

— The digestive disorders (diarrhoea) following weaning can be largely limited through the control of the climatic conditions, the utilization of slatted floor and especially a discontinuous batch management allowing the cleaning, disinfection and non-utilization of the rooms between each passage of animals.

Influence of the variations in the main micro-climatic factors of the fattening pig house

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The experimental building used was a fattening pig house of the Danish type divided into 4 identical rooms with a capacity of 32-40 pigs each. Every room was fitted with a dynamic ventilation system (pressure above atmospheric) with rates ranging between 50 and 740 m³/h/pig and a heating system by radiation whose capacity ranged from 100 to 260 millitherms/hour/pig.

By means of an automatic regulator (I.T.P. (*) patent) it was possible at any moment to obtain different ambient conditions from one room to another.

The climatic data were recorded continuously until the slaughtering of the first group of animals.

Six trials were made from 1976 to 1978 from which the following conclusions can be drawn:

— optimum ambient conditions are obtained at high temperatures (at least 20 p. 100 at the resultant dry temperature),

— association of a low ventilation rate (30 m³/hour/pig) and a high air velocity (2.5 m/s) leads to the best growth performance,

— the feeding level should be taken into account when choosing the ambient conditions as *ad libitum* fed pigs are less susceptible to climatic variations than restricted animals.

Deodorization of pig manure in the piggery

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The aim of this study was to test the efficiency of a treatment of manure deodorization by two air-injectors blowing directly in the dunging gutter of the piggery.

Two fattening periods were observed. In the first one the ventilation times varied from 12.5 p. 100 (5.2 kg. O₂/day) to 50 p. 100 working (20.9 kg O₂/day). In the second batch, from 50 p. 100 to 100 p. 100.

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The increase in the amount of oxygen injected per day was modulated according to the change in load of the manure to be treated directly related with the feeding level.

During the treatment, the different pollution parameters increased progressively and reached a plateau at a concentration of 30 to 35 g/l.

The dissolved oxygen concentration was always around 1 mg/l for a ventilation rate of 12.5 to 50 p. 100. During this period, no form of oxydated nitrogen could be determined.

On the contrary, during the second period the nitrite concentration increased progressively and reached 2200 g/l at the 13 th week. At the 7th week, 500 mg/l nitrate were determined, whereafter the concentration fell abruptly (for a nitrite concentration of 1200 mg/l).

The load recordings showed an epuration yield for total dry matters and T.K.N. of 40 p. 100 identical in the two treatments. On the contrary, the ammonia nitrogen decreased of 44 p. 100 during the second treatment, leading to a larger oxygenation: the lower the ventilation rate, the higher the temperature increase.

It seems that 30 kw/pig present corresponds to an optimum deodorization treatment, the apparatuses working 40-60 p. 100 of the time.

Variation in pig manure composition during storage

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A concrete silo 3.4 m high and with a diameter of 1 metre was used for a period of 3 months to study the variation in the main physicochemical parameters, the volatile fatty acid contents, the bacterial flora and the sludge load of pig manure at three sampling stages.

A sedimentation fastly occurred at the beginning of the storage. The mineral contents (determined on the dry product) tended to become uniform with time at the different stages. The ammonia nitrogen level almost did not change and was identical at the different stages. Phosphorus and calcium, mainly in the insoluble form, were concentrated at the decantation stage. Only traces of lactic acid could be found. The acetic, butyric and propionic acid levels, increasing with time, showed values of the same magnitude at the different stages.

The mesophilic aerobic total flora and the number of spores of sulfite reducing *Clostridium* decreased during the first part of the study and then returned almost to the initial level. On the contrary, the amount of faecal coliforms *Escherichia coli*, enterobacteria and streptococci decreased and disappeared after three months. As for the pollution parameters studied (D.B.O. 5 and D.C.O.), the highest values were obviously found in the decantation product which is the richest in dry matter, suspended matters and crude fibre. The liquid supernatant showed a D.C.O./D.B.O. 5 ration of 2.5. to 3 corresponding to a more easily biodegradable effluent.
