

Six Degrees of Separation

These 6 factors largely determine herd profitability

By Jim Dickrell

Study finds for every 100,000 increase in bulk tank somatic cells, milk production drops 5.2 lb. per cow per day.

A large, on-going study of Midwest dairy herds show six factors separate top herds from their peers.

Zoetis teamed up with AgStar Financial Services to look at 90 variables in the management and financial records of 90 Midwest herds starting in 2006. The herds range in size from 500 to 4,715 cows, with an average of 1,045 lactating animals. The herds are based in Ohio, Michigan, Wisconsin, Minnesota and South Dakota.

The study found some farmers are consistently better managers, day after day, year after year. But after crunching the numbers, Zoetis statisticians found just six factors account for 85% of variation in farm profitability, says Mike Lormore, Director of Cattle Technical Services for Zoetis.

Findings from the on-going study, now in its 11th year, aren't rocket science. But herds which perform well in these factors are being propelled forward by healthier cows, higher profits and likely greater staying power.

"Some of the things we always thought were important are being confirmed," says Steve Bodart, Principal Business Consultant with AgStar Financial Services. "We've talked about some of these things, such as net herd replacement costs, year after year after year. This study gives us the ability to reinforce the message with producers."

"Even though the study focuses on larger herds in the Midwest, the principles and concepts are applicable everywhere and apply to everyone," Lormore adds.

So what are the six factors?

1. **Somatic cells counts**
2. **Energy corrected milk per cow.**
3. **Death losses**
4. **Net herd replacement costs**
5. **Pregnancy rate**
6. **Heifer survival**

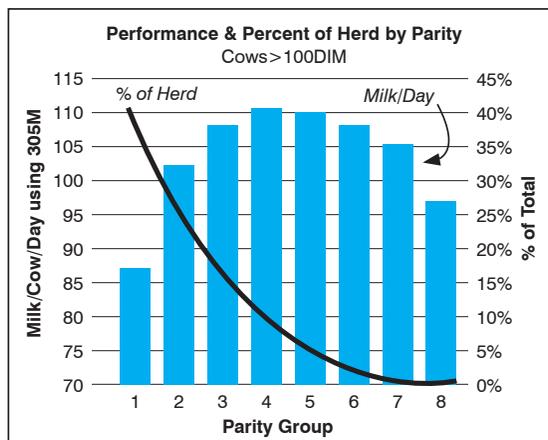
Somatic Cell Counts

One of the biggest drivers of profitability found in the study was milk quality and somatic cell counts. The differences among herds weren't large. The highest one third of profitability herds have bulk tank SCCs that average 196,000 cells/mL while the lowest one third of profitability herds had SCCs that averaged 239,000 cells/mL.

But the high herds average 91 lb/cow/day of energy corrected milk versus 72 lb/cow/day for the low herds. On an annual basis, that translates to \$1.14/cwt in more profit, or for the average size herd in the study, \$115,000 more net income.

And here's the stunning finding of the study: For every 100,000 increase in bulk tank somatic cell count, milk yield declines 5.2 lb. Work done in the 1980s by George Shook at the University of Wisconsin showed milk loss was about 1.3 lb for every 1 point increase in linear score for individual cows.

But this new data suggest the effect is much



Keeping a higher proportion of cows that are in their third, fourth and fifth lactations means overall milk production will be much higher.

greater. That's probably because milk production per cow is nearly double that of 30 years ago, and we know mastitis also impacts other aspects of health, reproduction and culling. "The death rate is much higher in high cell count herds, and you get more milk with lower cell counts because your cows live longer," Lormore says.

"Managing SCC for profitability has nothing to do with SCC premiums," he emphasizes. "The premiums you get from the co-op are irrelevant to the profit truly achieved through aggressively managing cell counts."

Energy-corrected milk

It seems a given that more milk per cow means more profit. Achieving that higher production, however, is correlated with healthy cows.

Lower cell counts, death losses, feed costs and days open are all hidden but important drivers of milk per cow. In other words, healthy cows produce more milk. The profit difference between the top and bottom third of herds is \$1.44/cwt, or some \$85,000 of profit per year.

This is largely due to production efficiency, commonly described as 'marginal milk.' All cows must eat a certain amount of feed simply for body maintenance. Once that requirement is met, this maintenance requirement becomes a smaller portion of her total feed bill as she produces each pound of additional milk.

Death losses

Cows die. That's a given on dairy farms, but the study shows their risk of dying varies from farm to farm. "Death loss is really a proxy for animal health and husbandry skills," Lormore says.

The top one-third of herds with the lowest death losses were 86¢/cwt more profitable than the lowest one-third of herds. That translates to \$70,000 per year more income.

Heifer calf survival rate is an important factor. "Everything you do early in life, from vaccinating the dam to getting colostrum into calves, is important," says Lormore. Then, transition cow management is critical to cow survival in the first 60 days of lactation. There is also a high correlation with death loss and net herd replacement costs.

Net herd replacement cost

The net herd replacement cost (NHRC) is defined in the study as number of cows removed from the herd times their replacement value minus the salvage value of culled cows (including dead cows) divided by the amount of milk shipped during this time period. As NHRC increases, profits decrease.

The herds with the lowest NHRC were seeing \$2.04/cwt more profit than herds with the highest NHRC, or some \$60,000 more profit per year. The herds with lowest NHRC were also seeing 10 lb. more milk per cow.

Herein lies another important lesson. Herds with high culling rates have a higher proportion of first and second lactation animals. But these younger cows don't produce nearly as much milk as mature animals. A second lactation cow will produce 15% more milk than a first lactation heifer, and third lactation cow will produce 10% more milk than a second lactation animal.

By culling cows early, farms are giving up tremendous volumes of milk each and every day, says Lormore. "You're making a ton more money if you have more aged cows in your herd," says Lormore. "As an industry, we need to move from an average age of 2 1/2 lactations in herds to 3 1/2 lactations to get to more optimal profitability levels."

Some will argue that when cull cow prices are high, it doesn't cost anything to replace cows because high beef prices offset heifer raising costs. "That's wrong," says Lormore. "Every time you cull an aged cow, it costs you a lot of money and time to get her replacement to the same point of production."

Lower prices for cull cows are now reinforcing that point, says AgStar's Bodart. Those herds that have a lower culling rate and a higher proportion of older cows in the herd are not feeling the loss of lower beef prices nearly as much as herds reliant on cull cow income.

"The message is that we want more of the right kind of heifers in the first place, and we need to keep them in the herd as long as possible," he says.

Pregnancy rates

The data on pregnancy rates is limited, but preliminary results show higher pregnancy rates drive higher profits to the tune of about \$50,000 per year or \$50 per cow per year.

Higher profit herds are also spending more on semen which makes sense, says Lormore. If cows are more likely to get pregnant at each insemination, farmers are more willing to spend money on higher-value semen. That, in turn, perpetuates their advantage in future generations of the herd.

Heifer survival

All of the herds in the study were doing a good job of raising heifers. The high profit herds, however, were doing a bit better with heifer survival rates averaging 95%. Low profit herds had an average heifer survival rate of 93%.

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