrum consumption, rectal temperature, heat production and respiratory quotient were measured in piglets kept either at 18-20 °C (cold) or at 30-32 °C (warm) during the first 24 hours of life.

At 30-32 °C piglets consumed 36.8 p. 100 more colostrum than at 18-20 °C (290 and 212 g/day, respectively). Similarly, rectal temperature was significantly higher at 30-32 °C (39.3 vs 38.5).

A 58 p. 100 increase in heat production (209 vs 132 Kcal/kg body-weight/day) was observed when the ambient temperature decreased from 30-32 °C to 18-20 °C. Moreover, the fact that the respiratory quotient was higher in piglets kept at 18-20 °C (0.87 vs 0.83) suggests that the newborn pig kept in cold conditions enhances its utilization of carbohydrates (glycogen) in order to increase its heat production.

Our results emphasize the nutritional importance of colostrum for piglets during the first day of life, especially when they are kept in adverse climatic conditions. The negative effects of cold are more marked in piglets with a low birthweight.

Comparison of four air conditioning systems in fattening pig-houses

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Between August 1978 and October 1980, five trials were made at the « Station Expérimentale de l'Institut Technique du Porc » to compare in summer (3 trials) and in winter (2 trials) the four following air conditioning systems : statical system by ventilating shaft, overpressure by ventilating shaft and dynamic removal by ascending or descending flow.

During each trial 40 castrated male pigs and 40 females were tested with each air conditioning system.

The animals were housed by groups of ten on a surface of 0.8 m² each and a useful volume of 3.2 m³.

The ventilation rates ranged between 18 and 75 m³/h/pig of 25 to 100 kg live weight.

The extreme daily temperatures observed between the treatments were not different (between 17° and 28° in summer and between 12° and 19° in winter), neither the growth rates of the fattening pigs (600 g/d before 60 kg and 650 g/d after). During early fattening (the first eight weeks) the static system seems to be better, while air conditioning by overpressure is not recommended in winter without supplementary heating. On the other hand, beyond 60 kg live weight the overpressure system gives better results especially in warm periods.

Because of the flow rates of the fans used in dynamic air conditioning, it is more advisable to recycle part of indoor air in order to reduce the fresh air flow especially in winter when the building is not heated.

Air conditioning in fattening pig houses : effects of air flow and air velocity

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Over a period of two years, we measured the performance of growing finishing pigs subjected to various combinations of four distinct ventilation parameters : flow rate, air velocity, volume per animal and indoor air temperature. The experiments took place in the winter and the summer. They allowed to draw the following conclusions :

A too high summer flow rate, a low volume per animal, an over-ventilation in the winter without heating, a low volume per animal corrected by a high air flow rate led to lower pig performance. A high volume per animal in connection with a low summer air-flow rate, high air velocities correctly associated with indoor air temperature whatever the flow rate improved the performance. Winter heating did not satisfactorily improve the pig fattening performance which was however maintained by a correct minimum flow rate (removal of latent heat) without any heating. Under ventilation during the winter to preserve the heat emitted by the animals did not bring any advantage and was harmful to the longevity of the building.

Influence of whey consumption on the polluttional load of pig manure

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Whey is often used in bacon pig feeding for economic reasons. However, this leads to a manure very different from that of an animal fed a diet based on cereals.

Intake of a large volume of liquid by the animal results in a dilution of the manure. About 70 p. 100 of the volume of liquid (water or whey) ingested are eliminated in the form of urine.