



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*Swine -  
Cost of  
production*

**FARMERS' BULLETIN No. 11**

WILHELM  
FOUNDATION OF  
AGRICULTURAL ECONOMICS  
LIBRARY

*Issued by*

**FARM ECONOMICS BRANCH  
CAMBRIDGE, UNIVERSITY, DEPARTMENT  
OF AGRICULTURE**

January, 1948

**ECONOMICS OF PIG PRODUCTION**  
Report, 1945—47



PRICE 2/-  
Post Free

## PIG RECORDING RAISES PROFITS

Conditions in pig-keeping vary widely from farm to farm, so that a large sample is necessary before reliable production figures can be obtained. The Cambridge Food Recording Scheme for Pigs at present comprises only some twenty-five herds but it is hoped that this figure will be doubled during the next twelve months.

The Scheme is designed for commercial pig-recording and cannot cope successfully with pedigree conditions. Its success depends on the co-operation of the farmers; it is essential that records should be accurate. The method is as simple as possible, entailing a minimum amount of work.

The scheme operates as follows. Returns are completed and sent to Cambridge at regular intervals and may be kept weekly or monthly. These include farrowings, prices of pigs bought and sold and foodstuffs issued during the month. Feeding stock and breeding stock are recorded separately. Transfers between breeding stock and feeding stock are made at weaning and, in the case of young breeding stock, when first used for breeding.

Stock valuations are made by the farmer every six months. Boars are brought into the herd at purchase price and depreciated fairly rapidly. Sows and gilts are transferred in at cost price, or at slaughter value if home-bred: they are valued at the end of the six months at commercial rates. Feeding stock is valued as potential bacon. No weights are required for breeding stock, but either the liveweight or the deadweight of all feeding stock bought, sold or transferred must be recorded. If possible, these pigs should be weighed; otherwise weights must be estimated.

Home-grown foods are charged at market price plus an allowance for delivery and grinding. This method has been adopted in order to bring food costs in herds fed on purchased foods into line with those for herds in which the food is largely home-grown.

Costs other than labour are obtained by a recorder who visits the farmer at six monthly intervals; they entail no extra work for the farmer.

Summaries are sent to individual farmers every six months; an additional summary to cover the twelve months is produced in October. These include a profit and loss account in the form set out in Table 1, and efficiency factors for the individual, average and best herds in the scheme. In this way weaknesses in the herd are readily brought to light and the Scheme provides a quick and accurate method for increasing efficiency in pig production.

Farmers in the Eastern Counties (Norfolk, Suffolk, Essex, Hertfordshire, Bedfordshire, Cambridgeshire, Peterborough and Holland) who are interested in the Scheme and would like further details are invited to communicate with the Provincial Economist, School of Agriculture, Cambridge. No charge is made to farmers, and all information supplied is treated in the strictest confidence. Members can be admitted in March or September, when the recording periods commence.

# ECONOMICS OF PIG PRODUCTION

REPORT 1945—1947

## I. INTRODUCTION

The Cambridge Food Recording Scheme for Pigs was established in March 1936. It has two principal objects: (i) to provide records for individual herds which will enable the farmers to increase efficiency and (ii) to obtain values for the principal factors in management for the guidance of the industry as a whole. During the first twelve months, the Scheme comprised thirty-three herds and a report was published to cover that period.\* The reduction in the pig population during the war led to its abandonment in 1940, but in October 1945 it was reintroduced on the original lines. The present report is designed to cover the two years from October 1945 to September 1947.

### *Sample*

The Scheme operates in all counties of the Eastern Province, but the herds referred to in this report are drawn from Norfolk, Suffolk, Cambridgeshire, Essex and Hertfordshire. They are mostly pure-bred herds run on commercial lines, consisting mainly of the Saddleback and Large White breeds.

The herds cover a wide range of size and type. The majority both breed and fatten, but a number buy and fatten stores. Since the Scheme was reintroduced, the pork trade has been virtually non-existent and pigs have been sold either as baconers or stores.

## II. GENERAL FINANCIAL RESULTS

The aggregate financial results for fourteen herds during the twelve months ended September 1946 are shown overleaf (Table I). These show a profit of £2,151 10s. 9d. (or 7 per cent) on a gross output of £30,928 1s. 10d. In Table II, the distribution of costs and profits per £100 output is compared with the average for the three pre-war years.

TABLE II  
*Distribution of Costs and Profit per £100 Gross Output.*

	33 herds	14 herds		
	1936-9	Oct. 1945—Sept. 1946		
	Average	Average	Three best	Three worst
Food Costs ... ..	73.0	74.2	66.8	103.9
Labour Costs ... ..	8.5	13.1	9.2	18.0
Other Costs ... ..	6.5	5.7	3.5	6.1
Total Costs ... ..	88.0	93.0	79.5	128.0
Profit (+) or Loss (-) ... ..	+12.0	+7.0†	+20.5†	-28.0†
TOTAL: ... ..	£100.0	£100.0	£100.0	£100.0

\* Farm Economics Branch Report No. 25: "An Economic Study of Pig Production."

† The figures in Table II are weighted averages. Those on the returns sent to farmers are simple averages, which for 1945/6 were:

average profit +£4.1; profit of the three best +£20.6; three worst -£25.1.

TABLE I  
Aggregate Financial Results, October 1945—September 1946 (Fourteen Herds)

No.	Specification	£	s.	d.	£	s.	d.		£	s.	d.		£	s.	d.	
OPENING VALUATION :—																
35	Boars...	430	10	0												
336	Sows and Gilts	3,267	12	6												
605	Suckling Pigs	578	4	0												
1,614	Feeding Stock	8,059	4	3												
					12,335	10	9									
PURCHASES :—																
7	Boars...	254	19	0												
14	Sows and Gilts	366	9	0												
					621	8	0									
316	Weaners	751	5	0												
613	Stores	2,062	7	7												
					2,813	12	7									
3,185	PIGS BORN ALIVE						X									
					15,770	11	4									
	GROSS OUPUT, Cd/down				£30,928	1	10									
<u>6,725</u>					<u>£46,698</u>	<u>13</u>	<u>2</u>									
COSTS :—																
	Meal (25,541 Cwt.)	19,314	18	9												
	Other Foods	3,638	18	5												
					22,953	17	2									
	Labour				4,049	17	3									
	Transport				284	12	1									
	Vet. and Medicines				165	2	8									
	Miscellaneous Expenses				359	13	5									
	Repairs and Improvements				262	11	0									
	Rent Charge on Buildings				610	17	6									
	Rent of Pasture				90	0	0									
					28,776	11	1									
	NET PROFIT*				2,151	10	9									
					<u>£30,928</u>	<u>1</u>	<u>10</u>									
CLOSING VALUATION :—																
19	Boars...	256	15	0												
162	Sows and Gilts	1,781	10	0												
417	Suckling Pigs	378	17	0												
1,668	Feeding Stock	8,585	2	6									11,002	4	6	
SALES :—																
52	Boars...	774	12	8												
255	Sows and Gilts	3,300	5	0												
154	Suckling Pigs	266	6	0									4,341	3	8	
36	Stores over 150 lb. L.wt.	283	1	5												
542	Stores under 150 lb. L.wt.	1,903	9	0												
2,612	Baconers (Factory)	28,737	5	3												
15	„ (Domestic Use)	164	16	8												
20	Casualties	74	2	8												
					31,162	15	0									
	Supplementary Credits	192	10	0									192	10	0	
DEATHS :—																
574	Pre-weaning						X									
190	Post-weaning						X									
9	Boars and Sows						X									
<u>6,725</u>					<u>£46,698</u>	<u>13</u>	<u>2</u>						<u>£46,698</u>	<u>13</u>	<u>2</u>	
	GROSS OUTPUT, Bt/down												30,928	1	10	
													<u>£30,928</u>	<u>1</u>	<u>10</u>	

\* No charge has been included for management, for interest on capital in livestock, or for litter ; on the other hand, no credit has been allowed for manure.

TABLE III  
Aggregate Financial Results, October 1946—September 1947 (Sixteen Herds)

No.	Specification	£ s. d.	£ s. d.		No.	Specification	£ s. d.	£ s. d.
<b>OPENING VALUATION :—</b>					<b>CLOSING VALUATION :—</b>			
29	Boars...	387 15 0			36	Boars...	734 0 0	
271	Sows and Gilts	2,948 12 0			371	Sows and Boars	4,685 0 0	
613	Suckling Pigs	556 17 0			853	Suckling Pigs	906 13 0	
2,066	Feeding Stock	10,218 2 6			1,733	Feeding Stock	10,979 9 6	
			14,111 6 6					17,305 2 6
<b>PURCHASES :—</b>					<b>SALES :—</b>			
9	Boars...	505 10 0			37	Boars...	1,027 6 11	
7	Sows and Gilts	192 6 0			115	Sows and Gilts	2,205 5 4	
			697 16 0		137	Suckling Pigs	399 14 3	
407	Weaners	1,162 10 0						3,632 6 6
428	Stores	2,029 9 0			250	Stores over 150 lb. L.wt.	3,093 10 11	
			3,191 19 0		768	Stores under 150 lb. L.wt.	3,560 16 2	
3,551	PIGS BORN ALIVE		X		2,453	Baconers (Factory)	29,938 8 6	
					8	„ (Domestic Use)	97 10 7	
			18,001 1 6		14	Casualties	73 19 2	
	<b>GROSS OUTPUT, Cd/down</b>		£39,797 2 10			<b>Supplementary Credits</b>	96 10 0	
								36,764 5 4
								96 10 0
			<u>£57,798 4 4</u>			<b>DEATHS :—</b>		
7,381					478	Pre-weaning	X	
					119	Post-weaning	X	
					9	Boars and Sows	X	
					7,381			<u>£57,798 4 4</u>
	<b>Costs :—</b>					<b>GROSS OUTPUT, Bt/down</b>		39,797 2 10
	Meal (26,162 Cwt.)	20,618 13 3						
	Other Foods	4,109 1 2						
			24,727 14 5					
	Labour		4,914 14 8					
	Transport		433 5 8					
	Vet. and Medicines		194 5 1					
	Miscellaneous Expenses		297 7 8					
	Repairs and Improvements		315 8 1					
	Rent Charge on Buildings		604 15 0					
	Rent of Pasture		132 5 0					
			31,619 15 7					
	<b>NET PROFIT*</b>		8,177 7 3					
			<u>£39,797 2 10</u>					<u>£39,797 2 10</u>

\* No charge has been included for management, for interest on capital in livestock, or for litter; on the other hand, no credit has been allowed for manure.

The profit in 1945/46 compares unfavourably with that of 1936/39. The rise in costs is most marked in the case of labour, which has increased by nearly 50 per cent. The actual cost of meal and labour and the average bacon price have risen as follows :—

	1936/9	1945/6	Increase
Labour (Average minimum wage) ... ..	33/6	65/6	95½%
Meal (cwt.) ... ..	8/5	15/2	80%
Bacon (per score liveweight) ... ..	9/3	20/-	116%

It will be seen that the rise in the price of bacon is considerably greater than that of the two principal items of expenditure; however, this has been more than balanced by the poorer quality of war-time meals, as shown in the lower output per lb. consumed (see Section IV). The financial results for the year 1946/7 (sixteen herds) are given in Table III. A profit of £8,177.7s. 3d. (or 20.5 per cent) was obtained on a gross output of £39,797 2s. 10d. Table IV shows the distribution of costs and profit on these herds per £100 gross output.

TABLE IV  
*Distribution of Costs and Profit per £100 Gross Output on Sixteen Herds.*

	October 1946–September 1947		
	Average	3 best	3 worst
Food Costs ... ..	62.1	55.7	81.8
Labour Costs ... ..	12.4	7.9	16.6
Other Costs ... ..	5.0	3.0	8.3
Total Costs ... ..	79.5	66.6	106.7
Profit (+) or Loss (–) ... ..	+20.5*	+33.4*	–6.7*
TOTAL : ... ..	£100.0	£100.0	£100.0

This rise in profitability took place entirely during the second half of the year, when profit per £100 gross output increased from £5.4 to £31.9. It was due to the boom in the store trade, where prices doubled in a few months, and to the increase in the average price of factory pigs. Also, during the last month of the year, 93 heavy stores were sold at 5/- per score liveweight above the current bacon price.

Table V shows the distribution of costs per £100 total expenditure for the two years 1945/6 and 1946/7, compared with the three-year pre-war average.

TABLE V  
*Distribution of Costs per £100 Expenditure.*

	Average 1936–39	1945–46	1946–47
Meal ... ..	81.2	67.2	65.2
Other foods ... ..	1.8	12.6	13.0
Total Food ... ..	83.0	79.8	78.2
Labour ... ..	9.7	14.1	15.5
Transport ... ..	0.7	1.0	1.4
Veterinary, repairs, misc. ... ..	2.3	2.7	2.6
Rent ... ..	4.3	2.4	2.3
TOTAL : ... ..	£100.0	£100.0	£100.0

\* Simple averages, as on returns to farmers :—  
average +£15.1; three best +£34.5; three worst –£5.4.

The most striking change since the pre-war years is the increase in the consumption of 'other foods'. This has risen from little more than 2 per cent of all food almost to 16 per cent in 1945/6. Labour also shows a large rise, but rent, the actual value of which has remained almost constant, is only half of the 1936/9 figure.

It is apparent from the above account of the recorded herds that the most effective method of increasing profits is by economising in food consumption and so increasing output per unit of food. As shown in Section IV, this is particularly true in the case of feeding stock. Labour costs, also, are often high and the cause of poor profits.

The highest profit for the two years combined was made by a herd of eighteen breeding sows, in which practically all pigs were fattened to bacon weight. Large profits were also made by another similar herd of twenty sows, and by a feeding herd in which all pigs were bought as stores. Short descriptions of these herds will be found in Section V.

### III. BREEDING STOCK RESULTS

Of the fourteen herds recorded during the year ended September 1946, five purchased all young stock as stores. The remaining nine were breeding herds, in all of which a certain amount of fattening was done. The breeding herds varied in size from thirteen sows and gilts almost to one hundred, averaging twenty-seven. During the year ended September 1947, twelve of the sixteen were breeding herds; they varied from three to fifty sows, with an average of twenty-four.

The more useful efficiency factors are given in Table VI, which gives the average for two years and the best and worst herd-years in each factor. The separate figures for the two years are very similar; they have been combined and treated as twenty-one herd-years.

TABLE VI  
*Efficiency Factors (Breeding Stock) 1945-1947.*

Factor	Average of twenty-one herd-years	Best herd-year	Worst herd-year
Sows and gilts in herd ... ..	24.95	X	X
Litters per sow and gilt ... ..	1.45	2.37	1.02
Pigs born alive per sow litter ... ..	9.13	12.47	7.10
Pigs born alive per gilt litter ... ..	8.63	11.50	4.00
Pigs born alive per litter (sow and gilt) ... ..	9.00	12.38	7.10
Pigs born alive per sow and gilt per year ... ..	14.51	20.82	8.04
Pre-weaning deaths per litter ... ..	1.49	0.19	5.05
Pigs weaned per litter ... ..	7.51	8.88	5.91
Pigs weaned per sow and gilt per year ... ..	12.11	17.87	6.82

The factors affecting profitability, in breeding herds, are :—

- (a) Total cost per sow per year,
  - (b) Size and weight of litters at weaning,
  - (c) Frequency of farrowing.
- (a) The cost per sow depends on the layout and management of the breeding herd. As suggested in Section II, economy is most readily effected in food and labour. A large reduction in food costs can sometimes be made if in-pig sows and gilts are allowed the run of good pasture or ley: this method is largely responsible for the success of herd "A" (Section V).
  - (b) The size of litters at weaning depends on the number at birth and the pre-weaning mortality. The number of pigs born depends on the inherent productivity of the sow and is little affected by management; some sows give consistently large litters whilst others never manage to produce more than half-a-dozen young pigs. The figures for



litter-size at birth, as given in the present Recording Scheme, refer to the number of pigs seen alive. Most of the pre-weaning mortality takes place during the first week after farrowing, mainly due to overlying or savaging by the sow. Much of this can be reduced by disposing of ill-tempered and clumsy sows and by fitting farrowing rails in the pens about ten inches above the floor level and the same distance from the wall : these enable the young pigs to escape from beneath the sow. Overfeeding is a common cause of clumsiness among sows, making them fat and lazy ; ample exercise will do much to keep them active. That some herds show a consistently high mortality rate is evidence that management can play an important part in reducing pre-weaning losses. Gilt litters are usually rather smaller at birth than sow litters and the former are unable to rear more than seven or eight piglings successfully. Table VII shows that summer litters were rather larger at birth than winter ones and that mortality was lower : this resulted in one more pig being weaned per litter during the summer.

TABLE VII  
*Seasonal Effect on Size of Litter.*

	Winter	Summer
Pigs born per sow litter ... ..	8.87	9.45
Pigs born per gilt litter ... ..	8.71	8.77
Pigs born per litter (sow and gilt) ... ..	8.74	9.26
Pre-weaning deaths per litter ... ..	1.76	1.31
Pigs weaned per litter ... ..	6.98	7.95

- The weight of litters at weaning also depends to a large extent on the sow. A good milking sow enables the young pigs to make rapid growth. This is an important factor in shortening the breeding cycle ; also the advantages are carried on into later life.
- (c) A long interval between farrowings is a frequent cause of poor breeding stock results. In a well managed herd, it should be possible to obtain an average of almost two litters per sow per year. This can only be accomplished if the suckling sows and pigs are " done well " so that the latter can be weaned at eight weeks and the sows served at the first oestrus after weaning. This will give a breeding cycle of twenty-five to twenty-six weeks.

TABLE VIII  
*Cost per Weaner (14 Herd-years).*

	Average 1945/47
Cost of food (breeding stock) : ... ..	357 4 2
Total Cost (breeding stock) : ... ..	458 2 6
Adjustment for sales, purchases and valuation change in breeding stock : ... ..	-21 11 9
Adjusted Total Cost : ... ..	£436 10 9
Average number of sows : ... ..	20.0
Cost per sow per year : ... ..	£21 16 6
Average number of weaners transferred out per year : ... ..	206.3
Average number transferred out per sow per year : ... ..	10.3
Cost per weaner : ... ..	£2 2 4
Profit (+) or Loss (-) per £100 output of weaners :	
(a) With market price £2 (1945/6) ... ..	-£5 16 8
(b) With market price £3 (1946/7) ... ..	+£29 8 11

Wide variations in these factors will obviously have a marked effect on the cost of producing weaners and therefore on the profit of the herd.

Table VIII gives the annual cost per sow and the cost per weaner during the two years in the herds in which the output was largely weaners. For this calculation it has been assumed that, in breeding stock, labour and other costs are in the same proportion to food costs as in the herd as a whole. Purchases and sales of sows and boars and changes in valuation appear as an adjustment to the cost of the weaners.

The approximate average market values of weaners were £2 and £3 per head, respectively, during the two years and these have been taken as their values in Table VIII. The very high prices, 3/- per lb. liveweight or more, that were obtained during the summer of 1947, raised the average price by 50 per cent over that of the previous year.

The average figures may be compared with those for the herds with the highest and lowest costs per weaner (Table IX).

TABLE IX  
*Cost per Weaner—Best and Worst Herds.*

	Herd with lowest cost per weaner		Herd with highest cost per weaner	
	1945/6 "A"	1946/7 "B"	1945/6 "C"	1946/7 "D"
Cost per sow ... ..	*£15 19 4	£19 16 8	£23 14 3	£21 2 2
Number of weaners trans. out per sow ...	15.32	14.94	9.27	5.17
Cost per weaner ... ..	£1 0 10	£1 6 7	£2 11 2	£4 1 8
Value of weaner ... ..	£2 0 0	£3 0 0	£2 0 0	£3 0 0
Profit (+) or Loss (-) per £100 output of weaners ... ..	+£47 18 4	+£55 13 11	-£27 18 4	-£36 2 3

It is apparent both from these figures and from the averages in Table VIII, that the principal cause of high weaner costs is a small number weaned per sow per year. This again is due to infrequent farrowings. The number weaned per litter was good in almost all the recorded herds, but in several little more than one litter was obtained per sow per year. The difficulties of wartime rationing were no doubt partly responsible, particularly the shortage of protein foods and the high fibre content of such foods as were available; also, few of the herds practised creep feeding. As a result it was not always possible to obtain sufficiently rapid growth to allow weaning at eight weeks.

With a lower pre-weaning mortality and a higher rate of farrowing the majority of the herds recorded would have made substantial profits on breeding stock, even during the earlier year (1945/6) when the weaner market was unsatisfactory.

#### IV. FEEDING STOCK

All herds did a certain amount of fattening during the two years covered by this report, most of the output being marketed as baconers. Sales from feeding stock are summarised in Table X.

\* In this herd the adjustment for sales and purchases of breeding stock was +£150; this accounts for the low cost per sow. In the other herds the adjustment was small.

TABLE X  
*Distribution of Sales.\**

	1945/6				1946/7			
	No.	Av. live wt. (lb.)	Price (sc.)	% of Total No.	No.	Av. live wt. (lb.)	Price (sc.)	% of Total No.
Baconers (factory) ...	2612	220.5	19/11	81.0	2453	213.0	22/11	70.2
" (domestic use) ...	15	199.1	—	0.5	8	227.1	—	0.2
Stores over 150 lbs. L. wt. ...	36	179.6	17/6	1.3	250	175.3	28/3	7.2
" under 150 lbs. L. wt. ...	542	68.1	20/7	16.6	768	71.5	25/11	22.0
Casualties ...	20	92.1	16/1	0.6	14	119.7	17/8	0.4
TOTAL: ...	3225	—	—	100.0	3493	—	—	100.0

During 1945/6, 80 per cent of the pigs sold went to the factories, but in 1946/7, this number fell to 70 per cent. The fall was due to an increase in the demand for stores during 1947, the proportion sold as stores being 50 per cent higher than in the previous year. Table XI shows that these changes took place entirely during the summer of 1947.

TABLE XI  
*Distribution of Sales\* (Winter and Summer Period 1946/47).*

	Oct. 1946—March 1947				April—September 1947			
	No.	Av. live wt. (lb.)	Price (sc.)	% of Total	No.	Av. live wt. (lb.)	Price (sc.)	% of Total
Baconers (factory) ...	1260	208.5	21/9	83.8	1193	217.8	24/2	59.9
" (domestic use) ...	6	241.8	—	0.4	2	183.0	—	0.1
Stores over 150 lbs. L. wt. ...	1	294.0	22/1	0.2	249	174.9	28/3	12.5
Stores under 150 lbs. L. wt. ...	233	74.0	18/11	15.4	535	70.4	29/2	26.9
Casualties ...	3	53.7	18/4	0.2	11	137.7	17/7	0.6
TOTAL: ...	1503	—	—	100.0	1990	—	—	100.0

The cost of producing fat stock is governed by:—

- (a) the cost of the weaner ;
- (b) food consumption per lb. liveweight gain ;
- (c) the price of foodstuffs ;
- (d) the mortality rate ;
- (e) labour and 'other' costs.

(a) The cost of rearing weaners has been dealt with in the previous section. The market price of young stock has a large effect on the profit from fat pigs. In 1945/6 and in the earlier six months of 1946/7, the price was at a level which favoured the herds purchasing weaners and stores, but during the summer of 1947 the price rose from approximately £2 per head for 40 lb. weaners to £5 or more. The increases in the price of bacon have to some extent compensated for the now heavy initial charges in fattening herds.

(b) The food consumption per lb. of meat produced is the principal factor influencing profit in fattening. The average consumption in the recorded herds is shown in Table XII, compared with the pre-war figures.

\* Transport and marketing charges have been deducted from the price paid for baconers sent to the factory. Weights of baconers for home consumption and stores are mostly estimates.

TABLE XII  
*Food Consumption per lb. Liveweight Gain.*

	Average 1936/39	1945/6	1946/7
lb. meal per lb. liveweight gain ... ..	4.1	4.1	4.3
Cost of meal per lb. " " (d.) ... ..	3.6	6.8	7.3
Cost of all food per lb. " " (d.) ... ..	3.7	7.7	8.6

The meal consumption per lb. liveweight gain is roughly the same as before the war, but the quantity of other foods and therefore of total food consumed is significantly greater due to the poorer quality of wartime meals.

(c) Meals from home-grown foods charged at market prices are usually rather more expensive than purchased meals, but the higher cost is offset by the better results obtained. The economy of potatoes as a substitute for meal depends on the price at which they can be bought. Home-grown potatoes are at present charged at £3 per ton, to which should be added, say, 10/- for boiling; since they replace meal at the rate of 4 lb. of potatoes per lb. of meal, they cost £14 per ton of meal equivalent. Home-grown cereals are charged at an average of £18 per ton, so there is a saving of £4 when potatoes are fed. Roughages can be used to make up rations when other food is in short supply, but tend to slow down the rate of fattening.

(d) The average rate of mortality is usually low in fattening stock. Erysipelas, once a common cause of death, has been overcome in many herds by the use of serum. The figures for the two years, 3.4 per cent and 2.2 per cent respectively, have been expressed as the number of deaths among the feeding stock as a percentage of the total exposed to infection or accident. The higher figure for the earlier year is largely due to one herd in which mortality was almost 25 per cent. Otherwise they compare very favourably with a three-year pre-war average of 4.4 per cent.

(e) Labour and 'other' costs have been charged in Table XIII according to expenditure on these items in the herds as a whole.

Table XIII gives the average cost and profit on fat pigs during the two years.

TABLE XIII  
*Cost and Profit per Pig (Feeding Stock).*

	1945-6	1946-7
Estimated value of weaner ... ..	2 0 0	3 0 0
Liveweight of weaner (lb.) ... ..	37	38
Selling liveweight per pig (lb.) ... ..	193	179
Increase in liveweight per pig (lb.) ... ..	156	141
Cost of food per lb. liveweight gain ... ..	7.7d.	8.6d.
Total cost of food per pig ... ..	5 0 1	5 1 1
Labour and 'other' costs per pig ... ..	1 5 4	1 8 2
Total cost per pig ... ..	£8 5 5	£9 9 3
Average price per score liveweight ... ..	20/-	22/11
Receipts per pig ... ..	9 13 0	10 5 1
Profit per pig ... ..	1 7 7	15 10
Profit per £100 gross output* ... ..	£18 0 7	£10 18 3

The same market prices of weaners have been used as in Table VIII (Section III). The selling liveweights are the averages of all pigs sold during the period.

\* Gross output = Receipts less value of weaners.

The fall in profitability during the latter year has been caused by the increased cost of the weaners and a rise in the price of meal; these factors have been partly offset by the increased bacon price.

Costs and profits during the two years on an identical sample of four herds which specialised in fattening are shown in Table XIV.

TABLE XIV  
*Distribution of Costs and Profits per £100 Gross Output in Herds Specialising in Feeding Purchased Stores.*

	1945-6	1946-7
Food Costs per £100 Gross Output ... ..	71.2	63.9
Labour Costs " " " " " " " " " "	7.9	8.3
Other Costs " " " " " " " " " "	3.1	2.7
Profit per £100 Gross Output ... ..	82.2 +17.8	74.9 +25.1
	£100.0	£100.0

The profit on these herds is well above the average; this is due to one herd ("B" Section V) which made a large profit each year.

Table XV gives the efficiency factors for food consumption in the four feeding herds.

TABLE XV

	4 feeding herds	
	1945/6	1946/7
lb. meal per lb. L. wt. gain ... ..	4.2	3.7
Cost of meal " " " (d.) ... ..	6.7	6.4
Cost of all food " " " (d.) ... ..	8.6	9.0

The small increase in the cost of all food per lb. liveweight gain in 1946/7 is due to the increased price of meal.

## V. SOME PROFITABLE HERDS

The recorded herds cover a wide range of profitability and the results of several have been exceptionally good. A short account of methods used in the three herds on which the largest profits have been made is given below.

HERD "A" is a pure bred Essex herd of eighteen sows. It is run on a commercial basis and few pedigree stock are sold.

The gross output was £2,400 in 1945/6 and £2,800 in 1946/7; profit per £100 gross output being £14 and £37½ respectively. The improvement during the second year was due to a drop of £300 in food costs accompanied by an increase of £400 in output.

The labour requirement of the herd consists of one full-time pigman with a small amount of part-time assistance. The in-pig sows are kept on grass during the summer with a straw shelter. They are brought indoors for farrowing and, when strong enough, the young pigs are

allowed free range. Litters average between eight and nine pigs, and almost two litters are obtained per sow per year; during each of the recorded years,  $13\frac{1}{2}$  pigs were weaned per sow and consequently the cost per weaner was small.

Most of the pigs are sold as baconers of 11 to 12 score liveweight in batches of sixteen. They are fattened in a pighouse of the Scandinavian type and fed principally on home-grown meal. Meal consumption per lb. liveweight gain was 3.8 lb. during the two years, the total cost per lb. liveweight gain, including a small quantity of other foods, being 8d. The excellent results were therefore due largely to the breeding side of the herd, combined with low labour and 'other' costs in the herd as a whole.

HERD "B" is a feeding herd of some 300 pigs. Practically the whole output is baconers of 11 to 12 score liveweight. No breeding herd is kept.

During the two years a total of 1,056 baconers was sold, the annual gross outputs being £4,400 and £5,470 respectively. These left profits of £21 and £28 $\frac{3}{4}$  per £100 of output.

Three substantially constructed wooden buildings house the stock. They are divided into pens accommodating six to eight pigs apiece. One full-time pigman and one man working half-time are employed, the cost amounting only to 7 per cent of the output. This is little more than half the average cost of labour in all herds recorded. 'Other' costs are correspondingly low.

Stores were purchased at an average liveweight of 60 lbs., for which the price paid per head in 1946/7 was £3 15s. 9d. They were fed to bacon weight within six months and sold at an average liveweight of 11 score. Mortality was very low, being less than 1 per cent for the two years.

Rations consisted of 75 per cent meal and 25 per cent other foods. Most of the meal was home grown; the other foods were mainly potatoes with a small amount of sugar beet pulp. The potatoes, which were all bought, were cooked and clamped; 15 per cent wastage was assumed in this process, but it had the advantage of allowing all steaming to be done at one time with a corresponding saving of labour. Food cost per lb. liveweight gain was, however, very little below the average, being 8.5d. The considerable profit made was therefore largely due to economy in labour and supplementary costs.

During the latter six months of 1946/7, the profit rose to £42 per £100 of output. The food consumption dropped considerably, food costing only 6.5d. per lb. liveweight gain. These low food costs were counteracted to some extent by the rise in the price of weaners and stores, for which 1/6d. per lb. was paid. The average cost of weaners and stores will probably be higher during the next year, and it will be difficult to maintain high profits in herds of this type.

HERD "C" comprises twenty sows. This, also, is a pure-bred Essex herd, run entirely on commercial lines; no breeding stock are sold.

During the year 1945/6, this herd showed only indifferent results, with a profit of less than £50 on an output of £1,950, or about £2 per £100 output. In 1946/7 the output was doubled to £3,780, costs rising only by £475; the profit rose to £1,400, or £37 per £100 output.

The labour requirement of one full-time man remained constant throughout the two years.

The in-pig sows are run out on grass in summer and kept in yards in winter: after farrowing the sows and young pigs are given the run of orchards. The fattening stock are kept in a lean-to type of shed with an asbestos roof: they are sold almost entirely as baconers in lots of ten to forty pigs, at an average liveweight of ten score. Rations consist mainly of meal, most of which is purchased.

The success of this herd in 1946/7 was due partly to the breeding and partly to the feeding side of the enterprise. The average size of litters was nearly  $8\frac{1}{2}$  pigs and mortality accounted for one per litter. The farrowing rate was exceptionally good, forty litters being obtained from the twenty sows during the year. As a result, almost fifteen pigs were weaned per sow.

The food consumption in the feeding stock was one of the lowest recorded, only 3.2 lbs. of meal being required per lb. liveweight gain, in addition to a very small amount of other food. During the previous year, this figure was 6.5 lb.

## VI. CONCLUSIONS

Although the average profits were low during the earlier year (1945/46), the best herds showed substantial returns.

Since food accounts for some 80 per cent. of the total expenditure, economy in this direction is more effective in increasing profit than a reduction in labour and 'other' costs. The latter are, however, sometimes responsible for poor returns and attention must be given to them.

In many herds, breeding is the weak side of the enterprise. It has been shown in Section III that the annual cost of a sow does not vary greatly from herd to herd; it is usually about £20, irrespective of the size of litters and frequency of farrowing. The principal factor affecting the cost per weaner is, therefore, the number weaned per sow during the year. If we assume the annual cost per sow to be £20 and the number weaned 15, the cost per weaner is £1 6s. 8d. If 14 only are weaned, the cost becomes £1 8s. 6d., an increase in costs (and therefore a reduction in profit) of 1/10d. When the number weaned falls still further to 13, the cost per weaner rises to £1 10s. 9d., an increase of 2/3d. The increases in costs for each reduction in the number weaned become rapidly greater. These figures serve to illustrate the importance of a numerically large production per sow. While it is essential that the pigs should be well grown at weaning, the rapid growth of small litters cannot offset the disadvantage in numbers.

Although in many herds careful management has greatly reduced the mortality among young pigs, often little attention is paid to the frequency of farrowings. In several herds only one litter per sow has been obtained: when compared with herds in which all the sows farrow twice a year, the reduction in output is equivalent to a 50 per cent. mortality.

The type of herd that is most profitable depends on the condition of the market. Breeding herds which sell all their young stock as weaners are less satisfactory than those in which the stock is fattened, as the output per sow in the former case is low and the market uncertain. Herds in which the young stock are all fattened are independent of the store market and secure the profit on both sides of the enterprise without the inevitable loss incurred in changing hands.

Apart from the initial cost of the weaners, profit in fattening depends principally on food costs. In the year ending September 1947, these averaged 8.6d. per lb. liveweight gain or £7 3s. 4d. in fattening a pig from 40 lb. to 240 lb. liveweight. Thus every 0.1d. reduction in food costs per lb. liveweight gain results in a saving of 1/8d. per baconer in cost of production: similarly, a saving of 1d. per lb. liveweight gain reduces costs by 16/8d. per baconer. It can be seen that relatively small increases in feeding efficiency will affect the profit substantially.

The majority of bacon pigs are slaughtered at a liveweight of approximately ten score. The average meal consumption per lb. liveweight gain between birth and slaughter (including a proportion of the meal fed to the sow) is lowest for pigs slaughtered at about that weight. Average meal consumption per lb. *deadweight* gain, on the other hand, is lowest for pigs slaughtered at much heavier weights, and is still falling at fifteen score liveweight. Pig-keepers would therefore be well advised to fatten their baconers to the heaviest weights at which the maximum bacon price is obtainable.

## ACCOUNTING SCHEMES FOR FARMERS

The Farm Economics Branch runs two cost accounting schemes for the use of farmers in the Eastern Counties, viz:—

- (i) Food Recording Scheme for Dairy Cows.
- (ii) Food Recording Scheme for Pigs.

Membership of these schemes offers several advantages over the keeping of private records; the individual is relieved of the work of tabulating and summarising his records and of periodically calculating his unit costs: he also has the advantage of seeing average results with which to compare his own, and he can obtain assistance in their interpretation. Milk or pig producers interested are invited to write to Cambridge for further details.

Farmers in the Eastern Province may also obtain assistance in keeping and interpreting their own financial accounts. The *CAMBRIDGE FARM ACCOUNT BOOK* (Price 6/6 post free) is specially designed for the use of occupiers of mixed arable farms in the Eastern Counties.

The *CAMBRIDGE FARM LABOUR BOOK* (Price 4/6 post free) has been specially designed for the purpose of recording total earnings of workers weekly, together with deductions such as National Health and Unemployment Insurance, Cottage rents, Income Tax, etc.

All enquiries should be addressed to:—

THE PROVINCIAL ECONOMIST,  
SCHOOL OF AGRICULTURE,  
CAMBRIDGE.



**PUBLICATIONS OF THE FARM ECONOMICS BRANCH,  
CAMBRIDGE UNIVERSITY SCHOOL OF AGRICULTURE**

- Report 12.** Four Years' Farming in East Anglia, 1923-27 (price 3/3 post free).
- Report 13.** Sugar Beet in the Eastern Counties, 1928 (price 2/9 post free).
- Report 14.** The Seasonal Distribution of Farm Labour Requirements (price 2/3 post free).
- Report 15.** Factors Affecting the Price of Potatoes in Great Britain (price 2/9 post free).
- Report 16.** Sugar Beet in the Eastern Counties, 1929 (price 2/9 post free).
- Report 17.** An Economic and Financial Analysis of Sixteen East Anglian Farms 1927-29 (price 1/1 post free).
- Report 18.** An Economic Survey of Hertfordshire Agriculture in 1930 (price 2/9 post free).
- Report 19.** An Economic Survey of Agriculture in the Eastern Counties of England, 1931 (price 2/9 post free).
- Report 20.** An Economic Survey of Milk Marketing Schemes and Price Policies (price 2/2 post free).
- Report 22.** An Economic Survey of Agriculture in the Eastern Counties of England, 1933 (price 2/9 post free).
- Report 23.** Changes in the Economic Organisation of Agriculture, 1933 and 1935 (price 1/8 post free).
- Report 24.** Changes in the Economic Organisation of Agriculture, 1935 and 1936 (price 1/8 post free).
- Report 26.** Changes in the Economic Organisation of Agriculture, 1936 and 1937 (price 1/8 post free).
- Report 28.** An Economic Study of Foods and Grazing in Milk Production (price 1/8 post free).
- Report 29.** Changes in the Economic Organisation of Agriculture, 1938 to 1943 (price 7/6 post free).
- Farmers' Bulletin.**
1. Interpretation of Farm Accounts (price 6d. post free).
  5. Management in Milk Production (price 6d. post free).
  7. Management in Pig Production (price 6d. post free).
  9. Harvesting by Combine and Binder (price 2/- post free).