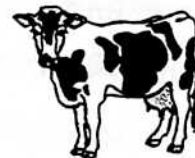


DBAP98: EFFECT OF TYPE OF FEEDING SYSTEM ON COSTS OF SOUTHEAST DAIRY FARMS



by: Dairy Extension Program Team (developers of DBAP)

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Introduction:

DBAP has enabled us to improve our understanding of differing types of dairies. Dairies are structured and operated much differently and it seems all types are viable and profitable, dependant primarily on management and external forces such as milk and feed prices. We have been curious about different feeding systems and the increased participation of dairies in 1998 made it possible to look at those differences.

Methods:

Forty-five of the 65 DBAP98 participating dairies which fit into clear defined feeding systems types were used to accomplish this sort. Thanks to Marvin Hoekema who made the computer runs for us. The four systems types studied were total mixed ration (TMR) with and without home grown forage, one-shot rations and modified grazing.

Results:

Table 1. Description of the physical size and productivity of sorted dairies

Feeding system type	Cows	Heifers	Milk sold per cow	Cows per FTE
TMR - no crops (14 dairies)	855	441	18,325	53
TMR - crops (17)	1188	735	17,365	54
One-shot rations (9)	244	73	13,629	49
Modified grazing (5)	785	103	15,323	78



Interestingly, the cropping dairies had the largest herds including both cows and heifers. TMR-no crops dairies had the highest milk sales per cow (18,325) while one-shot dairies were lowest at 13,629. Modified grazing dairies had the most cows per FTE at 78.

2. Financial structure of dairies

The TMR-crops farms had the highest assets per cow (\$5,277) while modified grazing dairies had the least (\$2,892). The graziers also had the lowest debt per cow at \$1,169.

Table 2. Financial structure of dairies

Feeding system type	per cow	
	Assets	Liabilities
TMR - no crops (14)	\$3,574	\$1,585
TMR - crops (17)	\$5,277	\$1,675
One-shot rations (9)	\$3,534	\$1,450
Modified grazing (5)	\$2,892	\$1,169

3. Revenues, expenses and net farm income per cwt.

There was little difference in total revenues among the dairies. There was geographical differences in milk price that were confounded by cattle sales. There was not a significant difference in culling rates.

Table 3. Revenues, expenses and net farm income per cwt.

Feeding system type	per cwt.	
	Revenues	Expenses
TMR - no crops (14)	\$19.04	\$17.40
TMR - crops (17)	\$19.61	\$18.36
One-shot rations (9)	\$19.81	\$17.70
Modified grazing (5)	\$19.04	\$15.06
Net Income	\$1.64	\$1.24

Costs did vary considerably as the TMR-crops dairies had higher costs per cwt., \$3.30 higher than modified grazing dairies. Table 7 at the end of this paper

shows that TMR-crops dairies had the highest personnel, machinery, real estate and depreciation costs. One-shot dairies had higher feed cost per cwt. (\$8.44) even with fewer heifers in their herds. The one-shot dairies did have the lowest labor and real estate costs and low depreciation expense. Modified grazing dairies had the lowest purchased feed costs, livestock expenses, depreciation and total costs. They also had the highest net return per cwt.

4. Effect of feeding system on revenues, expenses and net farm income per cow

Cows are the productive unit on dairy farms. Table 4 shows the revenues, expenses and net income on a per cow basis. TMR dairies had higher revenues and expenses while modified grazing dairies had the greater return per cow.

Table 4. Effect of feeding system on net farm income per cow

Feeding system type	Revenues per cow	Expenses per cow	Net Income per cow
Total mixed ration (31)	\$3,448	\$3,188	\$260
One-shot rations (9)	\$2,700	\$2,412	\$288
Modified grazing (5)	\$2,917	\$2,308	\$610
Average	\$3,022	\$2,636	\$386

5. Revenues, expenses and net farm income per worker

Since labor costs are a major concern among Florida dairies, we decided to determine if feeding system type influenced labor efficiency. Modified grazing dairies seemed to have higher productivity per FTE than TMR or one-shot dairies.

Table 5. Revenues, expenses and net farm income per worker

Feeding system type	Revenues per worker	Expenses per worker	Net Income per worker
Total mixed ration (31)	\$179,510	\$165,993	\$13,516
One-shot rations (9)	\$130,443	\$116,549	\$13,894
Modified grazing (5)	\$223,119	\$176,480	\$46,639
Average	\$177,691	\$153,007	\$24,683

DBAP dairies are structured much differently and it seems all types were profitable in 1998. Feeding system type did seem to influence profitability. In particular, modified grazing dairies seemed to prosper in the unique circumstances of 1998. Thanks to the increased participation of dairies in DBAP in 1998 which made it possible to look at those differences.

Summary:

Feeding system type	Return to assets	Operating profit margin	Asset turnover ratio
TMR - no crops (14)	8%	9%	1.09
TMR - crops (17)	6%	7%	.80
One-shot rations (9)	4%	5%	1.02
Modified grazing (5)	25%	20%	1.14

6. Other measures of profitability of dairies

Feeding system type	Revenues per farm	Expenses per farm	Net Income per farm
Total mixed ration (31)	\$3,575,302	\$3,306,094	\$269,208
One-shot rations (9)	\$658,777	\$588,609	\$70,168
Modified grazing (5)	\$2,290,237	\$1,811,500	\$478,736
Average	\$2,174,772	\$1,902,068	\$272,704

Table 6. Revenues, expenses and net farm income per farm

relative to other dairies. one-shot dairies appeared to have lacked revenue generating capacity in 1998 highest expenditures. Modified grazing dairies had the greatest net income while per farm, TMR dairies had the greatest revenue generating capacity but also the not per cwt. per cow or per worker. When we sorted by net income

In the final analysis, total net income is what is most important,

6. Revenues, expenses and net farm income per farm



Table 7. Selected 1998 financial performance information by feeding system group.

Category	Mixed ration -no crops	Mixed ration -crops	One-shot	Modified grazing
Number of dairies	14	17	9	5
REVENUES (per cwt. milk sold)				
Milk sales	18.33	18.20	18.70	18.80
Cow sales	0.15	0.52	0.44	-0.19
Calf/heifer sales	0.00	0.09	0.12	0.35
Other livestock	0.09	0.03	0.10	0.09
Crops	-0.06	0.33	0.02	0.27
Other	0.42	0.59	0.36	0.20
Gain (loss) on capital livestock sales ¹	0.11	-0.15	0.08	-0.49
Total revenues	19.04	19.61	19.81	19.04
EXPENSES (per cwt. milk sold)				
Personnel	2.28	2.64	1.86	1.91
Purchased feed	7.89	7.37	8.44	6.22
Crops	0.11	0.63	0.02	0.57
Machinery	0.89	1.10	0.53	0.72
Livestock	2.09	1.45	1.46	0.98
Milk marketing	1.14	1.05	1.06	1.10
Real estate	0.56	0.73	0.47	0.71
Interest	0.72	0.76	0.87	0.56
Other	0.65	0.98	0.97	0.64
Machinery depreciation	0.40	0.61	0.36	0.47
Building/improvement depreciation	0.14	0.34	0.16	0.13
Livestock depreciation	0.52	0.69	1.49	1.05
Total expenses	17.40	18.36	17.70	15.06
Net farm income from operations ² (per cwt. milk sold)	1.64	1.24	2.11	3.97
Number of cows	855	1,188	244	785
Number of heifers	441	735	73	103
Milk sold per cow (pounds)	18,325	17,365	13,629	15,323
Cull rate ³	36%	40%	37%	42%
Cows per full-time equivalent ⁴	53	54	49	78
Milk sold per full-time equivalent ⁴ (mil. pounds)	0.95	0.91	0.66	1.17
Total revenues per cow	\$3,480	\$3,395	\$2,694	\$2,911
Total expenses per cow	\$3,184	\$3,162	\$2,399	\$2,319
Net farm income from operations ² per cow	\$296	\$233	\$295	\$591
Average total assets ⁵ per cow	\$3,547	\$5,277	\$3,534	\$2,892
Average total liabilities ⁵ per cow	\$1,585	\$1,675	\$1,450	\$1,169
Rate of return on assets ⁶	8%	6%	4%	25%
Operating profit margin ⁷	9%	7%	5%	20%
Asset turnover ratio ⁸	1.09	0.80	1.02	1.14

¹The gain (loss) on capital livestock sales was determined by comparing the year-end capital livestock inventory value to the beginning, adjusting for purchases, sales, non-cash livestock transfers, and depreciation.

²Net farm income from operations was computed as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid management and capital.

³Cull rate was determined by dividing the number of cows that died or were sold by the average number of cows.

⁴A full-time equivalent was equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.

⁵Balance sheet information computed as average between beginning and ending values for year divided by average number of cows.

⁶Rate of return on assets was calculated by adding interest expense to net farm income from operations, subtracting a \$50,000 charge for unpaid management, dividing the remainder by ending total assets.

⁷The operating profit margin was determined by adding interest expense to net farm income from operations, subtracting a \$50,000 charge for unpaid management, dividing the remainder by gross revenues.

⁸The asset turnover ratio was calculated by dividing gross revenues by average total assets.