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Integrating production and financial records: One of the many ways we do it in the dairy industry

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The focus of a high quality consulting service to dairies (and I suspect swine operations) is to maximize profit by increasing revenues and decreasing costs. It sounds simple; however, we all know it isn't. Most businesses measure efficiency and manage profit by maintaining a record of the material used by a production unit to create a unit of product. Unfortunately, in the dairy industry, these records are typically prepared annually or quarterly; this reduces the utility of these records for observing and making timely decisions. The data is old relative to current management and averages numerous management changes and production subunits, thus missing changes in performance. For dairy management decisions and evaluations we have started monitoring the production information on a daily basis.

An integral part of the management service we provide the dairy industry is an information management system (Feed Managerial Accounting/Nutrition, or FeedMAN) which links units of production (hundred weights of milk) with feed costs and other fixed costs on a daily basis. The information from this system allows us to determine the impact on profitability from feed ingredient changes, feed handling and delivery changes, cow density levels, and other housing or health management changes. The information is available for subunits of production and the subunit information is combined to present the entire unit production information. The end result is pertinent, accurate, and timely information which is presented in easy-to-interpret format.

The basics of the information system

The information system is a managerial accounting system that links individual units of production with their costs. As the name managerial accounting suggests, this information is used for managing, not for financial reports. The following are key factors in the information system:

- Feed inventory control on an accrual basis.
- Daily storage of production, feedings, and cow numbers for each production unit.
- Minimizing the time and effort to store and process information.
- Presentation of accurate, timely, and pertinent information in a graphical format that is easy to interpret.

How do we accomplish this?

- Incoming individual feed ingredients are entered when they are delivered, including vendor, invoice, amount delivered, and cost.
- Ration mixes for each group of animals are stored.
- Daily animal numbers for each group are entered, along with ration mixes and the amount of ration to feed. Load sheets are then generated and used to mix and feed groups. A flowmeter is installed in the milk line to measure milk production for each group of animals on a daily basis.
- The program then combines the feeding and production data to generate daily information.

Lack of time, amount of effort, and motivation are the usual reasons why a management program fails to be implemented. FeedMAN was designed to overcome the time and effort barrier, and current high feed costs relative to milk price have provided the motivation. After initial training, only 5–10 minutes per day are required for data entry. The first dairy to use the program (a 2,250 cow unit) saved 1–2 person-days/month for feed inventory control and bank reports.

Presentation of information

When and how information is presented has a major impact on the value of the information. We've designed the data system to have information available after the last production shift is finished for the day. This allows us to detect changes in feed efficiency, production, and profitability as they happen. These changes can then be compared with current management conditions on the dairy to assist in the decision-making process.

Total unit and subunit information is displayed in graphic and tabular formats. The graphical presentation allows for rapid assimilation and comparison data. The graphic information is presented with four graphs per screen to

allow each graph's information to be evaluated relative to other graphical data presented in the same view.

An example

Example information

Figures 1–4 show two sets of information for a dairy; Figures 1 and 2 show information for the dairy as a whole, while Figures 3 and 4 show information for three subunits. This data is available for each month and all 12 pens on the dairy. During the discussion keep in mind the following advantages of having this real-time information:

- The data is available to determine and motivate the need for change in a timely manner.
- The data is available for each day to see trends in changes from the day the changes occur.
- The data is available to evaluate the effects changes have on profit, the day after the change is made.
- The same changes may not be made to all subunits. This allows for some subunits to act as controls for the changed subunits.

Discussion of example

The dairy called on the 9th of the month to indicate they were losing money (Figure 2b) and would like to try some ration changes discussed on an earlier visit. A decision to replace meat and bone meat with a high fat bypass soy protein was made for the high and middle cow rations (Figures 3a–d, 4a–b) and implemented on the 12th. On the 17th, a site visit was made and it was determined that the particle size of the ration was too fine due to excessive mixing of the forages by the mixing wagon. A decision was made to place the forage in the mixer as the last feed rather than the first and implemented on the 18th.

Please note the manager made the decision to call because of negative profits (Figure 2b); -$3,000 as of the 9th of the month. The negative profits were also the reason behind the request for a visit to investigate if any other changes could be made to improve profitability.

Results

An increase in profitability was observed between the 13th and 16th, with a second jump in profitability occurring near the 25th and 27th. The accumulative profit was $8,500 for the month or an increase of $11,500 from the 14th to the 31st. In association with the increase in profit the fixed cost of milk dropped $0.30/cwt. and the feed cost dropped $0.60/cwt. (Figure 2a). In short, the break-even price per cwt. of milk dropped from $12.10 to $11.20.

How, why, or where did these increases in profitability occur? The subunit pen information in Figures 3a–d and 4a–b help us answer these questions.

A milk production increase occurred in the high cow pens began between the 12th–15th and continued the remainder of the month (Figure 3a). An increase in milk produc-

Figure 1

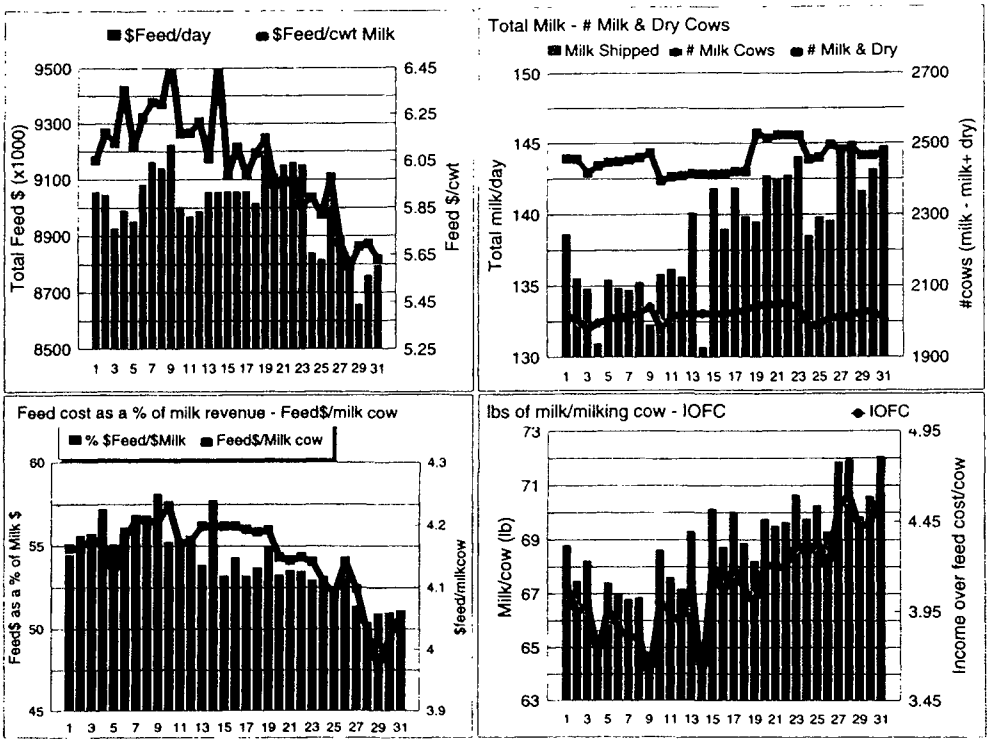
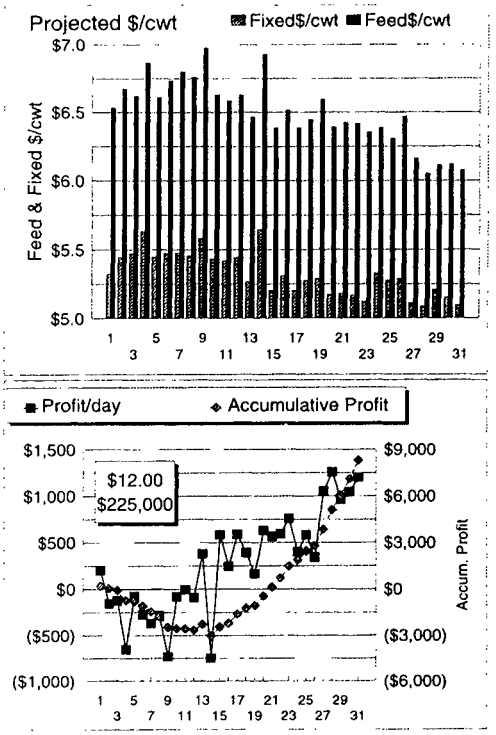


Figure 2

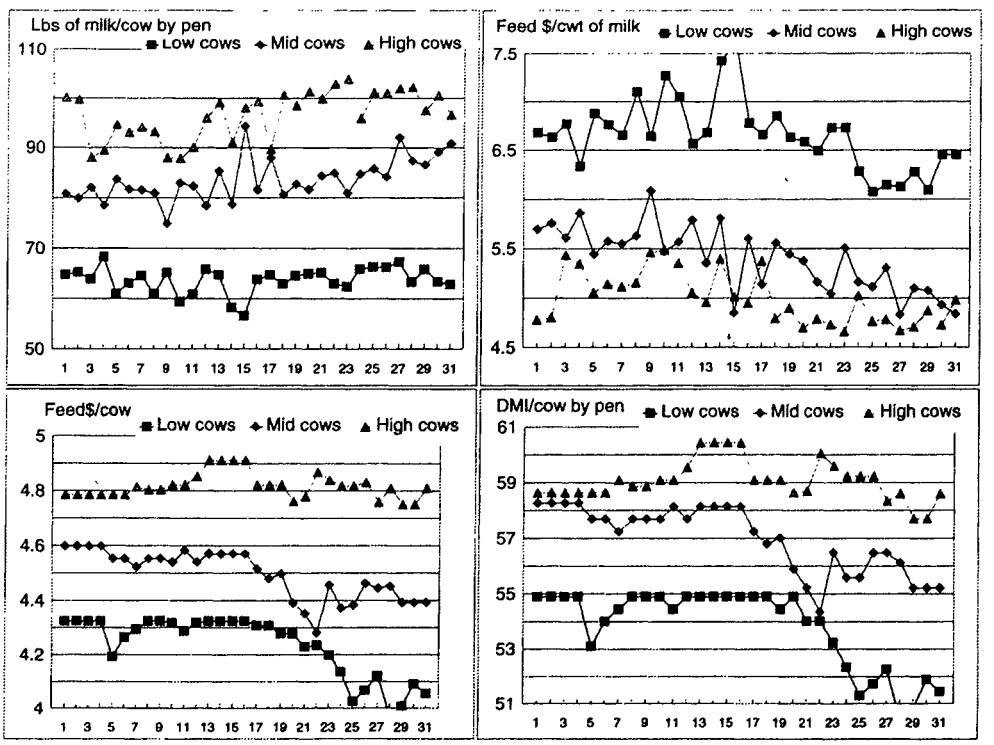


tion occurred the last five days of the month for the middle cow pens, and no milk production increase occurred for the low cow pens (remember the low cow pens had no feed ingredient changes in their ration during this time). The implications are that the ration change improved production for the pens the ration change occurred in. This interpretation is helped by the correlation in time of the changes in rations and production.

The dry matter intakes (DMI) started dropping (2–3.5 lb.) in the middle and low pens between the 18th and 21st (Figure 3d). This DMI drop resulted in decrease in feed cost of $0.15–0.25/cow/day (Figure 3c). At the same time, production was increasing in the middle pens and constant in the low pens (Figure 3a). The implications are that the increased particle size from changing the mixing order resulted in a reduced rate of passage and increase efficiency of digestion. Again, this interpretation is aided by the correlation in time of changes in mixing, DMI, and production.

How important were these changes relative to profitability (Figures 4a–b)? The change in production resulted in a $1.00/cow/day increase in profit for the high pen. The increase in production and decrease in DMI increased profit $0.80–0.90/cow/day for the middle pen, and, as indicated earlier, the decrease in DMI increase profit $0.25/cow/day for the low pens.

Figure 3



Summary

At first glance the end result of these changes are that the dairy increased profitability by making ration and particle size changes—and this had a major impact on profitability! However, the most profitable and beneficial impact was the education both the dairy manager and I received. The ability to observe and quantify the profitability of the changes immediately as they occurred made an indelible impression on our minds. Particle size has now become an important part of our daily observations.

Real-time production-accounting systems, such as FeedMAN, are becoming essential to the profitability of dairies and other production-based agricultural businesses. Commercial dairies use this system to monitor new types of dry-cow programs, minimize feed cost relative to production, modify BST programs, experiment with new by-product feeds, new feeding strategies, and monitor milking shift production. As a result, when profitability was increased, the changes remained in place. And when profitability was reduced, the changes were dropped—quickly.

Reference

Buelow, KL, et al., Daily Feed Cost and Production Accounting for Dairies. The *Comp. Cont. Ed. Pract. Vet. 1997; 19: s56-s64.*

Figure 4