

The Dairy Business Analysis Project: Florida Milk Production Costs, 1997 ¹

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The Dairy Business Analysis Project (DBAP) was started in 1996 in an effort to improve the financial performance of participating dairies. This summary represents the third year data was collected from dairies. Participants submit financial data which are screened for completeness and validity. Each dairy receives a report detailing its unique strengths and constraints to financial performance. Specific areas of the business where performance is benchmarked to other Florida businesses include operating, financing, and investing activities. These benchmarks represent real and achievable levels of performance in Florida.

Accounting Features

This project uses accounting measures and assumptions as advised by the Farm Financial Standards Council ¹. The main feature of these assumptions is the use of accrual adjusted accounting procedures. Accrual adjusted accounting takes into account changes in inventory, prepaid expenses,

accounts receivable, and accounts payable. This results in farm profits that are linked to changes in the balance sheet of the business.

In this report, all revenues and expenses were accrual adjusted. This means that revenue and expense categories were free from any distortions that may have been caused by cash-basis accounting practiced by many participants. This also means that revenue or expenses may be calculated even though cash does not enter or leave the business. This was especially true for the revenue categories of cow sales, heifer/calf sales, and crop sales. Keep this in mind when interpreting the report.

Because accrual adjusted accounting takes into account changes in the balance sheet, it was possible to validate the financial performance measured for each dairy. The statement of cashflows reconciles the net cash flow of the business with beginning and ending cash balances that were reported for the year. The statement of owner's equity similarly matches

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1. This document is CIR1218, one of a series of the Animal Science Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date January 1, 1999. Revised October 2007. Reviewed January 2008. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.
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equity changes with beginning and ending equity balances. An imbalance suggested incomplete or incorrect information.

Included Dairies

This report includes financial information from 27 dairies. This sample was collected from voluntary participants and does not represent the average for Florida. These dairies were screened for completeness and validity of information. Each of the dairies used in this report had an owner's equity imbalance of less than 10% of beginning equity and a cash imbalance of less than 10% of total cash receipts. These dairies were also screened for unusual circumstances. Dairies in start-up or rapid expansion were excluded from this report.

Dairy Description

Table 1 lists descriptive information from DBAP dairies from 1995-1997. The first observation from this table is the increase in number of dairies from 11 in 1995 and 18 in 1996 to 27 in 1997. Accompanying the change in sample size was a variation in the types of dairy in the sample. As evident from Table 1, the average number of cows varied from 1,914, 1,048, and 1,502 total cows for 1995, 1996, and 1997 respectively. The number of heifers also varied substantially between years. Milk sold per cow dramatically increased in 1997 from previous years to an average of 17,014 pounds. All of these changes were due to differences in the sample and do not necessarily reflect dramatic changes for individual dairies.

Also apparent from Table 1 were differences in both revenues and expenses between years. The variation in milk price from 1995-1997 is evident as the 1997 average of \$16.87 per cwt. milk sold was \$1.32 below the \$18.19 price measured in 1996. Cow sales also decreased in 1997 to \$0.79 per cwt. milk sold from \$1.05 in 1996. Crop revenue increased to \$0.17 per cwt. milk sold from \$0.05 in 1996, mainly due to an increase in inventory for these farms. All of these factors drove total revenues in 1997 to \$18.31 per cwt. milk sold, down \$1.62 from 1996.

On the expense side, several differences were measured between years. Purchased feed expense

decreased to \$8.37 per cwt. milk sold, down from \$8.62 in 1996 and above the \$7.41 in 1995. Livestock and depreciation expenses were also down although this may be due to differences in the dairies sampled. Personnel, crops, machinery, milk marketing and real estate expenses all increased from 1996, reflecting different dairies in the sample and are substantial considering the large increase in pounds milk sold per cow from 1996 to 1997. Depreciation expense decreased to \$0.63 per cwt. milk sold from \$0.73 in 1996. These changes drove total expenses to \$18.02 per cwt. milk sold, \$0.23 higher than in 1996.

The differences in both revenues and expenses drove net farm income from operations² to \$0.29 per cwt. milk sold, down substantially from \$2.14 in 1996. While it is clear that differences in milk price between years was a large factor in determining differences in net farm income from operations, it was not clear how differences in the sample affected profits across years.

Comparison of dairies by profit group

Dairies were sorted into groups on the basis of net farm income from operations per cwt. milk sold. Revenues and expenses were averaged within the upper 25%, all, and lower 25% groups. Net farm income from operations is a good measure of the operating efficiency of the business for two reasons. First, net farm income from operations does not include the appreciation (i.e., gain in value) of equipment, buildings, or real estate. Additionally, net farm income from operations does not include the gain or loss on the sale of these assets. Because of these properties, it is somewhat independent of large value changes or liquidation of business assets. Moreover, adjusting net farm income from operations by pounds milk sold allows businesses to be directly comparable regardless of business size.

Several differences in revenues per cwt. milk sold between profit groups are evident in Table 2. Total revenues for the upper 25% group were \$19.77 per cwt. milk sold, \$1.46 above the average and \$1.71 above the lower 25% group. Milk price only accounted for \$0.59 per cwt. milk sold of this difference. The other substantial difference was in

crops where the upper 25% group had \$0.90 per cwt. milk sold in crop revenues while the lower group had \$-0.05, a net difference of \$0.95. This was largely due to accrual inventory adjustments and reflects differences in farm productivity during 1997. Other revenue categories were comparable among groups.

The profit groups also differed substantially in expenses. Table 3 lists expense categories by profit group. The upper 25% group was lower than both the average and the lower 25% group in personnel, machinery, livestock, milk marketing, and other expenses. Purchased feed expense of \$8.40 per cwt. milk sold was slightly above the average for all dairies of \$8.37 but below the \$9.01 of the lower 25% group. Crops, machinery, and real estate expenses were all above the average and the lower 25% group. However, total expenses of \$17.63 per cwt. milk sold were \$2.69 per cwt. milk sold or 13% below the lower 25% group.

Differences in both revenues and expenses drove a \$4.41 per cwt. milk sold net difference in net farm income from operations between the upper and lower 25% groups (Table 3). Differences in size and profitability are detailed in Table 4 . While the upper 25% group sold more pounds milk per cow than either the average or the lower 25% group, herd size of 1,428 was below both the average for all dairies (1,502) and of the lower 25% group (2,258).

While not surprising, the upper 25% group had less invested capital and used it more efficiently. Total assets of \$3,872 per cow drove the asset turnover ratio ³ to 0.94, which was well above the average both for all dairies (0.84) and the lower 25% group (0.61). This signifies superior capital efficiency. When combined with the superior operating profit margin ⁴ of 0.11, the upper 25% group had an overall rate of return on assets ⁵ of 9%, 15 percentage points above the -6% of the lower 25% group. Liabilities were also substantially less for the upper 25% group with \$1,366 per cow yearly average compared to the \$2,287 for the lower 25% group (Table 4).

While these results may imply that a certain management or production style was more profitable than others, there was wide variation among dairies within each group. The most common characteristic

among the upper 25% group was the ability to control expenses. The upper 25% was also more efficient at using invested capital. However, generalizing from these observations is risky considering both the small sample size and the large variation among dairies.

Heifer Raising

Heifer-raising activities were a major enterprise for a large portion of the project participants. For this comparison, a heifer raiser was determined by having at least 30% of their cow inventory as heifers. Table 5 lists expense categories by heifer-raising groups. Several differences among expense categories are evident when looking at the results.

The first observation is that the heifer raisers had total revenues of \$18.42 per cwt. milk sold, \$0.59 higher than the \$17.83 of the nonraisers. This was due to the fact that a majority of the heifer raisers also had active cropping enterprises that contributed inventory growth in 1997. This makes understanding the differences between heifer-raising groups difficult because of the confounding effect of cropping activity on some of the expense categories. Keep this in mind when examining the rest of the data.

By continuing to examine Table 5 , it is evident that nonraisers had advantages in some expense categories. Nonraisers were lower in personnel, feed, machinery, other, and depreciation expenses, although it is unclear how this was related to cropping activities. Overall, nonraisers raisers had total expenses of \$17.48 per cwt. milk sold, \$0.66 lower than the \$18.14 of the nonraisers (Table 5).

Livestock expense of \$4.45 per cwt. milk sold for the nonraisers was well above the heifer raisers at \$1.98 (Table 5). Table 6 explains further the difference in livestock expense. Replacement expense was a major portion of livestock expenses. Nonraisers raisers had an adjusted replacement expense ⁶ of \$3.21 per cwt. milk sold, \$2.46 higher than the \$0.75 of the heifer raisers ⁷. This was partially driven by the nonraisers having a higher cull rate (0.46) than the heifer raisers (0.40) (Table 6). The nonraisers also had milk sold per cow of 15,143 pounds which was 2,296 pounds lower than the 17,439 average for the heifer raisers (Table 6). This

may have driven replacement expenses higher on a per cwt. basis.

Another substantial difference between the groups was in personnel expenses. Total personnel expense for the nonraisers was \$1.94 per cwt. milk sold which was \$0.63 lower than the \$2.57 of the heifer raising group (Table 5). This was driven by nonraisers having 84 cows per FTE, well above the 47 for the heifer raisers (Table 6). While heifer-raising activity contributed to this difference, cropping activities were confounded in this number so it is difficult to draw meaningful conclusions on labor efficiency based on these data. It should, however, draw attention to the large variation in labor efficiency that was present on these dairies.

Purchased feed expense also differed between groups with the heifer raisers \$1.33 per cwt. milk sold higher than the nonraisers (Table 5). Surely part of this difference was due to heifer raising activities. However, with the heifer raisers having milk sold per cow 2,296 pounds higher than the nonraisers (Table 6), this difference may have been caused by differences in milk production level. Moreover, the effect of cropping activities on purchased feed expense for the heifer raisers is not clear.

What is also interesting is comparing the groups on their use of invested capital. Total assets⁸ for the nonraisers were \$3,364 per cow, \$999 lower than the \$4,363 of the heifer raisers (Table 6). The nonraisers also used their invested capital more efficiently with an asset turnover ratio of 0.95, above the 0.81 of the heifer raisers (Table 6). This tended to drive the rate of return on assets to 3% for the nonraisers, which was slightly above the 2% of the heifer raisers. The operating profit margin of 2% was the same for the two groups (Table 6) which corresponds to comparable levels of net farm income from operations per cwt. milk sold (Table 5). However, there was considerable variation in these numbers with highly profitable and unprofitable dairies in both groups.

Regions

Another factor that caused dairies to vary was the region in which they were located. For this comparison, dairies were sorted into four regions⁹

including dairies in south Alabama and Georgia. Figure 1 shows the approximate regions in Florida that were used in this summary. Table 7 lists expenses and Table 8 lists descriptive statistics by region.

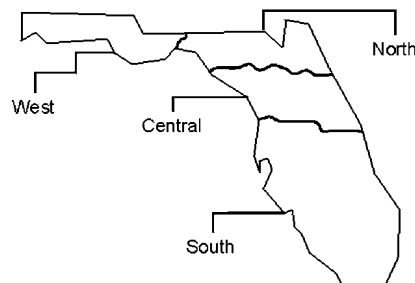


Figure 1.

The South region had the highest net farm income from operations of all regions at \$1.32 per cwt. milk sold. This was due to total expenses of \$17.08 per cwt. milk sold, lowest among regions, and relatively high total revenues of \$18.40 (Table 7). Specific expense categories where the South demonstrated superior control were personnel (\$2.08 per cwt. milk sold), machinery (\$0.67 per cwt. milk sold), milk marketing (\$0.97 per cwt. milk sold), other (\$1.06 per cwt. milk sold), and depreciation (\$0.51 per cwt. milk sold) (Table 7). The 15,746 pounds milk sold per cow was lowest among regions (Table 7), accentuating the cost control ability of these dairies in the South region. Herd size of 2,352 cows was also highest among regions.

The West region was next in terms of net farm income from operations with \$0.72 per cwt. milk sold (Table 7). This was driven by total revenues of \$19.14 per cwt. milk sold, the highest among the regions (Table 7). There was a great deal of variation in the type of activities for this region, more so than for the other regions. Some of these dairies tended to have cropping activities, which boosted total revenues higher for the region. On average, however, purchased feed expense was lowest among all regions at \$6.96 per cwt. milk sold. Livestock expense was also lowest among regions at \$1.54 per cwt. milk sold (Table 7), driven by a low cull rate of 0.36 that lowered adjusted replacement expense to \$0.48 (Table 8). There were several expense control problems, however as personnel (\$2.85 per cwt. milk sold), machinery (\$1.46 per cwt. milk

sold), real estate (\$0.66 per cwt. milk sold), other (\$1.96 per cwt. milk sold), and depreciation (\$0.83 per cwt. milk sold) were highest among the regions (Table 7). Also highest among regions was the \$5,275 total assets per cow which limited the asset turnover ratio to 0.73.

The North and Central regions were both unprofitable, on average, as expense control constrained profits for most of these dairies. The North region had net farm income from operations of \$-0.41 per cwt. milk sold (Table 7). This was driven by total expenses of \$18.78 per cwt. milk sold, highest among regions. Livestock expense was particularly high, as \$3.34 per cwt. milk sold was highest among regions (Table 7) driven mainly by the highest cull rate among regions (0.46, Table 8) and an adjusted replacement expense of \$2.16 per cwt. milk sold (Table 8).

The Central region was the least profitable of all the regions as net farm income from operations was \$-0.79 per cwt. milk sold. This was partially driven by the lowest total revenues among groups of \$17.74 per cwt. milk sold (Table 7), largely due to negative inventory adjustments to cow and heifer sales. High expenses also constrained profits for this region. Purchased feed expense of \$9.62 per cwt. milk sold (Table 7) was the highest among regions. Comparably, milk sold per cow of 19,141 was highest among regions, accentuating the problem with feed expense control for this region. Even though the high milk production level of the Central region tended to dilute the relatively fixed expenses of real estate (\$0.46 per cwt. milk sold) and depreciation expenses (\$0.63 per cwt. milk sold), the high feed expense overwhelmed any expense savings on a per cwt. basis.

Milking Frequency

The daily frequency of milking affects the overall financial performance of a dairy. Dairies were separated into groups on the basis of the milking frequency. Table 9 lists expenses while Table 10 lists descriptive statistics by milking-frequency groups.

What can be seen from these results is that while the 3X group had 17,614 pounds milk sold, above the

16,342 pounds of the 2X group, there were few definite differences that could be directly attributed to milking frequency. The 2X group had net farm income from operations of \$0.50 per cwt. milk sold, \$0.56 higher than the \$-0.06 loss of the 3X group. While this was a substantial difference in operating efficiency, the driving factors may not have been due to milking frequency. For instance, purchased feed expense of \$7.99 per cwt. milk sold for the 2X group was below the \$8.79 of the 3X group (Table 9). Conversely, livestock expense of \$2.13 per cwt. milk sold for the 3X group was lower than the \$2.74 of the 2X group (Table 9). However, these differences may have been caused by the 2X group having 53% heifers per cow versus the 62% of the 3X group (Table 10) suggesting that the 3X group, on average, raised more heifers. Cropping activity was also confounded with these numbers as total revenues for the 2X group of \$18.67 per cwt. milk sold were \$0.91 above the \$17.76 of the 3X group (Table 9), mainly driven by inventory increases adjusting accrual revenues. Crop expense of \$0.46 for the 2X group was also considerably higher than the \$0.16 of the 3X group (Table 9), supporting this observation. Profitability, as measured by the rate of return on assets, was not substantially different between the two groups as assets per cow and the asset turnover ratio were comparable.

Milk sold per cow

Milk production per cow is an important factor which affects the financial performance of the dairy business. To examine a possible relationship between production level and overall farm profitability, dairies were separated into four groups based on pounds milk sold per cow. Table 11 lists expenses and Table 12 lists descriptive statistics by milk sold per cow groups.

The group with the highest net farm income per cwt. milk sold was the 15,000-17,000 pound group at \$0.60 (Table 11). This group had both the highest total revenues of all milk production groups at \$18.88 per cwt. milk sold and the highest total expenses of \$18.28 (Table 11). This was due to accrual inventory adjustments for cropping activities and did not reflect decisions due to production level. This group (15,000-17,000 pounds milk sold per cow) had

the highest total expenses among groups at \$18.28 per cwt. milk sold which raises questions about the cost control ability independent of crop activities boosting revenues.

The group of dairies with the next highest profitability was the 17,000-19,000 group with \$0.21 net farm income from operations per cwt. milk sold. Even though total revenues were the lowest of all groups at \$17.96 per cwt. milk sold, this group had the best cost control with total expenses at \$17.75, \$0.53 (3%) lower than the 15,000-17,000 group. This was due to the lowest purchased feed expense among groups at \$7.28 per cwt. milk sold, \$2.54 lower (26%) than the >19,000 group which was highest at \$9.82. However, the highest expense categories among the groups were personnel, machinery, real estate, and depreciation expenses, suggesting that other enterprise activities influenced expense control (Table 11). In fact, total assets per cow were highest among groups at \$4,995, which drove the lowest asset turnover ratio (0.73, Table 12), although there was a great deal of variation among farms.

The <15,000 group had an average net farm income from operations of \$0.16 per cwt. milk sold (Table 11). This group was highest in the expense categories of livestock (\$2.82 per cwt. milk sold) and other (\$1.83 per cwt. milk sold), while lowest for personnel expense (\$1.76 per cwt. milk sold) among the milk sold per cow groups (Table 11). While second highest among groups in total expenses at \$18.14 per cwt. milk sold (Table 11), this group had the least invested in the business with \$3,022 total assets per cow (Table 12). The operating profit margin of 0.02 was also comparable to the other groups although there was wide variation within this group.

The group with highest overall milk sold per cow (>19,000 group) had the lowest net farm income per cwt. milk sold at \$0.14 (Table 11). While revenues were comparable to the other groups at \$18.11 per cwt. milk sold, this group had the highest purchased feed expense at \$9.82 per cwt. milk sold, 35% higher than the \$7.28 of the 17,000-19,000 group (Table 11). Livestock expenses, however, were lowest among groups at \$1.69 per cwt. milk sold (Table 11). This group also had the highest overall asset turnover ratio

at 1.02 (Table 12), suggesting high efficiency of capital use.

While many conclusions about milk production level cannot be drawn from this data, general observations can be made about the financial performance of these dairies in relationship to milk sold per cow. First, pounds milk sold per cow, while an important factor, was only one driver of financial performance among several other activities such as cropping and heifer raising. It is apparent from this data that some real extremes in purchased feed expense exist between the groups, suggesting a wide variation in feed conversion efficiency for the dairies in this data set. Another observation, supporting the previous, is that the underlying capital base (i.e., what the business has invested in) often influences the profitability of the business, not milk per cow alone. This was evident by examining differences in the assets per cow and the asset turnover ratio. In summary, milk production level was just one of several business decisions influencing profitability, so it is difficult to generalize farm profitability in terms of one measure of productivity.

Herd Size

Herd size is another factor that affects the financial performance of dairies. Dairies were sorted into groups based on the average herd size for 1997. Table 13 lists expenses and Table 14 lists descriptive statistics by herd size. While there were some subtle differences in overall financial performance, it is unclear whether herd size influenced performance.

The >2,000 herd-size group had the highest net farm income from operations at \$1.10 per cwt. milk sold (Table 13). This was driven by total revenues of \$18.89 per cwt. milk sold, which was highest among herd-size groups, and total expenses of \$17.79 which was second lowest among groups (Table 13). Overall cost control was best for this group as the 0.07 operating profit margin was highest among all herd-size groups (Table 14). While this group was not exceptionally low for any particular expense category, the group was highest among groups only for livestock expense (\$2.83 per cwt. milk sold, Table 13). Perhaps the biggest factor explaining the difference in performance for the >2,000 herd-size

group is that the dairies in this group received a higher price for their milk and had lower hauling rates as evident by marketing expense of \$0.94 per cwt. milk sold and total revenues of \$18.89 (Table 13).

The 1,000-2,000 herd-size group had the lowest overall total expenses of \$17.72 per cwt. milk sold. Specifically, this group had the lowest personnel (\$2.17 per cwt. milk sold), machinery (\$0.63 per cwt. milk sold), and other expenses (\$1.10 per cwt. milk sold, Table 13). Driving these differences in expenses was that this group had total assets of \$3,312 per cow, the lowest among herd-size groups (Table 14). These dairies raised fewer heifers as a percentage of herd size with 0.48 heifers per cow ¹⁰ as opposed to 0.57, 0.60, and 0.78 heifers per cow for the <500, >2,000, and the 500-1,000 groups respectfully (Table 14). This group, on average, also had less active cropping activities.

The <500 group had net farm income from operations of \$0.66 per cwt. milk sold, second highest among the herd-size groups (Table 13). However, when adjusting profits with a \$50,000 uniform charge for management for all dairies, this group had an operating profit margin of 0.00 (Table 13). This group was also the most variable in terms of financial performance, with both highly profitable and unprofitable dairies within the same group. With high variation in the information, it is difficult to make generalizations about this group.

The 500-1,000 group had net farm income from operations of \$-0.91 per cwt. milk sold, the lowest among herd-size groups (Table 13). This was due to the highest total expenses of \$18.62 per cwt. milk sold. High total expenses were not driven by any particular expense category, although personnel expenses of \$2.87 per cwt. milk sold were the highest among the groups (Table 13). Instead, the most noticeable feature of this group was the \$17.72 per cwt. milk sold in total revenues (Table 13), the lowest among the groups. This was mostly driven by inventory decreases in cows, heifers, and crops. On average, the dairies in this group suffered from overall productivity problems, which drove profits negative.

In summary, the effect of herd size, if any, is difficult to see in these data. Most differences among dairies were due to expense control, enterprise activities, and overall farm productivity.

Labor Efficiency

In order to investigate the variation in labor efficiency, dairies were separated into groups on the basis of pounds milk sold per full-time equivalent ¹¹ (FTE). Table 15 lists selected statistics by labor-efficiency groups. While some differences are expected among groups, several differences may be less obvious.

First, the high labor-efficiency group (>1,000,000 pounds milk sold per FTE) sold 104% more milk per FTE than the low group (<700,000 pounds milk sold per FTE), even though pounds milk sold per cow was only 6% higher at 16,618 (Table 15). The main cause for this increase in efficiency was the large difference in cows per FTE with the high labor-efficiency group at 74, well above the 48 cows per FTE of the middle group (700,000-1,000,000 pounds milk sold per FTE) and the 38 of the low group (Table 15).

Another observation is the difference in personnel expenses per FTE among groups. The high and medium labor-efficiency groups are comparable at \$22,684 and \$22,997 personnel expense per FTE while the low group was considerably lower at \$16,028 (Table 15). Some of this expense difference was caused by the low efficiency group using more operator FTEs as a portion of total FTEs. Even with this expense 'savings' of the operator working for the business, personnel expenses of \$2.82 per cwt. milk sold were \$0.89 above the high group at \$1.93 (Table 15), suggesting labor efficiency problems for this group.

The most profitable group of dairies, however, was the medium labor-efficiency group with net farm income from operations of \$0.94 per cwt. milk sold (Table 15). This was driven by total expenses of \$17.36 per cwt. milk sold, lowest among groups and \$0.38 lower than the high group (Table 15). While certainly not the case for every dairy within these groups, this observation raises questions about what level of labor efficiency is optimal.

Returns to Capital

The Florida dairy business is a capital intensive industry that requires a good deal of investment in order to generate a profit. A great deal of variation existed, however, in the rates of return on assets for participating dairies. To understand this difference, dairies were sorted into groups by the rate of return on assets. Table 16 lists selected performance information by profitability group.

One of the first things to understand when interpreting this information is that the rate of return on assets is a product between the operating profit margin and the asset turnover ratio. The operating profit margin measures operating efficiency or how effective the business was at generating profits (i.e., net farm income from operations) from its activities. The asset turnover ratio measures capital efficiency or how effective the assets of the business were at generating revenues. Because of this relationship, both the operating and capital efficiency of the business affect profitability as measured by the rate of return on assets. This relationship is evident by looking at the data in Table 16.

The first observation from Table 16 is that the average number of cows was comparable among the three profitability groups. A low of 1,307 cows for the medium profitability group (1%-9%) and a high of 1,654 for the high profitability group (>9%) (Table 16) suggests that herd size was not a dominant factor causing profitability differences.

The operating profit margin varied dramatically between groups. The operating profit margin for the high group of 0.12 was 18 percentage points above the -0.06 of the low profitability group (Table 16). This was driven by differences in net farm income per cwt. milk sold with the high profitability group making \$1.94 while the low group lost \$1.05, a \$2.99 net difference (Table 16). Driving this was the fact that the high profitability group had the lowest total expenses of \$17.09 per cwt. milk sold and highest total revenues of \$19.03 per cwt. milk sold (Table 16). It is evident that the high profitability group had the best operating efficiency among profitability groups.

There was also a large difference in capital efficiency among profitability groups. The effect of capital efficiency on profitability was particularly evident between the high and medium profitability groups. While the medium profitability group had a respectable operating profit margin of 0.08, the rate of return on assets of 0.06 was 7 points below the 0.13 of the high profitability group (Table 16). The asset turnover ratio for the high profitability group was 1.08, 0.21 points above the 0.87 of the medium profitability group, a 24% difference (Table 16). This was driven by higher total revenues, milk sold per cow, and total assets per cow of \$3,282 that were 18% lower than the \$4,005 of the medium profitability group (Table 16). This suggests that the high profitability group used fewer assets more efficiently, boosting the rate of return on assets above the operating profit margin.

In summary, both the operating and capital efficiency affected the profitability of the dairies in this sample. In order to achieve high levels of profitability, a business needs to have high levels of both.

Balance Sheet

In addition to financial performance information, the project also collected balance sheet information detailing asset, liability, and equity data. Table 17 lists a balance sheet for all of the dairies included in this summary, adjusted for herd size. Table 18 lists the same information but is an average of the upper 25% dairies by net farm income from operations per cwt. milk sold. Several observations from the balance sheets of the two groups provide insight into the difference in financial performance.

The first observation to make clear about these balance sheets is that they were adjusted by herd size with the average number of cows as the denominator for each category. This has several implications when interpreting this information. The first is that this methodology recognizes cows as the productive assets on the dairy that generate revenues and subsequent profits. While other assets are important to make the dairy business function, cows are the common denominator among all dairies. Moreover, this methodology allows direct comparison of businesses of different sizes.

The first comparison to make is how the asset composition differed among groups. The upper 25% group (Table 18) had less invested, on a per-cow basis, in machinery and real estate. Comparing December 31 values, the upper 25% group had \$564 per cow invested in machinery (Table 18), \$95 less than the DBAP average at \$659 (Table 17). A similar difference existed in real estate and buildings on December 31 with the upper 25% group having \$1,188 per cow (Table 18), \$414 less than the DBAP average of \$1,602 (Table 17). Although there was considerable variation among the groups, it was apparent that the upper 25% group had less invested, on a per-cow basis, in real estate, buildings, and machinery.

Changes in assets were also apparent during the year. Total assets for the upper 25% group increased by \$237 per cow (6%) during 1997 (Table 18). This was driven by a \$305 per cow increase in net worth and a \$69 decrease in total liabilities (5%). The average increase in total assets was \$98 per cow (2%), which was driven by a \$51 increase in total liabilities (4%), \$31 increase in paid-in-capital¹² (23%), and a \$17 increase in net worth (<1%) (Table 17). Comparing the two groups, the upper 25% simultaneously grew the balance sheet with profits and reduced liabilities. Conversely, on average, there was a considerable increase in liabilities and paid-in-capital, with a small increase in net worth.

The previous changes are detailed by looking at specific categories on the balance sheet. The upper 25% group increased feed and supplies by \$16 per cow and accounts receivable by \$37 (Table 18). The reverse was true for the average group as they had decreases in feed and supplies of \$9 per cow (11%) and accounts receivable of \$8 (4%) (Table 17). These changes are signs of greater farm productivity by the upper 25% group and influenced higher profitability.

There were also differences among groups in how liability categories changed during the year. Accounts payable decreased by \$45 per cow (78%) for the upper 25% group (Table 18) while they increased by \$36 (51%) on average for all dairies (Table 17). Similarly, the upper 25% had minimal

changes in operating notes (Table 18) while they increased by \$14 per cow (9%) on average (Table 17). However, the upper 25% group did have a greater portion of liabilities in operating notes (Table 18). It is evident that the upper 25% group reduced liabilities during 1997, which were \$161 per cow less on December 31 than average. It also appeared that the upper 25% group used operating notes in lieu of accounts payable to finance operating activities.

Notes

1. Farm Financial Standards Council. 1995. Financial guidelines for agricultural producers. Exposure draft.
2. Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.
3. The asset turnover ratio was calculated as total revenues divided by the average of total assets for the beginning and end of 1997.
4. The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.
5. The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average of total assets for the beginning and end of 1997.
6. Adjusted replacement expense was calculated as expensed livestock purchases plus livestock depreciation plus a gain or loss on sale of capitalized livestock.
7. Because this number includes depreciation and gain/loss on sale, it is not directly comparable to the livestock expense category. Livestock expense only includes expensed replacement purchases.
8. Asset information was calculated as the average between the beginning and end of 1997.
9. Regions were defined as follows: 'West' included Gulf, Calhoun, and Jackson and all counties

west including dairies in south Alabama and southern Georgia. 'North' included Taylor, Lafayette, Suwannee, Columbia, Union, Bradford, Clay, and St. Johns and all counties north. 'Central' included Citrus, Sumter, Lake, Seminole, and counties north. The 'South' region included all dairies south of the 'Central' line.

10. Calculated as the average number of heifers divided by the average number of cows.

11. A full time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.

12. Paid-in-capital included owner's investments, retained earnings, and any other investments in the business not accounted for elsewhere on the balance sheet.

Table 1.

Table 1. Selected statistics from participating dairies for 1995, 1996, and 1997.			
	1995	1996	1997
Number of dairies	11	18	27
Number of cows	1,914	1,048	1,502
Number of heifers	1,238	508	883
Milk sold per cow (pounds)	15,853	15,887	17,014
Revenues (per cwt. milk sold)			
Milk sales	15.51	18.19	16.87
Cow sales	0.75	1.05	0.79
Calf sales	0.18	0.31	0.11
Other livestock	0.04	0.09	0.08
Crops	0.26	0.05	0.17
Government receipts	0.01	0.04	0.03
Custom work	0.00	0.07	0.04
Other receipts	0.29	0.13	0.21
Total revenues	17.03	19.93	18.31
Expenses (per cwt. milk sold)			
Personnel	2.79	2.38	2.45
Purchased feed	7.41	8.62	8.37
Crops	0.31	0.24	0.33
Machinery	0.79	0.70	0.86
Livestock	2.08	2.51	2.44
Marketing	1.32	0.94	1.06
Real estate	0.48	0.44	0.50
Other	1.63	1.22	1.39
Depreciation	1.71	0.73	0.63
Total expenses	18.51	17.79	18.02
Net farm income from operations ¹ (per cwt. milk sold)	-1.48	2.14	0.29

¹Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 2.

Table 2. Revenues by profit group for 1997.			
Category (per cwt. milk sold)	Upper 25%	All Dairies	Lower 25%
Number of dairies	7	27	7
Milk sales	17.17	16.87	16.59
Cow sales	1.01	0.79	0.95
Calf sales	-0.02	0.11	0.09
Other livestock	0.18	0.08	0.14
Crops	0.90	0.17	-0.05
Government receipts	0.04	0.03	0.00
Custom work	0.16	0.04	0.00
Other receipts	0.33	0.22	0.33
Total revenues	19.77	18.31	18.06

Table 3.

Table 3. Expenses by profit group for 1997.			
Category (per cwt. milk sold)	Upper 25%	All Dairies	Lower 25%
Number of dairies	7	27	7
Total revenues	19.77	18.31	18.06
Personnel	2.34	2.45	3.05
Purchased feed	8.40	8.37	9.01
Crops	0.55	0.33	0.42
Machinery	0.83	0.86	1.09
Livestock	2.13	2.44	2.72
Marketing	0.96	1.06	1.05
Real estate	0.56	0.50	0.37
Other	1.24	1.39	1.84
Depreciation	0.63	0.63	0.78
Total expenses	17.63	18.02	20.32
Net farm income from operations ¹	2.15	0.29	-2.26

¹Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 4.

Table 4. Descriptive statistics by profit group for 1997.			
Category	Upper 25%	All Dairies	Lower 25%
Number of cows	1,428	1,502	2,258
Number of heifers	928	883	1,364
Milk sold per cow (pounds)	17,053	17,014	16,614
Cull rate	0.41	0.41	0.46
Assets per cow ¹	3,872	4,178	5,461
Liabilities per cow ²	1,366	1,467	2,287
Rate of return on assets ³	0.09	0.03	-0.06
Operating profit margin ⁴	0.11	0.02	-0.11
Asset turnover ratio ⁵	0.94	0.84	0.61
<p>¹Assets per cow were computed as the average between beginning and end of year divided by the average number of cows.²Liabilities per cow were computed as the average between beginning and end of year divided by the average number of cows.</p> <p>³The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average of total assets for the beginning and end of 1997.</p> <p>⁴The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.</p> <p>⁵The asset turnover ratio was calculated as total revenues divided by the average of total assets for the beginning and end of 1997.</p>			

Table 5.

Table 5. Expenses by heifer-raising group¹ for 1997.		
Category (per cwt. milk sold)	Nonraisers	Heifer raisers
Number of dairies	5	22
Total revenues	17.83	18.42
Personnel	1.94	2.57
Purchased feed	7.28	8.61
Crops	0.28	0.34
Machinery	0.62	0.91
Livestock	4.45	1.98
Marketing	0.90	1.09
Real estate	0.51	0.50

Table 5.

Other	1.05	1.47
Depreciation	0.45	0.67
Total expenses	17.48	18.14
Net farm income from operations ²	0.35	0.27

¹Heifer raisers were determined as having at least 30% of their cow inventory as heifers. ²Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 6.

Table 6. Descriptive statistics by heifer-raising group¹ for 1997.		
Category	Nonraisers	Heifer raisers
Number of cows	1,317	1,544
Numbers of heifers	163	1,047
Milk sold per cow (pounds)	15,143	17,439
Cull rate	0.46	0.40
Cows per FTE ²	84	47
Assets per cow ³	3,364	4,363
Liabilities per cow ⁴	1,434	1,474
Heifer revenues (per cwt. milk sold)	0.07	0.12
Adjusted replacement expense ⁵ (per cwt. milk sold)	3.21	0.75
Breeding expense (per cwt. milk sold)	0.01	0.13
Vet expense (per cwt. milk sold)	0.26	0.31
Rate of return on assets ⁶	0.03	0.03
Operating profit margin ⁷	0.02	0.02
Asset turnover ratio ⁸	0.95	0.81

Table 6.

¹Heifer raisers were determined as having at least 30% of their cow inventory as heifers.²A full time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.
³Assets per cow were computed as the average between beginning and end of year divided by the average number of cows.
⁴Liabilities per cow were computed as the average between beginning and end of year divided by the average number of cows.
⁵Adjusted replacement expense was calculated as expensed livestock purchases plus livestock depreciation plus a gain or loss on sale of capitalized livestock.
⁶The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average of total assets for the beginning and end of 1997.
⁷The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.
⁸The asset turnover ratio was calculated as total revenues divided by the average of total assets for the beginning and end of 1997.

Table 7.

Table 7. Expenses by region¹ for 1997.				
Category (per cwt. milk sold)	West	North	Central	South
Number of dairies	4	5	8	10
Total revenues	19.14	18.37	17.74	18.40
Personnel	2.85	2.49	2.70	2.08
Purchased feed	6.96	7.77	9.62	8.22
Crops	0.82	0.37	0.15	0.26
Machinery	1.46	0.86	0.79	0.67
Livestock	1.54	3.34	1.84	2.83
Marketing	1.34	1.10	0.99	0.97
Real Estate	0.66	0.48	0.46	0.48
Other	1.96	1.66	1.35	1.06
Depreciation	0.83	0.70	0.63	0.51
Total expenses	18.42	18.78	18.53	17.08
Net farm income from operations ²	0.72	-0.41	-0.79	1.32

¹Regions were defined as follows: 'West' included Gulf, Calhoun, and Jackson and all counties west including dairies in southern Alabama. 'North' included Taylor, Lafayette, Suwannee, Columbia, Union, Bradford, Clay, and St. Johns and all counties north including dairies in southern Georgia. 'Central' included Citrus, Sumter, Lake, and Seminole counties north. The 'South' region included all dairies south of the 'Central' line.²Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 8.

Table 8. Descriptive statistics by region ¹ for 1997.				
Category	West	North	Central	South
Number of cows	406	634	1,529	2,352
Number of heifers	310	388	1,000	1,266
Milk sold per cow (pounds)	16,646	16,441	19,141	15,746
Cull rate	0.36	0.45	0.38	0.44
Cows per FTE ²	38	51	51	62
Assets per cow ³	5,275	4,411	4,318	3,511
Liabilities per cow ⁴	1,674	1,883	1,572	1,091
Adjusted replacement expense ⁵ (per cwt. milk sold)	0.48	2.16	0.55	1.54
Breeding expense (per cwt. milk sold)	0.07	0.12	0.10	0.12
Vet expense (per cwt. milk sold)	0.16	0.16	0.40	0.36
Hauling expense (per cwt. milk sold)	1.11	0.80	0.68	0.65
Rate of return on assets ⁶	0.06	0.00	-0.01	0.06
Operating profit margin ⁷	0.06	-0.03	-0.03	0.07
Asset turnover ratio ⁸	0.73	0.72	0.89	0.90

¹Regions were defined as follows: 'West' included Gulf, Calhoun, and Jackson and all counties west including dairies in southern Alabama. 'North' included Taylor, Lafayette, Suwannee, Columbia, Union, Bradford, Clay, and St. Johns and all counties north including dairies in southern Georgia. 'Central' included Citrus, Sumter, Lake, and Seminole counties north. The 'South' region included all dairies south of the 'Central' line. ²A full time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.

³Assets per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁴Liabilities per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁵Adjusted replacement expense was calculated as expensed livestock purchases plus livestock depreciation plus a gain or loss on sale of capitalized livestock.

⁶The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average of total assets for the beginning and end of 1997.

⁷The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.

⁸The asset turnover ratio was calculated as total revenues divided by the average of total assets for the beginning and end of 1997.

Table 9.

Table 9. Expenses by milking frequency group¹ for 1997.		
Category (per cwt. milk sold)	2X	3X
Number of dairies	13	13
Total revenues	18.67	17.76
Personnel	2.48	2.39
Purchased feed	7.99	8.79
Crops	0.46	0.16
Machinery	0.82	0.89
Livestock	2.74	2.13
Marketing	1.03	1.08
Real estate	0.50	0.48
Other	1.39	1.40
Depreciation	0.76	0.50
Total expenses	18.16	17.83
Net farm income from operations ²	0.50	-0.06

¹Milking frequency groups were determined by the daily frequency of milking. If more than one frequency was used on a dairy by different barns or frequency during the year, the dairy was included in the '3X' group.

²Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 10.

Table 10. Descriptive statistics by milking frequency group¹ for 1997.		
Category	2X	3X
Number of cows	1,107	1,926
Number of heifers	584	1,193
Milk sold per cow (pounds)	16,342	17,614
Cull rate	0.44	0.39
Cows per FTE ²	59	48
Assets per cow ³	4,144	4,284
Liabilities per cow ⁴	1,491	1,431
Rate of return on assets ⁵	0.03	0.02

Table 10.

Operating profit margin ⁶	0.02	0.01
Asset turnover ratio ⁷	0.85	0.80

¹Milking-frequency groups were determined by the daily frequency of milking at each dairy. If more than one frequency was used on a dairy by different barns or frequency was switched during the year, the dairy was included in the '3X' group.²A full-time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.

³Assets per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁴Liabilities per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁵The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average of total assets for the beginning and end of 1997.

⁶The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.

⁷The asset turnover ratio was calculated as total revenues divided by the average total assets for the beginning and end of 1997.

Table 11.

Table 11. Expenses by milk sold per cow groups for 1997.				
Expense Category (per cwt. milk sold)	Groups			
	<15,000	15,000-17,000	17,000-19,000	>19,000
Number of dairies	7	7	9	4
Total revenues	18.31	18.88	17.96	18.11
Personnel	1.76	2.45	2.92	2.62
Purchased feed	8.73	8.57	7.28	9.82
Crops	0.13	0.50	0.48	0.05
Machinery	0.67	0.92	1.08	0.59
Livestock	2.82	2.68	2.29	1.69
Marketing	1.08	0.99	1.11	1.01
Real Estate	0.51	0.45	0.58	0.42
Other	1.83	1.20	1.27	1.21
Depreciation	0.62	0.53	0.74	0.56
Total expenses	18.14	18.28	17.75	17.96
Net farm income from operations ¹	0.16	0.60	0.21	0.14

¹Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 12.

Table 12. Descriptive statistics for milk sold per cow groups for 1997.				
	----- Groups -----			
Category	<15,000	15,000-17,000	17,000-19,000	>19,000
Number of cows	2,369	980	890	2,277
Number of heifers	1,130	558	578	1,707
Milk sold per cow (pounds)	13,522	16,329	18,073	21,940
Cull rate	0.44	0.45	0.37	0.38
Cows per FTE ¹	67	54	46	46
Assets per cow ²	3,022	4,419	4,995	3,942
Liabilities per cow ³	1,829	1,471	1,198	1,428
Rate of return on assets ⁴	0.01	0.03	0.03	0.03
Operating profit margin ⁵	0.02	0.02	0.01	0.02
Asset turnover ratio ⁶	0.93	0.73	0.77	1.02

¹A full-time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.

²Assets per cow were computed as the average between beginning and end of year divided by the average number of cows.

³Liabilities per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁴The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average of total assets for the beginning and end of 1997.

⁵The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.

⁶The asset turnover ratio was calculated as total revenues divided by the average of total assets for the beginning and end of 1997.

Table 13.

Table 13. Expenses by herd size for 1997.				
	----- Groups -----			
Category (per cwt. milk sold)	<500	500-1000	1000-2000	>2000
Number of dairies	8	7	7	5
Total revenues	18.56	17.72	18.20	18.89
Personnel	2.32	2.87	2.17	2.49
Purchased feed	8.45	8.08	8.52	8.41
Crops	0.31	0.44	0.37	0.15

Table 13.

Machinery	0.94	1.15	0.63	0.63
Livestock	2.15	2.15	2.77	2.83
Marketing	1.14	1.04	1.06	0.94
Real Estate	0.42	0.53	0.55	0.52
Other	1.66	1.56	1.10	1.12
Depreciation	0.51	0.80	0.55	0.69
Total expenses	17.90	18.62	17.72	17.79
Net farm income from operations ¹	0.66	-0.91	0.48	1.10

¹Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 14.

Table 14. Descriptive statistics by herd size for 1997.				
	----- Groups -----			
Category	<500	500-1000	1000-2000	>2000
Number of cows	303	724	1,434	4,605
Number of heifers	173	569	682	2,741
Milk sold per cow (pounds)	15,614	18,176	16,426	18,448
Cull rate	0.43	0.42	0.39	0.40
Cows per FTE ¹	43	43	73	56
Assets per cow ²	3,964	5,381	3,312	4,050
Liabilities per cow ³	1,431	1,639	1,383	1,398
Rate of return on assets ⁴	0.01	0.00	0.04	0.07
Operating profit margin ⁵	0.00	-0.03	0.05	0.07
Asset turnover ratio ⁶	0.81	0.69	0.99	0.89

Table 14.

¹A full-time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.²Assets per cow were computed as the average between beginning and end of year divided by the average number of cows.

³Liabilities per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁴The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average of total assets for the beginning and end of 1997.

⁵The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.

⁶The asset turnover ratio was calculated as total revenues divided by the average of total assets for the beginning and end of 1997.

Table 15.

Table 15. Selected statistics by labor-efficiency group.			
Category	Pounds milk sold per FTE¹		
	<700,000	700,000-1,000,000	>1,000,000
Number of dairies	9	9	9
Herd size	412	1,353	2,741
Milk sold per cow	15,678	18,745	16,618
Milk sold per FTE ¹	582,114	887,765	1,185,721
Cows per FTE ¹	38	48	74
Personnel expenses per FTE ¹	16,028	22,997	22,684
Personnel expenses per cwt. milk sold	2.82	2.61	1.93
Personnel expenses per cow	462	490	328
Total revenues (per cwt. milk sold)	18.72	18.30	17.91
Total expenses (per cwt. milk sold)	18.97	17.36	17.74
Net farm income from operations ² (per cwt. milk sold)	-0.25	0.94	0.17

¹A full-time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.²Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

Table 16.

Table 16. Selected financial performance statistics by profitability group for 1997.			
Category	Rate of return on assets¹		
	>1%	1%-9%	>9%
Number of dairies	13	9	5
Number of cows	1,578	1,307	1,654
Milk sold per cow (pounds)	16,424	17,255	18,113
Cull rate	0.44	0.40	0.37
Cows per FTE ²	53	51	60
Assets per cow ³	4,643	4,005	3,282
Liabilities per cow ⁴	1,673	1,263	1,296
Total revenues (per cwt. milk sold)	17.80	18.64	19.03
Total expenses (per cwt. milk sold)	18.85	17.34	17.09
Net farm income from operations ⁵ (per cwt. milk sold)	-1.05	1.31	1.94
Rate of return on assets ¹	-0.04	0.06	0.13
Operating profit margin ⁶	-0.06	0.08	0.12
Asset turnover ratio ⁷	0.72	0.87	1.08

¹The rate of return on assets was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by the average total assets from the beginning and end of 1997.²A full-time equivalent (FTE) is equal to one person working 230 hours per month. This accounts for all labor and management, paid or unpaid.

³Assets per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁴Liabilities per cow were computed as the average between beginning and end of year divided by the average number of cows.

⁵Net farm income from operations is defined as accrual adjusted revenues minus accrual adjusted expenses. This represents the return to unpaid labor, management, and capital.

⁶The operating profit margin was calculated as net farm income from operations minus a \$50,000 charge for management plus interest with the remainder divided by total revenues.

⁷The asset turnover ratio was calculated as total revenues divided by the average of total assets for the beginning and end of 1997.

Table 17.

Table 17. Average per-cow balance sheet for 1997.					
Assets	Jan 1	Dec 31	Liabilities & Net Worth	Jan 1	Dec 31
<u>Current</u>			<u>Current</u>		
Cash, checking & savings	16	(4)	Accounts payable	70	106
Feed & supplies	85	76	Operating debt	148	162
Accounts receivable	189	181	Short-term debt	0	0
Prepaid expenses	83	85	Current portion -- notes payable	159	59
Total current assets	373	339	Total current liabilities	377	326
<u>Non-current</u>			<u>Non-current</u>		
Dairy cows:			Non-current portion		
owned	1,059	1,073	-notes payable	1,056	1,160
leased	27	35	Financial leases		
Heifers	342	340	-cattle & machines	9	5
Bull and other livestock	24	22	Financial leases		
Machinery:			-real estate & buildings	0	0
owned	600	659	Total non-current liabilities	1,065	1,165
leased	5	5			
Farm Credit stock	7	9			
Other stocks & certificates	117	144			
Real estate and buildings:					
owned	1,573	1,602			
leased	1	1			
Total non-current assets	3,756	3,889	Total liabilities	1,441	1,492
			Paid-in-capital	135	166
			Net worth	2,553	2,570
Total assets	4,129	4,227	Total liabilities & owner's equity	4,129	4,227

Table 18.

Table 18. Per-cow balance sheet of upper 25% ¹ dairies for 1997.					
Assets	Jan 1	Dec 31	Liabilities & Net Worth	Jan 1	Dec 31
<u>Current</u>			<u>Current</u>		
Cash, checking & savings	5	(17)	Accounts payable	58	13
Feed & supplies	114	130	Operating debt	234	232
Accounts receivable	163	200	Short-term debt	0	0
Prepaid expenses	107	90	Current portion -- notes payable	155	34
Total current assets	388	403	Total current liabilities	447	280
<u>Non-current</u>			<u>Non-current</u>		
Dairy cows:			Non-current portion		
owned	1,081	1,109	-notes payable	951	1,051
leased	20	21	Financial leases		
Heifers	364	364	-cattle & machines	1	1
Bull and other livestock	34	38	Financial leases		
Machinery:			-real estate & buildings	0	0
owned	507	564	Total non-current liabilities	953	1,052
leased	0	3			
Farm Credit stock	5	7			
Other stocks & certificates	190	290			
Real estate and buildings:					
owned	1,161	1,188			
leased	4	5			
Total non-current assets	3,366	3,588	Total liabilities	1,400	1,331
			Paid-in-capital	0	0
			Net worth	2,354	2,659
Total assets	3,754	3,991	Total liabilities & owner's equity	3,754	3,991

¹Upper 25% based on net farm income from operations per cwt. milk sold.