

VOLUNTARY FEED CONSUMPTION AND
EFFICIENCY OF GAIN IN LEAN AND FAT LAMBS

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Selection for high feed consumption in poultry (Pym and Solvyns 1979) results in increased deposition of fat, whereas selection for efficiency of conversion results in leanness. In the absence of any feed limitation, selection for gain has a large component dependent on feed consumption and a lesser component based on efficiency of use of nutrients. In cattle and sheep subject to seasonal variation in feed supply, fat deposition will depend on the adequacy of the feed supply and the selection processes to which an animal has been exposed. Some modes of selection have enabled particular types of sheep to exhibit high feed consumption and yet be lean (Siebert and Howard 1984).

An experiment was carried out in order to examine the voluntary feed consumption and the efficiency of gain of the body components of lean and fat type lambs at pasture. Six lean type sheep and six fat type sheep were weaned at three months of age and raised for four months. Faecal output was estimated by use of marker released from controlled release devices each month and feed consumption calculated from this value and digestibility of grazed forage samples. Body components were estimated from live weight measurements and body water space determined with the use of tritiated water.

After 3 months at pasture the lean type animals comprised 5.4% fat and the fat type 22.5%. At slaughter one month later the mean back-fat measurement was 4.9 mm in the lean and 14.0 mm in the fat group. The estimated voluntary food consumption (VFC) altered little in absolute terms as the digestibility of the pasture fell from 71 to 59%, but relative to live weight it declined. Daily live weight gain (LWG) declined also, but was maintained at a higher rate in the leaner group. The following table shows both VFC (g/d and g/kg LW/d()) and LWG (g/d) over the three periods of measurement (each 35 days).

Group	Period 1		Period 2		Period 3	
	VFC	LWG	VFC	LWG	VFC	LWG
Lean type	766(35.6)	157	693(25.7)	99	795(26.4)	51
Fat type	797(35.1)	171	751(26.2)	123	817(24.3)	48

The fat-type animals always consumed the most feed until the digestibility of forage declined to less than 60% when per unit live weight the leaner animals maintained both their feed consumption and weight gain at a higher level. Over the 3 periods gain per unit of digestible dry matter intake in live weight of lean animals increased at 13.6% efficiency and in lean body at 18.7%, whereas in fat animals the values were 14.4% and 10.8% respectively. The results demonstrate that it is distinctly advantageous to raise lean animals in terms of forage utilized per unit of lean meat produced.

PYM, R.A.E. and SOLVYNS, A.J. (1979). British Poultry Science 20:87.
SIEBERT, B.D. and HOWARD, B. (1984). Proc. 4th Conf. Assoc. Aust. Anim. Breed. and Gen.:203.