# THE VOLUNTARY FOOD INTAKE OF GROWING PIGS GIVEN DIETS CONTAINING A HIGH PROPORTION OF DIFFERENT RAPESEED MEALS, INCLUDING THOSE PREPARED FROM NEW VARIETIES OF RAPE

By Roland Hill and Pauline Lee
The Royal Veterinary College, Boltons Park, Potters Bar, Herts., U.K.
and by Brian Leech
Rothamstead Experimental Station, Harpenden, Herts., U.K.

The low acceptability by young animals, specially pigs, of diets containing rapeseed meal (RSM) has been mentioned over a number of years (Bowland, 1965; McDonald, 1974) but in very few studies were comparisons made among meals prepared from different types and varieties of rape. In the study reported here meal from four well defined types of rape were compared, and in each case the control diet was based on soyabean meal.

The rapeseed meal diets contained 25% of the meal and were formulated to contain the recommended nutrient allowances of the Agricultural Research Council (1967). The control, soyabean meal diet contained the same calculated levels of nutrients.

These diets were given twice daily to small groups of growing pigs. The quantity offered at each feed varied among experiments but was approximately the weight eaten by control, soyabean-fed pigs in about 30 minutes. These weights of food were close to those commonly given to bacon pigs. The weight of each diet uneaten 30 minutes after feeding was recorded and returned to the hopper: food remaining at the time of the next meal was discarded.

The diets were given one day at a time to each group of pigs, and were distributed among the groups in a manner ensuring that the mean intake of any particular diet was not biased by the diet given on the previous day.

In each of the first three experiments three diets were compared, the control diet based on Soyabean meal, S, and two based on rapeseed meals. One of these was from seed of the Canadian variety Tower, diet T, and the other from seed of B. napus varieties grown in the U.K., diet B. Mean quantities of food eaten in 30 minutes as percentages of the weights given were:

| Expt. No. | S | T | B |
|---|---|---|---|
| I | 100 | 87 | 50 |
| II | 100 | 98 | 70 |
| III | 92 | 69 | 62 |
| | 97 | 85 | 61 |

Diet T was eaten much more readily than diet B but less readily than the control diet S.

In experiments IV to VI a fourth diet was added, that containing meal from seed of the Canadian B. campestris variety Span, diet C, and the percentage intake values in 30 minutes were:

| Expt. No. | S | T | B | C |
|---|---|---|---|---|
| IV | 56 | 39 | 31 | 36 |
| V | 55 | 45 | 34 | 43 |
| VI | 85 | 84 | 61 | 75 |
| | 65 | 56 | 42 | 51 |

Diet B was again eaten least readily, and diet C was eaten almost as readily as diet T.

In two further experiments a diet containing meal from the European variety Erglu, diet E, was compared with diets S, T and B, and the percentage intakes in 30 minutes were:

| Expr. No. | S | T | B | E |
|---|---|---|---|---|
| VII | 91 | 86 | 58 | 91 |
| VIII | 95 | 93 | 51 | 98 |
| | 93 | 90 | 54 | 94 |

As in all previous experiments diet B was least readily eaten. Diet E was eaten as readily as the control diet S.

These data were analysed as a whole, using a computer programme, GLIM, devised by one of the authors (B.L.). From this analysis the average percentage food intakes in 30 minutes were approximately:

| S | T | B | C | E |
|---|---|---|---|---|
| 92 | 85 | 65 | 81 | 95 |

The 't' values for differences between diets were:

| | S | T | B | C |
|---|---|---|---|---|
| T | 2.76 | - | - | - |
| B | 7.30 | 5.00 | - | - |
| C | 3.01 | 0.88 | 2.65 | - |
| E | 0.86 | 2.18 | 4.28 | 2.44 |

It is clear from these results that a diet containing a high proportion rapeseed meal from B. napus varieties currently grown in the U.K. and other parts of Northern Europe, was much less acceptable and eaten less readily by growing pigs than a similar diet based on soyabean meal. Rapeseed meal from the new varieties was superior in this respect, and a diet based on Erglu RSM may be eaten as readily as that based on soyabean meal.

The chief known difference in chemical composition of the rapeseed meals used in this study was the quantity of oxazolidinethione formed from progoitrin on hydrolysis with thioglucosidase. The values, mg/g were:

| T | B | C | E |
|---|---|---|---|
| 1.1 | 10.1 | 2.6 | 1.2 |

Although these seem to be related approximately inversely to the readiness with which the diets were eaten, there is no direct evidence for a relation between acceptability and progoitrin or total glucosinolate content of the meal.

REFERENCES

Agricultural Research Council, 1967. Nutrient requirements of farm livestock, No. 3 Pigs, Agricultural Research Council, London.

Bowland, J.P., 1965. Canada Department Agriculture, Pub. 1257, p.69-80, Ottawa, Canada.

McDonald, B.E., 1974. Third progress report, Research on Rapeseed, Department Industry, Trade and Commerce, Ottawa, Canada, Rapeseed Association Canada, Pub. 40, p.50-52.