

UNIVERSITY OF LANCASTER

Department of Economics

Occasional Papers Series

Series Editor ... Professor S.G.Sturney

Number 6

THE AGRICULTURE OF
CUMBERLAND AND WESTMORLAND

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September, 1965

PREFACE

The Department of Economics of the University of Lancaster was commissioned by the Board of Trade to undertake an economic and social survey of that part of England north of the Ribble and west of the Pennines. Work on the project started in October 1964 with the intention of presenting a single report containing a description of the area together with an analysis of past and future trends and recommendations for action. The work was undertaken within the University, with the co-operation of appropriate central and local government bodies. Much of this co-operation was arranged by the North West Study Group with which the work has been closely associated. The study of the agriculture of the area was, however, sub-contracted to a team working under Professor J.Ashton at the University of Newcastle-upon-Tyne.

As a result of the change in Government policy, and in particular the establishment of regional bodies for the North Western and Northern regions, the pattern of the work had to be changed. The first priority became the presentation of the descriptive material which had been collected, split into two sections to correspond with the two regions into which the study area has been divided. The report which follows consists of only the descriptive part of the work relating to Cumberland and Westmorland. This report has been written from an external point of view, i.e. with particular reference to the relationships between agriculture and the rest of the economy. This will be followed at intervals over the next six months by analytical reports concerned with particular topics in which future trends and recommendations will be discussed. Only when all these reports on topics are available to be read alongside the present descriptive report will the full pattern of the research become apparent.

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The Agriculture of Cumberland and Westmorland

Introduction

A number of features of the agricultural industry pose special problems of measurement in economic terms at the regional level. There are many individual units, of which a substantial proportion are only operated as part-time businesses. Except in rare and highly specialised instances, no unit will have a dominating role in the market. Farms usually produce several commodities for sale, but only a small proportion of output is sold direct to final consumers. Many farmers produce the raw material for further processing on other farms: for example, seeds, store livestock and animal feedingstuffs are all sold, directly or indirectly, to other farmers. Again, most of the final output of agriculture is processed, after leaving the farm, prior to final consumption.

During the last few decades there has been a continuous increase in the proportion of farmers owning the land they farm. This change has been concentrated on smaller farms: thus most recent figures indicate that rented farms are considerably larger on average than those which are owner occupied. In Great Britain at present, 47 per cent of holdings, accounting for 37 per cent of crops and grass, are wholly owned by their occupiers, while 37 per cent of holdings, covering 42 per cent of crops and grass are wholly rented. Full owner occupation is less important than this in Cumberland and Westmorland, where 41 per cent of holdings, covering 32 per cent of crops and grass are operated in this way.

Capital in agriculture is generally divided into two categories depending on whether it is provided by the landlord or the tenant. Landlords' capital includes land and buildings, whilst tenants' capital covers crops, livestock, machinery and other operating expenses. In Cumberland and Westmorland tenants' capital is estimated to be in the region of £50 - £60m. Nationally, it is estimated that the ratio of landlords' to tenants' capital is 7:4. Thus, applying the U.K. ratio, landlords' capital might amount to some £900 - £100m., indicating an overall average value of land in the area of £70 - £75 per acre.

This value is less than the national average, but, as will be seen from Table 1, there is a high proportion of rough grazing in Cumberland and Westmorland; farms with vacant possession would certainly command an appreciably higher price than that suggested in this valuation.

These estimates indicate a total capital value in agriculture in the two counties of between £140 and £160m. at current prices. It should be borne in mind that this does not indicate the volume of resources that are interchangeable between agricultural and other uses. In the case of land, its value for most non-agricultural uses is much higher than it is for farming, whereas the transfer value of other farm assets is relatively low.

In discussing the place of agriculture in economic development it is essential to bear in mind the dominance of Government policy. The industry's economic environment has been influenced to a marked extent by the support afforded under the Agriculture Acts of 1947 and 1957 as well as the other legislation providing a comprehensive framework in which the industry operates.

In the sections that follow, the pattern of land use in the study area is examined in terms of cropping, stocking and size structure, the types of farming are described and profitability is assessed from sample information. The size and structure of the agricultural labour force is measured and an estimate of output presented. Finally, these sections are summarized in relation to the area and the national economy.

Land Use and Structure of Farming

Agriculture in Cumberland and Westmorland is particularly influenced by the topography and climate. Much of the area lies more than 1,000 ft. above sea level, and this, combined with a high rainfall, limits the choice of enterprise almost entirely to cattle and sheep with the production of arable crops being restricted to a few lowland areas where conditions are more favourable. Throughout the area, dairying is by far the most important enterprise with the production of milk and young stock accounting for half of the gross output. The conditions under which milk is produced vary widely; at one extreme, the Cumberland Plain compares favourably with other traditional dairying areas, whilst in the uplands, the severe winter and short growing season make dairying a much less profitable enterprise.

Industry in the area is mainly confined to West Cumberland and the larger towns such as Carlisle, Penrith and Kendal. Except in these areas therefore, it offers little direct competition to agriculture for labour and other resources. On the other hand, tourism, particularly in the Lake District, provides agriculture with additional income from such sources as the letting of accommodation and sale of produce.

Cumberland and Westmorland together account for nearly $4\frac{1}{2}\%$ of the total area of crops, grass and rough grazing in England and Wales (Table 1) but of this, nearly half is rough grazing held either in common or as sole rights. It is impossible to calculate either the present or potential contribution of this vast acreage; its quality varies from good upland pasture to rocky out-crops of no agricultural value whatsoever. Much of it can only be used in conjunction with the in-bye land and in certain instances, farmers have decided that it is to their advantage to forego their grazing rights. Nevertheless, it supports a large sheep population and enables the more productive lowland to be put to better use.

Table 1

Proportion of Crops, Grass and Rough Grazing*
in Total for England and Wales - 1963

	Crops, Grass and Rough Grazing *		Crops and Grass Only	
	Acres '000	%	Acres '000	%
Cumberland	833	2.8	490	2.0
Westmorland	455	1.6	207	.9
England & Wales	29,286	100.0	24,403	100.0

* Including Common Grazing

Source: Agricultural Statistics

The dividing line between rough grazing and permanent pasture, is, in many cases, somewhat arbitrary, but Table 2 suggests that over the last ten years, a small amount of rough grazing has been improved sufficient to counteract the loss of land for other uses and to make a small addition to the area of crops and grass.

Table 2 Change in Agricultural Acreage 1954 - 1963

	% Change 1954 - 1963	
	Crops, Grass and Rough Grazing *	Crops and Grass Only
Cumberland	- 1.8	+ .8
Westmorland	- .7	+ 1.0
England & Wales	- 1.6	- 0.1

* Including Common Grazing

Source: Agricultural Statistics

The downward trend in numbers of holdings in the study area in the period 1954-1963 (Table 3) has been less marked than in England and Wales, due partly to the smaller requirement for urban development.

Table 3 Change in Number and Size of Holdings 1954 - 1963

	No. of Holdings ϕ			Average Size of Holdings (Acres)*		
	1954	1963	Change %	1954	1963	Change %
Cumberland	6494	5881	-9.4	74.8	83.3	+11.4
Westmorland	2696	2458	-8.8	76.0	84	+10.6
England & Wales	375,432	330,307	-12.0	65.3	73.3	+12.3

ϕ Holdings of land used for agriculture exceeding one acre in extent. They may not necessarily be farms or farm businesses.

* Crops and Grass

Source: Agricultural Statistics

Moreover the average size of holding was 84 acres crops and grass as compared with nearly 74 acres in England and Wales. This larger average size of holding is also associated with more rough grazing than in the country as a whole. Acreage is not necessarily a direct measure of the size of business and the viability of a holding will depend on the scale and intensity of the farm business conducted on it. Thus recent analysis (Table 4) has shown that full-time holdings with a Standard Man Day requirement of 275 man days or more have an acreage of 117 and 110 acres in Cumberland and Westmorland respectively as compared with 129 acres for England and Wales as a whole.

Table 4 Proportion of Full-time and Part-time Holdings in 1962

	Cumberland	Westmorland	England & Wales
	%	%	%
<u>No. of Holdings</u>			
Full-time*	65	71	51
Part-time ϕ	35	29	49
<u>Area of Crops and Grass</u>			
On Full-time Holdings	93	95	92
On Part-time Holdings	7	5	8
<u>Average Size of Holding</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Full-time	117	110	129
Part-time	16	16	12

* Holdings with a Standard Man Day requirement of more than 275 man days

ϕ Holdings with a Standard Man Day requirement of 275 man days or less

Source: Derived from June Census 1962

The same analysis also shows that these full-time farm businesses account for two-thirds of all holdings in the study area. The corresponding proportion for England and Wales is one-half. This difference can be explained by the different size distribution of holdings in the study area, there being less emphasis on small units (e.g. holdings under 20 acres account for only 25 per cent in the study area compared with 40 per cent in England and Wales). In addition the area does not have alternative employment opportunities to the same extent as many other parts of the country, thereby generating from within agriculture a movement towards part-time farming. Nor is there a large urban population adjacent to or within the area giving rise to the same demand for holdings basically for residential use but with some part-time farming.

In the ten years following 1954, the tillage acreage fell rapidly in both counties (Table 5) and although together, they account for nearly 3% of the area of crops and grass in England and Wales, in 1963, they had less than 1% of the tillage acreage. This was largely devoted to the production of barley, oats and other feed crops, with insignificant acreages of sale crops. The change from oats to barley has been more pronounced than in other parts of the country due to the prominent position it previously held in the arable rotation.

Table 5 Proportion of Tillage* in Total for England and Wales
 and Change in Tillage Acreage 1954-1963

	% Tillage in Total for England & Wales 1963		Change in Tillage Acreage 1954-1963
	Acres '000	%	%
Cumberland	71	.8	- 25
Westmorland	15	.2	- 32
England & Wales	9,293	100.0	- 4

* Crops and Fallow

Source: Agricultural Statistics

The importance of sheep and cattle in the area is shown in Tables 6 and 7.

Table 6 Numbers and Proportion of Livestock in
 Total for England and Wales - 1963

	Cattle		Sheep		Pigs		Poultry	
	No: '000	%	No: '000	%	No: '000	%	No: '000	%
Cumberland	301	3.5	741	3.8	30	.6	963	1.0
Westmorland	122	1.4	532	2.7	10	.2	381	.4
England & Wales	8,616	100.0	19,665	100.0	5,231	100.0	94,401	100.0

Source: Agricultural Statistics

Table 7

Change in Numbers of Livestock
1954 - 1963

	% Change 1954 - 1963			
	Cattle	Sheep	Pigs	Poultry
Cumberland	(+)20.9	(+)11.4	(-)33.3	(-)11.0
Westmorland	(+)14.0	(+)14.7	(+)11.1	(+)13.7
England & Wales	(+) 6.8	(+)35.5	(+) 7.2	(+)49.0

Source: Agricultural Statistics

Including rough grazing, the two counties represent 4.4% of the area of England and Wales but carry 6.5% of the sheep and 4.9% of the cattle. Since 1954, the sheep population has increased more slowly than in the rest of the country due to the limited scope for intensification in hill areas and the small surplus of female sheep available each year once normal flock maintenance requirements have been met.

Total cattle numbers have risen markedly since 1954 but the change has not been uniform within the different categories (Table 8).

Table 8

Change in Composition of Total Cattle Numbers
in Cumberland and Westmorland - 1954-1963

	Cows '000	In calf Heifers '000	Other Cattle					
			Over 2 Yrs.		1 - 2 Yrs.		Up to 1 Yr.	
			Male '000	Female '000	Male '000	Female '000	Male '000	Female '000
1963	151.1	37.1	11.7	18.2	30.4	60.7	44.3	65.0
1954	117.3	36.9	15.7	26.8	20.8	49.9	26.8	56.4
Increase	33.8	.2	(-)4.0	(-)8.6	9.6	10.8	17.5	8.6
Increase as % of 1954	29	.4	(-)25	(-)32	46	22	65	15
			(-)30		29		31	

Source: Agricultural Statistics

Longer herd life and earlier calving have reduced the proportion of heifer replacements required and also enabled more cattle to be reared for beef. Dairy and beef cows have only been separately enumerated since 1959, but in the five years up to 1963, whilst the increase in dairy cows was of the same order as in England and Wales, (Table 9), the rate of increase of beef cows was nearly three times as great, reflecting the impact of the Hill Cow Subsidy in upland areas.

Table 9 Change in Dairy and Beef Cow Numbers 1959-63

	Dairy Cows		Beef Cows	
	Cumberland and Westmorland '000	England & Wales '000	Cumberland and Westmorland '000	England & Wales '000
1963	121.6	2,697.2	29.5	583.7
1959	111.4	2,492.9	20.8	511.4
Increase	10.2	204.3	8.7	72.3
Increase as % of 1959	9	8	40	14

Source: Agricultural Statistics

Neither pigs nor poultry are of any great significance in the area and in contrast to the trend in England and Wales, between 1954 and 1963, numbers in Cumberland declined appreciably. The proximity of intensive poultry production in North Lancashire appears to have had little influence in either Westmorland or Cumberland and it is only recently that some egg producing groups have been set up, based on a co-operative packing station in Carlisle. The minimum size of unit has been fixed at not less than 3,000 birds, but most members have exceeded this, the average being about 5,000 birds per producer.

Main Type of Farming Areas

To a large extent, the type of farming varies with topography from predominantly dairying in the lowland areas, through a combination of dairying and hill sheep as elevation increases, to upland rearing farms producing store sheep and cattle. This relatively simple pattern is frequently complicated by considerable variation in the quality of the hill grazing, systems of fell management, and on individual farms, the proportion of the in-bye land to unimproved fell, with the result that even within small areas, it is often extremely difficult to identify the typical system of farming. However, three main type of farming areas can be distinguished, viz:-

- a. The Cumberland Plain - dairying
- b. Shap - Ravenstonedale - dairying with hill sheep
- c. South East Lake District - hill sheep and cattle with some dairying.

Their location and that of the few major urban areas is shown on the Map and, in Table 10, the more important aspects of the cropping in selected parishes, are summarised.

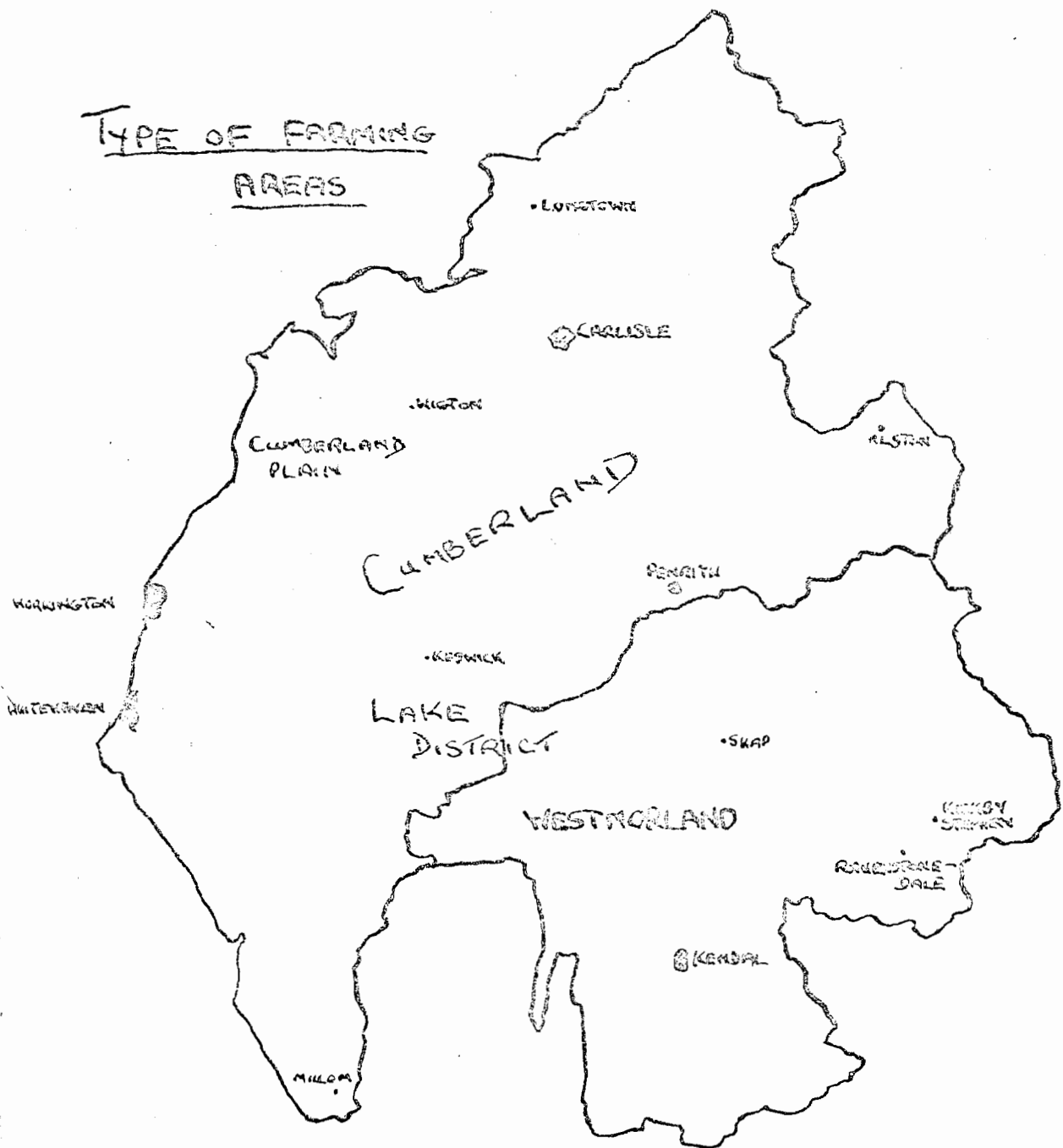
Table 10 Characteristics of Main Type of Farming Areas - 1964

<u>Crops (Acres)</u>	Cumberland Plain		Shap - Ravenstonedale		South-East Lake District	
	Per Holding	Per 100 Acres*	Per Holding	Per 100 Acres*	Per Holding	Per 100 Acres*
Tillage	24	31	-	-	-	-
Total Crops & Grass	78	100	80	100	74	100
Rough Grazing	8	10	57	71	182	244
<u>Livestock (No.s)</u>						
Cows - Dairy	19	24	10	13	7	9
Cows - Beef	2	3	6	7	7	9
Total Cattle	57	73	43	54	33	44
Ewes	15	19	149	187	226	306
Total Sheep	47	60	344	430	511	689
Total Pigs	6	8	3	4	7	9
Total Poultry	280	360	141	177	55	74

* Crops and Grass

Source: Based on June returns for selected parishes.

TYPE OF FARMING
AREAS



0 ————— 10 MILES

Cumberland Plain

The Cumberland Plain lies to the south-west of Carlisle towards Maryport and with the exception of some marshy land on the Solway estuary, extends to the coast. Dairying is the main enterprise but in recent years, with the change from the Ayrshire to the Friesian breed of dairy cow, rearing of young stock either for milk production or beef has assumed far greater importance. Few of the farms carry breeding sheep but lambs are frequently purchased for fattening on grass or roots in the winter. Pigs are of little importance but the impact of egg production by groups is gradually being felt. In several parishes, there is now an average of nearly 400 birds per holding. But even so, this is considerably less than in parts of North Lancashire, where the average is between 1000 - 2000 birds per holding.

Climatically, conditions are ideal for the production of grass and over the last ten years, there has been a steady improvement in the techniques of grassland conservation and utilisation. This, together with the use of more purchased feed, has enabled stocking densities to be increased by as much as 50% since 1953 and the typical herd now consists of 20 - 25 cows. In many instances, this increase has only been made possible by the adaptation and improvisation of the existing buildings. Although in the last decade, there has been considerable investment in new dairy accommodation and feed equipment, the lack of adequate buildings remains an important factor limiting the expansion of dairy herds in this area.

Shap - Ravenstonedale

The majority of farms in this area, extending roughly from Kirkby Stephen through the Lune Valley to Shap, depend on dairying and the production of store lambs for their livelihood, although a few are devoted entirely to the rearing of cattle and sheep. In some cases, the land is confined to the lower slopes of the valley and is in sole occupation, the sheep flock being relatively small, but more frequently, additional common grazing rights on the fell enable a larger number of sheep to be kept.

Whilst these farms are for the most part suited to milk production, they are at least 600 feet higher than those in the Cumberland Plain and consequently, experience a much longer winter. This adds to the cost of purchased feed and also requires a larger acreage to be devoted to the production of winter fodder. Hence stocking rates are lower than on the Cumberland Plain and the typical herd is likely to be in the region of 15 - 18 cows. Average milk yields are also lower, a reflection of the less favourable environment and perhaps a slower rate of change to the Friesian breed.

On the farms without fell grazing rights, where sheep can make only a small contribution to income, it is not easy to account for the fact that unlike the Bowland Forest area of North Lancashire, there has been no significant increase in the number of poultry kept.

On the farms with fell grazing rights, the sheep flock assumes greater importance and income is derived from the sale of store lambs, wool and draft ewes. Where conditions are suitable, the more productive Rough Fell ewe replaces the Swaledale. On some fells the grazing is restricted and on others, there is no specified limit, but in both cases the number of sheep is determined more by the area of in-bye land than that of fell.

South-East Lake District

The Lake District, which lies to the west of the A6 road between Kendal and Penrith and extends virtually to the West Cumberland coast represents approximately one third of the study area. Individual mountains rise to over 3,000 ft. and with the exception of the relatively narrow valley bottoms, most of the land lies above 1,000 ft.

The pattern of land use is not only affected by the factors already mentioned; the Lake District is an area of great scenic beauty and the tourists who are attracted to it create demands for produce and services which farming can often satisfy.

The average areas of crops and grass per holding in the south-east Lake District is very similar to that in the Shap - Ravenstonedale area, but it is associated with a much larger area of rough grazing (in neither case does this include common grazing, which cannot be allocated on a parish basis).

With certain isolated exceptions, dairying in the Lake District is on a small scale with frequently herds of less than 10 cows being maintained to supply local catering requirements during the summer months. Even with modest yields, milk production for the retail market is more profitable than the alternative of rearing cattle. But for the Milk Marketing Board, the seasonal fluctuation in quantity and the collection of small lots, must pose many problems.

Shippons and dairy buildings are generally inadequate and the enforcement of hygiene regulations in recent years has posed many problems. In much of the area, farm building is only permitted if local materials are used and this acts as a serious deterrent to expansion, even where institutional landlords are concerned.

Sheep provide a major part of the income on most Lake District farms and frequently, at least part of the ewe flock is owned by the landlord. On the lower and more fertile fells, the traditional Hardwick ewe has been replaced by the Swaledale but where conditions are poorer it is still found necessary to retain Hardwick lambs for sale in their second year.

Profitability of Farming

Information is available from the Farm Management Survey carried out by the Department of Agricultural Economics at Newcastle University on the profitability of the three types of farming discussed in the preceding section. In Table 11, the financial results for groups of farms in these areas are shown as an average for the years 1961, 1962 and 1963.

Net Farm Income is the profit after any family labour has been paid at the prevailing wage rate, but before the farmer has received remuneration for his manual and managerial effort, or interest on his capital invested in the farm.

The Cumberland Plain farms are operating at a level of intensity that is comparable with that of dairy farms in other traditional dairying areas in the south and west of England. Unlike the smaller Fylde dairy farms in North Lancashire which have a Gross Output of £140 per acre, they do not depend on

pigs and poultry to any great extent, and 75% of their output is obtained by the sale of milk and cattle from the dairy herd. Nevertheless, the purchase of feedingstuffs is an increasingly important item and on the smaller farms, accounts for nearly one third of the Gross Output. An additional £700 is spent on the purchase and upkeep of machinery and in total, payments to suppliers of feed, fertilisers and machinery amount to over £2,200.

Most of the labour on the smaller farms is supplied by the family and their total income is in the region of £1,300, of which £700 represents wages and the remainder, managerial salary and return on capital. The larger farms employ two workers in addition to the farmer and, in most cases, a family worker, but nevertheless, the family income is approximately twice that of the smaller farms.

The relative prosperity of the Cumberland Plain farms contrasts markedly with the lower incomes being obtained by farms in the Shap - Ravenstonedale area. Environmental conditions severely limit the intensity of farming and the Gross Output which has shown no increase in the last few years, is less than half that of the smaller Cumberland farms. Moreover the labour input is roughly the same on both types of farms reflecting not only a degree of underemployment, but also a lack of opportunities for non-farm work.

Expenditure on feedingstuffs and other items is heavier in relation to output and, on those farms without fell rights, if all family labour is charged at the prevailing rate, no surplus remains. Thus these farms are in general, too small in scale both to support the amount of labour which they use and to yield a management and investment return comparable to that of the other groups of farms shown in Table 11.

Table 11 Financial Results - Average of 1961, 1962 and 1963

	Cumberland Plain		Shap-Ravenstonedale		Lake District
	0 - 100a Per Acre £	100-250a Per Acre £	No Fell Right Per Acre £	With Fell Right Per Farm £	Rearing Farms ø Per Farm £
<u>Output</u>					
Cattle	12.0	10.5	6.0	708	384
Milk	34.2	21.9	13.3	1261	-
Sheep	2.2	4.3	2.8	946	1232
Pigs	.4	.2	-	38	223
Poultry	3.0	1.3	1.1	196	
Crops	2.6	1.9	.8	-	
Other	2.1	2.1	1.0	93	268
Gross Output	56.5	42.2	25.0	3242	2107
<u>less</u> Purch. feeds	18.4	11.5	8.4	1179	440
Purch. seeds	.8	.7	.1	8	9
Net Output	37.3	30.0	16.5	2055	1658
<u>Other Costs</u>					
Fertilisers	2.4	1.9	.7	86	34
Rent and Rates	2.8	2.7	1.9	187	134
Labour	4.8	7.4	5.0	307	-
Power	9.3	5.6	3.6	442	210
Other	3.3	2.6	1.3	215	161
Total	22.6	20.2	12.5	1237	539
Net Farm Income	14.7	9.8	4.0	818	1119
<u>less</u> Farmer and Wife labour	6.9	2.5	4.3	502	632
Management and Investment Income	7.8	7.3	(-).3	316	487
Size of Farm (acres)	73	180	103	120	76
Rough Grazing*	-	-	-	-	144
<u>Tenants Capital</u>					
Livestock and Crops	38.0	32.1	21.9	2837	3575
Machinery, Stores, etc.	21.4	12.7	7.9	976	287
Total	59.4	44.8	29.8	3813	3862

* Excluding common grazing ø Average of 1963/4 and 1964/5

Source: Farm Management Survey Scheme

Note: The Shap-Ravenstonedale farms with fell right and the Lake District rearing farms both have considerable common grazing rights in addition to the in-bye land. Results are therefore presented on a "Per farm" rather than a "Per Acre" basis.

Sheep make a vital contribution to output on the farms with fell grazing rights and they were thus able to achieve a small margin.

Rearing farms in the Lake District are operated at a very low level of intensity. Much of the output is derived from the common grazing by the hill sheep and the only purchased inputs are some feedingstuffs for cattle and perhaps poultry, fertiliser to produce winter fodder and a modest amount of machinery for transport and hay making.

Income is likely to fluctuate considerably from year to year because of varying seasonal factors, but the impact of unfavourable weather has been off-set by the payment of a larger subsidy on hill sheep. Subsidies are also paid on hill cows and calves and land devoted to the production of winter keep and many Small Farmer Schemes have been approved in hill areas. Of the Gross Output of £2,100, over £500 was received in the form of subsidies and without them, the farmers would have had no return other than for their manual work.

The effects of tourism are felt throughout the Lake District, but it is more usually the farms in the dales and near to the lakes that derive most benefit by selling milk and eggs and letting accommodation. The more remote rearing farms have little opportunity to supplement their income particularly since in some areas, a policy of concentrating caravan and camp sites has been introduced.

The Agricultural Labour Force

The agricultural labour force comprises two main parts: a hired element, a proportion of which will be members of the farm family, and a heterogeneous self-employed element which includes farmers, their wives, farm managers and a variety of part-time operators. Information on these two parts of the labour force comes from different sources and is presented separately here.

(a) The hired labour force

The Agricultural Census provides information on the hired labour force. At the county level the data are analysed by type of employment and age structure. The way in which the data have changed between 1954 and 1963 is shown in the following paragraphs.

Changes in employment structure

Changes in the size and employment structure of the agricultural labour force are shown in Table 12.

Table 12 Changes in the Agricultural Labour Force in Cumberland and Westmorland.

	1954 Number	1963 Number	% Change
Regular Whole-Time - Males	8024	6198	-23
- Females	1203	636	-47
- Total	9227	6834	-26
Regular Part-Time, Seasonal and Temporary - Males	1434	1185	-17
- Females	353	396	+12
- Total	1787	1581	-12
All Workers - Males	9458	7383	-22
- Females	1556	1032	-34
- Total	11014	8415	-24

Note: Regular part-time were included with regular whole-time workers in 1954

Source: Agricultural Census

There are no important differences between the proportionate changes shown in the third column and the corresponding developments in England and Wales. The decline in regular whole-time workers has been slightly less than that in England and Wales. This is consistent with the family structure of farming and the relatively few alternative sources of employment in these two counties.

Changes in age structure

Changes in the age structure of regular whole-time workers are compared with those in England and Wales in Table 13.

Table 13 Age Structure of the Regular Whole-Time Male
Agricultural Labour Force in England and Wales
and Cumberland and Westmorland

	Per Cent			
	1954		1963	
	Cumberland & Westmorland	England & Wales	Cumberland & Westmorland	England & Wales
65 and over	2.4	4.7	2.0	3.8
20 to 64*	72.9	79.0	72.8	79.3
18 to 19*	12.7	7.1	10.7	7.4
Under 18	12.0	9.2	14.5	9.5
Total	100.0	100.0	100.0	100.0

* In 1954, the grouping was 18 to 20 and 21 to 64 years old.

Source: Agricultural Census.

The main point shown in the table is the relatively higher importance of younger workers in the study area. The proportion of youths now accounts for 25 per cent of whole-time male workers, compared with 17 per cent in England and Wales. The high proportion of youths in agriculture is generally explained by the existing wage structure which provides a premium for youths over what they would obtain in industry.⁽¹⁾

Comparison with the age structure of the whole population indicates that farming is a more important source of employment in the two counties than in England and Wales as a whole. Thus, despite the fact that Cumberland and Westmorland has a higher than average proportion of youths in the 15-19 age group, 11.0% of these are employed as full-time regular agricultural workers. This compares with the much lower figure of 3.5% in England and Wales.

(1) See, for example, W.J.Thomas: The Changing Structure of Agriculture's Labour Force (Paper read to the International Conference of Agricultural Economists 1964).

The Agricultural Wages Bill

The Ministry of Agriculture's Wages and Employment Enquiry provides reliable information on agricultural wages. A recent regional analysis of these data showed only minor variations in wage levels between regions. The use of national average earnings is thus justified in estimating the Wages Bill for Cumberland and Westmorland. The results of this calculation are shown in Table 14.

Table 14 The Agricultural Wages Bill in Cumberland and Westmorland.

		£'000	
		1961/62	1962/63
Regular whole-time	- Males	3,708	3,786
	- Females	276	264
	- Total	3,984	4,050
Regular part-time	- Males	185	192
	- Females	79	74
	- Total	264	266
Seasonal or Casual	- Males	136	121
	- Females	21	20
	- Total	157	141
All Workers	- Males	4,029	4,099
	- Females	376	358
	- Total	4,405	4,457

Sources: Agricultural Census
 M.A.F.F. Wages and Employment Enquiry

The wages bill calculated in this way overstates the actual cash transfer to some extent. The main source of overstatement is that, for the purpose of estimating average wages, the earnings of all family workers are taken to be the same as those of general farm workers. There is no doubt that the cash

earnings of family workers are a good deal less than this, although there is no recent evidence on which to base a quantitative assessment. The importance of this imputed element can be gauged from the fact that the proportion of family workers is currently approaching one-fifth of the total in England and Wales. In the study area it seems that the proportion may be even higher, so that if family workers in fact are paid at only half the rate of general workers, this might amount to as much as 10% of the wages bill.

(b) The number of farmers

Although the number of hired workers is known from direct enumeration, the size of the self-employed element can only be inferred. Farmers undoubtedly make up most of this part of agriculture's man-power, although the contribution of their wives and of managers is important too. Simple enumeration of the number of "farmers" is also unsatisfactory because it begs the question of the relative importance of full and part-time operators in contributing to the total labour input. Thus, even if the number of farmers and managers was accurately known, the problem of the actual contribution of part-time operators and farmers' wives remains. Statistics from the following sources give some indication of the number of farmers.

(i) Agricultural census

The number of agricultural holdings recorded in the area is known precisely, although it may include some multiple holdings (pieces of land for which a separate return is made although they may be farmed as one entity) and even some non-agricultural land. However, it is known that a large proportion of these farms would not provide a full occupation for one man.

(ii) Full-time holdings analysis

Some data from the analysis of holdings according to estimated work requirements have already been presented (Table 4). The number of full-time holdings gives an impression of the number of farm operators who could obtain full-time employment in agriculture. Some of these occupiers will also have a supplementary source of livelihood.

(iii) Occupation census

The Registrar General's Office made available their unpublished estimate of the number of farmers and farm managers resident in the area. This is a sample based estimate and includes part-time as well as full-time farmers. It will also include farmers resident but not farming in the study area.

Table 15 Indicators of the Number of Farmers

	Year	Cumberland & Westmorland	England & Wales
Agricultural holdings (a)	1961	8,574	338,295
	1962	8,478	334,449
Full-time holdings (a)	1962	5,700	174,169
Farmers and farm managers (b)	1961	8,820	306,480

- Notes: (a) Holdings consisting entirely of rough grazings are excluded except from the estimate of full-time holdings although few, if any, of the full-time holdings will consist of rough grazings only.
- (b) "Farmers and farm managers" is occupation group 001 from the 1960 Classification of Occupations. It includes market gardeners and farm bailiffs as well as farmers and farm managers.
- (c) According to M.A.F.F.'s "Farm Classification in England and Wales" there were 160,249 full-time holdings in England and Wales in 1963.

As explained above, these data do not all refer to the same entity and it is impossible to relate them to the employment data in Section (a). However it seems that the number of full-time holdings probably gives a better indication of the size of the self-employed element than the other figures. This assumption is carried through into Section (c).

(c) Total labour use in agriculture

The analysis of holdings by work requirements is useful in that it suggests an upper limit to the number of businesses large enough to employ their occupiers full-time. However, it does not show the actual labour input of farmers on both full and part-time holdings. This gap is bridged by assuming that full-time holdings will fully utilize one man as farmer or manager, while part-time holdings use none. The figure derived in this way can be added to the hired labour force to give an estimate of total labour utilization in agriculture. This labour represents the demand of agriculture on the labour resources of the area; resources for which it is in competition with other industries.

Table 16 Estimated Agricultural Labour Utilization in Cumberland and Westmorland

	Number	Percent. of Total
Workers - Full time	6,834	49
Part-time	1,581	11
Farmers	5,700	40
Total	14,115	100

The Output and Revenue of Agriculture.

The gross output of the agricultural holdings in the area has been estimated by applying standard output coefficients to individual items in the Agricultural Census. These coefficients are obtained by multiplying regional average yields by appropriate farm-gate prices. In the case of meat livestock, yield is measured in terms of weight gain - that is to say, the value of the animal at the beginning of the period does not enter into output. The coefficients are generally derived from economic surveys; where the data are incomplete, local knowledge is used in determining these standards.

The crop and livestock information was obtained from the Agricultural Census* county data. Mostly, numbers produced or areas cropped are taken as averages of the censuses of 1961 and 1962. As the calculation relates to June-May years, it is assumed that the crops and stock present at the beginning of the period will determine the level of output. Where June numbers represent less than one year's production, they have been multiplied by an estimate of the U.K. average number of batches per year. Where fluctuations in population may influence the level of production, an average of the three censuses, 1961, 1962 and 1963, has been taken. These modifications are important in the case of broiler chickens and pigs, and a similar problem arises with calves sold off holdings before the census in June. In the latter case, retentions were taken from the 1962 and 1963 censuses, and these were deducted from the number of calves born, which were estimated from the 1961 and 1962 censuses. Details of this calculation are set out in Table 17.

* As the Census does not cover holdings less than one acre in extent the data understates the total numbers. Nationally this is significant only with poultry and pigmeat. In 1961/2 and 1962/3 it is estimated that 15 to 20% of poultry meat and eggs and some 5% of pig meat came from these small holdings in the U.K. As there is no information on the importance of these holdings in the area, the calculations presented deal only with holdings of one acre and above.

Table 17 Estimated Standard Output of Agriculture in
Cumberland and Westmorland

1961/62 and 1962/63 Average

	(1) Average June Census Numbers or Number Produced	(2) Standard Output £ per Head or Per Acre	(1) x (2) : Standard Output £
Dairy Cows	158,913	105	16,685,865
Beef Cows	30,197	30	905,910
Cattle over 2yrs.old	32,763	25	819,075
Cattle 1-2 yrs.old	91,943	25	2,298,575
Calves under 1 yr.old			
- sold off	80,000	5	400,000
- retained	109,109	20	2,182,180
Ewes	637,599	6.3	4,016,839
Other Sheep over 6 mths.	76,301	1.5	114,452
Sows	5,159	60	309,540
Other Pigs - for bacon	22,548	13	293,124
- for Pork	33,557	8	268,456
Poultry - Layers	689,808	2.5	1,724,520
Chickens fattened	1,813,859	0.5	906,930
Other Poultry fattened	44,387	2.5	110,968
Crops - Wheat	1,678	36	60,408
- Oats, rye and mixed corn	43,808	32	1,401,856
- Barley	9,577	38	363,926
- Threshed Beans and peas	25	40	1,000
- Potatoes	5,239	100	523,900
- Market Garden	1,013	100	101,300
Grand Total	-	-	33,488,824

The third column shows aggregate standard output for the two counties. In the case of livestock and their products, this is conceptually similar to total sales off the "area farm". No such identity can be assumed in the case of crops however, and there is little evidence, at the county level, of the proportion of production which is in fact sold off. A number of assumptions must therefore be made; these are rationalized in the following way:-

Wheat has to leave the farm on which it is grown in order to collect subsidy. Nationally about 95 per cent of the crop is sold off farms and the same proportion is included in output here.

Barley, oats, rye and mixed corn are grown mainly for livestock feed and are probably consumed in the area, which imports a large proportion of its feed requirements. The mechanism of subsidy payment does not induce producers to sell these crops (except rye). It is thus assumed that one-third of the production of these crops are sold off the farm and would therefore enter into output.

Threshed beans and peas are assumed to be retained on the area farm for livestock feed.

Potatoes and market garden crops are essentially cash enterprises and it is assumed that their entire production is sold.

By adding the value of changes in crops and stock numbers to the estimates of standard output, corrected on the above basis, an estimate of gross output is obtained. The results of this calculation are shown in Table 18.

Table 18

Estimated Gross Output of Agriculture in
Cumberland and Westmorland1961/2 and 1962/3 Averages

	Gross Output	
	£'000	% of Total
<u>Livestock</u>		
Dairy Cows	16,686	49.7
Beef cows and Cattle	6,606	19.7
Sheep	4,131	12.3
Pigs	871	2.6
Poultry and Eggs	2,742	8.2
<u>Crops</u>		
Cereals	647	1.9
Potatoes	524	1.5
Market garden crops	101	.3
Valuation Change	+ 1,248	3.8
	33,556	100.0

The most important difference between the pattern of output shown in Table 18 and that of U.K. agriculture is in the very much higher proportion which comes from dairy and beef cattle and sheep in the two counties. These enterprises account for more than 80 per cent of output here, compared with less than 40 per cent in the U.K. as a whole. These are, of course, all grazing livestock, although the dairy cows would probably consume a large volume of concentrated animal feedingstuffs which would have to be imported into the area. The value of production of concentrates in the area is probably less than £2 million annually, whereas the cost of total feed requirements is estimated at £8-£10m.

Thus feed imports of the order of £6 - £8m. might be required in the region. It is not known what proportion of this would be provided from U.K. imports.

Another major farm requisite in the area is fertilisers. Gross annual expenditure on fertilisers is estimated to be roughly £2m. of which some £ $\frac{1}{2}$ m is refunded to the farmer as fertiliser subsidy (see Table 19 below). Machinery is another important item of expenditure on farms. It is estimated that in Cumberland and Westmorland together the total machinery bill would amount to about £5m. This item covers depreciation, repairs and fuel - the estimate corresponds with that calculated by M.A.F.F. in relation to the whole agricultural industry (see for example Annual Abstract of Statistics 1964, Table 211).

The estimated gross output is valued at farm-gate prices, that is, including deficiency payments. The third component of revenue, in addition to output and valuation changes, is the value of Production Grants received during the year, these amounts are shown in Table 19.

Table 19 Value of Production Grants in Cumberland and Westmorland

£'000

	1961/2	1962/3
Ploughing Grant	244	242
Hill Sheep and Cattle	204	263
Animal diseases	-	2
Calf Subsidy	561	536
Lime	93	102
T.B.Eradication	-	-
Fertilisers	559	508
Small Farmers Scheme	128	104
Others	27	30
Total	1,816	1,787

- nil or negligible

Source: Ministry of Agriculture, Fisheries and Food.

Summary and Conclusion

The significance of agriculture in Cumberland and Westmorland as a proportion of that of England and Wales is indicated by its demands on land and labour resources and by its share of gross output. Thus the agriculture of the area occupies 5.4% of the total farm land of England and Wales although this share falls below 3% if only the crops and grass area is considered. About 2% of the agricultural labour force is employed in the area and around 2 $\frac{1}{2}$ % of the tenants' capital. The estimate of gross output in the area amounts to 2 $\frac{1}{2}$ % of that of England and Wales. Most of the output comes from grazing livestock; the area contains some 5% of the cattle and 7% of the sheep of England and Wales.

The importance of agriculture in the development of the two counties depends on the economic activity it generates. Relevant factors are the revenue it creates and the volume of inputs used up in the process. The Gross Revenue of agriculture is estimated at about £35m. The purchased inputs of feed, fertiliser and machinery - required in production are worth an estimated £16m. Other inputs would probably bring this up to £20m which leaves net output at £15m as the return to the landlord, the farmer and the worker. These rough figures give a broad impression of the cash flows generated by agriculture in the two counties.

Agriculture also contributes to the regional economy by releasing labour to other industries. Nationally, the agricultural labour force has been declining as output has increased. This increase in output per man, associated with a substantial change in the ratio of labour to capital in the industry, has enabled it to release considerable numbers of employees for more productive work. Hired workers in agriculture account for roughly half of the primary employment in the area. Over the last 9 years nearly 1/4 of the hired workers have left the industry. There is no direct evidence of a reduction in the number of farmers in the area. Nationally some of their effort is being channelled into other activities, often closely connected with agriculture such as transport, contracting and, in some areas, tourism. However, in Cumberland and Westmorland there is no quantitative information on these changes.