1-1-1929

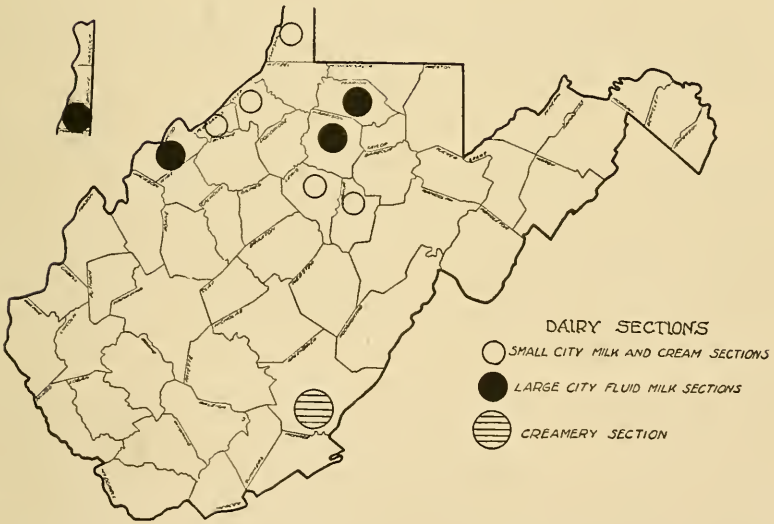
The Cost of Raising Dairy Cows in West Virginia

Paul A. Eke

Bulletin 224 November, 1929

The Cost of Raising Dairy Cows in West Virginia

by PAUL A. EKE



Typical Dairy Sections of West Virginia

AGRICULTURAL EXPERIMENT STATION
COLLEGE OF AGRICULTURE, WEST VIRGINIA UNIVERSITY
F. D. FROMME, Director
MORGANTOWN

SUMMARY

The range in the net cost per head until time of freshening for grade and native heifers was approximately $50 to $200. The most common costs were from $90 to $130 for spring calves and from $70 to $110 for fall calves.

The range in the net cost per head until time of freshening for purebred heifers was from approximately $70 to $240. The most common costs were from $90 to $150 for spring calves and from $90 to $130 for fall calves.

From 50 to 60 percent of the cost of raising occurred during the first year. By far the greater part of the cost for the first year occurred during the milk-feeding period.

For all classes of heifers approximately 77 percent of the total cost was expended for feed alone, from 11 to 14 percent for labor, and from 9 to 12 percent for all other costs.

The creamery section showed the lowest costs for raising grade and native heifers, followed in order by the large city fluid milk sections and the small city milk and cream sections.

Heifers born in the spring cost more to raise than heifers born in the fall. The difference in the average costs until time of freshening ranged from 4.3 percent for purebreds to 7.6 percent for grade and native heifers.

By excluding the extremely high and low-cost herds it is found that the approximate difference in net costs per head of purebred and of grade and native herds was $20 more per head for purebred heifers. However, the difference in the average net costs of all herds was approximately $40 more per head for purebred heifers.

The following factors should be considered in deciding to raise or buy replacements for the dairy herd:

1. The danger of infectious diseases.
2. The risks of buying as well as of raising poor producers.
3. The difference in cost of the two methods available for obtaining replacements for the dairy herd.

*The Cost of Raising Dairy Cows in West Virginia**

by PAUL A. EKE†

DAIRYMEN in West Virginia have been much concerned about the problem of raising heifers for herd replacements. Many important questions have arisen about this problem. In an endeavor to answer these questions an investigation was made of the costs incurred by 128 dairymen in ten dairy sections of the state. Forty-four of the herds consisted mainly of purebred stock and the other eighty-four herds of grade and native stock. The figure on the cover page gives the location of these sections.

A summary and statistical analysis of the estimates given by the dairymen has answered some of the more important questions.

The cost estimates obtained were for the summer of 1925 and winter of 1926, and for this reason give only an approximation of what may be the costs at present or in the future.

The value of the study consists in giving (1) the approximate costs of raising heifers in a number of sections of West Virginia; (2) the percentage of the total cost which occurred during successive seasons and years; (3) the percentage of the total cost due to feed, labor and other cost items; (4) a comparison of the costs for the different sections which were visited; (5) a comparison of the costs of raising spring and fall calves; (6) a comparison of the costs of raising purebred and "grade and native" heifers; and (7) the factors which influence the decision of dairymen to raise or buy herd replacements.

Cost of Raising Heifers

The cost of raising grade and native heifers differed rather markedly from the cost of raising purebreds. Figure 1 gives the range in net costs of raising grade and native heifers to two years of age, while Figure 2 gives the net costs till time of freshening. Figure 3 gives the range in net costs of raising purebred heifers until time of freshening. Table 1 gives the actual number of herds which fell in certain cost groups.

*Submitted for publication September, 1927.

†Resigned April, 1929.

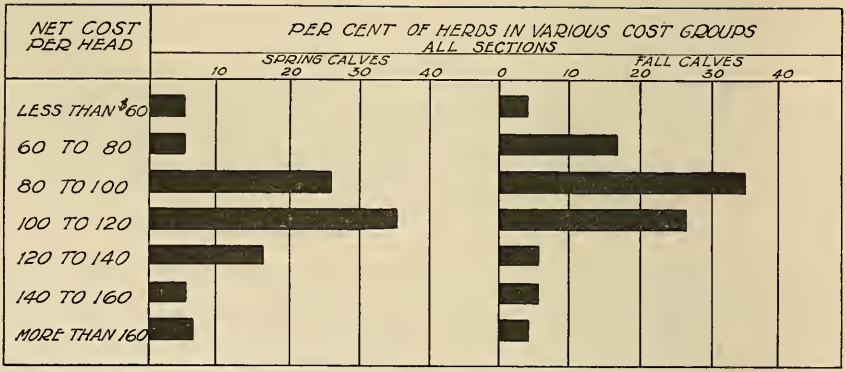


Figure 1.—Range and Distribution of Net Costs per Head to Two Years of Age for Grade and Native Herds

Figure 1 shows that the net cost per head to two years of age for grade and native spring and fall heifer calves in the three types of dairy sections studied varied from approximately $50 to $200. In the case of the spring calves 77 percent of the herds fell in three groups which showed a cost range of from $80 to $140. In the case of the fall calves 79 percent of the herds fell in three groups which showed a cost range of from $60 to $120.

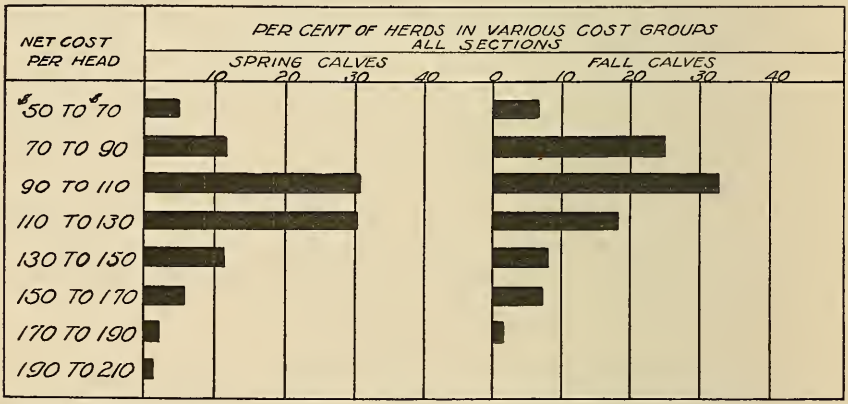


Figure 2.—Range and Distribution of Net Costs per Head till Time of Freshening for Grade and Native Herds

Figure 2 shows that the net cost per head till time of freshening for grade and native spring and fall heifer calves varied from approximately $50 to $210. In the case of the spring calves 85 percent of the herds fell in four groups which showed a cost range of from $70 to $150. In the case of the fall calves 76 percent of the herds fell in three groups which showed a cost range of from $70 to $130.

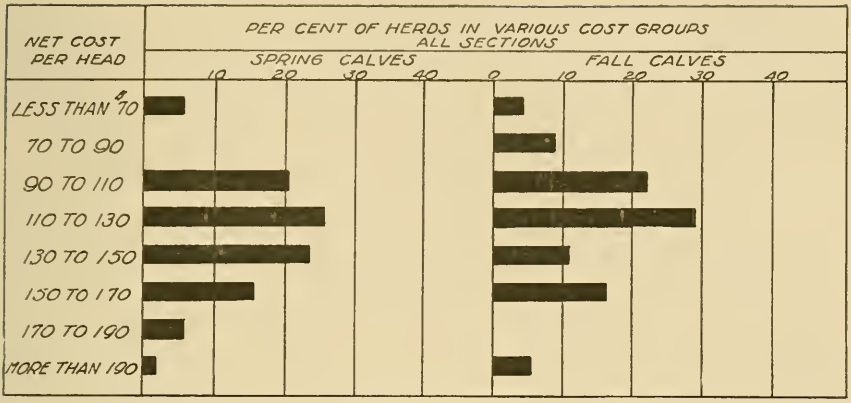


Figure 3.—Range and Distribution of Net Costs per Head till Time of Freshening for Purebred Herds

Figure 3 shows that the net cost per head till time of freshening for purebred spring and fall calves varied from approximately $70 to $240. In the case of the spring calves 84 percent of the herds fell in four groups which showed a cost range of from $90 to $170. In the case of the fall calves 79 percent of the herds fell in four groups which showed a cost range of from $90 to $170.

The very low-cost herds shown in Figures 1, 2, and 3 were the results of "roughing" the heifers through the winter and of inadequate whole-milk feeding. The unusually high-cost herds were in most cases due mainly to wasteful feeding methods, especially during the first six months. However, the costs of most herds fell in rather narrow limits, as indicated in Table 1. These costs show the variations which occurred among feeders of reasonable efficiency.

Table 1.—Range and Distribution of Net Costs Per Head for Grade and Native Herds and Purebred Herds until Time of Freshening

Net Cost per Head	Spring Calves		Fall Calves	
	Grade and Native (No. of Herds)	Purebred (No. of Herds)	Grade and Native (No. of Herds)	Purebred (No. of Herds)
$50 to $70	4	3	6	2
$70 to $90	10	0	21	4
$90 to $110	26	9	28	10
$110 to $130	25	11	15	13
$130 to $150	10	10	7	5
$150 to $170	5	7	6	7
$170 to $190	2	3	1	0
$190 to $210	1	1	0	3

Many dairymen were able to raise heifers for less than the above estimates by using unpaid family labor and feeding some unmarketable feeds. The estimates have been figured on the basis of paying the prevailing wages for labor and the market prices for all feeds.

Distribution of Total Cost over Successive Seasons

In selling or buying heifers during the period of their growth it is valuable to know what part of the total cost of raising has been expended at the age of the animal under consideration. Tables 2, 3, 4, and 5 state the percentage of the total average feed and labor costs expended during successive seasons and years. Only feed and labor costs are given in the tables because these costs constituted 90 percent of the total cost of raising and, therefore, give a good approximation of seasonal and yearly costs.

Table 2.—Percentage of the Total Average Feed and Labor Costs Expended on Spring Calves during Successive Seasons and Years for 53 Grade and Native Herds

Costs	First Year			Second Year			Total for Two Years (Percent)
	First Pasture Season (Percent)	First Feeding Season (Percent)	Total (Percent)	Second Pasture Season (Percent)	Second Feeding Season (Percent)	Total (Percent)	
Feed	35.7	21.9	57.6	7.8	34.6	42.4	100.0
Labor	33.5	33.2	66.7	2.0	31.3	33.3	100.0

Table 3.—Percentage of the Total Average Feed and Labor Costs Expended on Fall Calves during Successive Seasons and Years for 53 Grade and Native Herds

Costs	First Year			Second Year			Total for Two Years (Percent)
	First Feeding Season (Percent)	First Pasture Season (Percent)	Total (Percent)	Second Feeding Season (Percent)	Second Pasture Season (Percent)	Total (Percent)	
Feed	46.7	6.3	53.0	35.5	11.5	47.0	100.0
Labor	57.0	2.0	59.0	39.1	1.9	41.0	100.0

Table 4.—Percentage of the Total Average Feed and Labor Costs Expended on Spring Calves during Successive Seasons and Years for 44 Purebred Herds

Costs	First Year			Second Year			Total for Two Years (Percent)
	First Pasture Season (Percent)	First Feeding Season (Percent)	Total (Percent)	Second Pasture Season (Percent)	Second Feeding Season (Percent)	Total (Percent)	
Feed	42.3	20.1	62.4	6.6	31.0	37.6	100.0
Labor	31.5	32.6	64.1	3.6	32.3	35.9	100.0

Table 5.—Percentage of the Total Average Feed and Labor Costs Expended on Fall Calves during Successive Seasons and Years for 44 Purebred Herds

Costs	First Year			Second Year			Total for Two Years (Percent)
	First Feeding Season (Percent)	First Pasture Season (Percent)	Total (Percent)	Second Feeding Season (Percent)	Second Pasture Season (Percent)	Total (Percent)	
Feed	53.5	5.9	59.4	31.0	9.6	40.6	100.00
Labor	53.0	4.2	57.2	38.6	4.2	42.8	100.00

The expenditure for feed during the first year ranged from one-half to three-fifths of the total cost of feed for the first two years. Furthermore, the greater part of this expenditure for the first year occurred during the first six months. For fall calves the expenditure for feed during these six months was approximately half of the total expenditure for the two years. For spring calves this expenditure ranged from one-third to two-fifths of the total feed cost. Figure 4 shows the expenditure for feed graphically. Tables 6 and 7 give these costs numerically.

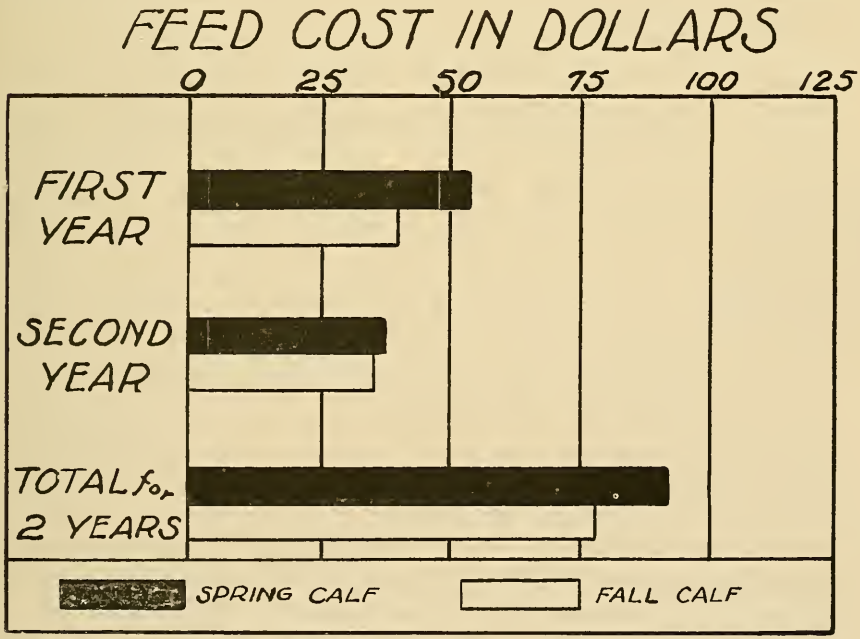


Figure 4.—Difference in Average Feed Costs by Years for Grade and Native Heifers

Figure 4 illustrates the difference in the average feed costs by years for grade and native heifers. From one-half to three-fifths of the total feed cost occurred during the first year.

About three-fifths of the labor costs for the two years occurred during the first year for both fall and spring calves. During the first six months of the first year about one-third of the total labor costs was expended for spring calves and more than one-half was expended for fall calves.

Table 6.—Average Feed Costs per Head for Grade and Native Spring Calves by Seasons and Years

Sections	First Year				Second Year				Total for Two Years
	No. of Herds	First Pasture Season	First Feeding Season	Total	No. of Herds	Second Pasture Season	Second Feeding Season	Total	
All sections	53	$33.32	$20.52	$53.84	53	$ 7.31	$32.24	$39.55	$93.39
Large city fluid milk sections	22	30.72	22.59	53.31	22	7.13	32.77	39.90	93.21
Small city milk and cream sections	20	39.14	20.09	59.23	20	6.76	34.28	41.04	100.27
Creamery section	11	27.93	17.17	45.10	11	8.70	27.45	36.15	81.25

Table 7.—Average Feed Costs per Head for Grade and Native Fall Calves by Seasons and Years

Sections	First Year				Second Year				Total for Two Years
	No. of Herds	First Feeding Season	First Pasture Season	Total	No. of Herds	Second Feeding Season	Second Pasture Season	Total	
All sections	53	$37.19	$5.07	$42.26	53	$28.21	$ 9.16	$37.37	$79.63
Large city fluid milk sections	22	35.19	5.00	40.19	22	30.34	8.16	38.50	78.69
Small city milk and cream sections	20	41.84	4.68	46.52	20	28.30	9.13	37.43	83.95
Creamery section	11	32.72	5.92	38.64	11	21.92	10.64	32.56	71.20

Division of Total Cost into Various Items

Feed was the most important item of cost. For all classes of heifers approximately 77 percent of the cost was for feed alone. Labor was the item next in order of importance, ranging from 11 percent to 14 percent of the total cost. Interest costs were next in order of amount but equalled only about 3 percent for grade and native and 6 percent for purebred heifers. Housing costs ranged from about 2½ to 3 percent. All other costs combined equalled approximately 3 percent of the total cost.

The only marked difference to be found in the costs of raising the three classes of heifers shown in Table 8 is the smaller percentage expended for labor and the larger percentage for interest in the case

Table 8.—Percentage of Total Cost of Raising Three Classes of Heifers Attributed to Various Cost Items

Costs	For Grade and Native Heifers Until Two Years of Age (Percent)	For Grade and Native Heifers Until Time of Freshening (Percent)	For Purebred Heifers Until Time of Freshening (Percent)
Gross Cost	100.0	100.0	100.0
Feed	77.9	76.8	77.3
Labor	13.1	14.1	11.2
Housing	2.9	2.8	2.6
Bedding	1.3	1.5	1.4
Interest	3.1	3.1	5.9
Loss from death	1.1	1.1	1.1
Miscellaneous	0.6	0.6	0.5

of purebred heifers. Purebreds usually received more and better feed, which made the labor item smaller in proportion to the total cost. The labor costs, however, usually were greater in amount than were the costs for grade and native heifers. The greater value of purebred heifers raised the charges for interest.

Differences in Costs between Typical Dairy Sections

The three types of sections compared in this analysis comprise an important dairy section in each of ten counties. Ohio, Wood, Marion, and Harrison counties contain the "large city fluid milk sections" shown in the figure on the cover page; Marshall, Tyler, Pleasants, Lewis, and Upshur counties the "small city milk and cream sections;" and Greenbrier county the "creamery section."

The creamery section showed the lowest costs of raising grade and native heifers for the summer of 1925 and winter of 1926. The large city fluid milk sections were next in order, while the small city milk and cream sections had the highest costs. The differences in the average costs in these types of sections is appreciable, being from $7 to $16 per head.

A study of Table 9 shows that most of the differences in costs between the sections are due to differences in feed costs.

The creamery section showed cheaper feed costs because of a lower price for milk and because the heifers could be pastured more months during the year. The differences in the costs of hay were very small between the sections.

High costs for feed in the small city milk and cream sections were due almost entirely to uneconomical feeding methods during the first year. More experience with dairy cattle in these sections no doubt

Table 9.—Average Costs of Raising Grade and Native Heifers to Two Years of Age in Typical Dairy Sections of West Virginia

Costs	Small City Milk and Cream Sections	Large City Fluid Milk Sections	Creamery Section
Feed	$92.11	$85.95	$76.22
Labor	15.83	13.80	13.64
Housing	2.71	3.70	2.89
Bedding	1.05	1.69	2.33
Interest	3.44	3.51	3.16
Loss from death	1.27	1.27	1.27
Miscellaneous	.65	.69	.91
Gross cost	117.06	110.61	100.42
Manure credits	11.06	11.60	10.37
Net cost	106.00	99.01	90.05

will bring the costs down to a level or even lower than the costs in the large city fluid milk sections because hay, pasture, and labor were slightly cheaper in the small city milk and cream sections. The labor costs per head for the latter sections were also the highest for all sections since there were fewer heifers per herd.

The costs of purebreds showed very slight differences between the small city milk and cream sections and the large city fluid milk sections. In the creamery section very few purebred herds were visited.

One should not conclude that raising dairy heifers should be expanded in the low-cost sections and curtailed in the high-cost sections. Low costs are but one indication and not conclusive proof that this would be a wise course either for certain sections or for particular dairymen. Raising dairy heifers may yield a profit, but alternative enterprises may pay better. On the other hand, the high cost sections may have no alternative enterprise which pays a better profit. Nevertheless when purchasing heifers or cows one will normally be able to find more raised and to buy them cheaper in sections where heifers are raised at lower costs.

Difference in Costs between Spring and Fall Calves

It costs more to raise heifers born in the spring than heifers born in the fall. The difference in the average net cost to two years of age was 12.9 percent more for spring calves than for fall calves. The average net cost until time of freshening was 7.6 percent more for spring calves than for fall calves. The reason for the difference lies in the greater opportunity which fall calves have to take advantage

of cheap pasture feed, as well as in the younger age and smaller size of stock when it enters the winter feeding periods. Table 10 gives the average net costs of raising grade and native heifers for those born in the spring and for those born in the fall.

Table 10.—Average Net Costs of Raising Grade and Native Heifers

Time of Birth	To Two Years of Age	Until Time of Freshening
Spring	$106.03	$112.06
Fall	93.90	104.16

Purebred heifers show a smaller difference in average net costs for spring calves than do grade and native heifers. Purebred spring calves cost 4.3 percent more than fall calves.

Difference in Costs between Purebred and Grade and Native Heifers

The forty-four purebred breeders spent more per head in raising heifers than did the eighty-four breeders of grade and native heifers. This difference is shown in the range in costs which are given in Figures 1, 2, and 3 and in Table 1. Eighty-four percent of the purebred herds had a range in costs of from $90 to $170 for spring calves, while 85 percent of the grade and native herds had a range in costs of from $70 to $150 for spring calves. Thus, when the extremely high and low-cost herds were excluded, the approximate difference in cost was $20 more for purebred than for grade and native heifers. However, the difference in the average net costs was approximately $40 because of a number of purebred herds with extremely high costs.

The reason why more was expended on purebred heifers than on grade and native heifers was not that they required more feed and care to attain the same degree of growth and condition, but that the additional feed and care given purebred heifers made extra good growth and fine condition possible. Buyers of purebred cattle are willing to pay for this increased size and good condition.

Factors Affecting Replacements for the Dairy Herd

No general rule will avail for dairymen in deciding to raise or purchase replacements for the dairy herd. There are several factors which ordinarily must be considered for a particular time and place in making a decision.

The danger of bringing disease to the dairy herd is ever present unless guarded against with extreme care. The added cost of raising a heifer above the cost at which one may be bought is often well spent in order to avoid the danger of contagious abortion or other infectious diseases.

Unless the dairyman buys from tested herds and reliable breeders, there is often the greater danger of buying poor producers. However, a premium usually must be paid for stock of proved production. If cows are purchased from untested herds a buyer must always guard himself against purchasing animals which are offered for sale because of some defects as producers. Of course, in raising heifers there are always some heifers which must be discarded for one reason or another. Both methods, therefore, present hazards. These two classes of risks must be appraised in choosing which course to follow. Individual dairymen can determine from experience whether they are more efficient in avoiding one of these hazards than in avoiding the other.

Of prime importance, of course, is the relative cost of the two methods available for replacement. What it costs a dairyman to raise a cow and for what price he can buy one at a particular time are often the deciding factors in this matter. The cost of raising a cow depends upon the prices of feed, labor, and other cost items and also upon the dairyman's efficiency. On the other hand, heifers can often be raised at a low cost on pasture, feed, and labor which would otherwise go to waste.

Labor often costs very little or nothing if there are children old enough to care for the calves, or if the regular work about the dairy and farm does not occupy the full time of the dairyman. There is often a surplus of pasture, and at certain periods a surplus of milk either as whole milk or as skim milk. Barn room which would otherwise be vacant can be used for the heifers. Any or all of the above advantages may at times reduce very greatly the cost of raising heifers.

The prices which must be paid vary from time to time in response to the number available for sale and the demand. These prices may be less or more than the cost of raising. Costs of raising heifers act merely as a check upon the supply.

It may be possible during certain periods to buy heifers and cows in other dairy sections of the state or outside the state for less than the cost of raising. Dairy sections with low feed-costs usually sell at the lowest prices. Furthermore, better stock may often be obtained in this way.

A comparison of prices to be paid and the cost of raising cannot be the deciding factors in all cases. The risks of diseases and the lack of knowledge as to breeding and production must be considered when buying for replacements.