

**The effect of adding certain fatty acids on the voluntary food intake of sheep.** By J. L. CLAPPERTON, *Hannah Dairy Research Institute, Ayr*

Previous experiments at this Institute (Czerkawski, Blaxter & Wainman, 1966; Czerkawski & Clapperton, 1967), have shown that when linseed oil fatty acids or certain branched-chain acids are added to the food of sheep methane production is reduced. During the course of these experiments, it was observed that when the linseed oil fatty acids were added the sheep were eager to eat more than their ration, but when the branched-chain acids were added the animals were reluctant to eat, and on occasion refused their rations.

Therefore, an experiment was carried out in which these acids were mixed with rations consisting of 50% dried grass cubes and 50% lamb creep pellets. The linseed oil fatty acids (British Drug Houses, Ltd, Poole, Dorset) were incorporated at two levels, namely 2% and 4% of the total feed, while the branched-chain acids (Versatic 15/19; Shell International Chemical Co Ltd, London, SE1) were incorporated at 1% and 2% of the feed. The acids were added by soaking the food with emulsions of the fatty acids. Experiments were also carried out in which water was added to the food and these were known as the 'control' experiments.

Originally, these rations were offered *ad lib.* to five 1-year-old Down Cross wether lambs. During the course of the experiments, two of these sheep died. The most probable cause of death was chronic copper poisoning—the copper content of the food was such that the copper intake of the sheep was close to 30 mg/day and this is generally regarded as the safe upper limit (Dick, 1954).

The food intakes with the three remaining sheep were: control,  $1412 \pm 220$  g/day; with 2% and 4% linseed oil fatty acids,  $1946 \pm 151$  and  $1623 \pm 146$  g/day respectively; and with 1% and 2% Versatic 15/19,  $1652 \pm 207$  and  $1121 \pm 158$  g/day respectively. These results show that, compared with the control diet, the lower level of each fatty acid preparation in the rations resulted in a greater intake than did the higher level of the same fatty acids. There is, therefore, an optimum level for the addition of fatty acid. The addition of 2% linseed oil fatty acids resulted in a 40% increase in food intake, while the addition of 2% branched-chain acids resulted in a 20% fall in intake. Both these results were statistically significant at the 5% level.

It can be calculated that the addition of 2% linseed oil fatty acids doubled the amount of energy stored daily by the sheep, this increase being mainly due to the increased consumption of the basal ration.

#### REFERENCES

- Czerkawski, J. W., Blaxter, K. L. & Wainman, F. W. (1966). *Br. J. Nutr.* **20**, 485.  
Czerkawski, J. W. & Clapperton, J. L. (1967). *Proc. Nutr. Soc.* **26**, xxiii.  
Dick, A. R. (1954). *Aust. J. agric. Res.* **5**, 511.