July, 1954

Report No. 80.

UNIVERSITY OF BRISTOL

Department of Economics (Agricultural Economics)
Bristol II. Province

COSTS AND RETURNS OF FATTENING SHEEP ON ROOTS IN DEVON

A Study of 37 Sheep Fattening Enterprises

1952/53

by

E.T. Davies, B.Sc.

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DEVON.

Price: 1/6d.

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DEPARTMENT OF AGRICULTURAL ECONOMICS
1 COURTENAY PARK, NEWTON ABBOT

With the Compliments of

Stanley T. Morris

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Any queries arising out of this report should be addressed to the Provincial Agricultural Economist, 1, Courtenay Park, Newton Abbot.

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INTRODUCTION

It is nearly twenty years since the winter fattening of arable sheep in Devon was last studied and reported on.[1] This present study was conducted during the Winter and Spring of 1952/53, and, like the earlier study, was confined mainly to farms situated in or adjacent to the red loam district of Mid-Devon - the triangular section formed by Crediton to the West of Exeter, Broadclyst to the East and Teignmouth to the South, one of the most fertile areas in South West England. With the exception of six flocks located in the Totnes and one in the Kingsbridge area, all the flocks investigated were located in the prescribed area.

Some measures of the natural and other amenities which the area enjoys may be gauged by a study of the rental values of the farms surveyed, which averaged 34s. 6d per acre of crops and grass. The comparative figure for a group of sheep rearing farms in the upland districts of North Devon in 1950/51 was 22s. 2d. The system of farming practised on these red loam soils is essentially mixed, with corn, cattle, sheep and pigs each contributing to the farm output. A study of the cropping for 1952 showed that the average size of the survey farms was 257 acres of crops and grass, divided as follows:-

	% of Total
Tillage	37·3
Temporary Grass	14·5
Permanent Grass	48·2
Total Crops and Grass	100·0

Tillage occupied over 37% of the total farm acreage, with corn accounting for 74·3% and forage and other crops for 25·7% of this area. Barley was the predominant cereal, amounting to 56·0% of the total corn acreage, with Wheat 14·5%, Oats 17·0% and Mixed Corn 12·5%. Barley was of greatest importance in the districts of Broadclyst and the coastal region from Teignmouth to Exminster, where conditions of soil and other factors are well suited to the growing of a high quality malting sample. Towards Crediton and Totnes, this crop was less significant and wheat occupied a relatively more prominent position in the farm rotation. Cash root cropping, such as potatoes and sugar beet, was relatively unimportant on the survey farms.

In terms of livestock, the yearly average numbers maintained per 100 acres of crops and grass, were:- Cattle 29; Sheep 81; and Pigs 15. The relative numerical importance of sheep does suggest that the value of the 'Golden Hoof' is still held in high esteem by these red-loam farmers for the maintenance and improvement of both the fertility and condition of the soil. Indeed, the association of sheep with arable cropping has been described as "the most highly scientific system of maintaining soil fertility ever devised".[2] Nevertheless, it has been argued that the growing of root crops for sheep consumption is economically unsound, and that fertility can be maintained by a system of alternate husbandry, with corn and leys

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1 "Changes in the practice of Sheep farming on the red loams of Mid Devon". S.T. Morris, M.Sc., Seale Hayne Agricultural College. Pamphlet No. 45. July 1935.

2 'Sheep' - by J.F.H. Thomas and others,

alternating in the farm rotation. But the supporters of this modernist theory tend to overlook the incidence of fungoid attacks which invariably accompany such a system, a succession of crops all of which are prone to similar diseases. The root crop not only provides an opportunity to thoroughly clean the land, but, equally important, it allows for a change in crop, since, as one authority wrote* "there is a botanical gulf between cereals and roots, and a botanical affinity between cereals and grasses".

The importance of sheep in any form of farm organisation can be assessed by their contribution to total farm output. From the financial data available in the department for a group of farms most closely resembling the survey farms, sheep and wool account for nearly one-fifth of the total output. On some of the larger of these farms, sheep assumed even greater importance - the output from the sheep enterprise amounting to a third of the total.

Practically every farmer who co-operated in this investigation strongly emphasised the important role which their arable sheep played in the general farm economy. They claimed that even when the direct returns from winter fattening were small, the very fact that animal residues were directly applied to the land did ensure that fertility was maintained: and at the same time, the cultural operations involved in the growing of forage crops went a long way towards reducing the incidence of weeds and disease in the subsequent cereal crops.

The present study, is confined to one particular aspect of the sheep enterprise - the fattening of hoggs on arable land. This report deals not only with financial considerations of the study, but also with systems of hogging,such as methods of feeding and foods fed, breeding policies and the question of flock composition and disposal. An investigation covering the entire sheep enterprise on a group of farms in this area is now in progress and results will be available in due course.

Altogether, financial and physical data were collected for 37 sheep fattening enterprises.

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* Ibid p.1.[2]

SYSTEMS OF HOGGING

Methods of Feeding.

One of the most interesting features revealed during the course of this study was the lack of standardisation between the farms in terms of flock management. In one respect however, the majority of the farms had in common the fact that the traditional method of hogging sheep on cleaned and cut roots had been completely abandoned, and on four farms only was such a system still evident. However, there were many farmers who freely admitted that sheep usually thrived much better under such a system, and that they would gladly revert to it if labour were both plentiful and cheap. In the few instances where this older system of feeding was still pursued, the flocks were mainly small and the labour, or at least most of it, was undertaken by the farmer himself.

With the present day technique of folding lambs on roots, the main drawback was often claimed to be the difficulty experienced by the lambs in breaking their own roots during the hard, frosty weather of mid winter when they normally begin to shed their teeth. As a result, they are often forced to exist on an inadequate diet at a time of year when they particularly require more, and an inevitable check in the fattening rate follows. However, this was the system most generally adopted on the survey farms. In fact, twenty-seven of the farmers folded their sheep in this manner. The normal procedure was to introduce the hoggs gradually to the actual crop on which they were subsequently folded by hauling out a few loads as a prelude to the commencement of the actual folding period. On the remaining six farms, the heavy nature of the soils demanded a departure from the normal method of folding. In these cases, the treading and trampling of the sheep would not only lead to excessive poaching, but also to an accumulation of mud on the sheep's undersides and legs, resulting in an inflammatory condition of the intestines. Such a condition causes great discomfort to the sheep, and often results in a distinct set-back. On three of these heavy soil farms, this trouble was avoided by hauling out the roots to the sheep on grass, whilst on the other three farms, its incidence was reduced by giving the hoggs free access to the entire root field, with no penning or folding arrangements whatsoever.

Types of Foods Fed.

The total acreages of the various forage crops fed to the sheep, together with the estimated total yields, are set out in Table 1. It will be seen that the 4,429 sheep covered by this study consumed the produce of 340½ acres of roots and greenfodder, equivalent to 1 acre per 13 sheep. The most prominent item in the table is that of mixed roots, which amounted to 116¾ acres, and was composed of either swedes and kale (61½ acres), swedes and turnips (39 acres), or a combination of all three (16¼ acres). Swedes, therefore, appeared in all the mixed root crops, and this together with the acreage sown to Swedes alone, amounted to 186¼ acres, equivalent to just over 55% of the total forage fed to the sheep. Kale, on its own, accounted for a further 46¾ acres, whilst turnips were responsible for 31½ acres, being grown chiefly as a catch crop after early potatoes and barley. The only other crops of note were rape and vetches, the remaining acreage being devoted to cabbage and a small area of mustard.

It is of interest to note the prominent role played by kale in the feeding programmes of these fattening sheep. When grown as a pure crop or as a constituent of a mixture, kale was cultivated on twenty-two of the farms and appeared in approximately 48% of the total forage acreage fed, which is very nearly on par with Swedes.[1]

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[1] In the previous study, kale appeared in only about 20% of the total forage fed, whilst the swede crop accounted for 50% of the total.

Not only is the kale in itself of high nutritional value, it also has the added advantage of providing an abundant amount of edible keep at that time of the year when swedes normally become hard and frosted and therefore difficult for the lambs to consume.

Table 1.

ANALYSIS OF THE TOTAL FORAGE CROPS FED

CROPS	MAIN CROPS			CATCH CROPS		
	Acres	Estimated Total Yields	No. of Farms	Acres	Estimated Total Yields	No. of Farms
	Ac.	Tons	No.	Ac.	Tons	No.
Turnips	2½	31	3	29	167	7
Swedes	69½	1061	17	-	-	-
Kale	46¾	643	9	-	-	-
Rape	34	323	5	-	-	-
Vetches	18	180	1	-	-	-
Mixed Roots	113¾	1906	13	3	24	1
Other	15½	229	8	8½	38	2
TOTALS	300	4373	56	40½	229	10

The investigation revealed that the pre-war custom of supplementing home-grown forage with liberal quantities of cake and corn had practically disappeared. In fact, only two of the costed flocks received a ration of purchased cake, whilst corn, mainly in the form of crushed oats, was fed to seven flocks. Hay was fed on twenty-five of the farms, but eleven farmers relied solely on forage crops for wintering their hoggs.

The Feeding Period.

The term "feeding period" relates to the time when the sheep were actually consuming forage crops. As will be shown later, only a proportion of the total costed hoggs were graded directly off these crops, the majority of the remainder being held over on grass until after shearing. Therefore, for purposes of this report, all the data presented relate to that period when the sheep were actually consuming forage crops. In the case of those hoggs retained until after shearing, estimates were made of their values and dead-weights at the time the sheep were transferred from forage crops to grass.

The commencement date of hogging on individual farms varied tremendously, ranging from about early October to the end of January, but with the first half of November being the time favoured by most farmers. These dates relate to the times when the fattening or feeding periods actually commenced on the farms and do not include the entry of those hoggs which were purchased later in the year to augment or replace the sheep originally owned. For both the graded and retained sheep, the average feeding period was 16½ weeks,[1] but here again there existed a wide variation, with a range from 5 weeks to 23½ weeks.

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1 This compares with 13½ weeks in the earlier study.

Breeds and Crosses.

To illustrate still further the degree of diversification encountered during the course of this study, the following tables on breeds and crosses have been computed in order to give some idea of how breeding policies varied on the costed farms.

Four of the farms visited did not maintain a breeding flock, and here the programmes of winter fattening were carried out entirely with autumn purchased stores. One other farmer maintained two breeds of ewes, Devon Long Wools and Dorset Downs, in approximately equal numbers. The breeding flocks on the remaining farms were made up of either pure-bred ewes or cross breds. A study of table 2 will show that by far the most popular breed type was the Devon Long Wool.

Table 2.

ANALYSIS OF THE BREEDS OF EWES AND RAMS KEPT ON 33 FARMS

BREEDS	No. of Flocks	No. of Sheep	% of Total
(1) EWES:			
Devon Long Wool	19	1863	56·8
South Devon	7	559	17·1
Devon Long Wool x Devon Close Wool	2	296	9·0
Dorset Down	3	285	8·7
Kerry Hill	1	98	3·0
Devon Long Wool x Suffolk	1	90	2·7
Dorset Horn	1	90	2·7
TOTALS	34	3281	100·0
(2) RAMS:			
Suffolk	19	32	45·0
Hampshire	12	17	23·9
South Devon	7	10	14·1
Devon Long Wool	4	6	8·5
Dorset Down	4	6	8·5
TOTALS	46	71	100·0

The other West Country breed recorded, namely the South Devon, was favoured on the seven farms located in the Totnes and Kingsbridge areas, and in each instance the flocks were of pedigree status. Indeed, one of these flocks held the distinction of being the oldest in the South Devon Flock Book, and no female importations had been made into this flock for the past fifty years. The almost universal practice on the farms studied was the use of a Down type ram on Long Wool type ewes, a long established practice in this district. The ram most favoured on the farms investigated was the Suffolk, followed by the Hampshire. The latter has long been popular with Exeter farmers, but the Dorset Down, a most popular ram for crossing in bygone days, does appear to have been largely replaced by the

Suffolk as the predominant Down ram for crossing. Further analyses of the mating policies are given in tables 3 and 4.

Table 3.

COMBINATIONS OF RAMS KEPT ON 33 FARMS.

	No. of Farms	
One Breed		
Suffolk	8	
South Devon	7	
Hampshire	4	
Dorset Down	1	20
Two Breeds		
(Hampshire (Suffolk	6	
(Suffolk (Devon Long Wool	2	
(Suffolk (Dorset Down	2	
(Hampshire (Devon Long Wool	1	
(Hampshire (Dorset Down	1	12
Three Breeds		
(Suffolk (Devon Long Wool (Dorset Down	1	1
		33

Table 4.

TYPES OF CROSSINGS FOR HOGG PRODUCTION ON 33 FARMS

Ram		Ewe	No. of Flocks
Devon Long Wool	x	Devon Long Wool	3
" " "	x	Devon Long Wool x Suffolk	1
South Devon	x	South Devon	7
Suffolk	x	Devon Long Wool	14
"	x	Devon Long Wool x Devon Close Wool	1
"	x	Devon Long Wool x Suffolk	1
"	x	Dorset Down	3
"	x	Kerry Hill	1
Hampshire	x	Devon Long Wool	9
"	x	Devon Long Wool x Devon Close Wool	1
"	x	Dorset Down	1
"	x	Dorset Horn	1
Dorset Down	x	Devon Long Wool	4

Flock Maintenance.

A further element of diversification is evident from a study of the method of flock maintenance. Home-reared ewe replacements were used on nine out of the thirty-three flocks, and seven of these were the South Devon pedigree flocks. On the remaining twenty-four farms, the flock numbers were maintained by annual purchases, usually during the months of July, August and early September. The total number of replacements introduced into the breeding flocks during the summer of 1952 was as follows:-

	Number
Home Reared Ewe Hoggs	280
Purchased Ewe Hoggs	390
Purchased Four-Tooth Ewes	85
Purchased Six-Tooth Ewes	290
Total	1045

With a total ewe population of 3,281 recorded on the farms, this figure of 1,045 represents a replacement rate of just under 32%, which corresponds with the general practice of replacing one-third of the breeding flock each year. The customary procedure was to retain the breeding ewes as long as their teeth and udders continued to be satisfactory. Culls from the flock were invariably fattened off.

Buying and Selling Policies.

This topic illustrates yet again the very wide range in sheep management systems practised on the survey farms. For instance, on two farms the entire lamb crops were sold fat and purchases were made later in the year for hogging on roots. A further thirteen farmers sold some of their lambs fat, and six of these supplemented the remainder with the autumn purchases of stores. Finally, there were eighteen farmers who kept all their lambs for winter hogging, six of whom purchased additional sheep during the autumn and early winter.

An analysis of the total number of sheep, given in table 5, reveals that nearly 47% were purchased hoggs. As many as 33·6% appreared in the opening valuation and had therefore been bought either

Table 5.

ANALYSIS OF THE ORIGIN OF SHEEP FED

	Numbers and Percentage of Hoggs	
	No.	No.
Opening Valuation:- (1. 10. 52.)		
Home Reared	2354	53·1
Purchased	1488	33·6
Total Opening Valuation	3842	86·7
Purchased Later	587	13·3
Total Hoggs Fed	4429	100·0

before, or at the actual time when the feeding periods commenced on the individual farms. The other purchases were procured later during the winter to replace those hoggs originally on hand. The monthly distribution of the total number of hoggs purchased is given in table 6. Apart from a few isolated purchases during July and in the New Year, the sheep were all brought on to the farms during the four month period August to November. One farmer, however, did purchase stores as late as April, but this was done principally to clear the surplus acreage of vetches available following the grading of earlier fed hoggs.

Table 6.

MONTHLY DISTRIBUTION OF HOGG PURCHASES

	1952						1953			
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Numbers Purchased	33	426	551	353	394	72	76	20	-	150
Estimated Dead-Wt. Per Head (lbs)	54½	56	51½	60	56	53	58	73	-	70
Average Value per Lb. Dead-Wt. (d)	31¾	31	31¾	30¾	31¾	31¼	31½	34½	-	29

Although a total of 4,429 hoggs were costed during the winter of 1952-53, table 7 shows that only 2,905, that is, approximately two-thirds, were actually graded directly off forage crops. Thirty-seven sheep either died or were sold as casualties, whilst the remainder, amounting to 1,487 sheep, were retained for further feeding. The total numbers of hoggs graded off forage crops each month are presented in table 8, together with details of the average monthly prices paid by the Ministry.

Table 7.

DISPOSAL OF HOGGED SHEEP

	Numbers and Percentage of Hoggs	
	No.	%
Sales:-		
Graded	2905	65·5
Casualties	20	·5
Total Sales	2925	66·0
Retained	1487	33·6
Died	17	·4
Total Hoggs Fed	4429	100·0

In the case of those sheep which were retained on the farms after the conclusion of the 'hogging' period, the more customary procedure was to graze them on leys for about four to six weeks, and then shear and grade them off immediately afterwards. In fact, a total of 1,282 sheep, spread over thirteen farms, were disposed of in this manner. A further 42 sheep either died or were sold as casualties whilst on grass; another 92 hoggs were kept throughout the summer and fattened during the 1953-54 winter; the remainder, 71 sheep, were transferred into the breeding flocks in the autumn of 1953.

Table 8.

MONTHLY DISTRIBUTION OF HOGGS GRADED DIRECTLY OFF FORAGE CROPS

	1952		1953					
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Numbers Graded	14	213	511	919	484	598	116	50
Estimated Dead-Wt. Per Head (lbs)	73	68	60½	66½	67	83	70	80
Average Market Value Per lb. Dead-Wt. (d)	29¼	30¼	32¼	34	35	36¼	36¼	35¼

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THE FINANCIAL RESULTS

Definitions.

It is necessary to define the terms used in this study before discussing the financial aspects of the hogging enterprise. A list of definitions is therefore given below:-

1. Production or Output is a measure of the value added to the hoggs during the period when they were consuming forage crops. Production is calculated by subtracting the sum of the opening valuation plus purchases of hoggs, from the sum of the closing valuation plus sales, e.g.

	£	£
Closing Valuation of Hoggs	500	
Add Sales of Hoggs	1000	1500
Less		
Opening Valuation of Hoggs	800	
Add Purchases of Hoggs	150	950
Production	=	550

2. Margin or Investment Income is the difference between total production and total costs. To arrive at investment income, the labour of the farmer has been included and charged at the standard minimum agricultural rate. Investment income, therefore, represents the reward for management, risk bearing and the interest on capital invested.

Production of Hoggs.

Production, as already defined, refers to the value added to the sheep during their feeding period on forage crops. In table 9, production per graded hogg is shown to be £1. 3. 1d more than that calculated for the retained sheep. The overall production, however, was £2. 1. 1d.

Table 9.

AVERAGE PRODUCTION PER HOGG AND PER HOGG FEED WEEK

	Average Value			Average Dead Weight		
	Graded Sheep	Retained Sheep	All Sheep	Graded Sheep	Retained Sheep	All Sheep
	£ s d	£ s d	£ s d	lbs.	lbs.	lbs.
Beginning of Feeding Period	7 5 2	7 5 2	7 5 2	55	55	55
End of Feeding Period	9 15 1	8 12 0	9 6 3	69½	62	66
AVERAGE PRODUCTION PER HOGG *	2 9 11	1 6 10	2 1 1	14½	7	11
AVERAGE PRODUCTION PER HOGG FEED WEEK	3 0	1 7	2 6	0·9	0·4	0·7

* The average number of Feed Weeks per Hogg is 16½.

At the commencement of the feeding period, the overall average value per hogg was calculated at £7. 5. 2d. The home-reared sheep, however, were assessed at a slightly higher rate to that paid for the purchased hoggs. The former averaged £7. 0. 6d. per head for an estimated carcass weight of 53 lbs., which represents a charge of 31¾d per lb. The purchased hoggs, on the other hand, were a heavier type of sheep on the whole, averaging 57¾ lbs. per-head. These were purchased at an average price of £7. 10. 5d. representing an outlay of 31¼d per lb dead-weight. At the termination of the hogging period, the receipts from the graded hoggs averaged £9. 15. 1d. per-head, for an estimated dressed carcass weight of 69½ lbs. The retained sheep on the other hand were assessed at an average value of £8. 12. 0d. with an estimated dead-weight of 62 lbs. per-head. The average value for all hoggs was £9. 6. 3d., with an estimated dead-weight of 66 lbs.

Production Costs.

A summary is given in table 10 of the total costs attributable to the sheep during their feeding period on forage crops. The chief item of cost is that of foods and grazing, which amounts to 77% of the total costs incurred. The labour charges refers to manual labour

together with a small charge for the horse and tractor services used in hauling hay, hurdles, etc., to the place of feeding.

Table 10.

SUMMARY OF TOTAL PRODUCTION COSTS ON 37 FARMS

	Cost	Percentage
	£ s d	%
Foods and Grazing	6117 15 7	77·0
Labour	1221 2 1	15·4
Miscellaneous	604 13 1	7·6
Total Costs	7943 10 9	100·0

Miscellaneous costs include such items as overheads, depreciation on sheep equipment, haulage and other sundry items.

Table 11.

AVERAGE PRODUCTION COSTS PER HOGG AND PER HOGG FEED WEEK

	PER HOGG		PER HOGG FEED WEEK	
	Amount	£ s d	Amount	£ s d
Foods and Grazing:-				
Roots and Greenfodder	20·60 cwts	1 5 1	1·20 cwts	1 6
Cake and/Corn	5·00 lbs	1 0	·30 lbs	1
Hay	21·50 "	1 0	1·30 "	1
Grazing	-	7	-	-
Total Foods and Grazing	-	1 7 8	-	1 8
Labour:-				
Manual	1·80 hrs	5 0	·10 hrs	4
Horse	0·20 "	3	-	-
Tractor	0·04 "	2	-	-
Total Labour	-	5 5	-	4
Miscellaneous:-				
Farm Overheads	-	1 11	-	2
Depreciation on Equipment	-	6	-	
Haulage	-	4	-	
Sundries	-	-	-	
Total Miscellaneous	-	2 9	-	2
TOTAL PRODUCTION COSTS	-	1 15 10	-	2 2

In table 11, a more detailed account of the various costs are presented. The total costs per hogg were practically identical for both the graded and retained sheep, averaging £1. 15. 10d, or 2/2d per feed-week, but this varied over the entire sample from 7d to 6/- per week. Roots and greenfodder accounted for over 90% of the total charges made for foods and grazing, with hay, cake and corn assuming relatively minor importance. On average, each hogg consumed just over 1 ton of forage, or roughly, the produce of about 1/13th of an acre. This means, therefore, that on the survey farms each acre of forage crops maintained 13 sheep over a feeding period of 16½ weeks.

Total labour charges amounted to 5/5d per sheep, or 4d per feed week, but here again there was considerable variation, with a range from 1d to 1/6d per week. Under miscellaneous costs, the most important item was that of general farm overheads, which were charged at 7/6d per £1 of manual labour directly expended on the sheep. The charge for equipment depreciation referred mainly to such items as the netting, stakes and hurdles used in folding the sheep.

The Profit Margin.

The profit margin or investment income, as defined earlier, refers to the difference between total production and total costs. In the case of those hoggs graded directly off forage crops, table 12 shows that a surplus margin amounting to 14/1d per-sheep was attained, compared with a deficit margin of 9/- per-sheep for those which were kept on until after shearing. For all hoggs, there was a surplus margin of 5/3d per-sheep. It is strongly suspected, however, that the substantial difference in profit margin between the graded and retained sheep is mainly reflected in the under valuation of the latter at the conclusion of their feeding period, since in no way can this variation be related to any extremes in managerial efficiency or to the quality of store hogg fed.

Table 12.

PRODUCTION, PRODUCTION COSTS AND MARGINS PER HOGG AND PER HOGG FEED WEEK

	PER HOGG			PER HOGG FEED WEEK		
	Graded Sheep	Retained Sheep	All Sheep	Graded Sheep	Retained Sheep	All Sheep
	£ s d	£ s d	£ s d	s d	s d	s d
Production	2 9 11	1 6 10	2 1 1	3 0	1 7	2 6
Production Costs	1 15 10	1 15 10	1 15 10	2 2	2 2	2 2
Margin:-						
Surplus	14 1	-	5 3	10	-	4
Deficit	-	9 0	-	-	7	-

In conclusion, an attempt has been made in table B in Appendix II to illustrate the efficiency with which the various 'input' factors were employed on the individual farms. When interpreting this table, it must be borne in mind that the efficiency standards per £1 of manual labour are based only on the direct labour expended

on the sheep. It is invalid, therefore, to compare these efficiency standards with those normally expressed per unit of labour in a complete farm account. Here, the total labour utilised on the farm is taken into consideration, and this involves the labour on livestock, crops and on the unproductive work of hedging, ditching, etc.

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SUMMARY

1. A study of the winter fattening of arable sheep was undertaken on 37 Mid-Devon farms during the period 1952-53, and covered a total of 4,429 sheep.

2. On most of the survey farms, the traditional method of hogging sheep on roots had been completely abandoned in favour of the less labour-demanding system of folding. Indeed, on only four farms were roots cut and cleaned in the traditional manner.

3. The sheep consumed the produce of 340½ acres of forage crops, equivalent to 1 acre for every 13 sheep folded. Swedes and kale, either as pure crops or as constituents of a mixture, were the most important forms of forage fed.

4. Concentrates, in the form of cake and corn, played a very minor role in the sheep diet, with an average of 5 lb. fed per head. Hay was fed at approximately 21½ lb. per head.

5. Manual labour requirements averaged nearly 11 hours per 100 hoggs per week, representing an outlay of 30s. 3d per week.

6. The most popular sheep for hogging purposes was the Devon Long Wool x Suffolk, followed by the Hampshire Down cross.

7. A total of 2,905 sheep, or 65·5% of the entire sample, were graded directly off forage crops. The majority of the remainder were held-over on grass until after shearing. Receipts averaged £9. 15. 1d per head for the graded hoggs, and the estimated value of the retained sheep averaged £8. 12. 0d. per head at the end of the feeding period. The average value for all hoggs was £9. 6. 3d.

8. Production averaged £2. 9. 11d per hogg graded, compared with £1. 6. 10d per head for the retained sheep. For all hoggs, production averaged £2. 1. 1d.

9. Assuming the same costs for both groups of sheep (£1. 15. 10d per head), there was a surplus margin of 14/1d per head on the graded sheep and a deficit margin of 9/- on the retained sheep. The overall margin averaged 5/3d.

10. Twenty-one of the costed flocks earned a surplus margin, and sixteen a deficit margin.

SOME COMPARISONS BETWEEN THE 1934* AND 1952 STUDIES.

Although the data available for the two periods are insufficiently homogeneous to facilitate a complete and valid comparison of the hogging enterprise, the following observations will at least give some idea of the extent conditions have changed since 1934.

At the time of the earlier study, the average receipt value per-hogg at grading was £2. 8. 0d; in 1952 it was £9. 15. 1d, an increase of nearly 290%. On the other hand, the store value per-sheep shows an even higher proportional increase, from £1. 11. 9d. to £7. 5. 2d., or approximately 350%. The position, therefore, is that although the margin between the return from fat sheep and the price of the store sheep had widened in 1952 as compared to 1934, this extra margin was less than the additional folding costs of the sheep, and consequently the position of farmers was relatively worse in 1952 than in the earlier year.

But in addition to this, it is clear from the statistics available that individual items of cost have also undergone a marked upward trend. In 1934, the average minimum wage for adult labour was 30/6d for a 49 hour week, or 7½d per hour; during the 1952 study it averaged £5. 10. 6d., or 2/4d per hour for a 47 hour week. This difference represents an increase in the basic hourly rate of over 265%. The charge made for manual labour on sheep in 1934 was 3/9d per-hogg, compared with 5/- per-hogg in 1952. This difference represents an increase of only 33% so it is obvious that when the earlier study was made the time devoted to the wintering of hoggs was appreciably higher. In fact, in 1952, labour requirements averaged nearly 11 hours per 100 hoggs per week, but the comparative figure in 1934 was 44 hours.

This state of affairs can most certainly be attributed to the question of management and feeding policies. On many of the survey farms in 1934, the traditional cutting and cleaning of roots was still a prevalent custom, whereas today, this system has been almost completely abandoned in favour of the cheaper practise of folding. Furthermore, hand feeding of cake and corn has also greatly diminished in recent years. During the earlier study, there was an average consumption of 64 lbs. of concentrates per-sheep, at a cost of ¾d per lb, but during the 1952 investigation only 5 lbs. were fed per-sheep at a cost of approximately 2½d per lb. The more intensive feeding system of the 1934 era is indeed reflected in the length of fattening period. During the earlier study, the average time in forage crops was 13½ weeks, compared with 16½ weeks in 1952.

One further comparison between the two periods is the replacement, to a large extent, of the Dorset Down ram by the Suffolk as the most popular breed for crossing purposes.

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* Ibid p.l.[1]

APPENDIX I

Table A

ANALYSIS OF TRADING ON 37 FARMS

Opening Valuation.	No.	Value £ s d	No.	£ s d
Home Reared	2354	16543 5 6		
Purchased	1488	11030 19 0	3842	27574 4 6
Other Purchases			587	4578 16 0
Production of Hoggs (c/fwd)				9089 5 6
			4429	41242 6 0

Expenses.				
Foods and Grazing:-	Amounts	Value £ s d		£ s d
Roots and Greenfodder	4603 tons	5548 6 3		
Cake and Corn	199 cwts	212 4 3		
Hay	850 "	223 11 7		
Grazing	-	133 13 6		6117 15 7
Direct Labour:-				
Manual	8097 hours	1113 6 6		
Horse	1022½ "	63 18 1		
Tractor	195 "	43 17 6		1221 2 1
Miscellaneous:-				
Overheads		417 5 7		
Equipment Depreciation		107 16 6		
Haulage		76 11 0		
Sundries		3 0 0		604 13 1
PROFIT.				1145 14 9
				9089 5 6

APPENDIX I

Table A

ANALYSIS OF TRADING ON 37 FARMS

Sales.	No.	Value £ s d	No.	£ s d
Graded	2905	28333 12 5		
Casualties	20	116 15 3	2925	28450 7 8
Closing Valuation			1487	12791 18 4
Deaths			17	- - -
			4429	41242 6 0
Production of Hoggs (b/fwd)				9089 5 6
				9089 5 6

APPENDIX II

Table B

TOTAL PRODUCTION PER £1 OF EXPENSES

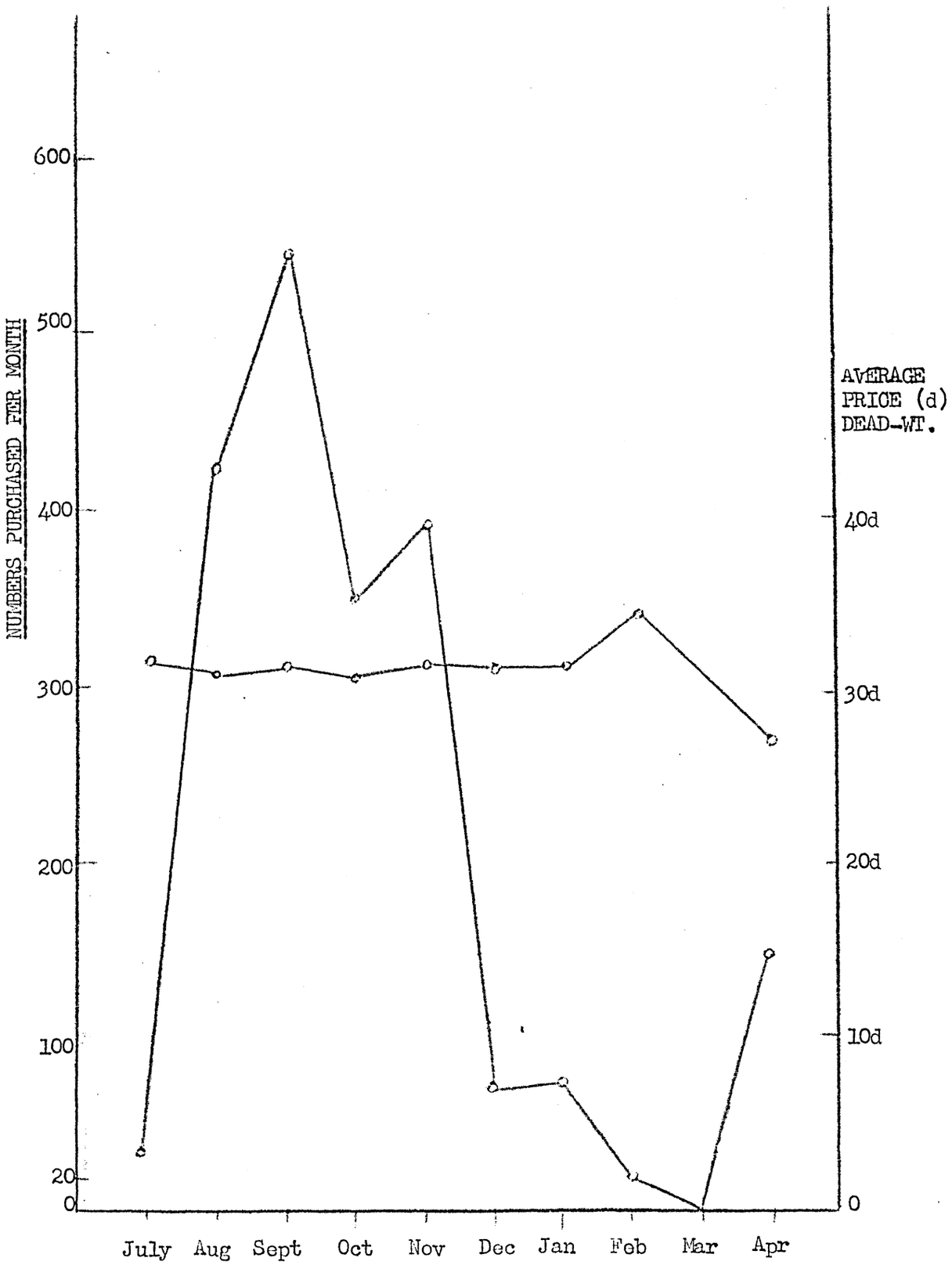
Farm No.	No. Hoggs Fed	Investment Income		Prod. per Flock	Production per £1 of:-				
		Per Hogg	Per Flock		Total Exps.	Foods and Graz.	Direct Manual Labour	Misc. Costs	*Cap. Inves'd.
	No.	s. d	£	£	£	£	£	£	£
1	47	58 2	136	220	2·6	2·9	41·7	59·2	2·2
2	450	50 5	1131	1603	3·4	4·2	40·8	33·3	1·5
3	192	45 7	436	779	2·3	4·7	6·5	13·5	1·4
4	30	40 0	59	76	4·5	5·7	31·0	82·0	1·4
5	90	38 7	173	233	3·9	6·2	16·0	31·4	1·7
6	80	35 9	143	206	3·3	3·8	39·5	51·2	2·2
7	48	33 0	79	163	1·9	2·4	21·2	19·4	2·9
8	243	23 0	280	526	2·1	2·9	12·7	21·9	0·8
9	82	22 0	89	206	1·7	2·3	11·1	23·2	1·1
10	49	18 10	45	121	1·6	2·1	12·3	18·3	1·1
11	93	14 0	65	248	1·4	1·7	11·2	15·6	1·4
12	256	13 7	175	540	1·5	1·6	31·2	49·4	1·1
13	150	12 7	93	355	1·4	1·8	11·3	13·6	1·1
14	53	10 5	27	109	1·3	1·7	13·5	12·3	1·3
15	119	7 10	46	226	1·3	1·9	5·6	12·2	1·4
16	32	7 7	12	32	1·6	3·2	5·1	8·9	0·4
17	112	6 5	36	232	1·2	2·0	4·2	10·4	1·4
18	95	5 2	24	129	1·2	1·4	14·4	21·5	1·6
19	63	3 7	11	129	1·1	1·7	4·2	13·1	1·0
20	137	1 0	6	188	1·0	1·5	5·2	8·9	0·6
21	127	7	3	79	1·0	1·6	5·5	6·5	0·8
22	24	- 1 7	- 2	31	0·9	1·5	3·1	15·0	2·0
23	69	- 2 0	- 7	170	1·0	1·3	6·0	12·7	1·1
24	161	- 3 0	- 25	249	0·9	1·0	25·9	48·2	1·4
25	100	- 4 5	- 22	167	0·9	1·0	16·2	16·6	0·9
26	11	- 6 10	- 3	13	0·8	0·9	6·7	11·0	1·5
27	100	- 9 2	- 45	149	0·8	0·9	10·2	17·1	1·0
28	170	-12 0	- 92	283	0·7	0·8	11·8	24·1	0·8
29	55	-17 2	- 47	116	0·7	0·9	5·6	11·5	0·6
30	149	-18 5	-136	165	0·6	0·6	6·2	11·7	0·7
31	35	-20 0	- 35	33	0·5	0·6	3·3	6·1	0·7
32	409	-23 10	-485	214	0·3	0·5	1·1	4·3	0·2
33	75	-25 2	- 94	68	0·4	0·6	2·6	5·0	0·7
34	170	-27 0	-230	465	0·7	0·8	7·7	11·4	1·0
35	56	-29 9	- 83	143	0·6	1·0	2·0	7·7	0·9
36	77	-37 0	-142	131	0·5	0·7	2·6	5·5	0·9
37	220	-43 9	-480	275	0·4	0·5	2·2	5·4	0·4
AVER-AGE	120	5 2	31	245	1·1	1·5	7·4	15·0	0·9

* Production has been adjusted upwards to represent an annual return on the capital invested.

APPENDIX III

Chart A

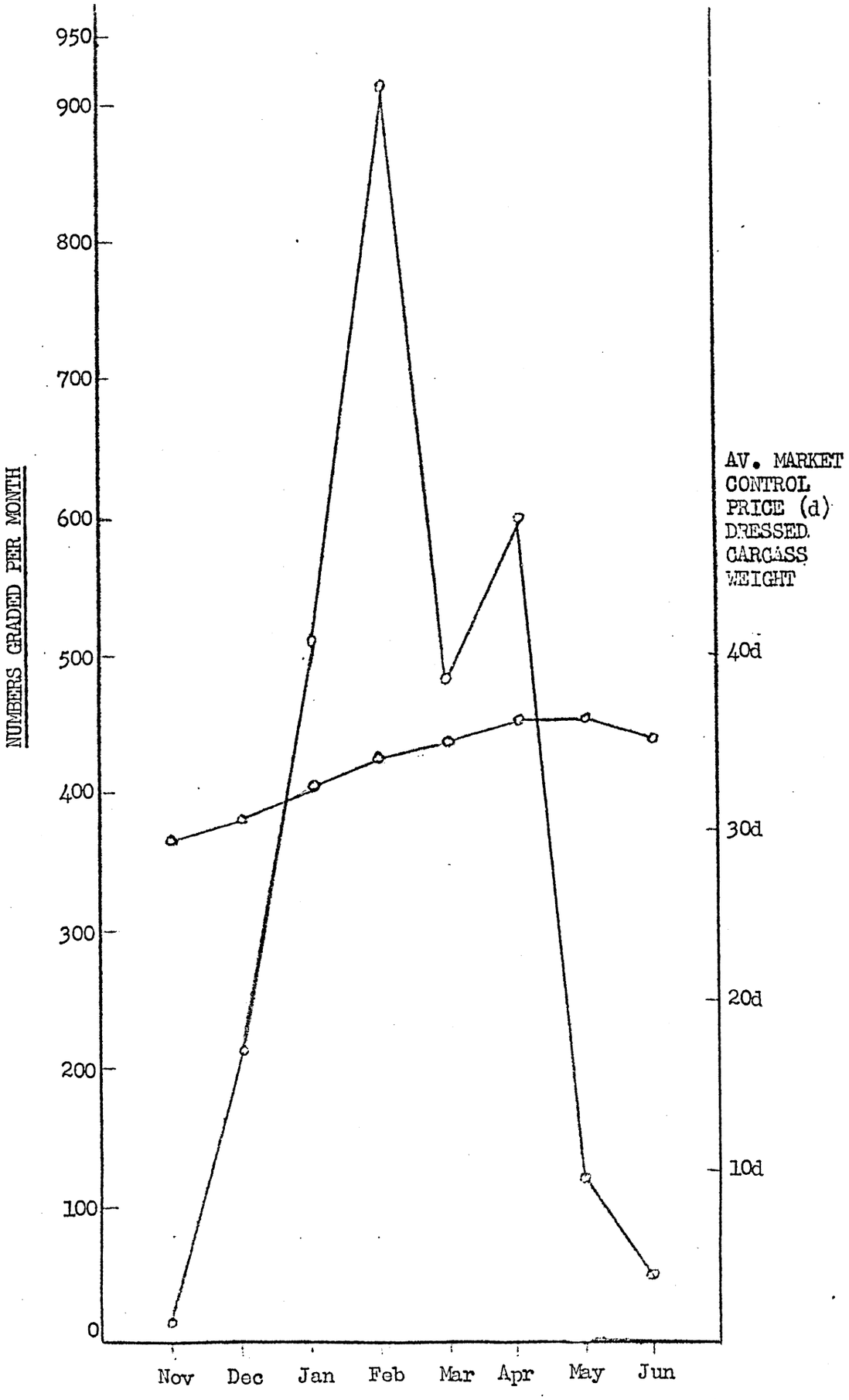
MONTHLY DISTRIBUTION OF HOGG PURCHASES WITH AVERAGE PRICES PAID PER LB. DEAD-WEIGHT.



APPENDIX III

Chart B

MONTHLY DISTRIBUTION OF HOGGS GRADED OFF FORAGE CROPS
WITH THE AVERAGE MARKET CONTROL PRICES PER LB. DRESSED CARCASS WEIGHT.



APPENDIX IV

Costing Method

The accounting technique employed in determining the various cost items are as follows:-

Foods:- 1. Purchased - charged at the actual cost to the farmer.

2. Home-Grown - the cost of production of all forage crops fed to the sheep were determined on each farm surveyed, and the average costs per acre for these crops are given in table C on page 23.

The other home grown feedingstuffs, such as hay and corn, were charged at:-

Food	Cost/Ton £
Hay	6
Dredge	16
Oats	20

3. Grazing - charged at 6d per head per week.

Labour:-

1. Manual - charged at 2/9d per hour.

This overall hourly rate was arrived at by adding to the National Minimum Wage Rate an allowance for perquisites, employer's share of National Health Insurance, overtime and also an allowance to cover the time lost through sickness, etc.

2. Horse - charged at 1/3d per hour.

3. Tractor - charged at 4/6d per hour.

Equipment Depreciation:-

1. Machinery on Forage Crops - a charge of £1 per acre was made to cover the depreciation on all machinery, excluding tractors, used in the cultivating of the forage crops.

2. Sheep Equipment - the following annual depreciation rates were applied on equipment used during the feeding of the sheep on forage crops:-

	% of Cost
Wire	25
Hurdles	20
Wooden Stakes	50
Cutters	5

General Farm Overheads - were charged at 7/6d per £1 manual labour expended on the sheep.

Farmyard Manure - charged at 15/- per ton.

Manurial and Cultural Residues:-

1. Forage Crops:-

(a) Brought forward from the previous crop and charged to the forage crops:-

⅓ cost of F.Y.M. and applying
⅓ cost of all Artificials (excluding straight nitrogeneous fertilizers)

(b) Carried forward to the following crop:-

⅓ cost of F.Y.M. and applying
⅓ cost of all Artificials (excluding straight nitrogeneous fertilizers)

(c) Lime - the cost of lime and applying was spread over five years.

(d) One-half the costs of the cultural operations up to seeding on the forage crops were credited as a cultural residue in respect of cleaning, and carried forward to the following crop.

2. Sheep:-

(a) The residual manurial values of all forage crops folded were credited at £2 per acre. All other foods fed were credited according to the recommendation of the Scott Watson report.

(b) A credit of 10/- per acre was allowed as an arbitrary assessment of the treading value of the sheep in respect of all folded crops.

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Table C.

PRODUCTION COSTS PER ACRE OF FORAGE CROPS.

CROP	MAIN CROPS																CATCH CROPS			
	Swedes				Kale				Rape				Vetches				Mixed Roots				Other Crops							
Acreage Fed	69½				46¾				34				18				113¾				18				40½			
Estimated Yield Per Acre (Tons)	15·2				13·6				9·5				10·0				16·7				14·8				5·6			
	Hours	£	s	d	Hours	£	s	d	Hours	£	s	d	Hours	£	s	d	Hours	£	s	d	Hours	£	s	d	Hours	£	s	d
Labour:-																												
Manual	47·75	6	11	4	29·90	3	0	3	38·25	5	5	3	8·00	1	1	10	38·88	5	6	10	41·50	5	14	0	18·25	2	10	0
Horse	1·89		2	4	2·19		2	9	1·74		2	1	-	-	-	-	1·60		2	0	2·00		2	6	1·80		2	2
Tractor	19·42	4	7	5	13·25	2	19	8	21·00	4	14	6	7·50	1	13	9	15·50	3	9	10	16·60	3	14	7	8·30	1	17	5
Total Labour		11	1	1		6	2	8		10	1	10		2	15	7		8	18	8		9	11	1		4	9	7
Manures:-																												
Artificials		4	10	4		2	6	7		2	12	6		1	16	11		4	13	8		7	1	8		1	2	2
F.Y.M.		6	13	4		2	10	9		5	18	2		-	-	-		4	9	1		5	10	0			13	2
Total Manures		11	3	8		4	17	4		8	10	8		1	16	11		9	2	9		12	11	8		1	15	4
Seeds			6	9			11	4			4	7		8	15	0			7	7		2	10	7			6	0
Rent		1	14	2		1	11	1		1	5	6		1	10	6		1	16	10		1	14	7		1	2	7
Overheads		2	9	11		1	2	9		1	19	11			8	5		2	0	6		2	3	1			18	10
Other		1	9	2		1	0	0		1	0	5		1	0	0		1	4	10		1	0	0			17	0
Total Gross Cost		28	4	9		15	5	2		23	2	11		16	6	5		23	11	2		29	11	0		9	9	4
Less Net Manurial and Cultural Residues		5	3	6		3	0	0		4	18	1			16	11		4	6	0		7	6	9		+ 1	13	0
TOTAL NET COST		23	1	3		12	5	2		18	4	10		15	9	6		19	5	2		22	4	3		11	2	4