

Feeding value of protein-rich peas for weaned piglets

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Three coordinated trials were made on the utilization of protein rich peas (variety Frimas) in weaned piglets. The incorporation levels were 0, 15, 30 and 45 p. 100 depending on the place of the experiment. The dams of the piglets came from « minimal disease » Large White herds. Piglets were weaned at 26 days, on an average, then kept in a special rearing house in flat deck pens. After an adaptation period of about twelve days, they were fed experimental diets during 4 to 5 weeks.

The results of these trials were grouped together and concerned 858 piglets with a mean live weight of 8.5 kg at the beginning of the experiment and 25 kg at the end.

The performance of piglets fed with 30 to 45 p. 100 peas were reduced as compared to the controls. The appetite of piglets was first affected, their feed intake reaching 97 and 83 p. 100, respectively of that of the controls. Thereafter, the growth rates decreased almost linearly. The feed conversion ratios varied from 105.5 to 107.7 p. 100 as compared with diets without peas. Thus, a lower intake was accompanied by a lower feed efficiency.

The performance of piglets fed with diets including 15 p. 100 peas were very close to those of the controls. The slightly increased feed intake (3 times/3) led to a slight improvement in growth and feed efficiency (2 times/3).

This incorporation level must therefore be considered as a maximum one in 2nd age feeds offered from 8/9 kg live weight.

Utilization of peas in early weaned piglet diets. Influence of the type of cereal

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Recent French studies showed that incorporation of 15 p. 100 peas combined with three cereals (barley, wheat, maize) into 2nd age diets led to favourable results between 9 and 26 kg live weight, while use of higher levels reduced the performance.

Two series of trials were made just after weaning (3 to 4 weeks of age) in piglets of 5-7 kg live weight distributed into three weight classes (heavy, mean, light) in order to study the influence of incorporating peas into diets including a single cereal:

- 20 p. 100 peas added to a diet based on maize (first topic, 4 trials, 96 piglets/trial);
- 30 p. 100 peas added to a diet based on wheat or maize (2nd topic, 3 trials, 108 or 96 piglets/trial).

The diets exhibited the same protein and energy characteristics (lysine, sulphur amino acids, digestible Energy). In both treatments, the results showed a very high repeatability.

The results of the first series of trials (384 piglets) showed that incorporation of 20 p. 100 peas into a diet based on maize:

- reduced piglet feed intake (— 9 p. 100) and growth rate (— 10 p. 100) especially during the 1st age period (3 to 6 weeks) and in heavy piglets (— 37 p. 100);
- little affected the feed conversion ratio on the whole period, but increased it considerably just after weaning (+ 32 p. 100) particularly in heavy piglets (+ 54 p. 100).

In the *second series of trials* (300 piglets) incorporation of 30 p. 100 peas into diets based on maize increased the variations observed in the first series: feed intake (— 15 p. 100), growth rate (— 20 p. 100), feed conversion ratio (+ 7 p. 100). On the other hand, incorporation of a large proportion of peas into diets based on wheat led to a slightly unfavourable effect during the first age period but the performance were the same over the whole experimental period (2p. 100 difference).

In conclusion, peas can be used in 2nd-age diets for piglets (from 6 weeks of age) at the moderate level of 15-20 p. 100 as a partial substitute for soybean meal, provided that the cereal fraction is not only composed of maize. In younger piglets, between 3 and 6 weeks, further studies are necessary to determine the maximum level of incorporation.

Energy and protein value of a lucerne protein concentrate (PX₁) — Utilization by the growing-finishing pig

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A first digestibility study was made in growing pigs by direct measurement according to the substitution method in order to assess the energy and protein value of a lucerne protein concentrate (PX₁).

The trial involved 12 Large White castrated male pigs with a live weight of 46.4 kg distributed into 3 groups of 4 pigs. The value of PX₁ was measured at two incorporation levels (10 and 20 p. 100) as compared with a diet based on wheat only. Pigs were subjected to a 10 days faeces and urine collection period.

On the basis of the results obtained we calculated a mean value for each level of incorporation of PX₁.

The digestible energy and metabolisable energy values (Kcal/Kg dry matter) were 3 863-3 703 for wheat, 3 735-3 322 for PX₁, respectively corresponding to an apparent digestibility coefficient of energy and nitrogen of 87.3 — 87.0 for wheat; 72.7 — 89.3 for PX₁, respectively.

A second study including 60 pigs distributed into 5 groups of 12 animals (6 castrated males and 6 females) per diet was between 25 and 100 kg live weight and allowed us to determine more accurately the possibilities of replacing partially or totally soybean meal by PX₁ in a diet based on wheat (group 2 to 4) or maize (group 5) as compared with a control diet: wheat — 20 p. 100 soybean meal (group 1).

In our experimental conditions, lucerne proteins (PX₁) incorporated in a proportion of 10 p. 100 (group 2) or 20 p. 100 (group 3) into a simplified diet based on wheat and replacing partially or totally soybean led to performance similar to those obtained with the control diet based on wheat and containing 20 p. 100 soybean meal.

It was even possible (group 4) from 25 to 40 kg live weight by combining wheat with only 10 p. 100 PX₁, 5 p. 100 soybean meal plus a lysine supplement and from 40 to 100 kg live weight 10 p. 100 PX₁ plus a lysine supplement to obtain the same performance than those recorded with the control diet.

The association maize — 20 p. 100 PX₁ gave excellent performances but required a supplementation of 0.03 p. 100 tryptophan.

Despite a poorer energy value, the lucerne protein concentrate (PX₁) is a source of protein equivalent to soybean meal 50 for fattening pigs.
