A WARTIME PUBLICATION

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATION

M. F. MILLER, *Director*

CIRCULAR 237 Columbia, Mo. JUNE, 1942

Reducing the Cost of Producing Dairy and Poultry Products in Missouri

B. H. FRAME

A reduction in the cost of producing a unit of any commodity is accomplished only by reducing the ratio of input to output. This, in general, may be accomplished by two methods: (1) By reducing input or gross expense proportionally more than output or yield, (2) By increasing yield more proportionally than input. The first method generally, but not necessarily, means a decrease in yield. The yield may be held constant or even increased. The chances, however, are that the yield will be decreased rather than increased. These two methods may be combined, but since there is at the present time an acute need for an increased supply of both dairy and poultry products, those measures which result in a decrease in total supply will not be discussed in this circular.

Regardless of which one of the above methods is used, or a combination of both, consideration must be given to the following expense items: (1) feed, (2) labor, (3) housing and equipment, (4) interest and taxes, (5) miscellaneous (such as medicines, veterinary, horse labor, advertising, general overhead, etc.) and to yield. There are numerous interrelations between most of the above items so that the consideration of any one of them can be only relatively free from a consideration of others. Moreover, certain ones of the above items are more important than others both from the standpoint of the percent of total expense involved

and the standpoint of flexibility. Their relative importance during the past decade as shown by the farm cost accounting records compiled by the Agricultural Economics Department of the University of Missouri is shown in Table 1.

TABLE 1.—RELATIVE IMPORTANCE OF VARIOUS EXPENSE ITEMS IN PRODUCING DAIRY AND POULTRY PRODUCTS.

Expense Item	Dairy Products	Poultry Products
Feed	59.0	64.6%
Man Labor	16.3	12.0%
Housing and Equipment	13.9	10.0%
Interest and Taxes	5.6	3.3%
Miscellaneous	5.2	10.1%

Interest and Taxes

Interest was computed at 5 per cent of the average inventory and taxes actually paid were allocated to different enterprises on the basis of proportional inventories. Interest and taxes combined represented only 5.6 per cent and 3.3 per cent of the total cost on the cattle and poultry enterprises respectively. In spite of the fact that practically everyone complains of interest and taxes, it is apparent that the direct effect of these items is comparatively unimportant in the production of dairy and poultry products. Furthermore, these items seem to offer few opportunities for the farmer to decrease his unit costs of production. In fact, it seems almost inevitable that taxes will increase irrespective of change in the output. It is doubtful if we will see, in the near future, any further reduction in interest rates so that any percentage decrease in the interest charge could come only from poorer quality stock or a lower price level, neither of which would be of advantage to the farmer.

Miscellaneous Charges

The classification of miscellaneous charges, 5.2 per cent and 10.1 per cent of the totals, includes several items none of which are large in amount. Here again, there are few opportunities to decrease the cost of production except perhaps by an increase in the outlay for medicines and veterinary charges. Such outlays would increase the expense but should increase output more. There is probably nothing the operator can do which will pay higher returns for the expense involved than the adoption of proper sanitary measures in his herd or flock. Some sanitary measures result in raising the quality rather than the quantity of the product, and the increased cost would have to be met from an increase in price rather than from any increase in output. Other sanitary measures,

such as the control of Bang's disease and mastitis in the dairy herd and coccidiosis in the poultry flock reduce loss and are thus of the greatest importance in reducing cost.

Housing and Equipment

There are two principal methods by which the Housing and Equipment cost (13.9 and 10.0 per cent of the cost of the herd and flock respectively) per unit of output can be reduced.

(1) **By providing needed buildings and equipment.** Sometimes buildings and equipment are so inadequate as to seriously reduce the output per animal. While it is probably inadvisable to put too much into expensive buildings and equipment at present because of the cost and the national need for building materials in war industries, it is frequently possible to use cheaper material (field rock, creek gravel, native lumber, etc.) in constructing buildings which are just as substantial and furnish as serviceable shelter as more costly material. Straw can frequently be used for temporary shelter, but care should be given to proper sanitation. Rather expensive equipment, such as a milking machine, is frequently justified in periods of labor supply shortage such as that now facing many farmers.

(2) **By fully utilizing buildings and equipment already owned.** Not all farmers realize the saving resulting from fully utilizing buildings and equipment. This is possibly because the original cost is generally regarded as an expense rather than as an investment. The real expense is the annual depreciation, upkeep, interest, and taxes on the investment. This annual expense cannot be avoided after the original cost has been incurred, so that it is very important that buildings and equipment be utilized as fully as possible in order to spread these fixed costs over a larger output. Each additional unit of output from a given investment in buildings and equipment means a smaller cost per unit.

Labor

Man labor (16.3 per cent and 12.0 per cent for cattle and poultry respectively) is always an important item of cost in the production of agricultural commodities. With the most able-bodied men in the rural districts being inducted into the military service and drawn into defense industries the problem of an adequate labor supply will become increasingly acute as long as the present war lasts. Not only are farmers faced with an actual shortage of labor, but the labor still available will become increasingly costly. It, therefore, would seem wise to use every possible device to utilize labor to the best advantage.

The economical use of labor may consist in using labor saving equipment such as milking machines (where the herd is large enough to justify the investment), self-feeders, etc. In other cases it may mean that the size of the herd or flock should be adjusted so that available labor would be more economically employed. It is a well known principle that the larger the operating unit, up to a reasonable limit, the more economically labor is used. This applies especially to the poultry flock. A number of studies have been made showing the effect of size of the flock on various costs of producing poultry products. Table 2 shows the results of a study made in New Jersey.* These results are typical of results found in other studies. The extra time required to care for a flock of 200

TABLE 2.—THE EFFECT OF SIZE OF THE POULTRY FLOCK ON LABOR AND OTHER COSTS IN NEW JERSEY.

Fowls per Farm	Number of Farms	Months of Labor per 100 Birds	Cost per 100 Birds
300 or less	19	4.3	$182
301 to 500	42	2.7	115
501 to 700	29	2.0	85
701 to 900	23	1.7	72
901 to 1100	12	1.6	68
1101 to 1500	17	1.3	57
1501 or more	8	1.6	67
Average		1.92	81

hens is only a small fraction of the time required to care for a 100 hen flock. It would, therefore, seem wise to increase the size of the flock if the facilities are already available to do so or if they can be provided at not too great a cost.

Feed

Table 1 shows that feed constitutes the largest single item of cost in the production of both dairy products and poultry products, being 59.0 per cent of the cost with dairy products and 64.6 per cent with poultry. It is rather fortunate that this is true, because one of the greatest opportunities for reducing costs is in the item of feed. There are three phases of this problem.

The possibility of reducing the cost per unit of output by the feeding of better balanced rations is great. Most Missouri farmers are feeding much better balanced rations than they did a few years

*N. J. Agricultural Experiment Station Bulletin 329.

ago but too few are feeding the best possible rations from the standpoint either of total output or cost per unit of output. A better balanced ration, taking into consideration relative prices, may cost more per animal or may, in some cases, actually cost less. County agents or the Departments of Dairy Husbandry and Poultry Husbandry should be consulted regarding rations.

Another possibility of reducing feed costs on the dairy and poultry enterprises lies in the purchase of necessary concentrates during low price months. Studies at various stations show definitely that there are certain months during which concentrates are, on the average, enough lower than in other months to justify dairymen and poultrymen anticipating their future needs and purchasing their feed supplies during these low price months. The indices of seasonal prices of four popular concentrates, as reported by Haag and St. John of the Missouri Experiment Station,* and the possible savings (on an annual interest basis) are given in Table 3. The saving effected by buying necessary feeds during the low price months is usually so substantial that farmers regularly availing themselves of the opportunity should realize considerable savings in feed costs.

TABLE 3.—THE INDICES OF SEASONAL PRICES OF FOUR POPULAR CONCENTRATES AND THE SAVING EXPRESSED AS ANNUAL INTEREST.

Month	Bran	Cottonseed Meal	Soybean Meal	Meat Scraps
January	105.9	99.5	102.6	103.3
February	104.1	97.4	99.1	102.6
March	107.1	98.2	97.3	99.8
April	110.6	100.9	99.8	97.1
May	104.4	102.2	101.3	96.3
June	95.6	99.4	99.8	96.0
July	95.1	105.2	102.3	98.1
August	94.3	105.6	103.3	99.6
September	91.6	98.2	100.5	100.7
October	91.8	96.3	94.6	101.0
November	97.1	98.2	97.7	102.0
December	102.4	98.9	101.4	103.5
Saving as a % of Low	20.74	9.66	9.20	7.81
Months from Low to High	7	10	10	6
Interest Rate	35.6%	11.6%	11.0%	15.6%

The greatest opportunity to reduce feed costs is in the production of home grown feed. On the majority of Missouri farms the greater part of the feed is grown on the farm. Any reduction in the cost of this home grown feed is passed along to the livestock to which it is fed. During the past decade revolutionary progress has been made at the Missouri Experiment Station in developing new crops and crop rotations. These discoveries have greatly increased the productive capacity of Missouri farm land with very little added

*Mo. Agricultural Experiment Station Bulletin 422.

expense. Korean lespedeza in combination with wheat, barley, rye or oats, or a one year rotation of these same grains pastured off and followed by soybeans for hay produces two crops per year on the same land. Barley can be cut for grain early enough to be followed by a crop of soybeans for hay. These double cropping systems combined with better and more timely pastures of sweet clover, sudan grass, and especially korean lespedeza during the summer months when bluegrass is dormant are very important in lowering production costs.

Higher Quality Stock

Emphasis has so far been placed on the input side of the problem. Some of these measures, such as better balanced rations, will increase output but there is also great opportunity to lower the cost of production by adopting practices which affect output almost exclusively. The national need for materials of all kinds to carry the war to a successful conclusion is altogether too acute to permit wasting feed, labor, and capital on low producing animals. Better sires should be used and all "star boarders" should be culled out of the flocks and herds, and sent to market. If all Missouri farmers would consistently cull their poultry flocks and keep production records on their cows, selling off all uneconomical producers and keeping the offspring of only those animals which have demonstrated their high producing quality, output would be tremendously increased with very little additional expense.

Farm Planning

Perhaps there is no method of reducing the cost of producing farm products more effectively than careful farm planning, not for just one year, but for a permanent farming system extending years into the future. The assistance of the County Agricultural Extension Agent should be enlisted in making such farm plans. He in turn will contact specialists in the College of Agriculture so that all the latest technical developments will be available. Such farm planning need not be experimental. Only practices which have been tried and proved should be adopted.

There are at present many instances of the effectiveness of farm planning. Table 4 presents the actual results on a Warren County farm. In 1935 the cash farm expense on the farm was $676. This year was chosen to represent the "before treatment" because from most standpoints it was fairly normal. In the same year the total farm receipts were $1433 resulting in net farm receipts of $757. Another way of regarding the results was that each dollar of income cost 47.2 cents. Late in 1937 the owner, with the assistance

of his County Agricultural Agent and specialists from the College of Agriculture drew up farm plans, paying careful attention to the points previously discussed in this circular and also to maintaining and improving soil fertility. Dairy and poultry products had been the chief source of income on this farm and in the new plans they became even more important.

TABLE 4.—FINANCIAL RESULTS ON FARM IN WARREN COUNTY, MISSOURI.

Item	1935	1939	1940
Total Farm Receipts	$1433	$2359	$2795
Cash Farm Expenses	$ 676	$1030	$1024
Net Farm Receipts	$ 757	$1329	$1771
Cost per Dollar of Receipts	47.2c	43.7c	36.6c
Net Worth	$4735	$6164	$6920
Index of Prices of Farm Products	108	93	98
Index of Prices of Products used in Farm Production	126	122	124

Nineteen hundred thirty-eight was a year of transition. In fact, the complete effect of the new plans will not be fully apparent before the expiration of several years. In 1939 the total receipts were $2359 at a cash expense of $1030 or 43.7 cents per dollar income. The net receipts were $1329. In 1940 the total receipt had increased to $2795 at an expense of $1024 or a cost of 36.6 cents per dollar income. The figures for 1941 are not yet available, but the results in 1941 were better than in 1940.

That these improvements were not attained because of a higher price level for farm products or lower price level for the commodities which farmers buy is shown by the comparative price indices of farm products and commodities used in farm production. In fact, the prices of farm products in 1939 were 15 points below 1935 while prices farmers paid for commodities used in production had decreased by only 4 points. In 1940 both indices had risen—prices received by 5 points and prices paid by 2 points. Thus, it will be seen that the net loss against the farmer was eight points. In spite of these adverse movements in price level, this farmer increased his net farm receipts by 133.9 per cent.

Thousands of Missouri farmers can duplicate the success of this Warren County farmer. Our country needs total production as never before. Our total resources are definitely limited. By using their resources economically and producing as cheaply as possible, Missouri farmers should be able not only to maintain or increase present supplies of dairy and poultry products, but also release productive resources to our war production factories and our armed services.