youngs). We studied the feeding effects on the number of young rabbits at birth and their performance at 70 days of age.

From the obtained information, we conclude that:

— doe-rabbits showed a racial heterogeneity which had an effect on production process;

— it is necessary to have a better bromatology knowledge of fibrous materials for a better use in rabbit feeding having regard to their low cost;

— Feed for rabbits with high energy levels (DE) gives better results; the 3 150 kcal digestible Energy /kg when adding fat are equivalent to 3 000 kcal metabolisable Energy /kg.

— In experimental rooms of small research units with controlled environment, we must use purebred or high level selected rabbits;

— When using fibrous materials in rabbit feeding, attention has to be paid to technological aspects, feed palatability and addition of synthesis amino-acids.

Energy and digestible protein concentration of diets Effects on growth performances of rabbits

Chantal DEHALLE

Laboratoire de Recherches sur l'Élevage du Lapin, I.N.R.A.
B.P. 12 — 31320 Castanet Tolosan (France)

Sixty 5 week-old rabbits of both sexes were offered 4 diets with a digestible energy value of 2 320 kcal /kg or 2 730 kcal /kg and 49.4 or 58.3 g digestible protein per 1 000 kcal digestible energy. At the end of the 5 week experimental period the animals were slaughtered to determine the energy and protein balances. The apparent digestibility was studied during the third experimental week. Replacement of starch by straw decreased the digestible energy content of the diets. But, protein digestibility of the different diets was not affected. When the digestible energy concentrations in the diets decreased, the animals kept their daily digestible energy intake fairly constant and maintained their growth rate. The digestible proteins /digestible energy ratio did not significantly affect either the apparent digestibility of the different nutrients, or the growth performances. The efficiency of protein deposition was higher when the digestible protein digestible energy ratio was low.

Effects of dietary metabolisable energy concentration and physical form of the diet on the performance of growing rabbits

D. H. MACHIN (1), Catherine BUTCHER (2), E. OWEN (2), M. BRYANT (2), J. E. OWEN

(1) *Tropical Products Institute, 56-62 Grays Inn Road, London WC1X 8 LU (United Kingdom).*
(2) *Reading University, Department of Agriculture and Horticulture, Earley Gate, Reading RG6 2 AT (United Kingdom).*

This study was carried out to assess the ability of rabbits to use diets of various nutrient density and form.

In this study, 24 seven week old Californian rabbits (initial weight 1.44 ± 0.33 kg) were pair-fed 2 diets in 3 physical forms. The 2 diets (8 M /D and 12 M /D) were formulated to contain 8 and 12 MJ /kg dry matter using ruminant metabolisable energy values. Crude protein content was 160 g /kg dry matter. Ground barley straw was the main fibre source. Diets were

fed *ad libitum* until slaughter at 2 kg live weight, as either pellets, mash (60 p. 100 meal, 40 p. 100 water) or meal in a 2 × 3 factorial design with 4 replicates.

Daily liveweight gain (DLG) over a 6 week period for 8 M/D mash and meal diets were — 0.264 and — 6.218 g DLG on 8 M/D pellets was 20.73 g, and was significantly lower ($P < 0.01$) than on any of the 12 M/D treatments. DLG for diets 12 M/D pellets, mash and meal were 33.10, 27.90 and 26.51 g, respectively (SED ± 2.321 g); the pelleted diet gave significantly higher DLG than meal ($P < 0.05$). Mean total DM consumptions of 8 M/D pellets, 12 M/D pellets, mash and meal were 4.688, 1.985, 1.941 and 2.552 kg (SED ± 0.614), respectively. Differences were significant ($P < 0.001$) between 8 M/D and 12 M/D diets.

Killing-out percentages (KO p. 100) were 57.53, 59.08, 61.02 and 63.14 or 8 M/D pellets, 12 M/D pellets, mash and meal diets, respectively (SED ± 2.92). The 12 M/D meal diet gave significantly ($P < 0.05$) higher KO p. 100 than the pelleted diets, while gut contents were significantly ($P < 0.01$) heavier from the 8 M/D diet.

8 M/D mash and meal diets are clearly unsuitable for growing rabbits. The results show that both metabolisable energy concentration and form (particularly with low energy diets) are important in determining food consumption and therefore growth rate and certain carcass characteristics.

Effect of food restriction on growth performances and visceral measurements in young rabbits between 5 and 8 weeks of age

F. LEBAS, J. P. LAPLACE

Laboratoire de Recherches sur l'Élevage du Lapin, I.N.R.A., B.P. 12 — 31320 Castanet Tolosan (France)
Laboratoire de Physiologie de la Nutrition, I.N.R.A. C.N.R.Z., 78350 Jouy-en-Josas (France)

Fourty-eight Californian rabbits of both sexes, aged 5 weeks, were distributed into 4 groups corresponding to 4 techniques of administration of the same pelleted diet.

A *group:* *ad libitum* feeding every day.

B *group:* Free access to pellets only during 5 days a week, i.e. Tuesday, Wednesday, Friday, Saturday and Sunday.

C *group:* Daily administration of a limited quantity of pellets corresponding to 71 p. 100 (= 5/7) of the *ad libitum* feeding of an preexperimental group.

D *group:* Every week, supply of the same quantity of pellets as in group C, but only two times a week on Tuesday (3/7) and Friday (4/7).

The animals were slaughtered at 8 weeks of age and visceral measurements were made.

Daily food intake during 21 days was similar for the 3 restricted groups (B, C, D) and the mean, 21 p. 100 lower than for group A. As compared with group A, the daily live weight gain of group C was reduced by 27 p. 100, that of groups B and D by 48 p. 100. Considering the daily carcass weight gain, the reduction was similar for the 3 restricted groups (22 to 29 p. 100). Stomach and small bowel weight were not affected by any type of restriction. Caecum was heavier for group C, but colon weight was reduced by 15 p. 100 for groups B and D. The content of viscera was enhanced for the stomach in groups C and D and for caecum in all restricted groups (+ 41 to + 44 p. 100). The liver weight was quite the same for groups A, B and D, reduced by 27 p. 100 for group C.
