

## Influence of air temperature and velocity on performances of piglets weaned at 3 weeks

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Two experiments were carried out in order to study the influence of temperature (trial 1) and air velocity (trial 2) on the performances of piglets weaned at 22 days, on an average, and raised for 6 weeks (from 22 to 64 days of age) in a 1 tiers battery. The piglets were kept in groups of 6 on an area of 0,24 m<sup>2</sup> per animal and were fed *ad libitum*.

Trial 1 was divided into 2 parts:

- a) comparison of performances obtained at 30 and 25 °C (48 × 2 piglets);
- b) comparison of performances obtained at 20 and 25 °C (48 × 2 piglets).

The group reared at 25 °C constituted the control group for comparison of the 3 treatments. Two diets containing 4 and 9 per cent copra oil were used. Considering the overall period of measurements, the growth rate (g/d), feed intake (g/d) and feed conversion ratio decreased linearly with the temperature increase, i.e. 433, 655 and 1.51, respectively at 20 °C; 388, 579 and 1.49 at 25 °C; 374, 548 and 1.45 at 30 °C. Growth rates obtained at 20 and 30 °C were significantly different ( $P < 0.01$ ). At 30 °C, the feed conversion ratio was 25 per cent ( $P < 0.10$ ) lower than at 20 °C during the second week of the trial and 11 per cent lower during the 3rd and 4th weeks. The rise in the energy level of the diet did not significantly affect the growth performance and feed intake of the animals. Neither the air temperature nor the copra oil content of the diets had any significant effect on the apparent digestibility of the energy of the diets.

Trial 2 was made on 96 piglets distributed into 2 groups and placed in 2 compartments with similar room temperature (26 °C summer, no heating). The air velocity was constant (10 cm.s<sup>-1</sup>) in one of the compartments; in the other it was increased to 40 cm.s<sup>-1</sup> between 10.00 a.m. and 4.00 p.m.

For the whole period of measurements, a temporary increase in air velocity during the day had no marked effect either on growth rate (397 *versus* 379 g/d), feed intake (604 *versus* 591 g/d) or feed conversion ratio (1.54 *versus* 1.61).

## Composition of pig manure : Influence of the type of management

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An investigation was made to ascertain the agricultural value of whole pig manure. A proximate chemical analysis was performed to measure NTK, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O and trace elements in 26 samples.

Among the samples collected in storage pits, a high correlation was found between dry matter content and NTK and P<sub>2</sub>O<sub>5</sub> concentration.

NTK (g/l) = 0.53 (DM p. cent) + 3.16       $r = + 0.80$   
P<sub>2</sub>O<sub>5</sub> (g/l) = 0.7 (DM p. cent) + 1.25       $r = + 0.84$

The mean values obtained from samples of manure from fattening pigs were the following:  
 — % dry matter: Ca = 4,8; Mg = 1,5; Na = 1,1  
 — ppm dry matter: Zn = 1,120 — Fe = 2,620 — Cu = 838 — Mn = 576.

The results obtained in this study cannot be easily extrapolated to all types of manure. The kind of feeding greatly affects the variation in manure composition. However, for one and the same farm, the variations are small and determination of the dry matter leads to a good approximation of the fertilizing value of the manure. For establishing a general "manure plan" or for correcting errors committed in the feeding, an analysis of a sample of manure from each farm is required.

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## VII. — ECONOMICS

### **Financial requirements and economic returns in pig production under different production conditions**

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Four types of pig rearing and fattening farms of identical size and productivity are analysed. The differences pertain to investment levels, labour requirements, feed production and the existence of a traditional farm system or not. The previsional study of six years is based on analyses of economic efficiency and of investment financing. The results are given before tax deduction. Return to total capital varies from one to three and the differences of return to own capital are much more important. The financial situation is difficult for production units with purchased feed without the support of a traditional farming system. Pig production under these conditions can only survive with a high productivity. The production units having particular advantages at their disposal (existing buildings, on-farm produced cereals, even partially, a lower feed cost) are able to realize their growth stepwise by fully employing available labour at the beginning of the process in order to overcome more easily the financial difficulties of production.

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### **Financial requirements and economic returns in pig production according to productivity**

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The author compares two pig producing farms with identical investment and financing conditions but different technical productivities: on farm A, performances correspond to those of 1975, on farm B, performances correspond to those of the best farms in 1975, i.e. 30 per cent of the farms studied. A six year period is considered starting from the moment of investment. Figures are obtained through a simulation of physical flows and a financing model, the PLANFI (I.N.R.A. - Crédit Agricole).

The results clearly indicate the superiority of farm B, net average return increases from 1 to 10,4 per cent, farm income, return to labour and capital and gross margin of self-financing