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## THE EGG-FEED RATIO

by

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An indication of the relative profitability of egg production can be obtained by studying the relationship between egg prices and the cost of poultry feed. This relationship is usually referred to as the egg-feed ratio.

Both feed costs and egg prices can be determined with a reasonable degree of accuracy. Admittedly farmers will purchase several different feeds in varying quantities at different prices, but the significance of the criterion lies not so much in the cost of feed or the price of eggs, measured in absolute terms, but in the change in one item relative to the other.

In Table I, the cost per lb. of poultry feed and the price per dozen of eggs have been averaged for each year since 1930. Feed costs have been calculated from the actual cost of feeding birds in the egg-laying competition which is held each year at the Hawkesbury Agricultural College. The rations fed in that competition are costed on the basis of feed prices ruling in the Sydney wholesale market.

For the years in which poultry feeds were freely available the rations fed at Hawkesbury may be regarded as approximately representative of the ration fed by most farmers, although this contention may not be valid under present circumstances. By taking into account all items in the diet, the final composite figure becomes a weighted average and the costs listed in the table can be regarded as reflecting fairly accurately the changes in feed costs during the period covered.

Egg prices have been obtained from the records of the New South Wales Egg Marketing Board. The price for each year is the average gross price per dozen paid for all eggs received by the Board.

The egg-feed ratio has also been calculated and listed in Table I. This ratio is obtained by dividing the average price per dozen eggs by the average cost of one pound of feed. The resulting figure is then the number of pounds of feed which can be purchased by one dozen eggs.

High feed costs or low egg prices do not necessarily mean that the position of the poultry farmer is deteriorating. To take a recent example, feed costs were much higher in 1948 than in 1941, but the rise in egg prices in those seven years was more than sufficient to compensate for the increase in costs. Egg prices in 1948 were nearly double those obtaining in 1941 with the result that the ratio was 28.2 in 1948 as compared with 20.0 in the earlier year.

In Figure 1 the details of annual feed costs and egg prices are illustrated graphically. Figure 2 shows the movement in the egg-feed ratio from year to year. An upward trend is evident in the ratio, at least until 1944-45 when a relative decline occurs, although the egg-feed ratio remains reasonably favourable.

The ratio given in Table I is not intended to show the profitability of egg production at any particular time, although it can be used in this way by a farmer knowing the output and feed consumption of his

flock. In the present context, the ratio serves to show how the economic conditions governing the production of eggs in New South Wales have improved or deteriorated from year to year in the past two decades.

TABLE I.

*Egg-Feed Ratio in the Sydney Metropolitan Area, 1930 to 1950.*

Season.	Feed Costs per lb.	Egg Prices per dozen.	Egg-Feed Ratio.
	Pence.	Pence.	
1930-31	0.70	15.1	21.5
1931-32	0.57	13.6	23.9
1932-33	0.68	12.2	17.9
1933-34	0.61	12.7	20.7
1934-35	0.58	12.8	22.0
1935-36	0.80	13.8	17.2
1936-37	0.80	15.2	19.0
1937-38	0.86	16.1	18.8
1938-39	0.68	15.6	22.9
1939-40	0.57	13.8	24.1
1940-41	0.70	15.1	21.6
1941-42	0.71	14.2	20.0
1942-43	0.72	19.5	27.1
1943-44	0.73	20.8	28.5
1944-45	0.68	20.7	30.4
1945-46	0.75	20.1	26.7
1946-47	0.79	20.3	25.7
1947-48	0.98	23.9	24.3
1948-49	0.97	27.4	28.2
1949-50	1.20	31.3	26.1

The feed costs given in Table I are based on wholesale prices and to that extent reveal a more favourable ratio than would be the case if the landed cost of the feed to farmer was taken into account. However, these are the only figures available on a comparable basis over a long period of time. Their merit lies in the fact that they enable a comparison to be made between the pre-war, war and post-war years.

The changing ratios can be illustrated more conveniently by using an index of egg-feed ratios. This has been done in Table II. With the average egg-feed ratio in the base period, 1930 to 1939, equal to 100, a series of indices has been computed which shows annual variations in the ratios.

TABLE II.

*Index of Egg-Feed Ratios.*  
(Base period 1930-39 = 100.)

Season.	Index Number
1939-40	118
1940-41	106
1941-42	98
1942-43	133
1943-44	140
1944-45	149
1945-46	131
1946-47	126
1947-48	119
1948-49	138
1949-50	128

### A Sample Ration.

In order to ascertain what feeds are at present being used on New South Wales poultry farms, a postal survey was conducted during October, 1950. Over 200 poultry farmers, selected at random throughout the state, were asked to furnish details of the daily rations fed to their laying stock. From the information obtained from the survey it has been possible to assess the relative importance of the five main items of feed in the rations at present fed to laying stock.

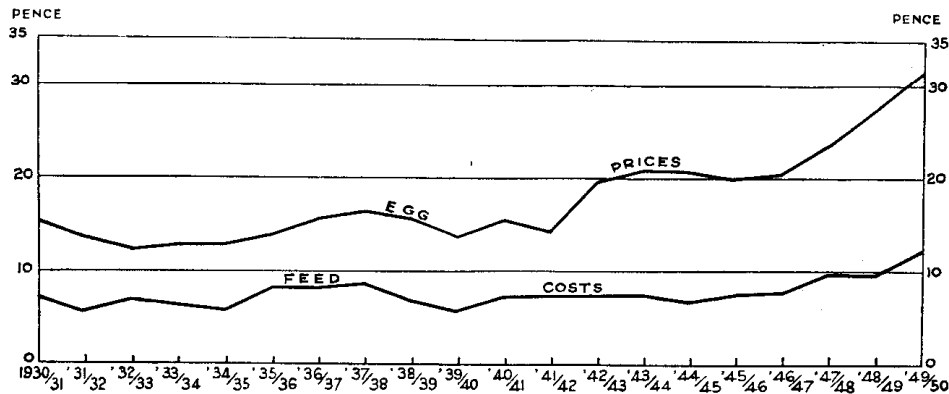


Fig. 1.—Feed Costs and Egg Prices, 1930-31 to 1949-50.  
For convenience in illustration feed costs are shown on a 10 lb. basis.

On the average, a parcel of 100 lb. of feed representing a staple diet, consists of 53 lb. of wheat, 12 lb. of bran, 23 lb. of pollard, 7 lb. of wheatmeal and 5 lb. of meat meal. Farmers do feed supplements and green feed in addition to these items, but it is not practicable to make an allowance for them in the sample ration.

This is not a ration which would be recommended from a nutritional standpoint. It is rather low in protein but it could actually be used. Being both realistic and typical, the sample ration provides a workable basis upon which changes in feed costs can be reliably computed.

The cost of the sample ration has been calculated from the records of prices kept by this Division. Prices quoted, in this instance, represent the average of the retail prices (including delivery to the farm) quoted by a group of produce stores in the main poultry districts of the metropolitan area.

Feed costs computed on this basis, together with appropriate egg prices and the resulting egg-feed ratio, are given in Table III. As these figures represent the farm cost of feed they are naturally higher than those given in Table I.

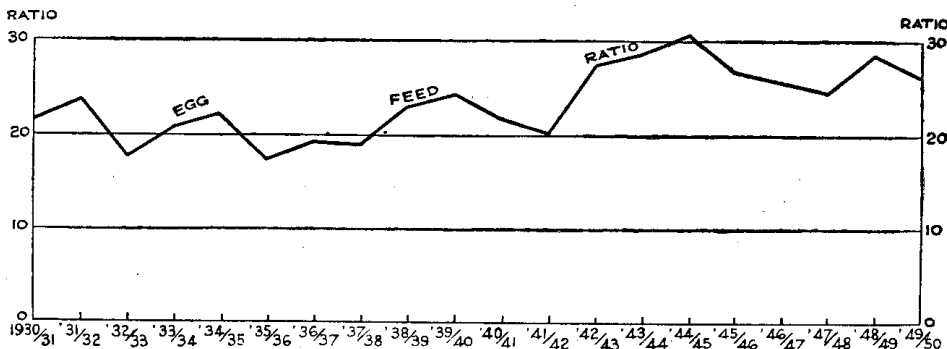


Fig. 2.—Egg-Feed Ratio, 1930-31 to 1949-50.

TABLE III.

*Seasonal Egg-Feed Ratios.**(Based on farm cost of feed—February, 1947 to July, 1950.)*

	Feed Costs per lb.	Egg Prices per dozen.	Egg-Feed Ratio.
	Pence.	Pence.	
February, 1947 ...	1.10	22.1	20.1
July, 1947 ...	1.17	26.2	22.4
September, 1947 ...	1.21	22.9	18.9
December, 1947 ...	1.21	21.4	17.7
March, 1948 ...	1.39	27.5	19.8
June, 1948 ...	1.40	34.8	24.9
October, 1948 ...	1.48	23.6	15.9
January, 1949 ...	1.61	27.6	17.1
May, 1949 ...	1.65	34.9	21.2
August, 1949 ...	1.70	27.5	16.2
October, 1949 ...	1.68	27.3	16.3
January, 1950 ...	1.67	31.6	18.9
April, 1950 ...	1.67	40.9	24.5
July, 1950 ...	1.71	42.1	24.6

Retail feed prices are available on a comparable basis for various months during the past four years so that the figures in Table III reveal seasonal fluctuations in the egg-feed ratio which are not disclosed by the average annual figures.

The ratio in Table III is generally more favourable in the winter months, April to July, than throughout the rest of the season. This is as one would expect, considering that feed prices do not vary greatly during the season (although a general increase from year to year is evident), while egg prices reach their peak in the period of short supply.

#### **Relationship between Feeding and Production.**

While the use of the egg-feed ratio implicitly assumes that birds are adequately fed, no precise relation between feed intake and egg output was established in this investigation.

The law of diminishing returns does not seem to apply to fowls producing eggs, although it does apply to birds producing meat, i.e., birds intended for the live or dressed poultry trade. Experiments in the feeding of poultry in America show that, within the usual quantitative ranges of feeding birds, egg production will increase with increases in feed input and, moreover, the production of eggs per unit of feed will be greater as more feed is consumed<sup>1</sup>. Under such conditions the poultryman's task is simply to feed the birds as much as they will eat.

If the farmer desired to increase production the above facts would suggest that the first recourse should logically be to increased feeding. On the other hand, if he decided to reduce total production, economic prudence would suggest that culling, rather than reduced feeding of the original number of birds, would be the best solution. Other things being equal, he would always seek the highest output per unit of feed.

<sup>1</sup> P. L. Hansen, "Input-Output Relationships in Egg Production," *Journal of Farm Economics*, Vol. XXXI, No. 4 (November, 1949), pp. 687-696.

The American experiments, already referred to, showed that egg production drops a little more than twice as much as the reduction in the rate of feeding, within the usual ranges of feeding. In other words, if the feed input was reduced by 25 per cent., egg production would drop 53 per cent. below the level attained at full rations.

It does not necessarily follow from these statements that increased feeding provides the whole solution to the problem of low production per bird. The physiological capacity of a bird to produce eggs and its ability to resist disease are major limiting factors in any programme to increase egg production. It is unlikely that egg production in this State could be raised much above its present level without some improvement in the breeding of laying stock.

#### **Limitations of the Ratio.**

Two different egg-feed ratios have been computed in the course of this investigation. The fact that they are not entirely comparable prompts a number of important questions in respect of the price data and the regimen of feeds used.

The feed costs obtained from the Hawkesbury Agricultural College have been calculated on the basis of wholesale feed prices, whereas the feed costs used to compute the intraseasonal ratios represent landed costs at the farm. Doubtless a farmer would prefer to have a ratio calculated on the farm cost of feed and the farm value of eggs. However, for comparability over a long period, and for expedience in collecting reliable data, the use of wholesale prices for both feed and eggs seems to provide the most satisfactory basis.

The statistics describing the secular trend of the ratio have not been calculated on a fixed regimen of feeds. In a period of twenty years, the rations fed to stock in egg-laying competitions naturally varied somewhat according to the availability and relative price of the different feeds. The obvious defect of such variation from the statistical standpoint is offset to some extent by the inference that it reflects, more realistically, practical experience in the poultry industry. Birds in these competitions were adequately fed from the nutritional standpoint. Use of the ratio assumes that stock generally are fed at a comparable nutritional level.

The sample ration formulated as a result of the survey of present feeding practices of poultry farmers does not include all items actually fed. Green feeds and sundry supplements were not included because of costing difficulties and the smallness of the sample. Moreover, the ration is only applicable at a given point of time. To use the present ration indefinitely, regardless of possible changes in feeding practices, would be unwise, especially if the experience of the last five years in respect of feed supplies is repeated. If the regimen is adjusted to take account of changes in the component items of the ration, occasioned by variations in the availability and relative prices of feed stuffs, statistical problems, concerned with the need to maintain the comparability of ratios in a time series, will arise.

The major disadvantage in using egg-feed ratios and similar indices in the study of long-term changes is that their reliability depends on the continuance of fairly stable economic conditions. If the various costs involved in egg production increased in similar proportions in a period of inflation, an egg-feed ratio would remain realistic. However, if there were differential movements as between the major cost items, the ratio would become rather unreliable. For example, if labour costs increased while subsidies kept feed costs at a stationary level, the egg-feed ratio might, over a period of time, show an apparent change in favour of the poultry farmer, when, in fact, the profitability of egg production had not altered.

If these difficulties and limitations are recognised the egg-feed ratio can be used with some effect to indicate relative movements in the two main factors governing the profitability of egg production, either between succeeding seasons or, more significantly, intraseasonally.

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