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NUTRITION OF HILL CATTLE AND SHEEP

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Hill farming industry

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Ultimately, decisions about the need for, and volume of, food production from our own land resources are political ones since agriculture, in general, is dependent for a variety of reasons on substantial Government support.

This is especially true of the hill areas and although it is difficult to calculate the total expenditure on agricultural support to the hills and uplands since farmers in these areas receive a proportion of the many types of grants available to other farmers, the direct grants can be identified. These have been estimated for 1971-2 (Anonymous, 1971) as

	£ (millions)
Hill cows	14.3
Hill sheep	9.3
Winter keep	5.1
Total	£28.7

This is 9.6% of the total support to agriculture for some 5-6% of the total value of agricultural produce. The estimated value of the produce from the hills and uplands, £81 000 000 in 1967, does not take into account the value added to store cattle and sheep in the lowlands.

This support is being applied to approximately one-third of the agricultural land area of Great Britain comprising some 4 451 000 ha (11 000 000 acres) of land in hill sheep farms and 1 821 000 ha (4 500 000 acres) in upland stock rearing farms.

The former are those which are substantially rough grazings with a varying proportion of inbye and the latter are largely enclosed permanent pastures with varying ratios of rough grazings.

There are also some 1 011 750 ha (2 500 000 acres) of rough grazings in deer forests supporting 180 000 red deer and largely independent of agricultural support.

The pastoral resources of these areas are primarily exploited by the ruminant animal and have one major advantage, particularly the areas of rough grazings, in that the dry matter is obtained at very low cost. The main limitations to the economic use of this feed are in the efficiency of herbage utilization, the low levels of production obtained and the labour and other inputs required to exploit it.

Another important factor in certain areas is that of farm size which is of considerable economic consequence in Wales and the north of England. There are approximately 11 580 holdings in the north of England and Wales and around 45% of these are classified as small farms of under 600 standard man-days. The now defunct Pennines Rural Development Board estimated that approximately one-third of the farms in this area were uneconomic on the basis of labour requirements (>275 standard man-days).

The size of the farm business is not the only cause of economic difficulty in upland and hill farming.

The average selling price of store lambs scarcely changed in the decade 1956-7 to 1966-7 (Duthie, 1967) and during that period Government support increased from around 60-90% of net profit to 130-190%.

Recently, it has been Government policy to encourage the shift of the national sheep flock to the hills and uplands, and this policy has been implemented by an increase of the hill ewe subsidy and the introduction of an upland ewe subsidy.

Even more so, home beef production has been encouraged and from 1951 to the present, direct grants to beef cows have increased by 168%. The cost to the Exchequer in 1964 was £5 000 000 and it is estimated for 1971-2 at £14 300 000.

The outcome of this policy has been a dramatic increase in suckler cow numbers, 35% over the last decade. McCreath (1970) has estimated that in the west of Scotland, income from subsidies (cow and calf subsidy and winter keep) contributes 44% of the revenue per cow.

The suckler herd in Great Britain contributes around 23% of home-produced beef-supplies and 76% of this comes from the uplands and hills.

There are, in fact, more beef cows in Scotland than dairy cows and this emphasizes the traditional importance of beef production in that country.

Husbandry systems in hill sheep farming vary considerably and encompass a wide spectrum of pastoral environments. Stocking rates vary from 0.5 ha (1.2 acres) per ewe to above 4 ha per ewe (10 acres). In Scotland some 60% of hill ewes are stocked at one ewe to 0.4-1.6 ha (1-4 acres) but a considerable proportion, 10% (250 398) are run very extensively at more than 4 ha (10 acres) per ewe.

Production likewise varies widely, weaning percentages being from 55 to 140% yet potential growth rates of existing breeds are rarely exploited. Consequently, output may be as low as 2-3 kg live weight/ha (2-3 lb/acre) but better farms may sell up to 25 kg/ha (25 lb/acre).

Because of these low levels of production and the generally depressed state of

the hill sheep industry the transfer of hill land to other uses or the restriction of sheep farming is frequently advocated.

Rarely does this take into account the opportunities for improvement which exist at the biological level or whether modifications to or changes in systems could make sheep production economically viable.

Subsequent papers will present some facts on which it becomes possible to make objective assessments.

Exclusively cattle-based systems have been developed on upland farms and relatively intensive stocking is possible. Cunningham & Harkins (1967) and Powell (1971) have reported stocking rates of 0.5 ha/cow per annum on upland permanent pastures.

The provision of winter feed is an important aspect of cattle management and this amounts to approximately 40% of the cost of production of the calf.

Nutrition is of importance not only in relation to performance but it is also of significance in relation to the food resources available and the systems which can be economically developed. The entire field requires urgent investigation.

Calves from cows run on rough grazings are generally small, market demand and consequently price is poor, and frequently growth-rate potential is inadequate.

Generally, the pastoral resources of the hills and uplands are making an important economic contribution to agricultural output. However, it is frequently argued that the problems are essentially sociological.

Given an improvement in the economic viability of hill farming it is possible that many of the so-called sociological arguments might disappear.

Nevertheless there are some aspects of sociological significance — the issues of public access and amenity. Agriculture is an important concomitant of amenity and I do not believe that the development of new systems of animal production in the uplands will in any way militate against properly organized and controlled public access to hill land.

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Relationships between energy intake and productivity in hill sheep

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Productivity from hill sheep kept under traditional systems of management is low in comparison with other forms of animal production dependent on pastoral resources, even when allowances are made for differences in herbage production.