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**POULTRY
COSTS AND RETURNS
1947-1951**

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UNIVERSITY OF MINNESOTA

Institute of Agriculture

Department of Agricultural Economics

and the

UNITED STATES DEPARTMENT OF AGRICULTURE

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Report No. 205

Department of Agricultural Economics

University Farm

St. Paul 1, Minnesota

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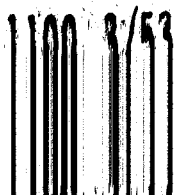
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FACTORS AFFECTING COSTS AND RETURNS FROM POULTRY, 1947 - 1951

F. T. Hady^{1/}, T. R. Nodland, and G. A. Pond

INTRODUCTION

Each year since 1947, approximately 500 cooperators in three farm management services in Minnesota^{2/} have furnished records of the feed costs and the returns they received from their farm poultry flocks. Since 1949, many of them have shown this information separately for the rearing flock and for the laying flock. The purpose of this report is to present the summary of these data for 1951 and a comparison with previous years.

COSTS AND RETURNS FROM COMBINED REARING AND LAYING FLOCKS

In 1951 the average cost of feeding a hen was higher than in any year since 1947 but the total value produced by the hen was also substantially higher (Table 1). As a result, the return above feed cost of \$2.15 in 1951 was double that of 1950 and the second highest for the five-year period of records. Most of this higher return was due to higher prices received for eggs.

The farm raised feeds listed in Table 1 were valued at average prices at the farm. The commercial feeds were valued at the price the farmer paid for them. The net increase in value of chickens represents the gross return. It is calculated by subtracting the cost of the chicks and hens which were bought and the estimated value of the poultry on hand at the beginning of the year from the combined value of the hens sold, those butchered for home use and those left on hand at the end of the year. The value of the eggs which were sold and those used in the home were added to the net increase in the value of chickens in order to get the total value produced.

The pounds of poultry produced was calculated in the same manner. The average number of hens during the year was determined by adding the number on hand at the beginning of each month and dividing this sum by 12.

The return above feed cost was the amount by which the total returns from the poultry enterprise exceeded the cost of the feed which was fed. It must pay for the housing costs, the labor involved and for all incidental expenses if the enterprise is to prove profitable. How well farmers fared with their poultry enterprise when all of their costs are considered is shown in Table 2. Data for the labor requirements, shelter and equipment costs and other cash costs were obtained from the 1951 study of Southern Minnesota Detailed Accounting Farms.^{3/} No attempt was made to adjust the 1951 data for these items to fit the earlier years although a slight downward adjustment in costs probably would be justified.

^{1/} Bureau of Agricultural Economics, U.S. Department of Agriculture.

^{2/} Southeast Minnesota Farm Management Service, Southwest Minnesota Farm Management Service and the Farm Management Service for Veterans Taking On-The-Farm Training.

^{3/} Report No. 203, Department of Agricultural Economics, University of Minnesota.

Table 1. Feed Costs and Returns From Combined Rearing and Laying Flocks, 1947 - 1951

	1947	1948	1949	1950	1951	Average 1947-51
Number of farms	516	549	532	432	392	484
Feed per hen, lbs.:						
Grain	98	86	99	94	96	94
Commercial feed	<u>43</u>	<u>38</u>	<u>42</u>	<u>46</u>	<u>45</u>	<u>43</u>
Total	141	124	141	140	141	137
Skim milk	6	7	7	5	4	6
Total feed cost per hen	\$5.07	\$4.42	\$3.76	\$4.15	\$4.61	\$4.40
Value of produce per hen:						
Eggs sold and used in home	\$5.33	\$5.61	\$5.59	\$4.64	\$6.09	\$5.45
Net increase in value of chickens	<u>.76</u>	<u>.83</u>	<u>.57</u>	<u>.59</u>	<u>.67</u>	<u>.68</u>
Total value produced	6.09	6.44	6.16	5.23	6.76	6.13
Return above feed cost per hen	\$1.02	\$2.02	\$2.40	\$1.08	\$2.15	\$1.73
Return per \$100 feed consumed	\$ 128	\$ 154	\$ 177	\$ 126	\$ 147	\$ 139
Price rec. per doz. eggs sold (cts.)	39.9	41.6	39.6	31.4	41.9	38.9
Eggs laid per hen	159	162	170	177	175	169
Average no. of hens on farm during year	198	199	201	219	220	207
Per cent of hens that were pullets	79	72	76	82	81	78
Per cent death loss of hens	13	13	12	13	14	13
Number of chicks purchased per farm	382	287	366	378	351	353
Pounds of poultry produced per farm	1094	876	1059	1139	1067	1047

If one values labor spent on the poultry enterprise at 80 cents per hour as it was in the farm cost study, then the poultry enterprise shows a loss during every year for which records are available. This loss varies from a high of \$1.54 per hen in 1947 to a low of 16¢ per hen in 1949. The 1951 loss was 41¢ per hen (Table 2). Perhaps a more realistic way to approach the problem, however, would be to determine the return above all costs other than labor, and from this compute the net return per hour of labor used on poultry. Table 2 shows that in 1951 the poultry enterprise paid 60 cents per hour for the time spent on it. The return, however, varied from 6 cents in 1947 to 71 cents in 1949. Since shelter and equipment costs and other cash costs were not varied from year to year, the factors that caused the variations in returns are limited to changes in feed costs per hen, changes in the value of the hen herself, rate of lay per hen, and the price of eggs. Tables 1 and 2 show that most of the variations in return per hour of labor were due to changes in the prices paid for feed and changes in the prices received for eggs.

Table 2. Return Above All Costs From Combined Rearing and Laying Flocks, 1947 - 1951

	1947	1948	1949	1950	1951	Average 1947-51
Costs per hen:						
Feed	\$5.07	\$4.42	\$3.76	\$4.15	\$4.61	\$4.40
Man labor	1.66	1.66	1.66	1.66	1.66	1.66
Shelter and equipment	.53	.53	.53	.53	.53	.53
Other cash costs	<u>.37</u>	<u>.37</u>	<u>.37</u>	<u>.37</u>	<u>.37</u>	<u>.37</u>
Total cost	7.63	6.98	6.32	6.71	7.17	6.96
Value of production per hen:						
Eggs sold and used in home	\$5.33	\$5.61	\$5.59	\$4.64	\$6.09	\$5.45
Net increase in value of chickens	<u>.76</u>	<u>.83</u>	<u>.57</u>	<u>.59</u>	<u>.67</u>	<u>.68</u>
Total value produced	6.09	6.44	6.16	5.23	6.76	6.13
Return above costs	-1.54	-.54	-.16	-1.48	-.41	-.83
Returns per \$100 total cost	\$ 80	\$ 92	\$ 97	\$ 78	\$ 94	\$ 88
Returns per \$100 feed fed	128	154	177	126	147	139
Net return per hour of labor	\$.06	\$.53	\$.71	\$.09	\$.60	\$.40
Man hours per year per hen	2.1	2.1	2.1	2.1	2.1	2.1

THE REARING FLOCK ^{1/}

Time of Purchase

The months during which the chicks were purchased, the number of purchases and the per cent of the total number of purchases are shown in Table 3 for the years 1949, 1950 and 1951. These data show some trend toward the earlier purchase of chicks.

^{1/} The rearing flock includes the chicks from the time of purchase until they are transferred to the laying flock or are otherwise disposed of.

Table 3. Month Chicks Were Purchased, 1949 - 1951

Month	Number of purchases			Per cent of purchases		
	1949	1950	1951	1949	1950	1951
January	1	1	1	.6	.6	.9
February	4	8	10	2.6	4.9	8.7
March	31	54	29	20.0	33.4	25.2
April	83	65	44	53.6	40.1	38.2
May	31	26	24	20.0	16.1	20.9
June	5	8	7	3.2	4.9	6.1

Sexed Chicks Predominate

Only 16 per cent of the farmers depended on straight run chicks alone for their replacement stock. However, a third of the farmers bought some straight run chicks (Table 4). On the other hand 37 per cent bought only sexed pullets and 67 per cent bought combinations that contained no straight run chicks. 43 per cent bought sexed cockerels either alone or in some combination with other chicks.

Table 4. Kind and Number of Chicks Purchased Per Flock, 1949 - 1951

Item	Number of farms	Ave. number of chicks purchased		
		Pullets	Straight run	Cockerels
<u>1949</u>				
Pullets	55	428	---	---
Straight run	36	---	480	---
Pullets and cockerels	36	394	---	63
Pullets and straight run	17	349	151	---
Pullets, straight run and cockerels	3	258	350	483
Straight run and cockerels	3	---	783	67
<u>1950</u>				
Pullets	69	400	---	---
Straight run	23	---	491	---
Pullets and cockerels	40	467	---	88
Pullets and straight run	18	376	179	---
Straight run and cockerels	3	---	583	183
Pullets, straight run and cockerels	4	436	131	72
Cockerels	4	---	---	307
<u>1951</u>				
Pullets	41	468	---	---
Straight run	18	---	521	---
Pullets and cockerels	30	353	---	66
Pullets and straight run	13	340	285	---
Straight run and cockerels	2	---	615	65
Pullets, straight run and cockerels	3	483	117	49
Cockerels	3	---	---	233

Feed Cost and Returns

It took less feed to raise 100 chicks in 1951 than it did in 1950 but the quantity was about the same as the average for 1949-51 (Table 5). However, the proportion of feed that was bought as commercial feeds continued to rise in 1951. The total cost of the feed was substantially higher in 1951 than in 1950. The cost of the feed exceeded the net increase in value per 100 chicks raised^{1/} by \$10.47 in 1951. Hence, on the average, these flock owners not only failed to recover the cost of the feed consumed by the chicks but they also failed to cover any of their other costs such as labor, use of equipment, interest on investment and miscellaneous cash cost. This apparent failure to cover feed costs in the chick raising enterprise has occurred in each of the three years of record and the average loss has been \$9.30 for the period 1949-51.

Table 5. Feed Costs and Returns Per 100 Chicks Raised in Rearing Flocks, 1949 - 1951 ^{2/}

Item	1949	1950	1951	Average 1949-1951
Number of flocks	150	161	110	140
Feed per 100 chicks raised, lbs.:				
Grain	1285	1439	1251	1325
Commercial feeds	950	1123	1138	1070
Total	2235	2562	2389	2395
Skim milk	13	72	31	39
Total feed cost per 100 chicks raised	\$70.92	\$86.04	\$89.00	\$81.99
Net increase in value per 100 chicks raised	<u>65.05</u>	<u>74.48</u>	<u>78.53</u>	<u>72.69</u>
Return over feed cost per 100 chicks raised	-5.87	-11.56	-10.47	-9.30
Return per \$100 feed consumed	\$ 92	\$ 87	\$ 88	\$ 89
Number of chicks purchased per farm as:				
Pullets	296	340	324	320
Straight run	155	104	133	131
Cockerels	26	35	27	29
Total number purchased	477	479	484	480
Price paid per 100 chicks purchased as:				
Pullets	\$39.83	\$39.85	\$42.49	\$40.72
Straight run	20.13	20.90	20.24	20.42
Cockerels	14.30	7.96	5.03	9.10
Number of chicks raised per farm	391	399	416	402
Pounds of poultry produced per farm	1638	1679	1747	1688

^{1/} The net increase in value was determined by subtracting the cost of the chicks from the gross income. This gross income includes the amount received from sales and the farmers' estimate of the value of birds used in the home and those transferred to the laying flock.

^{2/} "100 Chicks Raised" includes only those that are sold, butchered for home use or are raised to maturity and transferred to the laying flock.

Valuation of Pullets Affects Returns

These low returns are due to a very large extent to farmers' underestimates of the value of pullets transferred to the laying flock and to a lesser extent to underestimating the value of chickens eaten in the home. In so far as the rearing flock is for replacement purposes it seems logical that pullets should be valued either at their cost of rearing or at the cost of purchasing pullets of similar age and quality - which ever is the lower. Likewise for chicks eaten in the home the value should be equal to that which the bird would bring if sold in the market.

The approximate cost of raising a sexed pullet to laying age on these farms in 1951 was as follows:

Feed, 23.89 pounds	\$.89
Chick, purchase price ^{1/}	.49
Labor, 32 minutes ^{2/}	.32
Other costs ^{2/}	<u>.24</u>
	\$1.94

While it is often possible to buy scattered lots of good pullets at less than the cost of raising them, it is very doubtful that many farmers could depend on such sources for their annual replacements. Hence it would seem that the cost of raising pullets would be the most logical charge unless actual purchases were made.

Table 6 shows the number, weight, and value of chicks in the rearing flock and the disposition made of them for sexed and unsexed chicks and for various combinations. These averages are based on the data provided by the farmers. Of the total value of chicks raised per farm (\$496.05) only about 5 per cent was for chicks which were eaten in the home, 14 per cent was from sales of chicks and 80 per cent was for the value of pullets transferred to the laying flock.

High Mortality Lowers Returns

Another reason for the low returns received from the rearing flocks was the high rate of mortality on some farms. There was a considerable range in the amount of death loss among the flocks on the farms studied (Table 7). Much of it represents the loss of small chicks soon after purchase. On some farms, however, loss of chicks occurred several weeks after purchase. In either case, the cost of chicks that die and the cost of feeds consumed by them must be borne by the remaining birds in the flock. Consequently a high death loss is associated with a high feed charge for each 100 birds raised.

^{1/} The average price of pullets was \$.42. However 1.16 chicks were purchased for each chick raised. This increases the cost to \$.49 per chick raised.

^{2/} Adapted from information reported by C. D. Kearl and L. B. Darrah, "Cost of Raising Pullets", Farm Economics, Cornell University, No. 169, July, 1949.

Table 6. Number, Weight, and Value of Birds in Rearing Flocks, 1951

	1949	1950	1951
Number of cases	150	161	110
		<u>Number per flock</u>	
Used in home	20	20	25
Transferred to layers	295	315	322
Sold	76	59	67
On hand at end of year	-	5	2
Death loss	86	80	68
Total purchased	477	479	484
		<u>Pounds per flock</u>	
Used in home	80	82	105
Transferred to layers	1259	1314	1352
Sold	299	252	278
On hand at end of year	-	31	12
Total pounds produced	1638	1679	1747
		<u>Value per flock</u>	
Used in home	\$16.51	\$17.35	\$24.66
Transferred to layers	318.85	366.30	399.40
Sold	72.91	67.39	69.15
On hand at end of year	-	10.81	2.84
Total value per flock	408.27	461.85	496.05
		<u>Value per bird as reported by farmers</u>	
Used in home	\$.83	\$.87	\$.99
Transferred to layers	1.08	1.16	1.24
Sold	.96	1.14	1.03

Table 7. Relation of Death Loss to Returns From Rearing Flocks, 1949-1951

	<u>Per cent death loss of chicks</u>			
	Below 10.0	10.0- 19.9	20.0- 29.9	30 and over
Number of flocks	43	56	26	15
Feed per 100 chicks raised, lbs.:				
Grain	1175	1326	1435	1559
Commercial feed	1010	1012	1197	1233
Total	2185	2338	2632	2792
Skim milk	10	79	17	-
Total feed cost per 100 chicks raised	\$76.64	\$78.92	\$90.04	\$93.76
Net value produced per farm	75.70	73.39	70.96	63.02
Return above feed cost per 100 chicks raised	-.94	-5.53	-19.08	-30.74
Return per \$100 feed consumed	\$ 99	\$ 93	\$ 79	\$ 67
Number chicks purchased per farm:				
Pullets	296	330	390	278
Straight run	131	140	95	161
Cockerels	27	22	33	50
Per cent death loss	5.6	14.5	23.9	38.2
Pounds of poultry produced per farm	1785	1765	1571	1274

THE LAYING FLOCK

In 1951 the return above feed cost per hen, in flocks where the laying flock record was kept separate from the rearing flock, was almost twice as high as in 1950 and equal to that of 1949. (Table 8). Considerable year-to-year changes in the return above feed costs were due almost entirely to changes in the prices paid for feed and received for eggs. The quantity of feed fed per hen and the number of eggs laid per hen changed very little from year to year.

Table 8. Feed Costs and Returns from Laying Flock, 1949 - 1951

	1949	1950	1951	Average 1949-1951
Number of farms	160	187	140	162
Feed per hen, lbs.:				
Grain	81	80	77	80
Commercial feed	<u>27</u>	<u>30</u>	<u>31</u>	<u>29</u>
Total	108	110	108	109
Skim milk	4	3	2	3
Feed cost per hen	\$2.77	\$3.19	\$3.48	\$3.15
Value produced per hen:				
Eggs sold and used in the home	\$5.89	\$5.02	\$6.59	\$5.83
Less death loss and depreciation	<u>.55</u>	<u>.50</u>	<u>.55</u>	<u>.53</u>
Net value produced	5.34	4.52	6.04	5.30
Return above feed cost per hen	\$2.57	\$1.33	\$2.56	\$2.15
Return per \$100 feed consumed	\$ 193	\$ 142	\$ 174	\$ 168
Average number of hens per farm	229	251	274	251
Number of hens on hand, Jan. 1 per farm	269	292	316	292
Per cent of hens that were pullets	83	85	82	83
Per cent death loss	13	13	15	14
Eggs laid per hen	182	189	186	186
Price received per dozen eggs sold (cts.)	39.5	31.9	42.3	37.9

High Egg Production Increased Returns

The total feed consumed per hen varied only slightly with the level of egg production (Table 9). However, there was some variation in the amount of commercial feeds used. Flock owners, who secured less than 150 eggs per hen, fed 22 pounds of commercial feed per hen as compared with 33 pounds of commercial feed for the flocks laying 210 eggs and over in 1949-51. Ordinarily, one would expect a greater increase in feed consumption to be associated with increased egg production. However, quality of feed was also a factor. The additional commercial feeds used by flock owners with the relatively high levels of production resulted in better balanced rations. The per cent of hens that were pullets was higher for the high producing flocks and the death loss was lower.

Table 9. Relation of Number Eggs Laid Per Hen to Various Production Factors, 1949 - 1951

	Eggs laid per hen			
	Below 150	150- 179	180- 209	210 and over
Number of farms	34	40	39	49
Feed per hen, lbs.:				
Grain	80	79	80	80
Commercial feed	22	29	32	33
Total	102	108	112	113
Skim milk	4	3	2	2
Feed cost per hen	\$2.74	\$3.07	\$3.27	\$3.38
Value produced per hen:				
Eggs sold and used in home	\$3.89	\$5.16	\$6.16	\$7.51
Less death loss and depreciation	.48	.58	.59	.48
Net value produced	3.41	4.58	5.57	7.03
Return above feed cost per hen	.67	1.51	2.30	3.65
Return per \$100 of feed consumed	\$124	\$149	\$170	\$208
Average number of hens per farm	219	224	275	280
Per cent death loss	15	15	12	12
Per cent of hens that were pullets	66	86	90	95
Eggs laid per hen	125	165	195	238
Price received per doz. eggs sold (cts.)	37.4	37.6	38.1	38.3

Flock owners with a high level of production reported 21 per cent higher feed costs per hen than the owners of flocks with a low level of production. However, they also reported 92 per cent more eggs laid per hen. The increased production more than offset the additional cost of feed.

The number, weight and value of birds in the laying flock in 1951 are presented in Table 10. The number of mature birds purchased was very small. Most of the replacements for the laying flocks each year come from the rearing flocks on the same farms.

All Pullet Flocks Most Profitable

The ratio of pullets to hens over one year of age appears to be an important factor in poultry production. The data in Table 11 show the relation of percentage of pullets in the laying flock to various production factors in 1949-51. Approximately half of the farmers replaced the entire laying flock with pullets in the fall. Another fourth had 60 to 99 per cent pullets and the rest had less than 60 per cent pullets.

Higher egg production and lower death losses are associated with a high percentage of pullets in the flock. The net result is higher return above feed cost for the young hens than for the flocks containing a relatively large proportion of old hens.

Table 10. Number, Weight, and Value of Birds in Laying Flock, 1951

	1949	1950	1951
	<u>Number per flock</u>		
On hand beginning of year	272	292	321
Transferred from rearing flock	258	285	272
Purchased	<u>11</u>	<u>11</u>	<u>10</u>
Total	541	588	603
Sold	189	211	198
Used in home	11	13	12
On hand at end of year	<u>281</u>	<u>300</u>	<u>308</u>
Total	481	524	518
Death loss	60	64	85
	<u>Pounds per flock</u>		
On hand beginning of year	1166	1287	1410
Transferred from rearing flock	1107	1197	1152
Purchased	<u>48</u>	<u>43</u>	<u>46</u>
Total	2321	2527	2608
Sold	871	979	941
Used in home	50	60	56
On hand at end of year	<u>1246</u>	<u>1310</u>	<u>1371</u>
Total	2167	2349	2368
Net loss in pounds	154	178	240
	<u>Value per flock</u>		
On hand beginning of year	\$316.22	\$302.72	\$369.69
Transferred from rearing flock	277.08	331.71	340.83
Purchased	<u>16.49</u>	<u>15.30</u>	<u>12.00</u>
Total	609.79	649.73	722.52
Sold	173.50	175.54	192.64
Used in home	9.89	10.43	11.53
On hand at end of year	<u>294.04</u>	<u>342.08</u>	<u>362.62</u>
Total	477.43	528.05	566.79
Death loss and depreciation	132.36	121.68	155.73
	<u>Value per bird as reported by farmers</u>		
On hand beginning of year	\$1.16	\$1.04	\$1.15
Transferred from rearing flock	1.07	1.16	1.25
Purchased	1.50	1.39	1.20
Sold	.92	.83	.97
Used in home	.90	.80	.96
On hand at end of year	1.05	1.14	1.18

Table 11. Relation of Percentage of Pullets in the Laying Flock to Various Production Factors, 1949 - 1951

	<u>Per cent of laying flock that were pullets</u>		
	Below 60	60- 99	100
Number of flocks	36	38	88
Feed per hen, lbs.:			
Grain	79	81	79
Commercial feed	<u>22</u>	<u>29</u>	<u>33</u>
Total	101	110	112
Feed cost per hen	\$ 2.82	\$ 3.18	\$ 3.26
Value produced per hen			
Eggs sold and used in home	\$ 4.58	\$ 5.79	\$ 6.36
Less depreciation & death loss	<u>.43</u>	<u>.58</u>	<u>.55</u>
Net value produced	4.15	5.21	5.81
Return above feed cost per hen	1.33	2.03	2.55
Return for \$100 of feed consumed	\$147	\$164	\$178
Eggs laid per hen	150	181	202
Average number of hens per farm	187	306	254
Per cent of hens that were pullets	43	83	100
Per cent death loss	17	14	11

Some Factors That Do Not Show in the Records

It should be pointed out that there are some factors affecting the poultry enterprise on many Minnesota farms which are not taken into account in the records summary.

The first of these is the fact that the record summary shows only the averages of all of the poultry records. Many farmers did better than the average and made their poultry enterprise pay satisfactory returns.

It is not always necessary for the poultry enterprise to pay all costs at the going rates in order to justify its continuance. On many farms it is handled by family labor that has no alternative productive use. The poultry enterprise may not pay well enough to compensate for the time spent at hired labor rates but it may pay well enough to make the enterprise attractive to the family. In order to keep it within the bounds of a family labor enterprise the size of the enterprise must be kept small enough that it does not require much labor from the farm operator or from those whose time could be used more profitably on other farm enterprises. That the use of family labor enables the poultry flock to make some net contribution to the family income even though it does not pay going wages for this labor should not be interpreted as an alibi or excuse for poor practices. With better chicks, good care, balanced feeding and proper handling, storing, and marketing of eggs this contribution could be made materially larger.

While all pullet flocks generally lay better and many times pay a higher return per hen than do flocks that contain older hens, nevertheless there are situations where keeping hens over may be the most profitable thing to do. On farms where labor is at a premium during the chick raising season it may not be good business to have a replacement flock every year or to have a flock big enough to fully replace the laying flock. The loss in income from the alternative use of the time involved may be greater than the loss in income from using older hens. An alternative to be considered would be to buy partly or fully reared replacements.

Buying quality chicks which are bred for high egg laying ability often pays well for the premium price which these chicks command. It is apparent from the records, however, that some farmers do not secure the greater egg laying potential for which they pay and hence would be better off with a cheaper type of chick. The farmer must not only assure himself that he is getting the quality for which he is paying but must be ready to provide the care and feeding that is necessary to get the potentially higher rate of lay for which he is paying.

Generally speaking a high rate of lay is associated with higher returns per hen and greater profits from the flock. But there are exceptions to this general rule. To be profitable the higher rate of lay must be coupled with an adequate but economical combination of feeds which are fed. Sometimes feeds are available on the farm which have a low market value but a relatively high value as feed for the poultry flock. Their use may not result in the highest possible rate of lay but may result in the greatest possible net return per hen.