



## At World Dairy Expo '24

Above: Drs. Nele Leiterman and Ryan Leiterman attend World Dairy Expo in Madison, WI.

Right: Crystal Creek® Nutritionist Carley Ciolkosz talks with customers about the FLAP DUCT® ventilation system.

## Articles at a Glance

### Know Where You Stand: Helpful Benchmarks to Track on Your Dairy

"You can't manage what you don't measure." An arguably overused but truly powerful statement. When evaluating dairies and looking for ways to improve on client farm successes, tracking performance over time and comparing to benchmarks can be very helpful. Tracking key metrics on your farm can help catch issues before they become big problems, identify the next steps to take toward increased profitability, and allow for successes to be celebrated when improvements are made. Keep reading on page 2.

### Understanding Milk Pricing- If That's Even Possible: Part 2

In the previous article, we discussed the history of milk pricing in the United States, the equations that govern milk price and how end-product pricing works. This article will be the final part of a two part series where we will look at the make allowance and Producer Price Differentials (commonly referred to as PPD's); arguably two of the more controversial parts of the milk pricing process. Keep reading on page 6.

### Helpful Benchmarks for Raising Calves

Raising healthy calves is one of the most important and hardest tasks on a dairy farm. Healthy calves turn into healthy cows and the months from birth to weaning sets up the calf for the rest of its life as well as the longevity of being a high producing dairy cow. To ensure that the calves are getting the best care in order to thrive there are a few factors we need to look at including the mortality rates, morbidity rates, growth rates and colostrum management. Keep reading on page 8.

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# Know Where You Stand: Helpful Benchmarks to Track on Your Dairy



By Erik Brettingen, B.S.

“You can’t manage what you don’t measure.” An arguably overused but truly powerful statement. When evaluating dairies and looking for ways to improve on client farm successes, tracking performance over time and comparing to benchmarks can be very

helpful. Tracking key metrics on your farm can help catch issues before they become big problems, identify the next steps to take toward increased profitability, and allow for successes to be celebrated when improvements are made. Crystal Creek® helps clients build reports and uses herd management software to monitor performance of key areas on farms. Lactation performance, economics, transition cow success, reproduction, and calf growth/health are the main areas that are beneficial to monitor.

## *Lactation Performance:*

**Energy Corrected Milk (ECM):** ECM measures the amount of energy contained in the milk based on fat and protein levels and adjusts to a 3.5% butterfat and 3.2% protein. This is very important to differentiate from simply looking at pounds of fluid milk. For example, a herd producing 90 lbs. of milk with a 3.5% BF and 3.2% protein is making 92.25 lbs. of energy corrected milk. A herd producing 85 lbs. of milk with a 4.5% BF and 3.4% protein is making more ECM at 99.45 lbs. The herd making 85 lbs. of milk is producing more pounds of revenue generating fat and protein than the herd shipping 90 lbs. of fluid. Energy corrected milk is an important number to track/benchmark. Proceed with caution when comparing yourself to other herds. If your herd is moving in the right direction, that is a positive. Set goals based on past performance.

**Pounds Solids:** Total pounds of solids shipped per cow per day is very similar to energy corrected milk. This number can be found by multiplying the fat and protein percentages by the pounds of milk. For example, using the 85 lb. herd above,  $85 \text{ lbs.} \times 0.045 = 3.825 \text{ lbs.}$  of fat and

$85 \text{ lbs.} \times 0.034 = 2.89 \text{ lbs.}$  of protein. Then add the fat and protein together. This herd is shipping 6.715 lbs. of total solids per cow per day. This again is an important number to set your own goal and benchmark. Some of the top producing herds are making 7 lbs. of components per cow. This does not mean your herd has to ship 7 lbs. of components per cow to be successful. Find out where your herd is and work with your nutritionist to set realistic goals for improvement.

**Component Efficiency:** Monitoring pounds of solids shows the overall output from the cows. To get a more complete picture of performance, component efficiency should be measured. Use the following equation:

$$(\text{Total lbs. components per cow} / \text{DMI}) \times 100 = \text{component efficiency}$$

The goal is to achieve a component efficiency of 10-12%. This monitors how well cows are turning feed into fat and protein. High Dry Matter Intake (DMI) is usually a great thing, but if the milk solids production does not come along with it, that is a sign of potential issues. Poor component efficiency (less than 10%) can be due to herd demographics if the lactating group is made up of a high percentage of heifers (over 40%) or if days in milk is too high. Many times though, poor component efficiency is due to issues with diet formulation and rumen health. Too much starch in the ration can inhibit rumen function, microbial population growth, and fiber digestion. When this occurs, the amount of energy and protein the cows actually digest from each pound of feed is not what it should be.

## *Economics:*

**Total Feed Cost:** Total feed cost is simply finding how much it costs per cow per day to feed your animals. Total feed cost takes everything into consideration, meaning all home grown and purchased feed stuffs going to the cows.

**Purchased Feed Cost:** The purchased feed cost is essentially the total feed cost minus all home-raised feeds. This will be anything purchased from the mill, nutritionists, vendors, neighbors, etc.

**Income Over Total Feed Cost:** This powerful metric essentially measures the day-to-day profitability of



the dairy. Income over total feed cost is found by calculating the revenue produced in milk from each cow per day and subtracting the total feed cost from that. It is what you are making per cow after spending the money to feed her. Using the 85 lb. herd above as an example again, 85 lbs. of milk at \$0.19/lb. is \$16.15 per cow per day in total revenue. If it costs \$7.50 per cow per day to feed this herd, that leaves an income over feed cost of \$8.65 per cow per day. Because feed price and milk price are both able to dramatically change the final income over feed cost number, benchmarking income over feed cost requires looking at feed cost as a percentage of milk revenue. The brief table below outlines benchmarks for feed cost as percentage of milk revenue.

**Figure 1**

Benchmark	Metric
High Income Over Feed Cost	Feed cost less than 40% of total milk revenue
Low Income Over Feed Cost	Feed cost greater than 60% of milk revenue

<https://extension.psu.edu/managing-income-over-feed-costs>

**Income Over Purchased Feed Cost:** This number is calculated exactly as income over total feed cost but uses only purchased feed cost. Many times, this is looked at because it can be more of an indicator of cash flow. Total feed cost includes home grown forages that many times have already been made and are in inventory. They essentially have already been bought and paid for. The purchased feed cost includes the ongoing feed being bought to feed the cows. Again, using the 85 lb. herd above as an example, 85 lbs. of milk at \$0.19/lb. is \$16.15 per cow per day in total revenue. If the purchased feed cost of this ration is \$3.50 per cow per day, that leaves an income over purchased feed cost of \$12.65 per cow per day. Much like income over total feed cost, income over purchased

feed cost must be benchmarked as a percentage of milk revenue. The brief table below outlines benchmarks for income over purchased feed cost.

**Figure 2**

Benchmark	Metric
High Income Over Purchased Feed Cost	Feed cost less than 20% of total milk revenue
Low Income Over Purchased Feed Cost	Feed cost greater than 40% of milk revenue

<https://extension.psu.edu/managing-income-over-feed-costs>

## Transition Cow Success

Transition into lactation has an immense impact on profitability. Without a proper transition, cows do not peak well, may not breed back in a timely fashion, and many times leave the herd too soon to generate a profit. The table below outlines key parameters to track that indicate how well cows are transitioning on a dairy.

**Figure 3**

Metric	Goal
Milk Fever	<3%
Displaced Abomasum	<5%
Retained Placenta	<5%
Metritis	<15%
Ketosis	<15% Sub Clinical, <5% Clinical
Sold and Dead Before 60 Days	<8%

<https://www.vet.cornell.edu/animal-health-diagnostic-center/programs/nyschap/modules-documents/transition-cow-benchmarks>

<https://www.zoetisus.com/content/pages/Dairy/Dairy-resources/Documents/Dairy-Wellness-Outcomes-Benchmark-Audit-Performance.pdf>

(Continued on page 4)



## Helpful Benchmarks to Track on Your Dairy

(Continued from page 3)

### Reproduction

Getting cows bred back efficiently after calving keeps days in milk down and helps maintain milk production throughout the year. Reproductive success or failure can also be a window into how healthy the cows are and how they transition. The table below outlines key parameters to track that indicate how well the reproduction is going on a dairy. There are many numbers that can be looked at, but these are some key measurements we watch:

Figure 4	
Metric	Goal
Pregnancy Rate	>30% Note: Highly dependent on other herd management factors such as the Do Not Breed List
Conception Rate	>40%
Services Per Conception	<2%
Heifer First Service Conception Rate	>70%

<https://www.zoetis.com/content/pages/Dairy/Dairy-resources/Documents/Dairy-Wellness-Outcomes-Benchmark-Audit-Performance.pdf>

[https://calfandheifer.org/wp-content/uploads/2020/09/DCHA\\_GoldStandards\\_2020\\_En\\_WEB-final.pdf](https://calfandheifer.org/wp-content/uploads/2020/09/DCHA_GoldStandards_2020_En_WEB-final.pdf)

### Calf Growth/Health

Calf growth and development has significant impacts on productivity, longevity, and profitability of those calves when they enter the herd as first lactation animals. Tracking calf health and calf growth rates

is a great way to put a report card on a calf raising program. When tracking the metrics included in the table below, you can be sure calves are being raised without excessive health events, they are meeting growth targets, and being bred at the proper maturity to maximize health and productivity in their first lactation.

Figure 5	
Metric	Goal
Blood Total Protein	>80% of calves achieving 6.0 g/dl or above
Pre-Wean Scours Incidence	<15%
Pre-Wean Pneumonia Incidence	<10%
Pre-Wean Survival Rate	>97%
Pre-Wean Calf Growth	>85% of calves double birth weight by 56 days of age
Size at First Breeding	55% of herd's mature body weight

[https://calfandheifer.org/wp-content/uploads/2020/09/DCHA\\_GoldStandards\\_2020\\_En\\_WEB-final.pdf](https://calfandheifer.org/wp-content/uploads/2020/09/DCHA_GoldStandards_2020_En_WEB-final.pdf)

Tracking key performance metrics and economics can be very powerful. Knowing where you stand helps point out potential bottlenecks and open areas of opportunity. If you are curious where your herd is sitting with some of these key benchmarks or are looking for solutions to help achieve these goals, please consider reaching out to Crystal Creek® at 1-888-376-6777 to speak with one of our nutritionists about our nutrition and management consulting.

*References available upon request.*

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# Understanding Milk Pricing- If That's Even Possible: Part 2



By Ryan Leiterman, D.V.M.  
Director of Technical Services

In the previous article, we discussed the history of milk pricing in the United States, the equations that govern milk price and how end-product pricing works. This article will be the final part of a two-part series where we will look at the make allowance and Producer Price Differentials

(commonly referred to as PPD's); arguably two of the more controversial parts of the milk pricing process.

## Understanding the Make Allowance

A make allowance is an estimate of a dairy processing plants cost to turn milk into a commodity such as cheese or butter. The cost includes things such as labor, utility costs, ingredients like salt or cultures, product packaging and quality control testing. It does not include the cost of the milk itself. In an oversimplification, the make allowance covers the cost of production for the processor and that amount is allowed to be taken off the pay price for the milk. Some people look at it like the dairy producer covers the processing plants cost of operation with the lower milk pay price they receive.

How is the make allowance calculated? Processing plants fill out voluntary surveys where they report their costs of operation. These surveys are collected and compiled by the USDA's Agricultural Marketing Service (AMS), who then uses the reported data to calculate the make allowance. Make allowance calculations are done infrequently with one being done in 2008 and the most recent one being done in 2023.

- It is important to understand that the AMS has multiple roles. It is responsible for the weekly collection and independent verification of commodity prices, such as butter and cheese. AMS has the regulatory authority to provide independent oversight that the commodity pricing reported is verified to be accurate.



- In stark contrast, AMS claims that it does not have the regulatory authority to provide independent verification of the operational costs reported by processors in the voluntary surveys. Thus, the operational expense numbers reported by the processors are not verified to be accurate. These unverified operational expense numbers are then used to calculate the make allowance.

In speaking with a USDA AMS employee about this discrepancy, I was told that the AMS does not need to independently verify the processors reported costs of operation because a) "its been done like this for a long time" and b) he (the USDA employee) was confident that the processors were being "truthful in their reporting". At one time, California used to independently verify the processor cost reporting within their state and the USDA/AMS would use that data, however, California no longer verifies processor's reported costs. The University of Cornell has also been involved with analyzing the cost of operation data reported by the processors, however, Cornell does not independently verify the reported costs either. The price of milk paid to the dairy farmer is then reduced by the amount of the make allowance. Given the importance of the make allowance and its direct impact on the pay price for milk, why wouldn't the USDA AMS want to verify the processing plants reported operational expenses?

If processors cannot operate within the set make allowance to make a profit, they have the opportunity to either control their costs, lower the premiums paid, or de-pool their milk to avoid the FMMO regulated minimum prices. Compared to dairy farmers, the processors have options, while the dairy farmer has only the option to control their input costs.

It's important to note that this is not a dairy farmer vs processor issue. Processors need dairy farmers, and dairy farmers need processors. It's a symbiotic relationship where both parties need to remain profitable for the other to survive.

## Understanding Producer Price Differentials

Milk pricing is a complicated and hard to understand issue. Within the enigma that is milk pricing, the PPD is probably the most confusing part of it all. According to retired dairy co-op executive, Calvin Covington, the PPD is defined as "The total dollars in a federal order pool available for producer payment, minus the total dollars paid to producers for their milk production at the Class III component values for butterfat, protein and other solids. The sum is divided by the total cwt of producer milk. The result is the PPD per cwt."

The topic of PPD's can be confusing. However, in an oversimplification, you can think of it as the PPD is a factor related to the difference between Class I fluid milk pay price and Class III cheese pay price. If Class I milk is significantly higher than Class III milk, the PPD will generally be positive and will grow as the difference between Class I and Class III milk grows.

It's not only the pay price of Class I milk, but the volume of milk in the pool that was sold under Class I as well that impacts the PPD. Larger volumes of milk in the pool that are sold as Class I milk will generally also increase the PPD.

While there are outlier situations that will upend the broad statements above, they are generally useful in trying to understand the PPD.

In conclusion, milk pricing is a complex process that uses end-product pricing and takes factors such as make allowances and PPD's into account. There is no clear solution to a simpler and more effective milk pricing scheme, however, understanding the process is the first step to creating positive change. Hopefully these articles have helped shed some light on the often dark and confusing topic of milk pricing.

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# Helpful Benchmarks for Raising Calves



Carley Ciolkosz recently joined the Crystal Creek® team as a nutritionist. Carley has a degree in Dairy Science with a minor in Agricultural Business from University of Wisconsin-River Falls. She grew up on a dairy farm in central Wisconsin.

By Carley Ciolkosz, B.S.  
Livestock Nutritionist

Raising healthy calves is one of the most important and hardest tasks on a dairy farm. Healthy calves turn into healthy cows and the months from birth to weaning sets up the calf for

the rest of its life, as well as the longevity of being a high producing dairy cow. To ensure that the calves are getting the best care in order to thrive there are a few factors we need to look at including the mortality rates, morbidity rates, growth rates and colostrum management.

**Mortality/Morbidity Rates:** First, let's distinguish the differences between mortality and morbidity. Mortality is defined as the loss of calves before they reach maturity and can occur during the preweaning period or later. Morbidity refers to the occurrence of calves experiencing health issues including conditions like scours, respiratory infections, or naval infection. Essentially, morbidity is the "sick calf" count and mortality is the "dead calf" count. Tracking mortality and morbidity rates allows producers to quickly identify the potential cause of issues such as scours, respiratory infections and early death. Target mortality rates are found in Figure 1. Morbidity rates are separated for scours and pneumonia cases. Scours cases are defined as a case of diarrhea which requires any intervention for more than 24 hours. The target morbidity rates are found in Figure 2.

Figure 1 TARGET MORTALITY RATES	
24 Hours - 60 Days of Age	<5
61 - 120 Days of Age	<2
121 - 180 Days of Age	<1

Figure 2 TARGET MORBIDITY RATES FOR SCOURS	
24 Hours - 60 Days of Age	<25%
61 - 120 Days of Age	<2%
121 - 180 Days of Age	<1%

Pneumonia cases are defined as a case of respiratory disease which requires individual treatment with an antibiotic and the target rates are found in Figure 3.

Figure 3 TARGET MORBIDITY RATES FOR PNEUMONIA	
24 Hours - 60 Days of Age	<10%
61 - 120 Days of Age	<15%
121 - 180 Days of Age	<2%

**Growth Rates:** We associate growth rate with Average Daily Gain (ADG) which is very important to monitor while raising dairy calves. Ideally, the calf should double its birth weight between 24 hours to 60 days of age. Growth rates ultimately affect the timing of puberty which therefore impacts the age at first calving and lactation milk production. Properly raised calves will be healthy and ready to freshen between 22 and 24 months. This is why calves doubling their birthweight by weaning is critical because it sets the calves up to become healthy high producing lactating cows. Target growth rates are shown in Figure 4.

Figure 4 TARGET GROWTH RATES	
24 Hours - 60 Days of Age	Double birth weight
61 - 120 Days of Age	2.2 lbs. average daily gain
121 - 180 Days of Age	2.0 lbs. average daily gain

**Colostrum Management:** Colostrum is the most important factor for a newborn calf because it is the very first meal the calf gets and provides the calories and immunity necessary for the calf to survive. Four important things in colostrum are calories, antibodies, white blood cells, and hormones, all of which a calf needs to survive. Colostrum helps with growth rate, feed efficiency, general health, age at first calving, herd survivability, and affects 1st, 2nd, and 3rd lactation production. This is why colostrum management is very important to monitor. Check that it is always at the highest standard. All colostrum should be tested using a brix refractometer prior to feeding and producers





should strive to feed calves colostrum that tests greater than a 23% Brix. Feed enough colostrum to deliver a minimum of 200g of IgG within four hours of birth. Colostrum delivers important nutrients to the calf that

help protect the calf from harmful bacteria and infections throughout its whole life. Important to remember with colostrum management are the three Q's: Quantity, Quality, Quickly. Quantity regards feeding four quarts of high-quality colostrum within the first four hours of life. Quality stands for the colostrum being tested and only being fed at a minimum 23% brix or higher. Lastly, Quickly refers to feeding the colostrum within four hours of birth. Colostrum should be free of blood, debris, and mastitis, as well as being disease free. The target bacteria count (also known as standard plate count), target E. Coli count, and coliform target count are found in Figure 6. By having good colostrum management

**Figure 5** COLOSTRUM READING

	% Brix	g IgG/ Qt	g IgG in 4 Qt
AVERAGE QUALITY (Use For Bull Calves)	20.2	26.9	107.8
	20.4	29.0	115.9
	20.6	31.0	124.0
	20.8	33.0	132.2
	21.0	35.1	140.3
	21.2	37.1	148.4
	21.4	39.1	156.5
	21.6	41.2	164.7
	21.8	43.2	172.8
	22.0	45.2	180.9
	22.2	47.3	189.0
	22.4	49.3	197.1
22.6	51.3	205.3	
22.8	53.3	213.4	
GOOD QUALITY (Use For Heifer Calves)	23.0	55.4	221.5
	23.2	57.4	229.6
	23.4	59.4	237.8
	23.6	61.5	245.9
	23.8	63.5	254.0
	24.0	65.5	262.1
	24.2	67.6	270.3
	24.4	69.6	278.4
	24.6	71.6	286.5
	24.8	73.7	294.6
	25.0	75.7	302.8
	25.2	77.7	310.9
	25.4	79.7	319.0
	25.6	81.8	327.1
	25.8	83.8	335.2
26.0	85.8	343.4	
26.2	87.9	351.5	
26.4	89.9	359.6	
26.6	91.9	367.7	
26.8	94.0	375.9	
27.0	96.0	384.0	

**Figure 6**

Target Standard Plate Count	<100,000
Target Coliform Count	<10,000
Target E. Coli Count	<1,000

and abiding to these standards and guidelines, your calves should be set up for a successful life.

These benchmarks are critical to follow as a guideline for your calf program in order to produce happy, healthy, high-producing lactating cows in your future herd. If you have questions or want to see where your calves are with these benchmarks or want suggestions on how to improve certain areas of your calf program, please consider reaching out to Crystal Creek® at 1-888-376-6777 to speak to one of our nutritionists or veterinarians about our nutrition and management counseling.

*References available upon request.*

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Crystal Creek® has a variety of health products for calves including:

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**Select calf products will be 10% off during the month of December. Please see page 5 for a full list.**





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