THE WEST OF SCOTLAND AGRICULTURAL COLLEGE

(ECONOMICS DEPARTMENT)

TRACTOR OPERATING COSTS

1951-52

A SUMMARY FOR TWENTY MEDIUM TRACTORS

By

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A Summary For 20 Medium Tractors.

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This report covers the results of a small scale investigation into tractor-operating costs, the records for which covered the year from 1st July 1951 to 28th June 1952.

As it turned out, the year chosen for this costing study did not prove to be too suitable for the completion, on farms, of continuous records for a year. The main reasons were the increase in the price of petrol and also the notice given of the impending discontinuance of the 40% "initial allowance" on new farm machinery purchased. Because of this the rate of tractor replacement and of engine conversion was high and a number of tractor costing records had to be discontinued. The final sample of tractors upon which this report is based is, therefore, somewhat smaller than was anticipated.

Records were completed for 26 tractors for a full year which ended in June 1952. Of these, 25 were wheeled tractors and 1 was a tracklayer. On a "brake-horse-power" classification, all 25 wheeled tractors were of a "medium" type, i.e. 20-30 B.H.P.

Of these 25 tractors, 20 were equipped with Petrol/Vapourising Oil engines. The remaining 5 tractors in this group used either Petrol only or Diesel Oil only as fuel. As the number of complete records for Petrol and Diesel tractors was insufficient to make a worthwhile group, the following calculations are based entirely on the 20 Petrol/Vapourising Oil tractors.

The group consisted of the following tractors:-

Ferguson	8	Cost records
Fordson (Standard)	7	ditto.
Fordson Major	2	ditto.
David Brown VAK 1A	3	ditto.

Seventeen of the tractors had originally been bought new, and for these 17 tractors the average length of ownership at the commencement of the costing investigation was 4 years. On the whole, the costed tractors were comparatively new as only 5 of them had been in the possession of their present owner for over 8 years.

Summary of Average Costs for 20 Wheeled Tractors

The average cost per operative hour was 3/4¾d. based on an average working year of 1010 hours. The following table shows how the cost was made up by the various items of expense.

Item	Cost Per Hour
Petrol	3d.
Vapourising Oil	1/1d
Lubricating Oil	2¼d.
Grease	Negligible
Repairs and Spare Parts	4d.
Licence and Insurance	1¼d.
Service Time by Farm Staff	1½d.
	2/1d.
Depreciation	1/0d.
	3/1d.
Share, to this year, of Past, Current Year, and future Major Overhauls	3¾d.
	3/4¾d.

Appendix Table 1 gives a statement of the average annual cost per tractor.

Petrol and Vapourising Oil

The price of petrol rose during the costing year from 3/6½d to 4/3½d per gallon. In the case of vapourising oil the usual practice is to buy in bulk quantities of 200 gallons and the price per gallon for vapourising oil purchased in such quantities rose from 1/3¾d- 1/5d per gallon. There were small variations in these prices according to the zone of distribution in which the tractor was operating. Over the whole costing sample for the whole year the average charge per gallon of petrol was 3/9d and the average charge per gallon of V.O. was 1/4¼d.

Lubricating Oil and Grease

Lubricating oil was charged at varying prices according to the make and grade of oil used. The average price during the year was 7/11dper gallon when purchased in 40 gallon lots. The price inserted for grease, if not stated in the costing records, was 1/1d per lb.

Repairs, Spare Parts and Major Overhauls

Details of all repairs and spare parts were recorded weekly in the Tractor Record Books. Where the repair was of sufficient magnitude to be classed as a "Major Overhaul", it was not included in the normal heading "Repairs and Spare Parts". Instead, the cost of the overhaul was divided by the farmer's estimate of the life of the overhaul and the resulting figure was used for the cost statements as a separate item. Major Overhauls carried out before the commencement of the costing year were treated in a similar manner. In the case of several of the more recently purchased tractors however, where it was obvious that several years would elapse before a Major Overhaul would be required, an estimated cost of such an overhaul at current prices was used. In a few cases where the tractor was new or where the farmer intended selling the tractor soon in good mechanical condition this was not possible. In these cases it was thought desirable when preparing the costing summaries to insert a representative estimate in the Major Overhaul section.

Tyres

The sum of ½d. per hour has been added to the cost of repairs and spare-parts to cover the cost of tyre replacement, for such tractors as are likely to be retained for a working life longer than is normal in this area. In arriving at this figure, it was considered that wear and tear to the original tyres was already being covered in most cases by the annual depreciation charge, as the majority of the tractors were still operating with their original set of tyres and would be unlikely to require another set in their working life.

Service Time

The time spent on routine farm tasks such as refuelling, changing oil, greasing and cleaning was charged to the tractor at the rate of 2/6d per hour.

Depreciation

Depreciation was calculated at the basic rate of 22½% of the written-down value of the tractor, plus the normal additional allowance of one-quarter.

Licence - Insurance

A licence for roadwork had been obtained for every tractor in this group. This costs £2 per annum. Insurance premiums varied with the type of policy.

Distribution of Working Hours (By 13 Periods each of 4 weeks)

The average tractor among the 20 worked just over 1000 hours per annum.

Period Ended/ No. of Hours/

Period Ended	No.of Hours
28th July, 1951	78
25th August, "	76
22nd September, 1951	101
20th October, "	84
17th November, "	66¼
15th December, "	57
12th January, 1952	50¼
9th February, "	56½
8th March, "	93½
5th April, "	133¾
3rd May, "	111
31st May, "	70¾
28th June, "	32
Total	1010

Fuel and Lubricants

The average consumption of fuel and lubricants per hour was:-

	Pints
Petrol	.54
Vapourising Oil	6.30
Lubricating Oil	.21

The Average Annual Fuel Consumption per tractor is shown in Appendix Table 2.

Over the wide range of jobs on which these tractors were engaged throughout the year, fuel was used up at the rate of 1 gallon every 70 minutes.

Acknowledgments

The writer wishes to record his thanks to the farmers and tractor-drivers for their conscientious filling in of the Record Books and for their assistance in supplying further information required for the costing investigation.

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APPENDIX

Table 1

AVERAGE ANNUAL COST PER TRACTOR

Petrol	£11.12. 7
Vapourising Oil	55. 4.10
Lubricating Oil	10. 2. 7
Grease	10. 4
Repairs and Spare Parts	17.16. 8
Licence and Insurance	4.16. 7
Service Time by Farm Staff	6. 6. 9
	106.10. 4
Depreciation	44.14. 3
	151. 4. 7
Share, to this year, of Past, Current year, and Future Major Overhauls	15. 3. 7
	£166. 8. 2

Table 2

AVERAGE ANNUAL FUEL CONSUMPTION PER TRACTOR

	Gallons
Petrol	61½
Vapourising Oil	817
Lubricating Oil	25½