

A reduced input system for beef and sheep

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Introduction

Extensive farming systems are currently attracting interest as a potential solution to the problems of over-production and environmental damage within agriculture. However, information on the levels of physical performance and the financial viability of extensive systems is limited. This paper describes a system evaluation which was set up to determine levels of output and profitability from an upland livestock unit managed with reduced levels of purchased food, fertilizer and capital investment. The investigation was funded by Liscombe Research Ltd.

Material and methods

In each of 2 years, 1990 and 1991, a self-contained unit consisting of 22 ha of perennial ryegrass/white clover long-term leys and 14.5 ha of botanically diverse permanent pasture was stocked with a herd of spring calving, North Devon × Friesian suckler cows rearing calves by a South Devon bull, and a flock of Welsh Mule ewes lambing to Texel rams in May. The overall stocking rate was 1.7 livestock units (LSU) per ha with roughly equal proportions of cattle LSU to sheep LSU.

After calving indoors, the suckler herd grazed on the unit from mid April until weaning in October, when all calves were sold as stores. The cows were wintered indoors in cubicle housing and given big-bale silage made on the unit in June and July (first and second cut), allowing 60 MJ metabolizable energy per cow per day.

The ewes lambed outside in May. Weaning took place in early August with lambs remaining on the unit until sale as stores in October. After tupping in December/January, the ewes grazed the whole unit at a low stocking rate (five ewes per ha). Supplementary food (0.25 kg per head per day of barley/soya-bean meal mix) was offered to ewe hogs and to ewes of condition score 2 or below, until April. Hay, made on the unit, was offered to the whole flock during 2 weeks of snow cover in

Table 1 Animal performance

	1990	1991
Cattle		
Calf daily live-weight gain, turn-out to weaning (kg)	1.12	1.13
Weaning/sale weight in October (kg)	262	269
Sheep		
Live lambs born per ewe tupped	1.38	1.36
Lamb daily live-weight gain, birth to weaning (g)	248	233
Lamb daily live-weight gain, weaning to sale (g)	81	111†
Sale weight in October (kg)	32	34†

† Not including data from 50 lambs finished off grass in September/October.

February 1991 and to ewe hogs from January to April in both years. No other supplementation was provided.

Overall use of inorganic fertilizer was equivalent to 50 kg nitrogen per ha in both years, with some fields not receiving any fertilizer at all. Application of P and K was confined to fields cut for silage which received a single dressing of 30 kg phosphorus and 50 to 85 kg potassium per ha.

Results

Grass growth was adversely affected by a summer drought in 1990 and a late, cold spring in 1991 but, overall, performance levels in both cattle and sheep were close to those expected from more intensively managed systems and are shown in Table 1.

Fixed costs were calculated to be between £210 and £220 per ha. At these levels of output, a minimum unit size of 70 ha and full, less-favoured-area (LFA) rates of subsidy would be required to make the adoption of a more extensive system of farming financially viable. The financial breakdown is shown in Table 2.

Table 2 *Financial breakdown*

	1990	1991
Gross income (£)		
Lamb sales	6245	5855
Ewe premium	2124	2080
Cattle sales	6903	8530
Suckler cow premium	1404	1560
Surplus hay	500	160
Total	17176	18185
Variable costs (£)		
Forage (fertilizer, contract charges)	1872	2574
Purchased food (barley, soya-bean meal)	133	174
Vet and medicines	1409	1252
Ewe and ram replacement	2124	1280
Cow replacement and bull hire	767	1150
Total	6305	6430
Gross margin per ha	298	322
Gross margin per ha including LFA subsidies	362	389