

# Dairy Economics in Nebraska

## *An Analysis of Costs and Returns and Comparisons with Other States*

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### Dairy Economics in Nebraska

The dairy sector is undergoing major structural changes and economic adjustments. The industry is also becoming more market oriented as government price supports decline. Increased competitiveness has kept milk prices relatively stable, but increased grain and other input costs in 1995-96 have put increased pressure on profit margins which were already narrow.

This publication is a compilation of data related to the current economics of dairy farming. The objective is to provide data to help dairy farmers make adjustments in their operations, such as expanding their herds, and to provide basic data for operators setting

up new operations. A second objective is to provide a comparison of the economic components of Nebraska dairy farming with other states to demonstrate the competitive position of the Nebraska dairy industry.

### Nebraska's Dairy Industry

Figure 1 is a map showing where the licensed dairy producers are located as of January 1996. The top five counties, by number of producers, were Cedar, Knox, Gage, Antelope, and Holt. As of January 1996 there were 1,044 Grade A and manufacturing grade producers in the state (784 Grade A and 260 manufacturing). The number of manufacturing grade dairies has declined dramatically since 1980, but the

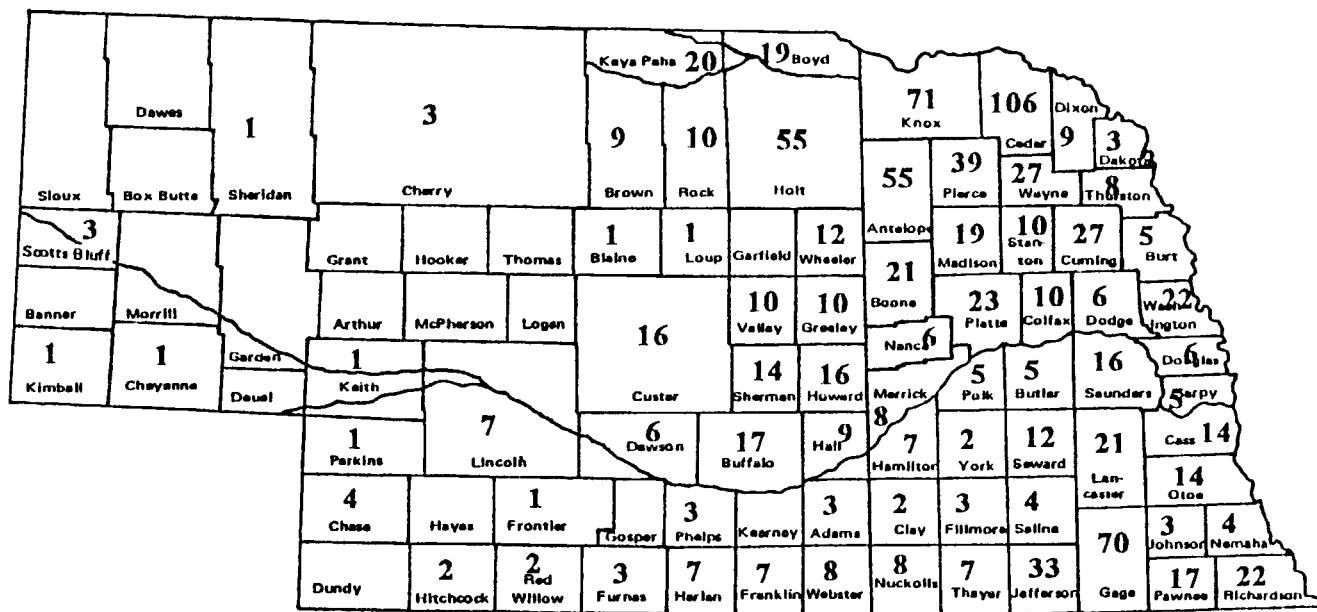


Figure 1. Number of dairy producers by county as of January 1996.



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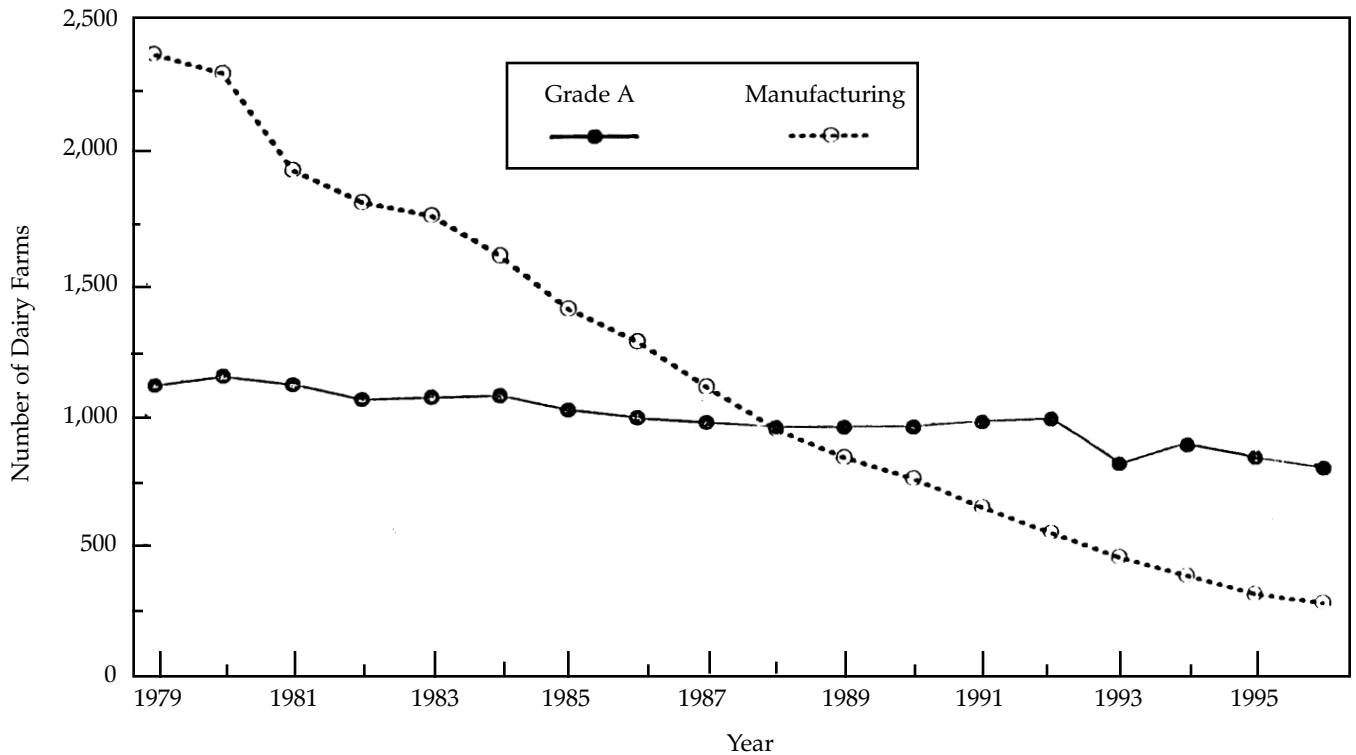


Figure 2. Number of dairy farms in Nebraska.

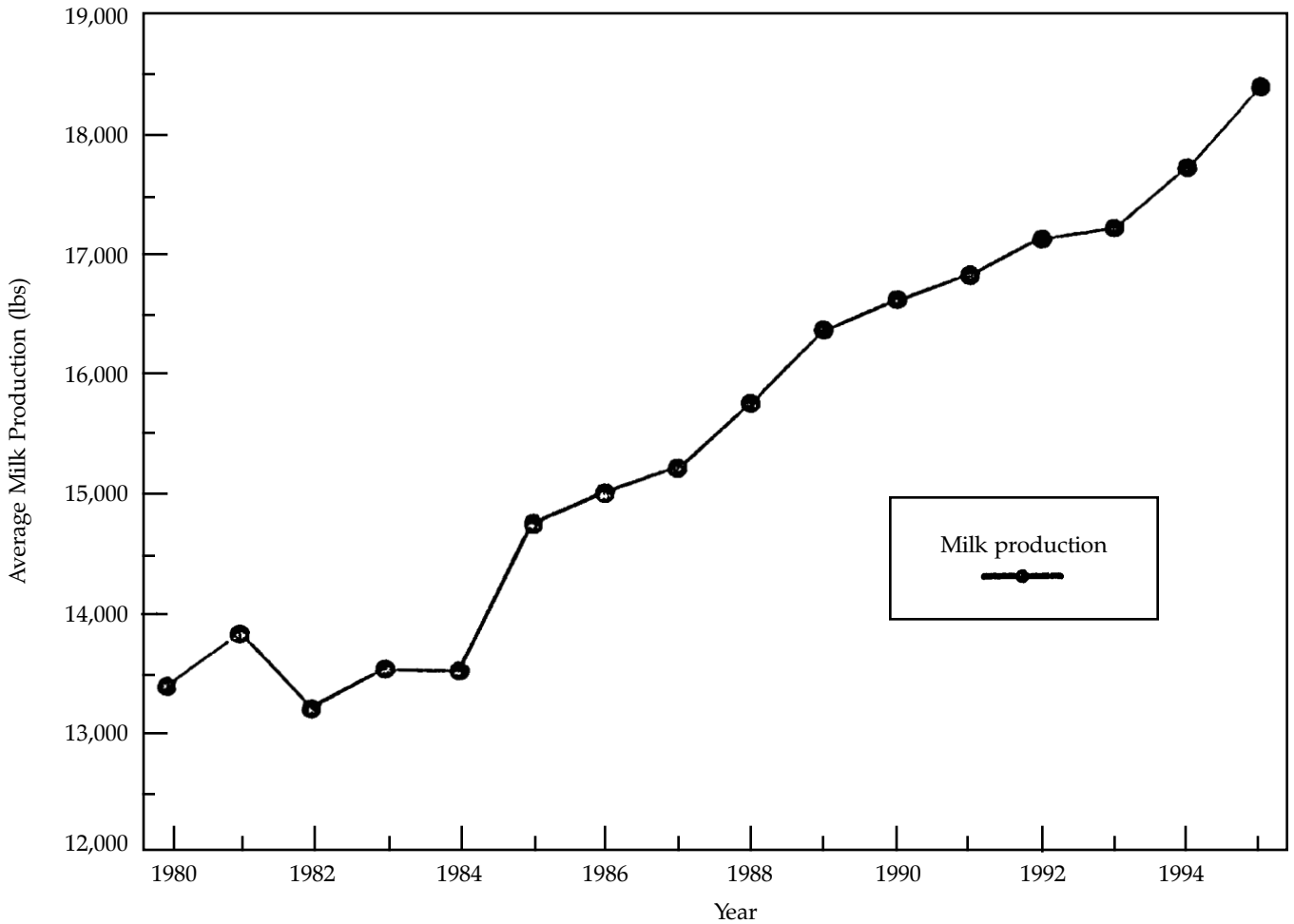


Figure 3. Average milk production per cow for DHIA herds in Nebraska.

**Table I. All milk, annual average price for selected states, per cwt.**

STATE	1990	1991	1992	1993	1994	1995	Average
Nebraska	\$13.10	\$11.60	\$12.60	\$12.50	\$12.80	\$12.50	\$12.52
California	\$12.02	\$11.22	\$11.61	\$11.45	\$11.52	\$11.68	\$11.58
Arizona	\$14.10	\$12.20	\$13.30	\$13.10	\$13.10	\$12.80	\$13.10
New Mexico	\$13.40	\$11.40	\$12.20	\$11.70	\$11.70	\$11.70	\$12.02
Texas	\$14.70	\$12.70	\$13.70	\$13.30	\$13.40	\$13.00	\$13.47
Kansas	\$13.30	\$11.70	\$12.60	\$12.70	\$12.80	\$12.30	\$12.57

Source: Nebraska Agricultural Statistics.

number of Grade A dairies has been more stable (Figure 2).

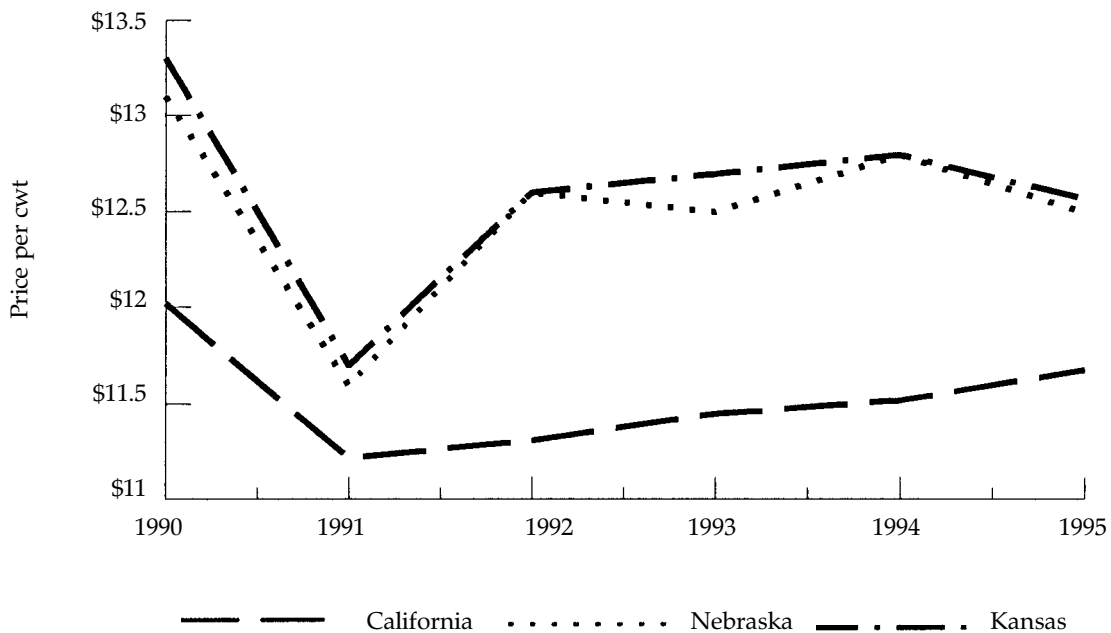
Average milk production for herds on DHIA test has increased by approximately 300 pounds yearly during the last 10 years (Figure 3). The almost linear trend since 1984 is very significant. It indicates that either the genetic potential for milk production of the Nebraska herd has significantly increased, or management techniques to achieve the potential have improved, or a combination of the two. Management is definitely a factor but this sustained record could not have been achieved without building the genetic base.

The size of DHIA herds has increased by 32 percent since 1986 to about 100 cows per herd. Although it is difficult to estimate accurately, the number of dairy cattle in the state appears to be relatively steady at approximately 95,000. Recent informal surveys

indicate that approximately 25 percent of Nebraska's dairies are actively expanding.

### Input and Output Prices

A comparison of the milk prices over the past six years for Nebraska and selected other western states is shown in Table I. Over this period the "all milk" price has averaged \$12.52 per cwt in Nebraska. The price in Kansas was similar at \$12.57. Texas and Arizona were higher at \$13.47 and \$13.10, respectively. The California price averaged almost a dollar lower than Nebraska at \$11.58. The prices for California, Kansas, and Nebraska are shown in Figure 4. The prices in Kansas and Nebraska have shown more variation than California but have been consistently higher than California with the minimum difference of \$.50 per cwt occurring in 1991.



**Figure 4. All milk, average annual price.**

**Table II. Corn, annual average price for selected states, per bushel.**

STATE	1990	1991	1992	1993	1994	1995	Average
Nebraska	\$2.28	\$2.34	\$2.09	\$2.52	\$2.33	\$3.15	\$2.45
California	\$3.03	\$3.10	\$2.85	\$3.19	\$2.98	\$3.55	\$3.12
Arizona	\$3.15	\$2.80	\$2.75	\$3.11	\$3.25	\$3.40	\$3.08
New Mexico	\$2.67	\$2.85	\$2.50	\$2.65	\$2.50	\$3.10	\$2.71
Texas	\$2.51	\$2.68	\$2.41	\$2.61	\$2.51	\$3.25	\$2.66
Kansas	\$2.25	\$2.42	\$2.15	\$2.61	\$2.32	\$3.25	\$2.50

Source: Nebraska Agricultural Statistics

**Table III. Alfalfa, annual average price for selected states, per ton.**

STATE	1990	1991	1992	1993	1994	1995	Average
Nebraska	\$ 59.50	\$ 48.00	\$ 47.00	\$ 52.00	\$ 56.00	\$ 60.50	\$ 58.83
California	\$104.00	\$ 82.00	\$ 83.00	\$105.00	\$112.00	\$101.00	\$ 97.83
Arizona	\$ 97.00	\$ 70.50	\$ 64.00	\$ 93.50	\$103.00	\$ 76.00	\$ 84.00
New Mexico	\$114.00	\$110.00	\$100.00	\$105.00	\$123.00	\$115.00	\$111.17
Texas	\$107.00	\$ 98.00	\$ 97.50	\$112.00	\$120.00	\$116.00	\$108.42
Kansas	\$ 63.50	\$ 66.50	\$ 68.50	\$ 73.50	\$ 76.00	\$ 76.50	\$ 70.45

Source: Nebraska Agricultural Statistics

### Feed Component Prices

The prices for dairy feed components are relatively low in Nebraska. The abundant supply of grains, forages, and coproduct feeds makes it a very competitive market. The prices for corn and alfalfa hay are presented in *Tables II* and *III*. Based on the fact that significant quantities of alfalfa are shipped out of the state each year, it can be assumed that the quality of alfalfa in Nebraska is high. Hence, there is no need for dairy producers in Nebraska to import alfalfa and pay higher prices plus transportation. Over the last six years, the corn price has averaged \$.67 per bushel lower in Nebraska than California and \$.63 less than Arizona.

There are also a number of coproduct feeds available in Nebraska. Nebraska has a substantial number of corn, sorghum, and soybean processing facilities located throughout the state. Major corn and sorghum processing plants are located in Blair, Columbus, Hastings, and York. These plants produce wet and dry corn gluten feed and distillers grains. Nebraska also is a leading state in soybean processing with large quantities of soybean hulls, extruded soybeans, and other coproducts available for feeding to dairy cattle. The largest hominy plant in the United States is located in Crete. These coproduct feeds, together with the traditional forages and grains available, give Nebraska dairy producers the ability to

formulate high quality, low-cost rations. *Table IV* lists some commonly available feedstuffs in Nebraska and the typical price range observed for each feed.

### Income over Feed Costs

A compelling way of measuring the impact of feed ingredient costs is to calculate income over feed costs (IOFC). A study was conducted at the University of Nebraska<sup>1</sup> to compare the income over feed costs for midwestern dairy farms (such as those in Nebraska) and California dairies, using 1994 average feed prices. The rations used for Nebraska included alfalfa silage (\$62/ton), corn silage (\$23/ton), corn (\$4.60/cwt), and soybean meal (\$172/ton). For California, the rations included alfalfa hay (\$116.60/ton), whole cottonseed (\$173.60/ton), corn (\$5.60/cwt), and soybean meal (\$195/ton). The quality of the ingredients was the same for both states as were the production levels and cow sizes used in the analysis. Corn silage was an alternative ingredient for the Nebraska diet but not the California diet because it is locally available in Nebraska but not in California. Similarly, cottonseed is often fed in California but not as often in Nebraska.

<sup>1</sup>Jagannatha, S., J.F. Keown and R.J. Grant, "Comparison of income over feed costs for Holstein cows in Midwestern states and California," *Journal of Animal Science* 74, 1996, p. 39.

**Table IV. Nebraska commodity prices.**

<i>Commodity</i>	<i>Typical Price Range<sup>1</sup></i>
<b>Grain Coproducts</b>	
Distillers grains, wet	\$30-40/ton
Distillers grains, dry	\$115-135/ton
Brewers grains, dry	\$95-115/ton
Corn gluten feed, wet	\$50-60/ton
Corn gluten feed, dry	\$90-110/ton
Soybean hulls	\$75-85/ton
Wheat middlings	\$65-75/ton
Hominy	\$80-100/ton
Beet pulp	\$115-130/ton
Whole cottonseed, linted	\$145-200/ton
<b>Animal Protein Coproducts</b>	
Blood meal	\$400-450/ton
Meat and bone meal	\$150-200/ton
<b>Grains</b>	
Soybean meal, 44% CP	\$170-200/ton
Canola meal, 42% CP	limited availability
Corn grain	\$2.00-2.50/bu
Corn screenings	\$60-80/ton
Sorghum grain	\$3.40-3.70/cwt
<b>Forages</b>	
Alfalfa hay	\$45/ton(poor) \$85/ton(good)
Corn silage	\$17-25/ton
Grass hay	\$40-50/ton

<sup>1</sup>Prices are from *Feedstuffs*, local supplier (wet byproducts), and *Dairy Profit Weekly* (alfalfa).

The Spartan Dairy Ration Evaluator from Michigan State University was used to formulate a low cost ration for each region. The average milk prices used were \$12.67 per cwt for the midwestern states and \$11.29 per cwt for California. This study showed that the IOFC was 67.2 percent for midwestern states and only 50.8 percent for California. Because feed costs represent nearly 50 percent or more of the cost of milk production (see *Tables VII and VIII*), a successful dairy must maximize IOFC.

## Dairy Enterprise Budget

Enterprise budgets can be used for a variety of purposes, such as analyzing the profitability of a specific operation, and as a guideline for financial management decisions such as expansion or leasing of facilities.

**Note:** The numbers presented here are representative of typical Nebraska operations but should not be interpreted as reflecting all possible situations.

### Cost Calculations

- In addition to directly related costs such as feed or veterinary costs, a charge is made for all the resources used in the dairy enterprise including labor, management, farm overhead costs, and the capital invested in livestock and facilities.
- A 100 cow herd is the *base unit*.
- The costs of raising *replacements* are included. A cow unit includes .39 of a heifer and .39 of a replacement per cow. Replacements have first calf at 24 months of age. The replacement rate for milking cows is 30 percent and culls weigh 1,350 pounds when sold. For replacements, .17 of a heifer per cow is culled before calving and weighs 900 pounds when sold. Birth rates are .53 of a bull calf and .47 of a heifer calf per cow per year. Bull calves are sold at birth and all heifers are retained for replacements.

Heifers available per cow per year	.47
Heifers culled per cow per year	- .17
Heifers ultimately entering the milking herd	.30

- The *feed costs* are based on computerized least cost rations using the feed ingredients and prices listed in *Table V*. Feed costs per head daily for herds producing 18, 20, or 22,000 pounds of milk are shown in *Table VI*.
- Milk hauling* costs are \$.40 per cwt plus \$10 per cow per year for stop fee.
- Insurance* on cattle is \$4.50 per \$1,000 value.
- Livestock investments* are: \$1,800 per cow unit for 18,000 pounds annual production herds, \$2,000 per cow for 20,000 pounds annual production herds and \$2,200 per cow for 22,000 pounds annual production. The interest on livestock is calculated by multiplying the investment by a real interest rate of 7 percent.

8. *Interest on feed and operating expenses* is calculated at the rate of 10 percent on total cash expenses for a six-month period.
9. *National milk promotion charge* is \$.15 per cwt (\$.10 to the Dairy Research Council and \$.05 to the National Dairy Board).
10. *Death loss* is estimated to be 3 percent. The cost is calculated by multiplying the total per cow unit investment by 3 percent.
11. *Labor requirements* are based on actual records and surveys of Nebraska dairy farmers. A wage rate of \$7.00 is assumed to include minimal benefits.
12. *Fixed costs on facilities and equipment.* The undepreciated value of facilities and equipment is assumed to be \$1,000 per cow. This is multiplied by a real interest rate of 7 percent.
13. *Overhead.* Farm overhead costs such as accounting fees, subscriptions, and farm information services are charged to the dairy enterprise at the rate of 5 percent of the non-feed cash costs.
14. *Management Fee* is assumed to be 4 percent of the expected gross receipts. The net projected milk price is \$14.00 per cwt. The projected base price is \$13.70 per cwt for 3.5 percent butterfat with bonuses of \$.15 per cwt for milk with an average

**Table V. Feed ingredients and prices used for calculation of ration costs.**

<i>Feed</i>	<i>Feed Price</i>		
	<i>High</i>	<i>Medium</i>	<i>Low</i>
Alfalfa, \$/ton	110.00	85.00	65.00
Corn Silage, \$/ton	25.00	22.00	19.00
Grass Hay \$/ton	60.00	50.00	40.00
Corn grain, \$/bu	4.00	3.00	2.00
Soybean meal, 44% CP, \$/ton	225.00	200.00	175.00
Soybean hulls, \$/ton	120.00	95.00	70.00
Blood meal, \$/ton	400.00	400.00	400.00
Dicalcium phosphate, \$/cwt	20.00	20.00	20.00
Limestone, \$/cwt	7.25	7.25	7.25
Salt, \$/cwt	6.00	6.00	6.00
Vitamin ADE, \$/cwt	25.00	25.00	25.00

**Table VI. Daily feed costs per head for three levels of milk production and three levels of feed costs.**

<i>Animal and Situation</i>	<i>Feed Costs</i>		
	<i>Forage</i>	<i>Concentrate</i>	<i>Total</i>
	----- (\$ / head / day) -----		
<b>Lactating Cows</b>			
18,000 pounds milk			
High feed costs	1.28	1.25	2.53
Medium feed costs	1.07	1.04	2.11
Low feed costs	0.87	0.85	1.72
20,000 pounds milk			
High feed costs	1.44	1.53	2.97
Medium feed costs	1.17	1.27	2.44
Low feed costs	0.96	1.00	1.96
22,000 pounds milk			
High feed costs	1.37	1.92	3.29
Medium feed costs	1.11	1.60	2.71
Low feed costs	0.91	1.25	2.16
<b>Dry Cows</b>			
Medium Feed Costs	0.46	0.50	0.96
<b>Heifers</b>			
Medium Feed Costs	0.45	0.31	0.76

somatic cell count of 300,000 and \$.15 per cwt for protein differential. Somatic cell bonuses are paid for counts up to 350,000 on a graduated scale beginning at \$.65 for counts less than 51,000. There is no bonus or deduction for counts between 351,000 and 450,000. Graduated deductions occur for counts over 450,000 up to a maximum of \$.65 per cwt for counts over 750,000.

### *Discussion and Interpretation of the Budget*

For a 20,000 pound herd, the feed costs per year are \$1,076 per cow including replacements. The total operating costs, including the feed costs, are \$2,024 per cow. The total costs including operating, ownership, overhead, and management are \$2,397. After allowance for cull animals and death loss, the net cost is \$2,111 per cow or \$10.55 per cwt of milk produced. If actual costs are consistent with those described in the budget, and the input-output relationships such as the labor hours per cow are similar, income above \$10.55 per cwt is a return to risk for the operator. It also provides an income to capital and management greater than the percentages specified.

### *Budget Adjustments and Capital Investments for Large Herds*

1. *Milk hauling.* The current hauling schedule is \$.40 per cwt plus \$5 per stop. For a 1,000 cow herd the stop charges would be approximately \$1 per cow per year.
2. *Labor requirements* would be reduced to an estimated 45 hours per cow per year assuming large milking parlors and other large scale facilities increase the labor efficiency.
3. *Investment in facilities.* The base budget uses a figure of \$1,000 per cow as the undepreciated value of facilities. A 1,000-cow operation would probably require the development of new facilities. The cost depends on the type of facilities and could cost as much as \$1,500 per cow. This does not include livestock or land. For a detailed listing of a suggested set of machinery and equipment investments for a 1000-cow herd, refer to "The

Economics of a 1000-cow Dairy," University of Missouri Commercial Agriculture Program, p. 20. The publication is available through the University of Missouri Cooperative Extension by calling 314-882-0139.

4. *Overhead.* An estimate of farm overhead costs is made in the base budget at the rate of 5 percent of the non-feed cash costs. Producers who are considering a large herd should not overlook these costs as a large herd situation will not have other enterprises to share these costs and the costs of accounting, for example, are all directly allocated to the dairy. It is suggested these costs be estimated at 4 percent of the non-feed cash costs, or \$20 to \$25 per cow per year.
5. *Management fee.* In the base budget, the management fee was calculated at the rate of 4 percent of gross receipts. If all labor is family labor, the labor and management charges are the amounts available for family living expenses. For a large herd, the labor for the regular activities probably will be supplied by hired labor. The management fee can be considered the amount available to the manager/operator for family living or the salary to the manager for performing the daily management tasks including labor scheduling and evaluation. A rate of 3 percent of gross receipts is suggested for large herds.
6. *Milk production.* The base budget shows three production levels: 18,000, 20,000 and 22,000 pounds per cow per year. It is assumed this is established with a 30 percent replacement rate which would mean 30 percent of the milking herd are in their first lactation. The establishment of a large herd would have a start-up phase which would mean there would be at least 35 to 40 percent first lactation animals. The average production would be correspondingly lower than for an established herd. If a 22,000 pound production level is expected for an established herd, the average production for a new large herd would be expected to be 18-19,000 pounds, increasing over a four or five year period to the 22,000 pound goal.

**Table VII. Budgeted costs of maintaining dairy herds per cow in eastern Nebraska, medium feed costs, 1997.**

	<i>Milk Production Level</i>		
	<i>18,000 lbs/cow</i>	<i>20,000 lbs/cow</i>	<i>22,000 lbs/cow</i>
<b>Feed Costs per day</b>			
Lactating Cow	\$2.11	\$2.44	\$2.71
Dry Cow	.96	.96	.96
Heifer	.75	.75	.75
<b>Feed Costs per year</b>			
Lactating Cows	643.55	744.20	826.55
Dry Cows	57.60	57.60	57.60
Heifers	273.75	273.75	273.75
<b>Total Feed Costs</b>	<b>\$ 974.90</b>	<b>\$1,075.55</b>	<b>\$1,157.90</b>
<b>Other Cash Costs</b>			
Bedding	25.00	25.00	25.00
Milk Hauling	64.00	76.00	88.00
Breeding Fees	20.00	22.50	25.00
Repair, Fuel & Oil-Tractor & Machinery	65.00	65.00	65.00
DHIA Fee & Other Records	18.00	18.00	18.00
Veterinary & Medicine	50.00	55.00	60.00
Utilities	64.00	72.00	80.00
Supplies	50.00	50.00	50.00
Repairs-Building & Equipment	15.00	15.00	15.00
Insurance on Cattle	7.20	8.55	9.90
Interest-Feed & Operating Expenses 10% for half yr	64.89	71.41	74.82
National Milk Promotion	24.00	28.50	33.00
<b>Total Other Cash Costs</b>	<b>467.09</b>	<b>506.96</b>	<b>543.72</b>
<b>Total Labor Costs: 60 hrs @ \$7.00</b>	<b>420.00</b>	<b>420.00</b>	<b>420.00</b>
<b>Total Operating Costs</b>	<b>\$1,861.99</b>	<b>\$2,002.51</b>	<b>\$2,121.62</b>
<b>Ownership Costs</b>			
Interest on Cattle 7%	126.00	140.00	154.00
Facilities & Equipment Ownership Cost @ 7.5%	75.00	75.00	75.00
<b>Total Ownership Costs</b>	<b>\$ 187.00</b>	<b>\$ 229.00</b>	<b>\$ 208.00</b>
<b>Overhead and Management</b>			
Overhead 5% of non-feed costs	24.25	26.42	28.42
Management, 4% of gross receipts	101.06	117.86	134.66
<b>Total Overhead &amp; Management</b>	<b>\$ 125.31</b>	<b>\$ 144.27</b>	<b>\$ 163.08</b>
<b>TOTAL ALL COSTS</b>	<b>\$2,174.30</b>	<b>\$2,375.78</b>	<b>\$2,492.70</b>
<b>Credits</b>			
0.3 Cull cows@1350lbs \$42/cwt	170.10	170.10	170.10
0.17 Cull Heifers@900lbs \$60/cwt	91.80	91.80	91.80
0.53 Day-Old Calves \$125/calf	66.25	66.25	66.25
Less Cow Death Loss, 3%	(54.00)	(60.00)	(66.00)
<b>Total Credits</b>	<b>\$ 274.15</b>	<b>\$ 268.39</b>	<b>\$ 263.15</b>
<b>Net Cost of Producing Milk</b>			
Total Per Cow	1,900.15	2,107.63	2,229.55
Total Costs Per Cwt.	10.55	10.54	10.13
Net Cost Per Cwt. Excluding: Labor, Overhead & Management	7.52	7.71	7.48



## Dairy Farm Records Comparison

Summaries from farm records programs provide another source of information on dairy enterprise costs and returns. A summary of the dairy enterprise analysis from the Nebraska Farm Business Association and summaries from the most recent reports from Kansas and Missouri are presented in *Table VIII* as a comparison. Note that there are some differences in how the costs are grouped together and reported.

## Discussion

The costs that are labeled "Allocated Costs," are based on total farm costs from actual records for these costs. The respective state farm records projects then use standard techniques to allocate the costs between enterprises. The "Direct Expenses Per Cwt of Milk Sold" refers to the costs itemized as direct expenses in the table. For example, the direct expenses for Nebraska were \$1,983 per cow for an average

**Table VIII. Dairy Enterprises Analysis, 1995**

	NE	KS	MO <sup>1</sup>
Number of farms	11	74	35
Average number of cows	94	98	98
Pounds of milk per cow	18,175	19,414	16,090
Milk receipts per year	\$2,307	\$2,419	\$2,081
Milk price per cwt sold	\$12.69	\$12.46	\$12.93
<b>INCOME PER COW</b>			
Milk Sales	\$2,306.84	\$2,419.01	\$2,081.00
Patronage & misc.	-	39.18	23.00
Livestock sales & change of total inventory	147.18	179.07	66.00
<b>GROSS INCOME</b>	<b>\$2,454.02</b>	<b>\$2,637.26</b>	<b>\$2,364.00</b>
<b>DIRECT EXPENSE PER COW</b>			
Feed	\$1,175.88	\$1,440.33	\$1,209.00
Breeding and Marketing	149.46	60.40	213.00
Veterinary	106.07	82.09	75.00
Livestock Supplies	107.95	224.38	—
Livestock Leases	20.30	—	—
Machinery	167.75	159.81	97.00
Building Repair	37.80	—	33.00
Hired Labor	121.24	166.40	360.00 <sup>2</sup>
Utilities	41.45	80.63	50.00
Operating Interest	28.02	87.75	94.00
Miscellaneous	27.10	3.12	—
<b>TOTAL</b>	<b>\$1,983.02</b>	<b>\$2,304.91</b>	<b>\$2,131.00</b>
<b>ALLOCATED EXPENSES</b>			
Depreciation	\$151.77	\$87.60	\$79.00
Real Estate & Personal	34.53	11.22	—
Farm Insurance	30.12	19.10	15.00
Farm Overhead	-	17.55	11.00
Interest	100.86	153.37	154.00
<b>TOTAL</b>	<b>\$317.28</b>	<b>\$288.84</b>	<b>\$259.00</b>
Unpaid Labor	\$273.98 <sup>3</sup>	\$196.13	<sup>4</sup>
<b>TOTAL EXPENSES</b>	<b>\$2,574.28</b>	<b>\$2,789.88</b>	<b>\$2,390.00</b>
<b>NET RETURN TO MANAGEMENT</b>	<b>-\$120.26</b>	<b>-\$152.62</b>	<b>-\$26.00</b>
<b>NET RETURN TO UNPAID LABOR AND MANAGEMENT</b>	<b>\$153.63</b>	<b>\$43.51</b>	<b>—</b>
<b>DIRECT EXPENSES PER CWT OF MILK SOLD</b>	<b>\$10.91</b>	<b>\$11.87</b>	<b>\$13.24</b>
<b>TOTAL CASH EXPENSES PER CWT OF MILK SOLD<sup>5</sup></b>	<b>\$11.82</b>	<b>\$12.91</b>	<b>\$14.36</b>
<b>TOTAL EXPENSES PER CWT OF MILK SOLD</b>	<b>\$14.16</b>	<b>\$13.96</b>	<b>\$14.85</b>
<b>INCOME PER CWT OF MILK SOLD</b>	<b>\$13.50</b>	<b>\$13.58</b>	<b>\$14.69</b>

Sources: Nebraska Farm/Ranch Business Management 1995 Annual Report, Nebraska Cooperative Extension. The Enterprise Analysis Report, 1995, Kansas Farm Management Association Cooperative Extension Service, Kansas State University. 1994 Missouri Dairy Enterprise Business Earnings, FM95-4, University of Missouri Extension.

<sup>1</sup> 1994 costs.

<sup>2</sup> Includes operator, family and hired labor.

<sup>3</sup> Includes management charge.

<sup>4</sup> Included with hired labor.

<sup>5</sup> Included Direct Expenses & Allocated Expenses except Depreciation.

production of 18,175 pounds per cow or \$10.91 per cwt. The total expenses for Nebraska herds including direct, allocated, and unpaid labor costs were \$14.16 per cwt.

### Family Living Expenses

Table IX shows a comparison of the living costs for farm families in Nebraska and Kansas from detailed farm records. The costs in Nebraska are slightly higher than Kansas. Actual costs could vary considerably. In Nebraska, the low 33 percent in terms of costs had an average of \$28,620 compared with \$36,345 for the high cost 33 percent. Note that these household expenses do not include the purchase of non-farm vehicles, real estate or other capital purchases, income taxes or real estate taxes, or savings and non-farm investments. Cash flow planning should include these items when determining total cash outlays needed by the farm family to meet farm

Table IX. Family living expenses, 1995.

	Nebraska	Kansas
<b>Number of Families</b>	<b>64</b>	<b>581</b>
<b>Average Family Size</b>	<b>2.7</b>	<b>3.4</b>
<b>Family Cost Living Expenses</b>		
Food	\$5,010	\$4,955
Medical care and health insurance	4,580	5,107
Household supplies, furniture, etc.	3,459	3,755
Clothing	2,167	1,527
Personal care, recreation	5,694	4,205
Child/Dependent care	131	183
Donations	2,010	1,595
Gifts	1,477	1,187
Education	788	891
Utilities	1,330	1,410
Auto (non-farm purposes)	1,449	1,274
Household repairs	789	1,550
Interest	405	301
Life Insurance	1,926	1,832
<b>TOTAL</b>	<b>\$31,215</b>	<b>\$29,772</b>

Sources: Nebraska Farm/Ranch Business Management 1995 Annual Report, Nebraska Cooperative Extension. The Annual Report, 1995, Kansas Farm Management Association Cooperative Extension Service, Kansas State University.

business and personal obligations. Living costs vary by family size and age of children. For example, the data from the Kansas Farm Management Associations shows the average living cost with no dependent children was \$28,772 in 1995 compared to \$33,292 for families with dependents over 18 years of age. The families in this latter category had an average of 2.5 children per family.

### Financial Position of Nebraska Dairy Farms

As part of a regional research project, a survey was conducted during 1994-95 to assess financial performance of Nebraska dairy enterprises (Table X). The survey was mailed to all 385 producers enrolled in the DHI program and 61 fully completed surveys were returned. The mean herd size of survey respondents was 95 cows with a yearly rolling herd average of 18,926 pounds milk/cow. The state averages for the same time period were 91 cows and 18,676 pounds milk/cow, so we were confident that our sample of producers accurately represented the population of Nebraska dairy producers.

Herds were grouped into herd size categories as less than 60, 60 to 80, or greater than 80 cows. Rolling herd average and net farm income increased with increasing herd size. Net worth increased with herd size, and debt to asset ratio was equal for small and large herds and lowest for medium sized herds. Family living costs decreased with increasing herd size. Total cost of producing milk per unit of milk sold increased with herd size. Use of total mixed rations, forage analysis, and nutritional consultants increased with larger herds. In five years, 30 - 37 percent of all operations expect to increase herd size, to 68, 88, and 176 cows for small, medium, and large herds, respectively.

When farms were grouped by rolling herd average, herd size and net farm income increased as milk production increased. Debt to asset ratio was lowest for herds with highest rolling herd average. In five years, producers anticipated herd sizes of 85, 119, and 167 cows for low, medium, and high production herds. This information should be useful for dairy producers, extension specialists, and agribusiness to assess the financial position of dairy producers and to allow producers to compare their business with the rest of the Nebraska dairy industry.

**Table X. Results of Nebraska financial survey by herd size and milk production level for 1994.**

ITEM	Herd Size (cows)			Rolling herd average (lbs)		
	<60	60-80	>80	<17,000	17,000-19,000	>19,000
Number of herds	18	15	28	15	19	27
Number of cows	49	67	140	56	106	115
SD	7	6	49	10	55	59
Range	34-58	60-79	83-262	40-68	34-250	43-262
Rolling herd ave, lbs	17,206	17,562	20,373	14,578	18,298	21,777
SD	3,128	4,054	2,216	1,832	846	1,744
Range	11,248-20,880	12,496-25,568	17,117-25,289	11,248-16,558	17,000-19,435	19,660-25,970
Milk sold, lbs/farm	777,771	1,059,379	2,382,028	794,030	1,508,200	2,192,993
Net farm income, \$	16,327	18,267	28,102	13,564	14,709	34,457
SD	18,235	30,782	38,645	21,705	34,848	34,350
Net farm income from						
Dairy, \$	11,556	15,988	21,516	9,741	9,636	28915
SD	14,190	25,970	34,423	14,318	32,121	29,134
Net Worth, \$	304,634	437,485	591,514	344,838	402,339	621,558
Debt: asset ratio	.45	.25	.46	.42	.47	.34
Family living costs, \$	18,695	18,155	20,130	14,643	22,992	21,430
Itemized dairy expenses, \$/cwt milk sold						
Depreciation	1.79	1.59	1.58	2.12	1.91	1.17
Purchased feed	4.20	4.13	4.56	3.80	4.97	4.17
Interest paid	.96	.89	.70	1.13	.77	.61
Hired Labor	1.16	.39	1.12	1.14	1.15	.81
Rent and leases	.71	1.02	.86	.68	.89	.90
Taxes	.33	.23	.35	.34	.35	.43
Veterinary fees	.87	.40	.67	.53	.62	.56
<b>Total Expenses</b>	<b>10.33</b>	<b>8.84</b>	<b>10.14</b>	<b>10.11</b>	<b>10.99</b>	<b>8.94</b>
Total Cost of Producing milk, \$/farm	85,363	125,486	129,911	90,098	227,179	
136,197						
Cost/cwt milk sold, \$	10.58	11.50	11.67	10.68	11.05	11.78
Expanded business in past 2 years, %	33	20	43	20	37	41
Labor hours/ cow	99.8	69.0	75.0	59.0	71.0	100.0
Hired labor hours	3,335	767	3,305	951	1,211	4,277
Unpaid labor hours	2,996	3,881	6,623	2,240	4,944	6,553

SD = Standard Deviation