

daily amounts of proteins (700 g/day), amino-acids, vitamins, minerals being equivalent. Measurements of milk production were carried out on days 1, 5, 9, 13, 17 and 21. O<sub>2</sub> consumption and CO<sub>2</sub> production were measured the other days of the lactation period. Energy, protein and fat deposition (or mobilization) in maternal tissues, energy and protein in milk and heat production of the sow were measured. Results concern the first 4 replicates.

Sows on treatment B had a higher body weight loss (22.6 vs 10.5 kg), the milk production being equivalent in the 2 groups. However, milk composition was slightly different : 18.24 and 19.14 p. 100 dry matter, 11.83 and 12.68 Cal/g. 7.12 and 7.59 p. 100 lipids for groups H and B, respectively. Heat production was higher in group H (7.8 vs 7.1 Mcal/day), but total energy retention was significantly lower for group B (2.7 vs 6.7 Mcal/day). Since energy produced in milk was equivalent for both treatments (7.2 and 6.7 Mcal/day), sows of group B mobilized higher amounts of body reserves (4.0 vs 0.6 Mcal/day). This mobilization was larger during the second part of lactation : 0.2 and 3.0, 1.6 and 4.9 Mcal/day from days 5 to 12 and 13 to 21, respectively. Protein supplies (700 g/day) met the requirements for lactation. Consequently, the mobilization of body reserves only concerned the fat reserves of the sow (60 and 440 g lipids/day for groups H and B respectively). However, this loss of lipids was lower than the body weight loss of the animals. The whole experiment (10 replicates) will provide more accurate information about the composition of the weight loss (dissection and chemical analysis of the carcass) and precise estimates of the energy requirements of the lactating sow (maintenance requirements, efficiency of food and body reserves for milk production).

### **Comparative utilization of wheat and rye by the bacon pig during the growing-finishing period**

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Two experimental diets containing either wheat or rye and soyabean meal, with the same lysine/DE balance (2.7 g per 1 000 Kcal DE) were compared in this trial. Both diets were fed restricted to *Large White* pigs between 27 and 101 kg live weight. The trial was made on 84 animals (42 per diet).

Rye was well accepted by the pigs.

The feed restriction scheme used theoretically supplied the same amounts of DE and lysine in the two diets and should lead to the same growth rate with the two cereals.

Only a slight difference was observed in favour of wheat (2 p. 100). The feed conversion ratio was 5 p. 100 higher with rye as compared to wheat. Moreover, rye led to a 0.75 point reduction in the carcass yield.

It may be concluded that rye can be used without any problem as sole cereal in fattening pig diets. A less severe feed restriction should be adopted than with wheat in order to counterbalance its lower energy concentration (about 3 650 Kcal DE/kg D.M.). This leads to the same growth rate, but the feed conversion ratio is deteriorated by about 5 p. 100.

### **Prediction of the energy value of oats from cell wall content**

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A digestibility experiment was made with 12 *Large White* castrated male pigs to estimate the feeding value of different types of oats and to define more accurately the effect of changes in their chemical composition on the energy value. The animals with a

mean live weight of 32 kg were kept in individual pens and received only cereal based diets (97 p. 100 oats). They were subjected to a 10-days faeces collection period. Three types of oats were tested : two regular oats (black and white) and one batch of naked oats containing 15.0, 11.8 and 2.9 p. 100 crude fibre respectively, on a dry matter basis.

An increase in the crude fibre content led to a highly significant linear decrease in the apparent digestibility of energy (ADE) according the following relationships :

$$\text{ADE} = 92.14 - 2.02 \text{ CF p. 100 DM} \quad (r = -0.994^{**}, \text{CV}_r = 1.7 \text{ p. 100})$$

$$\text{ADE} = 91.85 - 1.76 \text{ ADF p. 100 DM} \quad (r = -0.995^{**}, \text{CV}_r = 1.6 \text{ p. 100})$$

$$\text{ADE} = 93.88 - 0.91 \text{ NDF p. 100 DM} \quad (r = -0.990^{**}, \text{CV}_r = 2.2 \text{ p. 100})$$

The results showed that the energy value (DE) of oats was closely related to the cell wall content. The crude fibre content (Weende) seemed to be the main factor affecting the feeding value of oats for pigs, since it accounted for 99 p. 100 of the variation in DE content. It is possible to predict the digestible energy value of oats using a correction of 90 Kcal per supplementary point of crude fibre in the seed dry matter :

$$\text{DE (Kcal/kg DM)} = 4\,230 - 90 \text{ CF p. 100 DM} \\ (r = -0.995^{**}, \text{CV}_r = 1.5 \text{ p. 100})$$

### **Utilization of moist grain maize silage in the bacon pig Effect of the moisture content and of the presence of cobs**

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Four experiments were made to study the effect of the moisture content of grain at harvesting on the feeding value of maize silage containing only grain and to determine the feeding value of silage resulting from the mixture of grain with cob.

#### *Effect of the moisture content of maize at harvesting*

When grain was harvested with a moisture content of 41 or 37 p. 100 then ground and silaged it was preserved very well. Utilization of both silages led to very similar growth rates, feed efficiency and carcass performance. It was concluded that the D.M. feeding value of dry or silaged maize grain was equivalent.

When harvested with a moisture content of 24 p. 100, the maize quality decreased after opening of the silo and its feeding value was considerably reduced.

#### *Effect of the presence of 80 p. 100 of the ear cobs*

Two maize silages including cobs were studied in three trials. They contained 39 and 35 p. 100 moisture and 4.5 and 3.8 p. 100 crude fibre, respectively.

In each trial, silage of « maize + cobs » was compared to silage of grain alone with the same moisture content. Replacement of moist maize grain by « maize + cobs » was made on the basis of the same dry matter content. Accordingly, the presence of cobs reduced the energy concentration of the diet.

The lower energy intake with maize silage + cobs compared to maize alone led to a decrease in the growth rate of pigs, to a deterioration of the feed conversion ratio (by 2.4, 5.4 and 7.5 p. 100 according to the trial) and to an improvement in the carcass quality. The carcass yield was reduced by the presence of cobs in one trial out of three (by 0.8 point). According to these results, the feeding value of maize silage + cobs ranged between 90 and 97 p. 100 that of maize grain alone on a dry matter basis. This seems more favourable than the first results published in the literature.