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Cooperative Extension Service

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February 1977

4 pages

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# How Much Debt Can A Dairy Cow Carry?

No. 125

Extension Bulletin E-1068

February, 1977

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TRADITION TELLS US the amount of money a farmer can borrow depends on the "Three C's of Credit," defined as: (1) **character**, (2) **collateral** and (3) **capacity**.

Character has to do with personal honesty, integrity and trustworthiness. Collateral deals with the amount of security a borrower can pledge to a lender. These two concepts are not the subject of this bulletin which will discuss the third C, the **earning capacity available to pay off loans**.

The amount of debt which a specialized Michigan dairy farm could carry in relation to earnings was first published in 1973. The amounts were based on data for 1967 through 1971 from MSU Telfarm records kept by southern Michigan dairy farmers. Since that time, the relationship between dairy farm costs and returns has changed. This bulletin reports the debt repayment capacity estimated for Michigan dairy farmers from 1973 through 1975. These specialized dairy farmers, located throughout Michigan, are not a random sample because owners pay a fee to use Telfarm and join at their own request. The data are probably representative of what better-than-average Michigan dairy farmers accomplished in 1973 through 1975.

Figure 1 shows recent trends in dairy farm gross income. From 1971 to 1975, cash income increased 43 percent to \$1,469 per cow while cash expenses increased 56 percent to \$866 per cow. The Telfarm estimate of living cost increased 31 percent. The remaining income, after cash expenses and family living were covered, ranged from about \$230 to \$320 per cow on the average farm. This is the amount estimated to be available for new capital items or for debt service (interest and principal payments on borrowed money). This amount reached a peak of \$320 in 1974 and fell to \$275 in 1975.

## Why Debt Repayment Ability Varies

Debt-carrying capacity per cow for an individual farm depends on several factors, including crop yields per acre, milk yield per cow, farm size, prices received and production costs. Here is what happened in 1973 through 1975.

**Income** — Table 1 shows cash income per farm and per cow for various farm sizes. Smaller farms have more gross income per cow as a result of having more cash crop sales per cow. Other income sources per cow are about the same across size groups. Smaller dairy farms in this study had

more crop acres per cow resulting in more crop sales per cow. Debt-carrying capacity per cow may vary with the degree of specialization in milk production.

**Costs** — Larger farms hire more labor per cow (see Table 1, line 6) but when family and operator labor is counted also, large farms require about two-thirds as many labor hours per cow. With the exception of purchased feed, all other cash expenses per cow are lower on the larger farms. In total, however, the biggest farms had the biggest total cash expense and the smallest net cash income on a per-cow basis (see line 14 of Table 1).

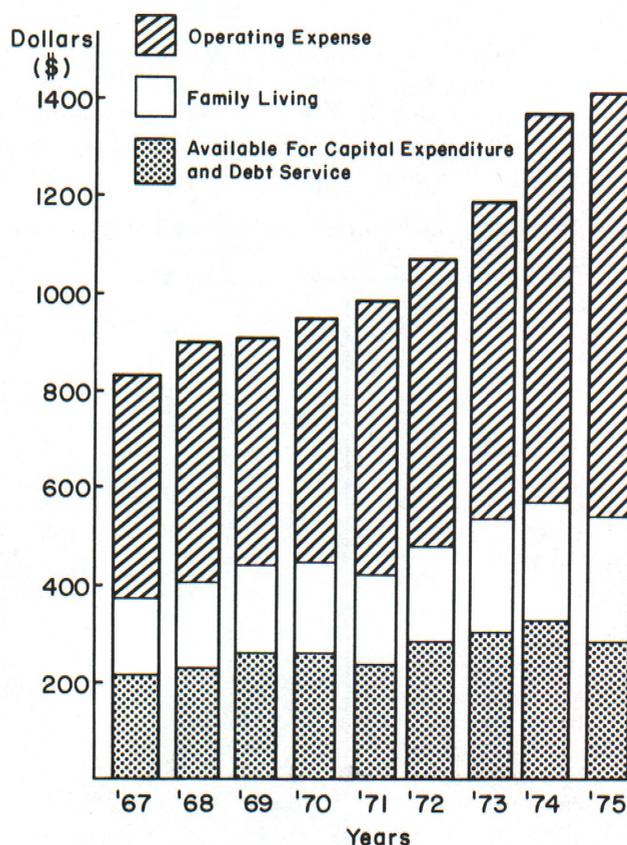


Figure 1 — Division of cash income per cow among cash operating expenses, estimated family living expenditures and the amount available for new capital expenditure plus debt service, 1967-1975, specialized Michigan Dairy Telfarmers.

**Debt Service** — The larger dairy farms have more money available for debt servicing per cow due to lower family living expenses per cow. The calculations are shown in the top five lines of Table 2. Line 5 is the total money available per cow for debt payments.

**Financing Capital Investments** — Loan payments already contracted for should be made before additional debts are considered. Capital expenditures for buildings, machinery and livestock are typically made with borrowed money. The investments made per cow from 1973 through 1975, averaged, are shown in Table 3. In any given year, the money available as defined on line 5 in Table 2 will have to be allocated among debts already contracted for, capital replacement and proposed new capital investments. Leaving an allowance for replacing worn out equipment and for paying off existing debts is an important step in forward financial planning.

**Loan Terms** — Basic loan terms are the amount of principal borrowed, the length of time given to repay the loan and the annual percentage rate charged. Below line 6 in Table 2, several assumptions are made about length of time and interest rates with the resulting amount of debt which could be repaid, given the annual payment available on line 5. With longer repayment times, more money can be borrowed. With lower interest rates, more money can be borrowed. The amount of debt which one cow can carry, then, depends on the loan terms. Table 2, line 6, indicates larger farms might consider debts approaching \$3,000 per cow only if the loan is long term. For the smaller farms, the limit is about \$1,000 less.

### Maximum Repayment Guidelines

**Dollars Per Cow** — The dollars available to make principal and interest payments per cow per year are given on line 5 of Table 2. The three-year average from 1973 through 1975 shows Michigan dairy farms could afford to pay from \$236 to \$330 per cow per year.

**Percent of Milk Check** — If all other costs plus family living are to be met, a dairy farmer should not let total interest plus principal payments on debt exceed 25 percent of the gross milk sales. On line 8 of Table 2, the cash available for debt service expressed as a percent of milk income ranged from 23 percent on small farms to 31 percent on the biggest farms. This thumb rule has been fairly stable over time as shown in Table 4.

### What Is Ahead?

Despite major changes in costs and income from 1973 through 1975, debt-paying capacity of specialized Michigan dairy farms remained above the levels of 1970 through 1973. Dairy farmers go into debt mainly to make capital investments. Table 5 shows capital investments have increased sharply from 1971 through 1975. Comparing line 5 of Table 2 with Table 5, it appears that money available for capital replacement or debt payment capacity is less than capital investments actually made. This is the reverse of the situation which existed in 1971 and 1972. It forces farmers to increase their indebtedness if other uses of cash are to be met. If capital items such as buildings and machinery are to be replaced in the next few years, dairy farmers will be pressed to generate larger amounts of cash to meet larger debt payments for the more expensive capital items.

Table 1 — Average Cash Income, Cash Expenses and Net Cash Income, 1973-1975 Averaged, Michigan Dairy Farms.

	Number of Cows							
	Under 50		50-74.9		75-99.9		Over 100	
	Total	Per Cow	Total	Per Cow	Total	Per Cow	Total	Per Cow
<b>Cash Income</b>								
1. Crops	\$ 5,599	\$ 149	\$ 6,229	\$ 101	\$ 6,716	\$ 77	\$ 10,088	\$ 71
2. Livestock	6,252	166	9,160	148	12,340	141	20,013	140
3. Milk	38,441	1,022	65,590	1,063	91,824	1,050	152,274	1,068
4. Other sources	1,059	28	1,239	20	1,746	20	2,777	19
5. Total	\$51,351	\$1,365	\$82,218	\$1,332	\$112,626	\$1,288	\$185,152	\$1,298
<b>Cash Expenses</b>								
6. Hired labor	\$ 2,473	\$ 66	\$ 5,050	\$ 82	\$ 7,517	\$ 86	\$ 17,627	\$ 124
7. Machinery operation	4,669	124	7,196	117	9,622	110	14,853	104
8. Building repair	831	22	1,426	23	1,722	20	2,987	21
9. Crop production	5,834	155	9,546	154	12,930	148	20,693	145
10. Livestock production	4,017	107	6,733	109	9,092	104	15,817	111
11. Purchased feed	6,647	176	11,476	186	16,701	219	30,860	216
12. Other	4,094	109	6,094	99	8,307	95	13,821	97
13. Total	\$28,566	\$ 759	\$47,521	\$ 770	\$ 65,891	\$ 754	\$116,658	\$ 818
14. NET CASH INCOME	\$22,785	\$ 606	\$34,697	\$ 562	\$ 46,735	\$ 534	\$ 68,494	\$ 480
15. Number of cows	37.62		61.71		87.45		142.65	

Table 2 – Per Cow Average Debt Paying Capacity by Farm Size, 1973-1975 Averaged, Michigan Dairy Telfarms.

Item	Size of Herd			
	Under 50	50-74.9	75-99.9	100 & Over
1. Cash farm income*	\$1,365	\$1,332	\$1,288	\$1,298
2. Cash farm operating expenses†	759	770	754	818
3. Net cash income (lines 1-2)	606	562	534	480
4. Family living expenses‡	370	280	231	150
5. Available for servicing debt or capital replacement (lines 3-4)	236	282	303	330
6. Amount of debt that line 5 will amortize:				
5 years – 10%	895	1,069	1,149	1,251
5 years – 8%	942	1,126	1,210	1,318
10 years – 10%	1,450	1,733	1,862	2,028
10 years – 8%	1,584	1,892	2,033	2,214
20 years – 10%	2,009	2,401	2,580	2,809
20 years – 8%	2,317	2,769	2,975	3,240
7. Milk income	1,022	1,062	1,050	1,067
8. Line 5 as a percent of milk income	23	27	29	31

\*Includes income from government payments, forest products, custom work, sale of machinery and improvements for the total farm as well as milk, livestock and cash crop sales.

† For the entire farm business, including feed purchases. Excludes interest paid, capital purchases of machinery improvements and livestock.

‡ This item is assumed to be equal to the value of operator plus unpaid family labor at the following hourly rates: 1973 – \$3.25, 1974 – \$3.50, 1975 – \$3.50.

Table 3 – New Capital Investment by Size of Dairy Farm, 1973-1975 Averaged, Per Cow, Michigan.

Item	Size of Herd			
	Under 50	50-74.9	75-99.9	100 & Over
	Annual Dollars Invested in:			
Buildings	\$121	\$103	\$ 99	\$117
Machinery	206	184	174	166
Cows	42	44	45	56
Total	\$369	\$331	\$318	\$339

Table 4 – Debt Repayment Capacity Per Michigan Dairy Farm, Expressed as Percent of Gross Milk Sales.

Year	Size of Herd			
	Under 50	50-74.9	75-99.9	100 & Over
	Percent			
1971	23	25	32	32
1972	26	28	35	36
1973	35	28	35	36
1974	27	28	28	32
1975	19	24	25	25

### Summary

Dairy men should be cautious when the proportion of the milk check committed to debt and new capital servicing exceeds 20 percent on smaller farms to 30 percent on larger farms. On the basis of the 1973 through 1975 averages, the amount available to finance debts and new capital has been \$236 on smaller farms of less than 50 cows (average 37.6) to \$330 per cow on farms in excess of 100 cows (average 142.6). In these rapidly changing times, careful financial planning should precede the substantial commitments of funds that are involved in capital replacement, modernization and expansion of dairy farm businesses.

Table 5 – New Capital Expenditures on Michigan Dairy Farms, Per Cow, 1971-1975.

Year	Size of Herd			
	Under 50	50-74.9	75-99.9	100 & Over
	Dollars Per Cow			
1971	258	222	295	191
1972	243	308	267	261
1973	336	287	265	351
1974	378	362	352	333
1975	394	346	339	332

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