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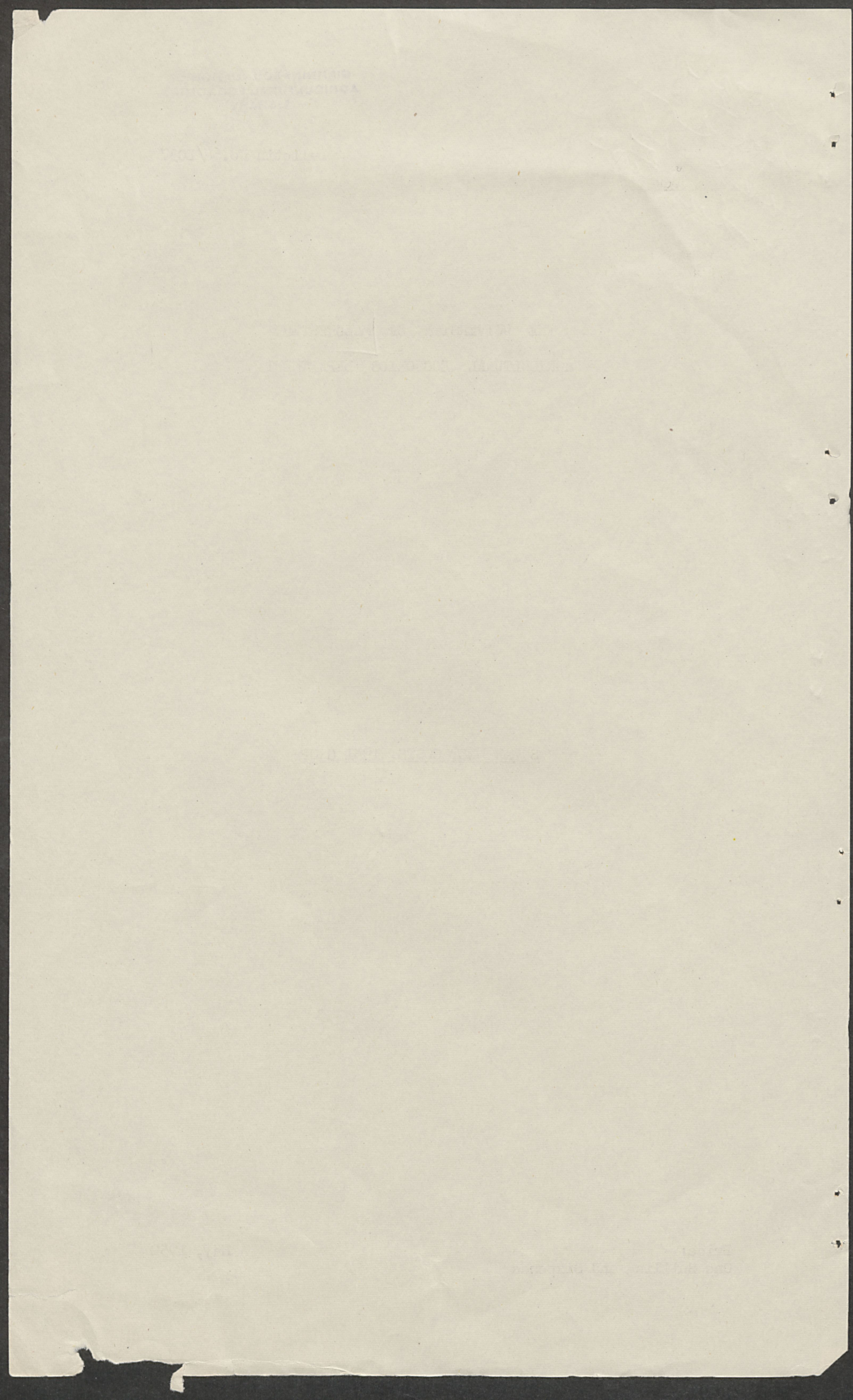
Sugar
beets
Cost of
production
O.S.

THE UNIVERSITY OF MANCHESTER
AGRICULTURAL ECONOMICS DEPARTMENT

SUGAR BEET COSTS, 1951 CROP

Price:
One Shilling and Sixpence

May, 1952



SUGAR BEET COSTS - 1951 CROP

Introduction

After a lapse of one year, costs have once again been obtained from a number of sugar beet growers in Shropshire and Staffordshire. Costs from fifty-four farms are included in this report compared with seventy-one farms for the 1949 crop; only four farms costed in 1951 were not included in the 1949 sample. The average area of beet costed per farm was 17.6 acres; individual farms grew from two to sixty-five acres.

Weather

It seems to be the habit nowadays when commenting upon the weather in any season to describe it as remarkable. It would probably be more correct to say that the weather is seldom the same for two seasons running. The 1951 season was notable in that total rainfall was much above the average, and sunshine was greatly lacking in August and September. The rainfall was concentrated in the months of March, May, August, and November and seriously hindered both sowing and harvesting. Consequently, sowing generally took place rather later than usual, but as there was no shortage of rain during any part of the growing season, yields were not unduly depressed. Despite the lack of sunshine at the end of the summer the average sugar content was quite high.

During November and December more than seven inches of rain were recorded and harvesting was almost stopped at times because of the flooded state of many fields. In many cases harvesting was not finished until late in January because of the hold-up.

Table 1

Monthly Rainfall and Sunshine Records (a)

Month	RAINFALL		SUNSHINE	
	50 Year Average	1951-52	25 Year Average	1951-52
	inches	inches	hours	hours
March	1.71	4.29	104.3	79.5
April	1.66	1.93	140.3	187.4
May	2.10	3.42	177.1	163.7
June	1.86	2.20	192.2	214.9
July	2.61	1.60	165.5	213.9
August	2.74	3.35	163.9	144.9
September	1.99	1.85	127.5	100.4
October	2.64	0.93	96.3	92.5
November	2.41	4.85	52.7	53.0
December	2.24	2.34	37.9	45.5
January	1.92	2.46	44.2	79.1

(a) Recorded at the Weather Station, Harper Adams College, Newport, Salop.

Factory Data for the West Midland Area

Two sugar beet factories, at Allscott and Kidderminster, serve the West Midland area and it should be remembered, when reading the details of factory returns shown below for the 1951 crop, that they process beet from several counties other than Shropshire and Staffordshire, notably Worcestershire, Warwickshire, Herefordshire and the Southern area. Compared with 1949 the number of contracts for growing beet has fallen by over 300 for the two factories but the total acreage is practically unchanged, indicating that there has been a further increase in the average acreage per grower. The change is most marked at Kidderminster where the number of farmers growing less than five acres of sugar beet has fallen by 160, whilst those growing more than twenty acres each have increased their sugar beet acreage per farm by 150 per cent compared with 1949. Even so, the average contracted acreages per grower have risen only slightly, to 7.64 acres at Kidderminster and 10.9 acres at Allscott.

Table 2

Factory Returns, 1951-52 Season

	<u>Allscott</u>	<u>Kidderminster</u>
Total Sugar Beet Area Harvested	18,413½ acres	16,239½ acres
Area Harvested per Grower	10.91 acres	7.64 acres
Total Yield of Untared Beet	260,901 tons	191,675 tons
Total Yield of Clean Beet	216,066 tons	161,261 tons
Average Tare per Cwt.	18.84 lbs	18.86 lbs
Average Sugar Content	16.43%	15.96%
Average Clean Beet per Acre	11.21 tons	9.93 tons
Average Price per Ton Clean Beet	114s 1d	111s 11½d

Table 3

Contract Acreages and Growers, Allscott Factory, Season 1951-52

Size Group	Number of Growers	Total Acreage
Up to 5 acres	709	2,394½
5.1 - 10 acres	439	3,407½
10.1 - 30 acres	417	7,286½
Over 30 acres	113	5,324½
Total:	1,678	18,413½

Table 4

Contract Acreages and Growers, Kidderminster Factory, Season 1951-52

Size Group	Number of Growers	Total Acreage
Up to 5 acres	1,236	4,007 $\frac{1}{4}$
5.1 - 10 acres	589	4,461 $\frac{1}{2}$
10.1- 15 acres	169	2,186
15.1- 20 acres	83	1,444
20 acres and over	159	4,983
Total:	2,236	17,081 $\frac{3}{4}$

Complete costs and other data for the 1951 Crop

Table 5 gives a summary of the results for the 1951 beet crop, and also for the 1949 crop. It is unfortunate that no details are available for the 1950 crop, when yields reached an all time record. The average yield at Kidderminster in 1950 was 2 $\frac{1}{2}$ tons, and at Allscott 2 tons, higher than in 1951, so it is most probable that profit per acre was also considerably higher.

Table 5

Costs and Returns per Acre, 1949 and 1951 Crops

	1949 Crop	1951 Crop
Number of Records	71	54
Gross Costs	£48 17 5	£58 18 0
Value of Beet	£58 7 9	£71 12 7
Cash Return	£9 10 4	£12 14 7
Estimated Net Residuals and Value of Tops	£6 3 10	£11 19 10
Estimated Real Profit	£13 14 2	£24 14 5
Yield per Acre, Clean Beet	10 $\frac{1}{2}$ tons	12 $\frac{1}{2}$ tons

Distribution of Beet Acreage Costed and Cropping Details

The average size of crop costed, 17.6 acres, is about twice the average acreage per grower in the West Midlands area. Table 6 indicates the size distribution of beet acreages on costed farms and it is noticeable that only half as many farms in the smallest size group are

included in the 1951 costs as were costed in 1949. In most cases this is due to the fact that the farms not included in 1951 had stopped growing beet. Again, the acreage of beet grown per costed farm in 1951 was less than in 1949, even on the larger farms; this is contrary to the general tendency for the West Midland area referred to earlier in the report.

Table 6

Distribution of Beet Acreage Costed, 1951 Crop

Acreage per Farm	Number of farms	Average Acreage per farm	Total Acreage
Up to 5 acres	12	$3\frac{1}{4}$	40
5.1 - 10 acres	13	$7\frac{1}{2}$	$96\frac{3}{4}$
10.1- 30 acres	17	$16\frac{3}{4}$	$286\frac{1}{2}$
Over 30 acres	12	$43\frac{3}{4}$	$524\frac{1}{2}$
Total:	54	$17\frac{1}{2}$	$947\frac{3}{4}$

Table 7

Previous Cropping and Application of Farnyard Manure, 1951 Crop

	Corn	Ley	Potatoes	Other Crops	Total
Total Acreage of previous crop	$713\frac{1}{2}$	$117\frac{1}{2}$	$100\frac{3}{4}$	16	$947\frac{3}{4}$
Percentage on which Farnyard Manure applied	42	84	28	75	49

Table 8

Range in Yields of Clean Sugar Beet Per Acre, 1951 Crop

	Under 8 tons	8-9.9 tons	10-11.9 tons	12-13.9 tons	14 tons and over
Number of Farms	3	10	15	13	13
Total Acreage of Beet	21	$180\frac{3}{4}$	$152\frac{1}{4}$	$315\frac{1}{2}$	$278\frac{1}{4}$
Acreage per Farm	7	18	$10\frac{1}{4}$	$24\frac{1}{4}$	$21\frac{1}{2}$

Stubble cleaning was carried out on 295 acres, which represented 41 per cent. of the beet acreage following corn. Farnyard manure was applied on 468 acres at an average rate of about 14 tons per acre. Table 8

shows the range in yields of costed beet crops and illustrates the tendency for higher yields to be produced on the larger acreages grown. The lowest yield per acre was 4 tons 16 cwt on a 2 acre piece, and the highest 19 tons 12 cwt on a 6 acre piece.

Tables 9 and 10 show the range per acre in net costs and in margins on costed crops. There is a very noticeable tendency for lowest costs and highest profits to be found on the larger acreages and for lowest profits and highest costs to be found on the smaller acreages grown. This is not surprising since high yields per acre in our investigations are generally associated with larger acreages (e.g. see Table 8) whilst high yields and high profits are more closely related in the sugar beet crop than is the case for some other agricultural products.

Table 9

Range in Net Costs per Acre, 1951 Sugar Beet Crop

	Under £40	£40- 44.9	£45- 49.9	£50- 54.9	£55- 64.9	£65 and over
Number of Farms	5	8	17	12	8	4
Total Acreage of Beet	218	172½	237	216	35½	18½
Acreage per Farm	43½	21½	14	18	10¾	4½

Net Costs per acre ranged from £33 1s 8d (yield 9t.7c.3q. per acre) to £76 18s 5d (yield 4t.8c.0q. per acre). The highest profit was £58 11s 9d per acre (yield 16t.10c.2q. per acre) and the largest loss £19 2s 5d per acre (yield 4t.16c.3q. per acre).

Table 10

Range in Margins per Acre, 1951 Sugar Beet Crop

	Losses			Profits			
	Over £5	£5- £0	£0- £9.9	£10- £19.9	£20- £29.9	£30- £39.9	£40 and over
Number of Farms	1	7	9	15	11	6	5
Total Acreage of Beet	2	58½	90½	263½	215	122	196
Acreage Per Farm	2	8½	10	17½	19½	19½	39½
Yield per Acre of Clean Beet	4t 16c	8t 3c	10t 7c	11t 2c	13t 1c	14t 5c	15t 9c

Labour and Manures

The cost of manual labour and the net cost of fertilisers account for two thirds of the total net cost of growing the sugar beet crop. It is therefore very important to ensure that neither is used inefficiently. In view of the reported falling off in sales of artificial fertilisers, it is most important that the close relationship between application of manures and yield per acre shown in Table 11 should be noted. This table indicates the calculated amounts of plant nutrients supplied in the form of lime, artificials and farmyard manure in relation to the yield of clean beet per acre. Estimated residuals have been taken into account and only

the figure for salt relates to the total weight applied, the other figure referring to weight of actual N , P_2O_5 , K_2O , and CaO presumed available to the crop. In order to compare the figures in the table it should be noted that, for instance, lowt of Sulphate of Ammonia provides 23lbs of Nitrogen, lowt of Superphosphate provides about 20lbs of P_2O_5 of which one third is considered to be available in the year of application, and lowt of 60% Muriate of Potash provides 67lbs of K_2O of which one half is considered to be available in the year of application.

Table 11

Relation of Manurial Treatment to Yields of Clean Beet per Acre, 1951

Fertilisers Applied	Under 8 tons	8-9.9 tons	10-11.9 tons	12-13.9 tons	14 tons and over	Average of 54 crops	YOUR FARM
N 1 lb per acre	176	143	164	159	135	149	
P_2O_5 1 lb per acre	53	63	60	59	62	61	
K_2O 1 lb per acre	186	99	100	115	126	113	
Salt 1 lb per acre	640	373	326	367	282	375	
CaO 1 lb per acre	239	397	349	514	493	453	

The table of labour requirements per acre (12) indicates very clearly the advantage that the large grower enjoys compared to the small grower by being able to work a larger area at one time and also generally by using more labour saving implements.

Table 12

Labour Requirements in Hours per Acre, 1951 Sugar Beet Crop

Size Group	CULTIVATIONS			HARVESTING			TOTAL		
	Man	Horse	Tractor	Man	Horse	Tractor	Man	Horse	Tractor
Up to 5 acres	100	12	16	94	2	10	194	14	26
5.1 - 10 acres	116	7	18	87	3	16	203	10	34
10.1 - 30 acres	89	6	17	80	9	11	169	15	28
Over 30 acres	93	1	15	70	1	15	163	2	30
Your Farm									

In comparing these figures, it should be remembered that the tonnage involved was approximately 50 per cent greater per acre in the over 30 acre group than in the smallest group.

Table 13

Average Costs of Production per Acre, 1951 Sugar Beet Crop

	Average for 54 Crops			YOUR FARM		
	£	s	d	£	s	d
Autumn Cultivations (a)		3	9			
Ploughing		19	1			
Seed Bed Preparation	1	2	4			
Applying F.Y.M. (a)	2	0	4			
Applying Lime and Artificials		17	6			
Drilling Seed		6	7			
Inter-Row Cultivation	1	14	1			
Singling and Hand Cleaning	8	0	7			
Total Cultivations:	15	4	3			
Hand Harvesting 780½ acres	£	s	d			
Ploughing Out (a).....	1	1	4			
Topping and Pulling.....	7	2	3			
	8	3	7			
Mechanical Harvesting 167¼ acres						
Lifting	7	1	4			
Total Lifting (average of hand and mechanical)	7	19	10			
Carting off and loading	5	10	0			
Transport to Factory	4	12	0			
Total Harvesting:	16	1	10			
F.Y.M. (a)	4	17	2			
Lime and Artificials	10	3	3			
Seed	1	4	11			
Total Materials:	16	5	4			
Rent	1	18	3			
Overheads	7	8	4			
Add Residues brought forward						
Manurial	1	0	4			
Cultural		9	10			
Gross Cost:	60	8	2			
Deduct Residues carried forward						
Manurial	5	16	11			
Cultural	1	10	0			
Value of Tops	6	3	1			
	13	10	0			
NET COST:	£46	18	2			

(a) Certain operations were not performed on the total acreage costed. The average cost of these on the actual acreage on which they were carried out was as follows

	£	s	d	
Autumn Cultivations on 295 acres		12	2	per acre
Applying F.Y.M. on.....436½ acres	4	7	7	per acre
Ploughing Out on.....633 acres	1	6	3	per acre
F.Y.M. approx. 14 ton				
per acre on.....436½ acres	10	10	11	per acre

Table 14

Average Primary Costs and Returns per Acre, 1951 Sugar Beet Crop

	Average of 54 farms			YOUR FARM		
	£	s	d	£	s	d
Manual Labour	21	9	0			
Horse Labour		9	3			
Tractor Labour	6	3	5			
<u>Total Labour:</u>	28	1	8			
Seeds	1	4	11			
Manures (Net)	10	3	10			
Transport	4	12	0			
Overheads	7	8	4			
Rent	1	18	3			
Depreciation of Harvesters and F.Y.M. Spreaders		12	5			
<u>Total:</u>	54	1	5			
Less Value of Tops and Net Cultural Residues	7	3	3			
<u>Net Costs</u>	46	18	2			
Receipts	71	12	7			
<u>Net Profit</u>	£24	14	5			
Average Yield Per Acre Clean Beet 12tons 11 cwt 3q.						

Table 15

Average Costs and Returns per Ton of Clean Beet, 1951 Crop

	£	s	d
Cultivations	1	4	2
Harvesting and Transport	1	8	9
Seeds and Manures (Net)		18	2
Rent and Overheads		14	10
<u>Total:</u>	4	5	11
Less Value of Tops and Net Cultural Residues		11	5
<u>Net Cost</u>	3	14	6
Receipts	5	13	9
<u>Net Profit</u>	£1	19	3

Table 16

Average Primary Costs and Returns per Acre for Sugar Beet Crops of various Acreages, 1951

	Under 5 acres			5.1 - 10 acres			10.1 - 30 acres			Over 30 Acres		
	£	s	d	£	s	d	£	s	d	£	s	d
Manual Labour	23	14	0	24	18	4	21	3	10	20	15	8
Horse Labour		18	0		12	5		19	9		2	2
Tractor Labour	5	6	8	7	1	10	5	14	0	6	6	6
Total Labour	29	18	8	32	12	7	27	17	7	27	4	4
Seeds	1	5	6	1	4	2	1	5	3	1	4	10
Net Manure	10	17	2	12	8	3	10	15	9	9	8	1
Transport	6	9	0	6	0	11	5	7	8	3	15	4
Rent	2	1	3	2	3	10	2	1	11	1	15	1
Overheads inc. Depreciation	8	6	2	8	15	8	7	19	4	7	18	5
Total:	58	17	9	63	5	5	55	7	6	51	6	1
Less Tops and Net Cult. Residues	6	19	7	6	4	1	6	19	8	7	9	2
Net Costs	51	18	2	57	1	4	48	7	10	43	16	11
Receipts	65	1	10	68	10	7	67	12	0	74	18	0
PROFIT	13	3	8	11	9	3	19	4	2	31	1	11

Mechanical Harvesting 1951

Despite the continued increase in labour costs over the past few years, there is still no sign of any great increase in the percentage of beet harvested mechanically in the West Midlands. Although there was an increase in the number of harvesters in the area in 1951 compared to 1949 there was little, if any, increase in the percentage of beet harvested mechanically, which remains at less than 6 per cent. The autumn was unusually wet and on many farms machines were only able to harvest part of the sugar beet crop. Mechanical harvesters were used on eight of the fifty-four costed farms and, in three cases, only part of the total acreage was harvested mechanically.

The Allscott and Kidderminster factory areas have the lowest percentage of mechanically harvested beet in the country; on the other hand, the use of tops for stock feeding in the area is more pronounced than elsewhere. The utilisation of tops for feeding is undoubtedly one of the main reasons for the lack of interest in mechanical harvesters shown in the area, particularly in the case of the smaller beet grower. Several of the harvesting units developed recently, Roerslev, Morn, Danco and Fordson, have in other areas attracted the small grower because of their cheapness. All of these machines, enable the tops to be removed for feeding, with relatively little mechanical damage. In a wet harvest year, however, as 1951 was in the West Midlands, more tops are lost and more dirt is carted off with the tops after beet has been harvested mechanically than would be the case if it had been hand topped.

Hitherto, the larger farms in the West Midlands have had little difficulty in obtaining sufficient labour for harvesting beet. In 1951, however, there was a shortage of casual labour for both potato and sugar beet harvesting and possibly the larger grower will look at the mechanical harvester with more interest. The cost of mechanical harvesting in 1951 was on the average approximately 14 per cent. cheaper than hand harvesting, the saving consisting entirely of manual labour.

Table 17

Costs Per Acre of Mechanical Harvesting of Sugar Beet, 1951

Type of Harvester	Depreciation	Ploughing Out	Topping	Total Cost	Acres Harvested.
	£ s d	£ s d	£ s d	£ s d	
<u>Fordson</u>					
Farm No.21	8 7	1 17 10	5 4 7	7 8 0	32½
Farm No.67	1 1 6	9 4	3 10 0	5 0 10	13
Farm No.56	1 5 6	14 11	4 2 1	6 2 5	11
Farm No.42	2 1 6	18 1	3 10 0	6 9 7	6¾
Average	17 9	1 5 4	4 9 10	6 12 11	15¾
<u>Catchpole</u>		Harvesting			
		£ s d			
Farm No.51	5 5 0	2 0 4		7 5 4	14
Farm No. 3	3 5 0	2 3 0		5 8 0	38
Farm No.61	3 12 6	3 1 2		6 13 8	32
Average	3 14 6	2 9 6		6 4 0	28
<u>Peter Standen</u>					
Farm No.2	4 1 0	4 7	4(a)	8 8 4	20

(a) This figure includes carting costs which, on this farm, could not be separated from the other harvesting costs.

In conclusion, the Department would like to thank the many farmers in Shropshire and Staffordshire who have willingly supplied the necessary data for compiling their sugar beet costs for many years, and also the British Sugar Corporation for supplying information about yields and returns.

APPENDIX

Standard Charges used in Compilation of Costs

Manual Labour

Males (over 21) up to October 2/5d per hour
after October 2/8d per hour
Women (over 18) up to October 1/9d per hour
after October 1/11d per hour

Other categories and piece work at appropriate rates.

Horse Labour

1/3d per hour

Tractors

Wheel types (light and medium) 4/- per hour
Crawler tractors 5/5d per hour

Farmyard Manure

15/- per ton exclusive of cost of carting and spreading.

Artificial Fertilisers

At net cost delivered to farm

Manurial Residues

Calculated according to recommendations of the Scott Watson Committee on Residual Manurial Values, amended in January 1951.

Cultural Residues

<u>Preceding Crop</u>	<u>Charge per Acre</u>
-----------------------	------------------------

Corn	Nil
Seeds (Mown)	40/-
Roots (Carted)	30/-
Roots (folded)	70/-
Potatoes	45/-
Old turf	50/-

Beet being itself a cleaning crop was in all cases credited with a cultural residue of 30/- per acre.

Beet Tops

The weight of tops was calculated by the factories to be 80 per cent of the yield of clean beet for 1951. Tops ploughed in have been credited at £1 per ton, based on an effective consumption of $\frac{3}{5}$ ths of the total yield of tops.

Overheads

A flat charge of £1 per acre has been included to cover the cost of overhead field charges. In order to cover the share of cost of depreciation and repairs of implements, car expenses, insurances, professional charges, etc. a further charge has been made of 6/- for every £1 of manual labour spent on beet production.

Depreciation Rates

All sugar beet harvesting equipment and farmyard manure spreaders have been depreciated at a flat rate of 20 per cent.

