

Feeding stuffs production Cost of 0.9-

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**COST OF PRODUCTION FIGURES FOR SOME FODDER CROPS IN SOUTH-WEST SCOTLAND
CROP OF 1948**

FOREWORD.

The investigation into the costs of crop production was continued for the 1948 crop, the emphasis being placed on fodder crops of importance in milk production in order to provide basic information for the milk cost investigation. For the 1948 crop the objective of the costing programme was to obtain more information on the greencrops (turnips, kale, etc.), and on the home protein crops (mashlum, beans and arable silage), and to place less stress on production costs for oats and hay. During the year cost records from 3 grass silage crops and 4 linseed crops became available, and these are briefly reported on. The cost of production figures for earlier cropping years have been given in "Report No. 4—1946," "Report No. 6—1947," and in "Report No. 4—1948."

Information from a total of 90 crops is available as follows:—Oats, 13 crops; Mashlum, 13 crops; Beans, 8 crops; Turnips, 29 crops; Kale, 4 crops; Mangolds, 3 crops; Arable Silage, 13 crops; Grass Silage, 3 crops; and Linseed, 4 crops.

Weather conditions in the autumn of 1948 had an effect on the costs of the grain and pulse crops as the long continued period of wet weather increased handling charges. With some of the linseed crops unfavourable weather and delayed harvesting meant a considerable loss in grain yield.

Acknowledgment is made, with thanks, of the assistance given by those farmers whose cost records are the basis of the information given, and also of the field investigation work of M. S. Muir, R. D. Murray, A. J. Spalding, and R. M. Sturgeon.

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SUMMARY.

The cost figures obtained summarise as:—

Crop.	No. of Records.	Average Yield per Acre.	Net Cost per Ton.		Cost Completed at:—
			(a)	(b)	
Oats	13	21 cwts. Grain. 22 cwts. Straw.	£15 1/-	£15 16/-	Threshed Out.
Mashlum	13	26 cwts. Grain. 25 cwts. Straw.	£17 17/-	£19 17/-	Threshed Out.
Beans	8	17½ cwts. Grain. 15½ cwts. Straw.	£29 3/-	£30 13/-	Threshed Out.
Turnips	29	16½ Tons.	£1 17/-	£1 16/-	Ready to feed.
Kale	4	21 Tons.	£1 18/-	£1 18/-	Ready to feed.
Arable Silage	13	9 Tons.	£2 7/-	£2 15/-	In silo.

The averages given as net costs under column (a) are those obtained with all costed crops combined to represent one inclusive field. Under column (b) the averages are net costs with each crop given equal weight in obtaining the average costs.

The cost figures for the small samples of Mangolds, Grass Silage and Linseed are shown in following sections.

Methods of handling and storing the arable silage crops were so varied that any average statement of labour and power use is impossible, but for the five main crops the figures were:—

Average Labour and Power Use per Acre.

	Man Hours.	Horse Hours.	Tractor Hours.	Hired Machine Hours.
Oats	46	19	5	$\frac{1}{2}$
Mashlum	60	9	10 $\frac{1}{2}$	1
Beans	66	30	6	—
Turnips	120	38	14	—
Kale	129	27	29	—

The Appendix Tables are as follows:—

- Table 1. Cost per Acre and per Ton. Oat Crop of 1948.
 Table 2. Per Acre Structure and Cost of Labour and Power Use. Oat Crop of 1948.
 Table 3. Cost per Acre and per Ton. Mashlum Crop of 1948.
 Table 4. Cost per Acre and per Ton. Bean Crop of 1948.
 Table 5. Cost per Acre and per Ton. Turnip Crop of 1948.
 Table 6. Per Acre Structure and Cost of Labour and Power Use. Turnip Crop of 1948.
 Table 7. Cost per Acre and per Ton. Kale Crop of 1948.
 Table 8. Per Acre Structure and Cost of Labour and Power Use. Mashlum, Bean and Kale Crops of 1948.

NOTES ON THE INDIVIDUAL CROPS.

Oats.

The costing records refer to 13 crops covering a total of 118 acres. Treating all crops as making up one "field" of 118 acres, the average cost per acre, threshed out, was £16 11/- after crediting straw, or £15 1/- per ton of grain after crediting straw. Average yields were 21 cwts. of grain and 22 cwts. of straw per acre.

The alternative method of preparing average costs, that is, averaging the individually calculated per acre and per ton costs for each crop, thereby giving an equal weight to each crop irrespective of size of field, yield, etc., gave averages of £17 1/- per acre or £15 16/- per ton after crediting straw. Average yields were 22 cwts. of grain and 22 $\frac{1}{2}$ cwts. of straw per acre.

The average labour and power use per acre was 46 man hours, 19 horse hours, 5 tractor hours, and $\frac{1}{2}$ hour of hired machinery, the latter wholly for threshing.

Mashlum.

The costing records for this crop—a mixture of oats and beans—related to 13 crops with a total acreage of 100 acres. Treating all crops as making up one "field" of 100 acres, the average cost per acre, threshed out, was £23 3/- after crediting straw or £17 17/- per ton of grain after crediting straw, these costs relating to average yields of 26 cwts. grain and 25 cwts. of straw.

The average of the individually calculated per acre and per ton costs for each separate crop was £23 13/- per acre or £19 17/- per ton, average yields of grain and straw being 24 cwts and 23 cwts.

The average labour and power use per acre was 60 man hours, 9 horse hours, 10 $\frac{1}{2}$ tractor hours and almost 1 hour of hired machinery, wholly for threshing.

Beans.

A total of 8 costing records covered a total of 50 acres, the average yields being 17 $\frac{1}{2}$ cwts. of grain and about 15 $\frac{1}{2}$ cwts. of straw. Treating all crops as making up one "field" of 50 acres, the average cost per acre, threshed out, was £25 9/- after crediting straw or £29 3/- per ton of grain after crediting straw.

The average of the individually calculated per acre and per ton costs for each separate crop was £26 3/- per acre or £30 13/- per ton, the yields being 19 cwts of grain and 16 cwts. of straw.

The average labour and power use per acre was 66 man hours, 30 horse hours, 6 tractor hours, and 1 hour of hired machinery for threshing.

Turnips and Swedes.

In all, 29 cost records for this crop were completed, representing a total of 216 acres and an average yield of just over 16 tons of roots per acre. Treating all crops as making up one "field" of 216 acres gave an average cost per acre, at the farm stading ready to feed, of £30 7/- or about 37/- per ton.

The average of the individually calculated costs for each separate crop was £33 1/- per acre and £1 16/- per ton.

The average labour and power use per acre was 120 man hours, 38 horse hours, and 14 tractor hours.

Kale.

The 4 kale crops costed covered a total of just short of 9 acres. Taking all crops as making up a "field" of this size, the average costed out at £40 5/- per acre or 38/- per ton at the stading ready to feed. The alternative method of averaging gave closely similar results of £40 per acre and 38/- per ton.

The average labour and power use per acre was 129 man hours, 27 horse hours, and 29 tractor hours.

Mangolds.

Among the 3 mangold crops was one of 3 acres, giving an exceptionally high yield, estimated at 48 tons per acre. Cost per acre of this crop was £68 but cost per ton worked out at 27/-. For the next crop, grown on 2 acres and yielding 30 tons per acre, the per acre cost was £41 10/- and the per ton cost was 28/-. The remaining crop, yielding 21 tons per acre from 2 acres, showed a per acre cost of £44 and a per ton cost of 41/-.

Arable Silage.

Cost records were completed for 13 crops, but as the methods of handling after the stage of "ready to cut" and the methods of storage were very varied, complete and comparable average figures up to a common end point were not obtainable.

A summary of the available information is:—

For 7 crops cut before filling into silo:—

- Crop A. Estimated mature yield, 8.3 tons per acre from 30 acres.
Cost per mature ton, £1 15/5.
Handled by cutlift and into high tower silo.
- Crop B. Estimated mature yield, 9 tons per acre from 20 acres.
Cost per mature ton, £2 11/1.
Into high tower silo.
- Crop C. Estimated mature yield, 11.7 tons per acre from 12 acres.
Cost per mature ton, £2 0/10.
Into low tower silo.
- Crop D. Estimated mature yield, 8.3 tons per acre from 3 acres.
Cost per mature ton, £3 19/11.
Into low tower silo.
- Crop E. Estimated mature yield, 10.5 tons per acre from 6 acres.
Cost per mature ton, £2 3/4.
Into low tower silo.
- Crop F. Estimated mature yield, 7.8 tons per acre from 18 acres.
Cost per mature ton, £1 19/9.
Into wire and paper silo.
- Crop G. Estimated mature yield, 13 tons per acre from 8 acres.
Cost per mature ton, £2 12/10.
Into pit silo.

For 6 crops filled into silo without a preliminary cutting or chaffing before filling:—

- Crop H. Estimated mature yield, 6 tons per acre from 2 acres.
Cost per mature ton, £4 16/6.
Into low tower silo.
- Crop I. Estimated mature yield, 9 tons per acre from 11 acres.
Cost per mature ton, £2 15/1.
Into wire and paper silo.
- Crop J. Estimated mature yield, 10.5 tons per acre from 3 acres.
Cost per mature ton, £2 19/6.
Into pit silo.
- Crop K. Estimated mature yield, 9 tons per acre from 5 acres.
Cost per mature ton, £2 15/7.
Into pit silo.
- Crop L. Estimated mature yield, 12 tons per acre from 5 acres.
Cost per mature ton, £2 17/4.
Into pit silo.
- Crop M. Estimated mature yield, 5½ tons per acre from 2 acres.
Cost per mature ton, £2 15/3.
Into stack silo.

These figures represent a first attempt at costing the arable silage crop and in the course of the work several difficulties, some of which were not successfully resolved, were met with.

Lacking an actual weighing out of silo at feeding time, the estimation of mature yield, even before allowing for wastage, cannot give close accuracy, and the estimates given above are presented with reserve. Where expensive specialist machinery was used the application of an appropriate rate of depreciation raised difficulties, and the similar problem of the effective life and annual charges on various types of tower and pit silos also require further consideration.

It is probably true to say that the estimated mature yields will tend to overstate the weight of palatable silage available for feeding, but taking the figures of yield as estimated, the average cost per mature ton, before allowing for wastage during the stored period, was approximately 47/- with the individual costs merged to make one complete "field" of 123 acres. The cost structure on the 12 crops filled into a silo or pit was:—

	Per Mature Ton.	Per Acre.
Dung, Lime, Manures applied	£0 9 2	£4 6 0
Add Manurial Residues b./fwd.	0 4 3	1 19 8
	<hr/>	<hr/>
Less Manurial Residues c./fwd.	£0 13 5	£6 5 8
	0 6 10	3 3 10
	<hr/>	<hr/>
Net Manurial Costs	£0 6 7	£3 1 10
	<hr/>	<hr/>
Man, Horse, and Tractor Work	£0 16 1	£7 10 8
Add Cleaning Cultivations c./fwd.	0 1 0	0 9 3
	<hr/>	<hr/>
Net Labour and Power Costs	£0 17 1	£7 19 11
	<hr/>	<hr/>
Seeds	£0 7 11	£3 13 9
Materials and Depreciation on Silos, Pits, and Special Machinery	0 4 2	1 19 0
Rent	0 2 1	0 19 7
Overhead Expenses	0 9 1	4 5 1
	<hr/>	<hr/>
Total	£2 6 11	£21 19 2

These costs represent 47/- per ton on an estimated mature yield of just over 9 tons per acre. Cost at feeding would probably be around 50/- to 55/- per ton.

By the alternative method of averaging, namely, an average of the individually calculated per ton costs for the separate crops, the cost per mature ton averaged 55/- in silo or pit.

Grass Silage.

Results from only 3 crops are available and, as with the arable silage costs, the method of handling varied considerably even within such a small sample. A detailed statement of average costs of this crop has been left over till some future year when an appreciable sample of costs is being handled. Brief notes may be of interest.

Crop A was from 26 acres, all of which, excepting 6 acres of 3-year-old grass, was from old permanent pasture. Over a 6-7 acre portion a second cut was taken and is included with the main cut. The estimated green yield, in silo, was 130 tons. A greencrop loader was used in the field. Some of the manuring was considered to be long-term improvement manuring. Cost per ton in silo was over 80/-, the high cost being partly due to high charges for man and tractor labour in cutting, carting in and filling.

Crop B was from 18 acres, the crop being cut by the reaper and hand forked in field and at pit. The estimated green yield was 115 tons from 18 acres. Cost per green ton was around 40/-.

Crop C, cut from 26 acres, gave an estimated green yield of 86 tons at a cost per green ton of about 60/-. The crop was handled in the field by a greencrop loader.

Over the 3 combined crops—of which Crop A had several untypical and high cost features—the average cost per green ton in silo was 60/-. This is a complete cost, containing all possible charges against the crop with the sharing of costs between hay cuts, winter grazing, etc., made as accurately as possible.

The structure of the average per ton cost, treating the three combined crops as one crop, was:—

	On Estimated Green Yield in Silo.
	Cost per Ton.
SHARE TO SILAGE OF CHARGES FROM PREVIOUS CROPS:—	
Dung, Lime and Manure Residues	£0 3 11
Original Sow-out cost	0 1 10
SHARE TO SILAGE OF CHARGES FOR ALL 1948 USES OF FIELD:—	
Dung	0 2 7
Lime	0 2 2
Harrowing, Rolling, etc., in Spring	0 0 0
Rent	0 2 10
Overhead share	0 2 6
DIRECT CHARGES TO SILAGE:—	
Manures (net) applied before silage	0 3 4
Man, Horse and Tractor Work from manuring to covering	1 3 7
Overhead share	0 13 0
Materials, special machinery depreciation and annual charge for silo	0 5 0
	<hr/>
	£3 0 9

If weight shrinkage in the silo and waste before feeding is taken into account, the above average of 60/- per ton would be exceeded. It has to be stressed, however, that the results from these three crops are not necessarily typical of a wider average. The present method of allocating farm overhead expenses resulted in the average charge for this item being 15/6 per ton or roughly one-quarter of the cost.

The average labour and power use, markedly increased by the figures of Crop A, were 6½ man hours, ¾ horse hour, and 2½ tractor hours per green ton.