Poultry - Cost of production 0.5

THE NORTH OF SCOTLAND COLLEGE OF AGRICULTURE

AGRICULTURAL ECONOMICS DEPARTMENT

ECONOMIC REPORT NO. 105

SOME ASPECTS OF ECONOMIC POULTRY KEEPING

by

AUDREY M. CHALMERS

February, 1963.

Price 1/6d. each
plus postage

Poultry - Cost of production 0.5

THE NORTH OF SCOTLAND COLLEGE OF AGRICULTURE

AGRICULTURAL ECONOMICS DEPARTMENT

ECONOMIC REPORT NO. 105

SOME ASPECTS OF ECONOMIC POULTRY KEEPING

by

AUDREY M. CHALMERS

February, 1963.

Price 1/6d. each
plus postage

Introduction

Modern poultry-keeping, if it is to be profitable, must be divided into three parts:

1. The purchase of chicks from a good laying strain
2. The rearing of these chicks economically to point-of-lay
3. The management of the laying flock to ensure optimum production at lowest possible cost.

First, the problem of buying day-old chicks. The purchaser should avail himself of all flock records and ensure that the chicks come from birds which have a high egg-laying potential and a source that is comparatively disease-free.

Second, rearing. Careful attention to technical details of rearing the chicks must be matched by intelligent feeding practice. Food makes up over 50% of the rearing cost and therefore, as in all forms of livestock production, food wasted is money thrown away. On many farms, the pullet at point-of-lay has cost more to produce than it will ever repay in egg production through its laying life. Low food consumption and low mortality are essential for an economic price at point-of-lay.

Third, the laying flock. Three factors affect profitability at this level and they are all closely inter-related:

1. Number of eggs laid per bird per annum
2. Food consumed per bird per annum
3. Bird Depreciation

A fourth factor, the price of eggs, is largely beyond the control of the farmer, but he can, by producing large clean eggs and by careful handling reduce the number of rejects and seconds to a minimum and thereby ensure that he is getting the best possible return at ruling prices.

The flock may have an excellent laying potential in its hereditary make-up but it is up to the farmer to provide the factors necessary to produce these eggs. Housing, ventilation, lighting and nesting facilities all form the environment which is an integral part of economic egg production.

Sample:

Forty-seven farmers and their wives completed a year's recording of their flocks in 1961/62. Of these, forty-one were commercial egg producers while six were hatchery suppliers. In addition, twenty-four flock-owners also supplied data on the rearing of the replacements. This report is therefore divided into two parts, the first part being devoted to the economics of table and hatching egg production and the second to rearing

costs.

We here make grateful acknowledgment of the co-operation of poultry advisers and farmers and their wives for the collection and keeping of records.

COMMERCIAL EGG PRODUCTION

All forty-one farms in this sample were mixed arable farms, none being specialist poultry farms. There were 37 deep litter flocks and 4 batteries involving a total number of laying birds recorded throughout the year of 45,579 the smallest flock in the sample having 60 birds and the largest over 4,100. Within the sample, all types of birds made up the flocks, from heavy crosses to light hybrids. Unfortunately, few farmers kept the same type throughout the year so no direct comparison can be made between the economics of any particular cross or hybrid.

The following Table I gives the average costs per hen per year for all the farms grouped according to system of management. It will be seen that food is by far the largest item accounting for 57% of total costs, followed by bird depreciation 18%, labour 15% and the remaining costs 10%.

TABLE I

Expenditure per Bird per Year

	Deep Litter Av. 37 farms	Battery Av. 4 farms	Average 41 farms
Food	1:10: 2	1: 4: 3	1: 9: 7
Labour	-: 7:11	-: 6: 2	-: 7:10
Bird Depreciation	-: 8: 8	-:16: 5	-: 9: 5
Other Charges			
Equipment Dep. and Reps.	-: 1: 2	-: 1:11	-: 1: 3
Sundry Expenses	-: -: 6	-: -:11	-: -: 6
Overhead Charges	-: 3: 4	-: 2: 8	-: 3: 3
	-: 5: -	-: 5: 6	-: 5: -
TOTAL COSTS	£2:11: 9	£2:12: 4	£2:11:10

The variation in costs from farm to farm was wide, the lowest being £1:12:11 and the highest £3: 9: 7, both in deep litter flocks. An indication of the distribution is as follows:-

TABLE II

Variation in Cost per Bird per Year (All Farms)

Cost	No. of Farms
45/- and under	7
Over 45/- to 50/-	9
Over 50/- to 55/-	11
Over 55/- to 60/-	9
Over 60/- to 65/-	4
Over 65/-	1

Table III gives total average receipts per bird for the year, average profit and loss per bird and the average number of eggs laid. Income is from eggs only as income from hens sold was taken into account when calculating bird depreciation in Table I.

TABLE III

Income and Expenditure per Bird

	Deep Litter Av. 37 Farms	Battery Av. 4 Farms	Total Av. 41 Farms
Egg Sales	£2: 6: 8	£2:12: 7	£2: 7: 3
Eggs consumed	-: 1: 1	-: -: 2	-: 1: -
	2: 7: 9	2:12: 9	2: 8: 3
Less Expenditure (Table I)	2:11: 9	2:12: 4	2:11:10
PROFIT/LOSS	-: 4: -	-: -: 5	-: 3: 7
Eggs laid	188	211	190

Range of profits and losses was as usual wide. Thirteen deep litter flocks and two batteries made profits, the highest being 10/8d. per bird while twenty-four deep litter flocks and two batteries made losses, the greatest of which was 22/9d. per bird. The birds making the greatest loss and the highest profit were both deep litter flocks. Distribution of profits and losses is as follows:-

TABLE IV

Distribution of Profits and Losses

Loss and Profit	No. of Farms
Loss - over 10/-	9
9/11 to 8/-	3
7/11 to 5/-	6
4/11 to 0/-	8
Profit - 0/- to 5/-	10
5/1 to 10/-	2
over 10/-	3

Calculations per Dozen Eggs

Table V shows income and expenses along with profits and losses per dozen eggs.

TABLE V

Expenditure and Income per Dozen Eggs

	Deep Litter Av. 37 farms	Battery Av. 4 farms	Average 41 farms
	s. d.	s. d.	s. d.
Food	1:11	1: 5	1:11
Labour	-: 6	-: 4	-: 6
Bird Depreciation	-: 7	-:11	-: 7
Other Charges	-: 4	-: 4	-: 4
Total Cost	3: 4	3: -	3: 4
Income	3: 1	3: -	3: 1
PROFIT/LOSS	-: 3	-: - -: -	-: 3
Eggs laid per bird (doz.)	$15^{8}/_{12}$	$17^{7}/_{12}$	$15^{10}/_{12}$

Eggs laid per bird per year ranged from 145 to 248, both in deep litter flocks, the spread on all farms being illustrated in the following table.

TABLE VI

Distribution of Eggs laid per Hen per Year

Eggs laid	No. of Farms
Under 150	1
151 - 175	10
176 - 200	23
201 - 225	2
Over 225	5

Comparison with previous years

Comparison of egg production cost figures with those of previous years is given in Table VII. Also in the table are the results of one battery which has been costed over thirteen consecutive years.

TABLE VII

Poultry Report Figures per Bird for Years 1949 - 1962

	Year	Income	Expenditure	Profit	Eggs Laid	Sale Price per Doz.
	1949/50	2:13: -	2: 2: 6	10/6	151	4/2
Average	1950/51	3: 2: 1	2:13: 4	8/9	174	4/3½
	1951/52	3:10: 7	3: 1: 6	9/1	182	4/7½
Figures	1952/53	3:15: 8	3: 4: 9	10/11	185	4/11¼
	1953/54	3: 4: 7	3: 1: 2	3/5	184	4/2¼
of	1954/55	3: 4: 8	3: 3: 8	1/-	185	4/2
	1955/56	3: 2:11	2:17:11	5/-	185	4/1
Each	1956/57	3: 3: 7	2:18:10	4/9	188	4/-
	1957/58	3: 2: 3	2:17: 9	4/6	189	3/11
Report	1958/59	2:11:10	3: -: 1	Loss 8/3	179	3/6
	1959/60	2:14: -	2:19: -	" 5/-	189	3/5
	1960/61	2:13: 3	2:14: 2	" 11	192	3/4
	1961/62	2: 8: 3	2:11:10	" 3/7	190	3/-
	1949/50	3:13:11	2:16: 9	17/2	207	4/3½
	1950/51	3:17: 2	2:16:10	20/4	210	4/5
	1951/52	3:13: 2	3: 4: 6	8/8	195	4/6¼
Farm No.	1952/53	3:17:11	3:16: 5	1/6	200	4/8
	1953/54	3: 8: 5	3: 5: 5	3/-	195	4/2½
8	1954/55	3: 5:11	3: 1: 6	4/5	194	4/1
	1955/56	3:11: 5	3: 1: 7	9/10	210	4/1
Battery	1956/57	3:10: 3	3: -: 4	9/11	204	4/1
	1957/58	3:12:10	3: 4: 2	8/8	216	3/11
	1958/59	3: 1: 3	3:11: 5	Loss 10/2	196	3/9
	1959/60	3: 9: 7	3: 4: -	Profit 5/7	232	3/7
	1960/61	2:12: 3	2:11: 8	" 7	187	3/4
	1961/62	2: 4: 3	2:10: 6	Loss 6/3	178	3/-

It can be seen that the selling price per dozen eggs rose steadily till 1952/53 and from then to date has gradually declined as steadily. Income per bird is therefore declining and, although expenditure may gradually be reduced through extra care in management and by using birds capable of higher production combined with lower food consumption, the gap between expenditure and income is still widening and losses are increasing. The small flock on the general farm where family labour is employed will tend to discount cost of labour and, as a result, will be in a position to withstand even greater reduction in income. If family labour and associated overheads are discounted on the 37 deep litter flocks, the average loss of 4/- per bird becomes a surplus of 7/3d. per bird or 6d. per dozen eggs. Only one farm still shows a loss when discounting labour charges. In flocks where labour is hired, however, wages have still to be paid and greater economic pressure will make necessary regular and careful checks on production costs compared with returns. The henhouse door must be shut <u>before</u> all profits have bolted.

Food

Being the major cost factor in egg production, food control is absolutely essential. Wastage should be kept at a minimum as mash lost in the litter is money lost in the litter and troughs should be half-filled twice rather than overfilled once.

TABLE VIII

Food Consumption per Year

	Deep Litter Av. 37 farms	Battery Av. 4 farms	Average 41 farms
Food per Bird	111.6 lbs.	91.8 lbs.	109.6 lbs.
Food per Dozen Eggs	7.2 "	5.6 "	6.7 "

The average food consumption per bird per day was 4.8 ozs. Since these costings started thirteen years ago, food per bird per annum has dropped by over $\frac{1}{4}$ cwt. This drop is due to two factors: greater number of the smaller type hybrids in the sample and increased care on the part of the farmers in feeding practice. If food is costing £30 per ton, a saving of $\frac{1}{4}$ cwt. represents a saving of 7/6d. cash per bird.

When food consumption is linked with egg production, it is clearly seen from Table IX that the higher the production, the lower the consumption of food per dozen eggs.

TABLE IX

Eggs Laid and Food Consumed

Eggs Laid	No. of Farms	Food per doz. Eggs
Under 150	1	9.6 lbs.
151 - 175	10	7.9 "
176 - 200	22	7.1 "
201 - 225	6	6.6 "
Over 225	2	4.3 "

Labour

Labour accounts for 15% of total costs and is therefore not so important an item as food. It may well be that a little more time spent among the birds might help to reduce the more expensive cost items of food and bird depreciation. On farms where family labour is used, recording is difficult and tends either to be under or overestimated. Records were kept as carefully as possible and Table X shows hours of work per hen per year.

TABLE X

Hours of Work per Hen per Year

Deep Litter Av. 37 farms	Battery Av. 4 Farms	Average 41 farms
2.0	1.2	2.0

Different Systems Compared

The following Table XI compares the least and most profitable flocks in each system. It can be seen that the flocks with poor results had high food consumption and high total costs while on the income side, high profit was associated with high egg production. Profits and losses can be made under either system which indicates clearly that management counts more than the system employed or type of bird kept.

TABLE XI

Low and High Profitability in Different Systems

	Deep Litter		Battery	
	Greatest Loss	Highest Profit	Greatest Loss	Highest Profit
	Av. 4 Farms	Av. 4 Farms	Av. 2 Farms	Av. 2 Farms
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Expenditure per Bird				
Food	1:10: 8	1: 7:11	1: 7:10	1: -: 9
Bird Depreciation	-:10: 4	-: 6:10	-:18: 9	-:14: 2
Labour	-: 9: 8	-: 4: 9	-: 5: -	-: 7: 4
Equipment Dep. and Repairs	-: 1: 5	-: 1: 3	-: 1: 8	-: 2: 1
Overhead & Sundry Charges	-: 4: 2	-: 2: 5	-: 2:11	-: 4: 2
Total Expenses	2:16: 3	2: 3: 2	2:16: 2	2: 8: 6
Income per Bird				
Eggs	2: -:11	2:12: 2	2: 8: 9	2:11:10
PROFIT/Loss	-:15: 4	-: 9: -	-: 7: 5	-: 3: 4
Physical Data				
Eggs laid	169	202	205	216
Food - lbs.	118.6	95.8	98	84.3
Average size of flock	221	682	2527	2067

Replacement Charges: In all the foregoing tables for comparative purposes, figures are based on a pullet replacement charge of 15/-. However, 18 of these commercial egg producers also kept rearing costs and of these, 13 showed an advantage of 1/5d. per bird, thereby increasing existing profits or decreasing existing losses by rearing their birds at less than 15/-. The remaining 5

actually increased their losses by 8d. per bird because of poorer management at this stage. Overall, these 18 farms reduced their bird depreciation by 9d. per bird.

Management at rearing level is extremely important if egg production is going to be profitable, and rearing costs are discussed more fully later in this report.

MEASURE YOUR EFFICIENCY

You as a poultry-keeper, should know what the profitability of your unit is. At least, you should know what cash your hens are returning to you in wages for time spent looking after them. Many of you keep records of eggs laid - which is useful but only if linked with other records if a profitability diagnosis of your flock is to be made. Do not forget home-grown grain. Too often, anything that is not paid for in cash is taken for granted and too often, that is exactly what happens to the oats from the loft. It may well be that the oats would be more profitable sold than fed to hens which are forming an uneconomic unit. A simple calculation follows which involves very little in the way of record-keeping and which would be invaluable in letting you know exactly what your unit is worth to you. This calculation should be made once a month.

EFFICIENCY CHECK

INCOME:	Eggs sold to Packing Station		
	Eggs sold privately		
	Estimate of eggs used in house at 1/6d. per dozen		_____
SUBTRACT EXPENSES:			
	Price of purchased food consumed		
	Value of Homegrown grain at current market price	_____	
	Total food cost		
	*Add $\frac{1}{3}$ of total food cost	_____	_____
SURPLUS:	To pay your wages and sundries		£

* By adding this figure, we take into account bird depreciation which covers any purchases and sales of birds. When culls are sold, therefore or birds added, do not count them in this calculation.

HATCHING EGG PRODUCTION

Six farmers producing hatching eggs provided costings for their units for the year. The average size of each flock was 506 laying birds, excluding cocks. Table I shows the average expenditure and income per hen on these farms, along with average figures for the three farms showing profits and the three farms showing losses.

TABLE I

Expenditure and Income per Hen

	Av. All 6 Farms	Av. 3 Profitable Farms	Av. 3 Unprofitable Farms
Food	1:17: 3	1:19: 1	1:15: 6
Labour	-: 6: 8	-: 4: 5	-: 8:10
Bird Depreciation	-:10: 9	-:10: 7	-:10:11
Other Charges			
Equip. Dep. and Reps.	-: 2: -	-: 2: 2	-: 1:11
Sundry Expenses	-: -:11	-: -: 4	-: 1: 5
Overhead Charges	-: 2:11	-: 2: 1	-: 3: 8
Total Costs	3: -: 6	2:18: 8	3: 2: 3
Income			
Eggs sold and used	3: 5: 1	3:13: 2	2:16:11
PROFIT/LOSS	-: 4: 7	-:14: 6	-: 5: 4
Eggs Laid	195	213	177
Food consumed - lbs.	134.8	137.9	131.6
Labour - hrs.	1.8	1.2	2.4
Food per Doz. Eggs - lbs.	8.2	7.8	8.8
Hatching Eggs sold as % Total production	50.1%	56.7%	43.6%
Av. Price per Doz. Hatching Eggs	5/6d.	5/8d.	5/4d.

All items are divided by the average number of hens only as the producer tends to think in terms of production per hen. Quantity of food used works out at 61% of total costs. Food per bird is therefore higher than in the commercial egg production costs because of the cocks which have to be kept and, in some cases, more cocks than would appear necessary have to be kept for replacement purposes.

It will be noticed that the food consumption and cost figures in the farms showing losses are lower than in the profitable farms. At first glance, this would seem contrary to expectations, but the greater number of eggs laid per bird in the profitable farms, linked with the food consumed, shows that the food per dozen eggs was actually lower on these farms.

Whereas the average profit per hen was 4/7d. two farms made profits of 19/10d. and one 3/9d., while three made losses of up to 8/6d. There were three factors responsible for the losses, either alone or in combination:

1. Very high food consumption
2. Low egg production
3. Low percentage of total eggs sold as hatching eggs.

Table II illustrates the average expenditure and income per dozen eggs, again showing the three profitable farms and the three unprofitable farms.

TABLE II

Expenditure and Income per Dozen Eggs

	Av. All 6 Farms	Av. 3 Profitable Farms	Av. 3 Unprofitable Farms
	s. d.	s. d.	s. d.
Food	2: 3	2: 2	2: 5
Labour	-: 6	-: 4	-: 7
Bird Depreciation	-: 8	-: 7	-: 9
Other Charges	-: 4	-: 3	-: 5
Total Costs	3: 9	3: 4	4: 2
Income	4: -	4: 1	3:10
PROFIT/LOSS	-: 3	-: 9	-: 4

Replacement Charges: In these calculations, figures were based on a pullet replacement charge of 15/-. Rearing costs, however, were available from four of the hatching egg producers, and only one failed to rear his birds below this figure, thereby increasing his loss per bird by 1/2d. The others by rearing at less than 15/- showed an advantage of 2/11d. per bird in reduced bird depreciation.

REARING COSTS

Twenty-four flock-owners co-operated in this survey, twenty-two of whom purchased their birds at day-old while the remaining two procured them at eight weeks of age. The total number of birds reared to point-of-lay from the twenty-four farms was over 10,500 with breeds varying from heavy crosses to light hybrids. The small size of the sample and number of different types of birds within it limit subdivision into figures for heavy, medium and light birds, and only average figures are given for the farms purchasing day-olds in Table I, along with the average of the two farms purchasing older pullets.

TABLE I

Cost per Bird to Point-of-Lay

	Purchased at D.O. Average - 22 Farms	Purchased at 8 weeks Average - 2 Farms
	s. d.	s. d.
Cost of Chick	3: 6	7: 9
Foods	7: 9	5:10
Labour	1: 9	-:11
Overheads	-: 7	-: 4
Equipment Depreciation	-: 5	-: 2
Heating	-: 3	-: -
	14: 3	15: -
Less:		
Credits for first eggs, birds consumed, etc.	-: -¾	-: 3
	14: 2¼	14: 9
Food per bird - lbs.	27.8	22.9
Labour per bird - hrs.	0.46	0.26

When purchased at day-old, the cost of the food constitutes over 50% of the rearing cost while chick cost amounts to 25%. Cost structure changes when buying birds at eight weeks when the young pullet cost amounts to over 50% and food costs are reduced to 40%.

Range of costs was wide and is illustrated below in Table II:

TABLE II

Cost to Point-of-Lay	No. of Farms
11/1d. to 12/-	2
12/1d. to 13/-	6
13/1d. to 14/-	2
14/1d. to 15/-	7
15/1d. to 16/-	4
16/1d. to 17/-	1
17/1d. to 17/5d.	2

As the cost of the replacement pullet is one of the major items affecting the bird depreciation figure in egg production, it is important to keep the rearing cost as low as possible. This can only be achieved if food consumption and mortality figures are kept down. Mortality rate of birds in this sample was under 8%.

APPENDIX

Methods of Costing and Standards Used

Valuations

Birds reared on the farm and added to the laying flock were included at 15/- while for opening and closing valuations, adjustments were made to this figure according to age of the birds. Birds bought and sold during the year were charged at actual prices paid and received.

Average Number of Birds per Flock

Where birds were added and culled at different periods throughout the year, this figure was obtained by calculating the total number of bird months and dividing by 12.

Bird Depreciation

This was calculated by taking the difference between opening valuation plus purchases and closing valuation plus sales.

Food

Purchased food was charged at purchase price delivered on the farm, whilst home-grown food was estimated at market value.

Labour

When employed full-time, labour was taken as wages paid, whilst part-time was charged at 4/8d. per hour. The farmer was also charged at 4/8d., wife and family at corresponding rates. Tractor work 4/6d. per hour.

Overheads

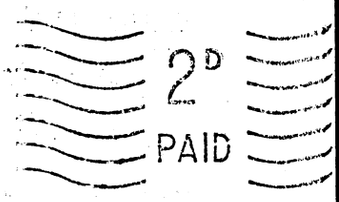
These were calculated according to the method recommended by the Conference of Scottish Agricultural Economists being 7/-d. per £1 of man labour employed on poultry work and 25/9d. per livestock unit.

Receipts

Eggs consumed in the farmhouse were added as a receipt at 2/- per dozen.

Management and Interest

No charge was made either for a managerial salary to the farmer or for interest on capital.


2D
PAID