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*Tractors
O.S.*

Report No. 71

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(Agricultural Economics)

A STUDY OF TRACTOR OPERATING COSTS AND PERFORMANCES
IN THE SOUTH WEST OF ENGLAND

1951-52

By

K.G. TYERS, B.Sc., (Agric.)

1, Courtenay Park,
Newton Abbot,
Devon.

Provincial Agricultural Economist:

June, 1952.

S.T. MORRIS, M.Sc.

Price: One Shilling & sixpence.

Acknowledgements

The Department of Economics gratefully acknowledges the willing co-operation of the farmers who so conscientiously completed the day to day record sheets and who also supplied the additional information on which this report is based.

Monica Stokes assisted in the field work of this investigation and also analysed some of the data.

Any queries relating to the information presented in this report should be addressed to the Provincial Agricultural Economist, 1, Courtenay Park, Newton Abbot, Devon.

S.T. MORRIS.

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INTRODUCTION

The widespread introduction of farm implements and machines constitutes one of the most important features of British Agriculture in this century. This development has been most rapid during the last decade when war conditions made increasing demands on the farmers. Large acreages were reclaimed and grassland came under the plough in an effort to maximise production from our soils. The task was beyond the capacity of horses, for the work had to be completed in a limited period of time. Labour was also scarce and expensive. The solution to these difficulties lay in the use of tractors which were rapidly introduced. At the same time the numbers of horses decreased. These features are brought out in Table 1 which contains the most recent data available on tractor numbers. The figures for tractors are taken from the 1950 machinery census and those for horses have been extracted from the 4th June statistics for the same year.

Table 1. Number of Tractors and Horses on Farms in 1940 compared with 1950

	TRACTORS			HORSES		
	March 1940	January 1950	1950 Index +	June 1940	June 1950	1950 Index +
England & Wales	66,131 *	295,261	446	541,396	289,000	53
Devon	2,124	12,173	573	23,798	13,420	56
Cornwall	1,474	7,376	501	15,697	9,263	59
Dorset	1,559	4,585	294	6,881	3,056	44
S.W. Province	5,157	24,134	468	46,376	25,739	56

* June 1940

+ 1940 = 100

The information set out in the above table shows that in 1940 horses outnumbered tractors both in England and Wales and also in the three South-Western counties. The rapid introduction of tractors and the decrease in the number of horses during the following decade has changed the position markedly, and in 1950 the data reveal that tractors were more numerous than horses in England and Wales and in Dorset, but in Devon and Cornwall the numbers of horses were still slightly greater.

Tractors have become very important and they now exert a considerable influence on farming in the South West. In 1951/52 an investigation was undertaken in the province to determine the types of machines being used, their running costs and performances, as well as the nature of the tasks performed. The information obtained during the investigation is analysed in this report.*

THE SAMPLE

When the investigation was commenced there were 43 farms included in the sample but only 37 completed records for the full year. The location of the sample farms, together with some details of their organisation, are set out in Table 2.

* For the previous study on this subject see "An Investigation into the Costs of Tractor Work and Performance in Devon and Cornwall" by S.T. Morris and K.G. Tyers, Farmers Report No. 50, September, 1947.

The medium sized mixed farms formed the predominant type in the sample for Devon and Cornwall. In Dorset however there were two distinct groups in which the farming differed markedly. The one contained mixed farms comparable with the Devon and Cornwall groups and the other referred to 3 large arable farms on the Chalk Downs.

Table 2. Data relating to the Sample Farms

Group	Number of :-			Average Size of Farm*	Acres per Tractor			No. of tractors costed
	Farms	Tractors	Horses		Crops	Grass	Total	
Devon	15	24	18	139 acres	23.7	63.2	86.9	19
Cornwall	15	17	17	93½	32.0	50.5	82.5	17
Dorset (Mixed)	4	7	3	154	14.2	73.7	87.9	5
Dorset (Arable)	3	13	8	579½	49.3	84.4	133.7	10
Total	37	61	46	155½	30.4	65.4	95.8	51

* Crops & grass only.

The average size of the 37 farms was 155½ acres of crops and grass. Rough grazings were omitted since tractors did little or no work on them. In the three mixed farming groups the average acres per tractor were between 82½ and 88. The ratio of grassland to tillage however was much higher on the Dorset mixed farms.

Of the 61 tractors kept on the 37 farms, records relating to 51 of them were completed for the year. These tractors have been classified into light, medium and heavy wheeled tractors and tracklayers. The classification of the wheeled tractors was based on their Brake Horse Power, those below 20 B.H.P. being classed as 'light', 20-30 as 'medium', and those over 30 as 'heavy'. The types of tractors in the sample are given in Table 3.

Table 3. Types of Tractors Costed

Type	Make	Number of Tractors	Total No. Tractors
<u>Wheeled Tractors</u>			
1. Light	International Farmall A	1	2
	Allis Chalmers B	1	
2. Medium	Fordson Major	15	44
	Fordson Standard	9	
	Ferguson - Petrol model	8	
	Ferguson - T.V.O. model	5	
	David Brown 'Cropmaster'	5	
	International Farmall H	1	
	Minneapolis Moline	1	
3. Heavy	Field Marshall	3	4
	David Brown	1	
<u>Tracklayer</u>	David Brown 'Trackmaster'	1	1
Total Number of Tractors	-	-	51

The length of time the tractors had been on the sample farms averaged just over 3 years at the commencement of the investigation and varied from four new ones to two bought in 1940.

The geographical distribution of the tractors according to their class is given in Table 4.

Table 4. Distribution of Tractors by Class

Group	Wheeled			Track-Layer	All Tractors
	Light	Medium	Heavy		
Devon	1	16	2	-	19
Cornwall	-	17	-	-	17
Dorset (mixed)	-	5	-	-	5
Dorset (arable)	1	6	2	1	10
Total	2	44	4	1	51

In this investigation individual tractor records were kept showing the total hours worked during the year, the amount of fuel and lubricants used, the amount of farm labour spent on servicing and repairs, the cost of garage repairs and the type of work carried out. From the data given in Table 4 it is seen that the samples of all but the medium wheeled tractors are far too small to allow of any detailed examination. Subsequent analyses have therefore been confined to the forty-four medium tractors, the results of the others being given in Appendix A.

ANALYSIS OF COSTS

A detailed analysis of costs together with some other data are set out in Table 5.

The average costs for the sample of tractors were £143.4.2 per annum and 3/6½d. per hour, the main items being the cost of fuel and a charge for depreciation. The average number of hours worked during the year amounted to 813, and the average acreage per tractor was 91. Fuel costs averaged £73.4.3 per tractor and 1/10d. per hour, and represented 52.4% of total costs. The expense incurred on fuel depends upon the cost and the type of fuel used as well as on the consumption rate. Petrol, for instance, costs more than twice as much as T.V.O. In the present sample, eight of the tractors costed were petrol models and the average petrol consumption rate for these was 0.65 gallons per hour. The remaining 36 tractors were T.V.O. models and their average hourly consumption rates were 0.08 gallons of petrol and 1.03 gallons of T.V.O.

Fuel consumption rates depend upon the condition of the tractor and the skill of the operator as well as on the type of work done. It has not been found possible in this investigation to study the influence of these factors on fuel consumption rates.

Engine and gear oils, together with grease, have been included under "Lubricants" which averaged £7.5.4 per annum and 2d. per hour. This expense is largely within the control of the operator as it depends upon regular greasing and the number of times the oil is changed during the year. "Repairs" included both garage and farm repairs as well as spare parts. This item averaged £12.9.5 per annum and 3¾d. per hour. No repairs were carried out on four tractors during the costing year whilst a further nine had only minor repair charges. Tyre replacement was an insignificant item in the sample costed and has been charged under repairs as a current cost.

The item "Servicing" covered routine work such as greasing, refuelling and changing oil. The average costs were £3.8.9 per annum and 1d. per hour. The sump oil in each tractor was changed at least once during the year. The average number of hours during which the tractor was operated before the oil was changed was 129 hours.

All but two of the tractors costed were insured and the premiums averaged £1.10.1. Road fund licences were obtained for 34 of the tractors.

Table 5.

Costs and other data
(Average of 44 medium tractors)

Item	COSTS					
	Per Tractor			Per Hour		Per Cent
Fuel	£	s	d	s	d	%
Lubricants	73	4	3	1	10	52.4
	7	5	4		2	4.7
Total	80	9	7	2	0	57.1
Repairs	12	9	5		3 $\frac{3}{4}$	8.3
Servicing	3	8	9		1	2.4
Insurance and Tax	2	17	3		$\frac{1}{2}$	1.2
Depreciation	43	19	2	1	1	31.0
Total Costs	143	4	2	3	6 $\frac{1}{4}$	100.0
Average hours worked	813					
Average fuel consumption:- Petrol (Gals. per hr.)	Petrol models			T.V.O. models		
	0.65			0.08		
	T.V.O.			1.03		
	-			-		
Acres per tractor:-	acres					
Tillage	29.1					
Hay and Silage	24.4					
Grazing	37.9					
Total acres	91.4					

A charge of 22 $\frac{1}{2}$ % of the written down values was included to cover depreciation. This charge therefore depended upon the initial cost of the tractor and the date of purchase. A tractor will depreciate more rapidly when working a large number of hours each year but it has not been found possible to vary the depreciation charge on the basis of amount of work done as the investigation was confined to one year only. The charge in this study averaged £43.19.2 per annum and 1/1d. per hour.

RANGE IN COSTS

The individual cost figures for 'medium' tractors varied from £65.4.6 to £295.11.7 per annum and from 1/10d. to 9/4d. per hour. The range in costs as well as the average number of hours worked are set out in Tables 6 (a) and (b).

The information set out in Table 6 indicates that the number of hours worked largely determine both the cost per tractor and per hour. Of the eleven tractors with an annual cost of less than £100, six were operated for less than 500 hours per annum. There were eleven tractors with a cost of

less than 3/- per hour, one of these worked less than 500 hours and four worked more than one thousand hours per annum. Each of the four tractors operated for over 1500 hours had a cost of less than 4/- per hour.

Table 6. (a) Range in Costs per Tractor, 1951/52

Average Number of Hours	Number of Tractors within Cost Range					All Tractors
	£ 50- £100	£100- £150	£150- £200	£200- £250	£250- £300	
Under 500	6	8	-	-	-	14
500 - 1000	5	6	8	-	-	19
1000 - 1500	-	-	5	1	1	7
1500 - 2000	-	-	-	-	4	4
All groups	11	14	13	1	5	44

(b) Range in Costs per Hour, 1951/52

Average Number of Hours	Number of Tractors within Cost Range						All Tractors
	Under 3s.	3s - 4s.	4s - 5s.	5s - 6s.	6s - 7s.	Over 7s.	
Under 500	1	2	6	1	3	1	14
500 - 1000	6	5	8	-	-	-	19
1000 - 1500	2	5	-	-	-	-	7
1500 - 2000	2	2	-	-	-	-	4
All groups	11	14	14	1	3	1	44

NUMBER OF HOURS WORKED

The forty-four tractors were used for an average of 813 hours per annum, individual machines varying from 251 to 1908 hours.

The hours of work performed by the tractors depend upon the size of the farm, the number of tractors per farm, and the nature of the equipment available for carrying out the different tasks, as well as on the contract work which can be carried out on neighbouring farms. The distribution of the tractors according to the number of hours worked together with the average acres per tractor are set out in Table 7.

The data given in this Table show clearly that the average hours of work per tractor vary directly with the average acres per tractor. The eighteen tractors which were operated for less than 600 hours per annum had fewer than 75 acres per tractor as compared with the five used for over 1400 hours per annum which had over 150 acres per tractor.

It is noted that in the '1200 - 1400 hours' group the average number of acres per tractor was 98.5. This is due to the fact that two of the three tractors were used for contract work. These were the only two tractors which were used to any great extent on work off the farm. As already indicated (viz. Table 6 (b)) the cost per hour depended to a considerable extent upon the number of hours worked during the year. Some of the costs (e.g. depreciation, insurances, tax) are fixed, consequently the fixed costs per hour will vary ~~directly~~ ^{inversely} with the number of hours worked.

Table 7. Acres per Tractor and Distribution of Tractors
by Hours of Work, 1951/52
(Average of 44 medium tractors)

Hours Per Tractor	Acres Per Tractor	Number of Tractors
200 - 400	64.3	6
400 - 600	72.6	12
600 - 800	77.4	8
800 - 1000	106.2	7
1000 - 1200	136.5	3
1200 - 1400	98.5	3
1400 - 1600	151.0	2
Over 1600	153.0	3
All Tractors	91.4	44

An analysis has been made showing the average costs per hour according to the number of hours worked during the year and the data are set out in Table 8.

Table 8. Costs per Hour according to the amount of Work Done,
1951/52
(Average of 44 medium tractors)

Hours Per Year	Cost Per Hour		Number of Tractors
	s	d	
200 - 400	5	5 $\frac{1}{4}$	6
400 - 600	4	0 $\frac{1}{2}$	12
600 - 800	3	5 $\frac{1}{2}$	8
800 - 1000	3	7 $\frac{3}{4}$	7
1000 - 1200	3	2 $\frac{1}{2}$	3
1200 - 1400	2	9 $\frac{1}{4}$	3
1400 - 1600	3	5	2
Over 1600	2	10 $\frac{1}{4}$	3
All groups	3	6 $\frac{1}{4}$	44

It is seen that the costs per hour were inversely proportional to the average hours worked during the year. Six tractors were operated for less than 400 hours per annum and these had an average cost of $5/5\frac{1}{4}$ d. per hour as compared with $2/10\frac{1}{4}$ d. for the three tractors working over 1600 hours per annum. Average costs and other data relating to the forty-four 'medium' tractors are grouped in Table 9 according to the number of hours worked.

Table 9. Tractor Costs and Other Data according to Number of Hours Worked,
1951/52
(Average of 44 medium tractors)

Hours Per Year	Under 500				500 - 900				Over 900				
	Costs Per				Costs Per				Costs Per				
	Tractor		Hour		Tractor		Hour		Tractor		Hour		
	£	s	d	s	d	£	s	d	s	d	£	s	d
Fuel	36	14	10	1	10	62	16	8	1	10	114	4	1
Lubricants	4	18	0		3	6	13	3		2 $\frac{1}{4}$	9	17	3
Total	41	12	10	2	1	69	9	11	2	0 $\frac{1}{4}$	124	1	4
Repairs	6	6	5		3 $\frac{3}{4}$	8	5	8		2 $\frac{3}{4}$	18	13	9
Servicing	1	19	8		1	2	8	7		2 $\frac{3}{4}$	5	11	11
Insurance & Tax	3	1	4		2	2	14	4		1	2	16	2
Depreciation	43	4	9	2	2	39	10	10	1	1 $\frac{3}{4}$	48	15	7
Total	96	5	0	4	9 $\frac{3}{4}$	122	9	4	3	6 $\frac{1}{2}$	199	18	9
Av. No. Hours	400				689				1284				
Fuel Consumption (galls. per hour)	Models		T.V.O.		Models		T.V.O.		Models		T.V.O.		
Petrol	0.53		0.10		0.77		0.09		0.64		0.08		
T.V.O.	-		1.11		-		1.03		-		1.00		
Average No. of Years on Farm	3 $\frac{1}{4}$				3 $\frac{3}{4}$				3				
Average Purchase Price	£ 285				£ 279				£ 351				
Acres Per Tractor:-													
Tillage	20 $\frac{1}{2}$				27 $\frac{1}{2}$				44				
Hay & Silage	17 $\frac{1}{4}$				17				35				
Grazing	31 $\frac{3}{4}$				33 $\frac{1}{2}$				47 $\frac{1}{4}$				
Total	69 $\frac{1}{2}$				78				126 $\frac{1}{4}$				
No. of Tractors	14				14				16				

The figures in the above table show clearly that the fixed costs vary ~~directly~~ ^{inversely} with the number of hours worked. Insurance and Tax averaged 2d. per hour in the 'under 500 hours' group as compared with only $\frac{1}{2}$ d. per hour in the 'over 900 hours'. The depreciation charges in the two groups were 2/2d. and 9d. per hour respectively, despite the fact that the average purchase price in the 'over 900 hours' group was £66 higher and that the tractors had been on the farm for a similar period of time.

The cost of fuel and lubricants averaged about 2/- per hour with no wide variations between the groups.

One of the most significant factors in Table 9 is the relationship between acres per tractor and hours worked. The average number of acres per tractor in the 'under 500 hours' group was 69 $\frac{1}{2}$ compared with 126 $\frac{1}{4}$ in the 'over 900 hours' group. This supports the contention that the size of farm is one of the most important factors determining the amount of available work for the tractor each year.

Fuel consumption per hour for the T.V.O. models decreased as the number of hours worked increased. In the case of the petrol models, the same trend is not clearly discernible but it should be pointed out that only one petrol model was included in the 'under 500 hours' group.

DISTRIBUTION OF WORK

The distribution of tractor work during the year is influenced by climatic conditions as well as by farm organisation and management. During 1950/51 the winter was exceptionally wet and spring cultivations were delayed. When conditions eventually improved in April 1951 there was a considerable volume of work to be performed immediately. Tractors were utilised for long hours each day in an attempt to get the crops planted without further delay. The effect of this on the distribution of work throughout the year is brought out in Table 10.

Table 10. Seasonal distribution of Tractor Work, 1951/52

Month	Hours work Per Tractor	Per Cent
February 1951	52½	6.5
March "	56½	6.9
April "	117½	14.4
May "	85	10.5
June "	77¾	9.6
July "	85¾	10.5
August "	60¾	7.5
September "	59	7.3
October "	68¾	8.5
November "	48	5.9
December "	47½	5.8
January 1952	54	6.6
Year	813	100.0

During each of the winter months the tractors averaged some 50 hours amounting to nearly 7% of the annual work. The peak was reached during April when the tractors averaged 117½ hours, nearly 15% of the total for the year. During the subsequent months of May, June and July the tractors were used fairly continuously on hay-making and inter-row cultivations, averaging 75-85 hours per month.

TYPE OF WORK DONE

The work performed by the tractors has been classified as follows:-

- (1) Field work which included ploughing, working down, seeding, sowing manures, inter-row cultivations, cutting hay and hay-making, and cutting corn, etc.

(2) Transport which included hauling foods, manures, seeds and other materials as well as the carrying of hay and corn at harvest time.

(3) Belt work which included sawing logs, threshing, grinding, etc. The importance of the types of work done is illustrated in Table 11. One tractor has been omitted from this analysis because of inadequate information.

Table 11.

Type of Work Done, 1951/52
(Average of 43 medium tractors)

	Hours Per Tractor	% of all Work
Field work	489	60.8
Transport	296 $\frac{1}{4}$	36.8
Belt work	19 $\frac{1}{2}$	2.4
All Work	804 $\frac{3}{4}$	100.0

The average hours per tractor spent on various jobs in the field are given in Table 12 (a).

Table 12. (a) Hours per Tractor on various Field Jobs, 1951/52
(Average of 43 medium tractors)

Type of Work	Hours Per Tractor	% of all Work
Ploughing	125 $\frac{3}{4}$	15.6
Working Down	148	18.4
Drilling Artificials	21 $\frac{1}{2}$	2.7
" Seeds	17 $\frac{3}{4}$	2.2
Cutting Grass	32 $\frac{1}{2}$	4.0
Conserving Grass	43 $\frac{1}{2}$	5.4
Cutting Corn	15	1.9
Raking Corn Stubble	2	.3
Planting Roots	5 $\frac{3}{4}$.7
Inter-row Cultivation on Roots	8 $\frac{1}{2}$	1.1
Lifting Roots	22 $\frac{3}{4}$	2.8
Cutting Weeds on Grassland	11	1.4
Other Grassland Work	13 $\frac{3}{4}$	1.7
Hedging and Ditching	3 $\frac{1}{4}$.4
Pick-up Baling	12 $\frac{1}{4}$	1.5
Spraying	2 $\frac{1}{4}$.3
Making Cress Beds	3 $\frac{1}{2}$.4
Total Field Work	489	60.8

Notes:

Conserving Grass includes both haymaking and silage making but excludes the carrying of materials.

Other Grassland Work includes harrowing and rolling of grassland etc.

Field work represented 60.8% of the total and was clearly the chief type of work performed by these tractors. The time spent on ploughing and subsequent cultivations also figured importantly and averaged 274 hours per annum and over 30% of all hours worked.

Transport work accounted for 36.8% of all tractor operations. An analysis is given in Table 12 (b).

Table 12. (b) Hours per Tractor on Various Transport Jobs, 1951/52.
(Average of 43 medium tractors)

Type of Work	Hours Per Tractor	% of all Work
<u>Transport:-</u>		
Foods	81	10.1
Materials	154 $\frac{1}{4}$	19.2
Carrying hay (at harvest)	33 $\frac{1}{4}$	4.1
Carrying corn (at harvest)	27 $\frac{3}{4}$	3.4
Total Transport	296 $\frac{1}{4}$	36.8

Few tractors were used to any great extent on belt work. Over the sample of 43 tractors this type of work averaged 19 $\frac{1}{2}$ hours per tractor and accounted for only 2.4% of all the work. The type of belt work carried out is given in Table 12 (c).

Table 12. (c) Hours per Tractor on Belt Work, 1951/52
(Average of 43 medium tractors)

	Hours Per Tractor	% of all Work
<u>Belt:-</u>		
Grinding	9 $\frac{3}{4}$	1.2
Threshing	5 $\frac{1}{4}$.7
Baling	1	.1
Sawing Wood	3 $\frac{1}{2}$.4
Total Belt Work	19 $\frac{1}{2}$	2.4
Total All Work	804 $\frac{3}{4}$	100.0

The foregoing data indicate the wide variety of tasks in which tractors were employed during the year.

CAPITAL OUTLAY ON MECHANISATION

The mechanisation of farming operations has probably proceeded further in this country than anywhere else, including the U.S.A. During the past decade, tractors were rapidly introduced and at the end of the war the British farmer was encouraged by tax relief to invest large sums of money. The purchase of a tractor is, of course, only the first stage in mechanisation and introduction of this machine necessitates a considerable outlay on allied implements before the tractor can be put to any useful purpose. Such items as ploughs and other tillage machines, as well as trailers and harvesting equipment, are necessary if the tractor is to be used efficiently. Too often horse equipment has been adapted for tractor use with resultant breakdowns and loss of valuable time. So that the tractor in itself creates a demand for a whole variety of implements.

During the course of this investigation, a complete list of implements used with tractors, (excluding any barn machinery), together with their purchase prices, was collected for all 37 farms. The data revealed that, on average, for every £1 spent on tractors a further £1.10.0 was spent on allied implements. The range in these farms varied from 8/- per £1 tractor capital to £3.16.0. On the farm with the lowest capital outlay on implements it was found that the farmer borrowed implements such as corn drills and manure distributors and had his hay and corn cut by contract. The farm with the highest outlay had a potato harvester costing £680, in addition to the normal range of tractor implements carried on farms. It would appear from this information that an outlay of £350 on a medium tractor would necessitate a further £525 - £550 expenditure for the usual range of implements commonly found on farms in the South West. This represents a capital outlay of some £900 on a tractor and other implements for a farm of about 150 acres.

There seems to be no satisfactory answer to the question of size of farm in relation to its ability to carry the whole range of implements and machines economically. An economic unit for mechanisation depends on many factors of which farm size may be of minor consideration. The intensity of production as well as the organisation and management are more likely to have a major influence on the optimum use of implements and machines. Individual farms in this sample carried a wide range of implements which were not fully utilized. Contract work could very well be resorted to in these cases to advantage. The farmer, however, is considerably influenced in his decisions by hazards due to catchy weather. The cost of carrying additional equipment must be weighed against the loss which might be involved through delay in planting or harvesting crops.

SUMMARY

1. Information relating to 2 'light' tractors, 44 'medium', 4 'heavy' and 1 tracklayer was collected during the course of this investigation. The main analyses refer to the 44 medium tractors.
2. The average costs per annum and per hour of the 44 'medium' tractors were £143.4.2 and 3/6¹/₄d. respectively. The major items of cost were fuel and depreciation amounting to 83% of total costs.
3. The average hours worked during the year by the medium tractors were 813, ranging from 251 to 1908 hours.
4. The average total acres of crops and grass per tractor for the 'medium' group were 91.4, 29.1 acres being tillage, 24.4 acres grass cut for hay or silage, and the remainder grass for grazing only.
5. The peak month for tractor operations was April with an average of 117¹/₂ hours per tractor. In May, June and July the tractors were used for an average of 75 - 85 hours per month.
6. Field work was the most important type of work performed by the medium tractors and represented 60.8% of all work. Transport averaged 36.8% and Belt work represented 2.4% of all work.
7. The capital outlay on machinery and implements (excluding barn machinery) that are required for use with a tractor averaged £1.10.0 for every £1 tractor capital on all farms in the investigation.

APPENDIX A

COST DATA BY TYPE OF TRACTOR, 1951/52

(a) Per Tractor

Item	Wheeled			Tracklayer
	Light	Medium	Heavy	
	£ s d	£ s d	£ s d	£ s d
Fuel	51 14 9	73 4 3	40 12 4	78 5 7
Oils and Grease	5 16 10	7 5 4	12 13 11	18 12 0
Servicing	4 6 8	3 8 9	9 3 1	17 6 10
Total Repairs	13 13 3	12 9 5	63 15 5	26 19 0
Insurance & Tax	1 19 0	2 17 3	4 15 6	-
Depreciation	48 4 1	43 19 2	89 12 2	148 5 6
Total Cost	125 14 7	143 4 2	220 12 5	289 8 11
No. Tractors	2	44	4	1
Average Hours per Tractor	963	813	1564	855

(b) Per Hour.

Item	Wheeled			Tracklayer
	Light	Medium	Heavy	
	s d	s d	s d	s d
Fuel	1 0 $\frac{3}{4}$	1 10	6 $\frac{1}{4}$	1 10
Oils and Grease	1 $\frac{1}{2}$	2	2	5 $\frac{1}{4}$
Servicing	1	1	1 $\frac{1}{2}$	4 $\frac{3}{4}$
Total Repairs	3 $\frac{1}{2}$	3 $\frac{3}{4}$	9 $\frac{1}{2}$	7 $\frac{1}{2}$
Insurance & Tax	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	-
Depreciation	1 0	1 1	1 1 $\frac{3}{4}$	3 5 $\frac{1}{2}$
Total Cost	2 7 $\frac{1}{2}$	3 6 $\frac{1}{4}$	2 9 $\frac{3}{4}$	6 9
Average Hours per Tractor	963	813	1564	855

APPENDIX B

TRACTOR COST RECORD

Costing Method. The costs were obtained from weekly record sheets kept by the tractor operator and sent in to this Department at regular intervals. A copy of a weekly record sheet appears below.

Farm Code No.
 Week ending195..

TRACTOR COST RECORD

Day of Week	JOB (specify crop wherever possible)	Working Time	Servicing Time	PUT INTO TRACTOR					Farm Repairs & Overhauls	Garage Repairs and Replacements		
				Petrol	TVO	Engine Oil	Gear Oil	Grease		ITEM	COST	
		Hours	Minutes	Gals	Gals	Pints	Pints	Lbs	Hours	£	s	d
SUN												
MON												
TUES												
WED												
THURS												
FRI												
SAT												
TOTAL												

REMARKS

APPENDIX CCOSTING METHOD(a) Average Fuel Prices.

Month	Petrol		T.V.O.		Diesel Oil	
	s	d	s	d	s	d
February 1951	3	2	1	3½	1	1½
March "	3	2	1	3½	1	1½
April "	3	4	1	3½	1	1½
May "	3	7	1	4¼	1	2
June "	3	7	1	4¼	1	2
July "	3	7	1	4¼	1	2
August "	3	7	1	4¼	1	2½
September "	3	7	1	4¼	1	2½
October "	3	7	1	4¼	1	2½
November "	3	7½	1	4¾	1	3½
December "	3	7½	1	4¾	1	3½
January 1952	3	7½	1	4¾	1	3½

Petrol was generally obtained in small quantities and the amount used each month was therefore charged at the above average prices.

T.V.O. was often purchased in bulk quantities of 200 gallons or more at a time and due note was made wherever possible of the dates when bulk supplies were delivered and their price. Where no information was available as to the date of delivery etc. the above average prices were charged for the months in which the T.V.O. was used.

(b) Lubricating Oils and Grease

These have been charged at the actual cost to the farmer where possible. For those cases where information was not available the following averages were used:-

	s.	d	
Engine oil	6	7	per gallon
Gear oil	7	0	" "
Grease	25	4	per 28 lbs.

(c) Labour Manual labour for servicing the tractor and farm repairs has been charged at 2/5d per hour.

(d) Depreciation Depreciation has been charged at 22½% of written down value.

