

Keep Your Eye On The Prize When Raising Calves And Heifers!



By Dan Leiterman

The primary goal, or “prize”, when raising calves and heifers is to develop a cow that will perform to her genetic potential and do so in a healthy, trouble free, profitable manner for many lactations. Attaining this requires attention to many factors, such as maternity

care, neonatal care, colostrum management, nutrition, ventilation, animal comfort and disease prevention. Many dairy producers believe that successful calf rearing is defined by low death loss and fail to recognize that *the quality of a calf rearing program is ultimately judged by the quality of the first lactation heifers that enter the milking string.*

Recently I met with a calf manager for a 900 cow dairy. During the course of our conversation I asked her what aspects of the calf rearing system she wanted to improve. She responded that on her dairy there was “very little room for improvement”, as they only lost one pre-weaned calf in the last 12 months. On its own merit the low mortality statistic was very impressive and I complimented her on the achievement. As I examined their protocols and treatment rates, I learned that they were treating more than 50% of their post-weaned calves with antibiotics for respiratory disease. Many of these calves were treated three or more times with different antibiotics. When I raised concern about the excessive respiratory treatments, the calf manager considered the treatment rates perfectly acceptable because their post-weaned mortality rate was below 2%.

This calf manager was not keeping her eye on the prize. By focusing on mortality rates as a benchmark for success, she was forgetting that calves experiencing chronic pneumonia in the pre or post-weaned phase produce anywhere from 1,200 to 3,000 lbs less milk as first lactation heifers. This lost production from chronic calf respiratory disease was costing the dairy between 378,000 and 945,000 pounds of milk per year. At \$20 per cwt, endemic calf pneumonia cost the dairy between \$75,600 and \$189,000 worth of lost milk revenue every year. The economic impact above does not take into account the cost of treatment, reduced feed efficiency and higher cull rates for those animals. Remember, she said there was “very little room for improvement” in her calf raising operation. This dairy may have won

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the mortality battle, however they were losing on a larger scale by putting compromised animals into the milking herd and reducing operational profitability.

It is important to understand that a good calf program needs to optimize the physical development of the calf, which includes organ and tissue development, i.e. rumen papillae, intestinal tissue health, muscle development and good liver function. Implementing good fundamental practices of proper colostrum management and higher levels of well designed nutrition will significantly improve calf health and performance, as well as significantly support the development of healthy, profitable cows.



The following pages give calf management goals and cite research that shows when heifers are reared with an attention to colostrum management, higher levels of daily nutrition and increased growth rates they will: 1) produce more milk per lactation for the rest of their life, 2) be easier to get pregnant, 3) last in the herd longer and 4) be significantly more profitable. When the end product, a healthy and profitable cow, is not clearly seen as the goal, it is easy to be lulled into a false sense of security or accomplishment by focusing on a single progress benchmark like low mortality. Focus on colostrum management, maximizing calf growth and early rumen development to help create calves that will become the ultimate prize; a healthy, trouble free, profitable cow.

Colostrum Management

Research indicates that the colostrum quality (bacteria load), total IgG (antibodies) fed and prompt colostrum feeding after birth can all significantly impact how the calf will grow, develop and perform in the dairy herd.

• Benchmarks

1. Feed 200 grams of immunoglobulins from colostrum (generally 4 quarts, but testing is recommended for accuracy).
2. Feed total colostrum intake within the first 4 hours of birth (use esophageal feeder if necessary).



3. Bacteria load in colostrum needs to be below 100,000 CFU/ml at feeding time for optimum IgG absorption (periodically test colostrum for bacteria load).

• Tools to reach colostrum management goals

1. Crystal Creek®'s Genesis Plus™ colostrum supplement: Used when natural colostrum is in short supply to ensure a 200 gram IgG intake level per calf.
2. Digital Colostrum Meter: Colostrum can have a wide range of IgG levels, so just feeding 4 quarts of colostrum may not deliver adequate protection. Use a digital colostrometer (Atago model PAL-1) to accurately measure IgG (antibody) concentration of colostrum and make sure the calf receives 200 grams of IgG.
3. Four quart bags or two quart feeding bottles for freezing colostrum.
4. A good calf esophageal feeder. Crystal Creek® carries a durable plastic esophageal feeder ideal for colostrum administration. Call Crystal Creek® for tips on how to safely feed a calf with an esophageal feeder.

• Results of proper colostrum management

Improvements seen when calves are fed adequate colostrum when compared to calves that did not receive adequate colostrum are displayed in **Table 1** below.

Table 1

	200 g. IgG (4 quarts colostrum)
Pre-weaned Average Daily Gain¹	0.5 lbs./hd./day higher ADG
Pre-weaned Feed Efficiency¹	50% better feed efficiency
Age To First Conception¹	14 days sooner
Milk Production 1st Lactation¹	800 lbs. more milk
Milk Production 2nd Lactation¹	1,460 lbs. more milk
% Survival Past 2nd Lactation¹	11% improved survival rate

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KEEP YOUR EYE ON THE PRIZE

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Feed Swift Start™ Calf Milk Replacer For Improved Rumen Development And Better Weight Gains In Pre-Weaned Calves

The majority of commercially available calf milk replacers do not promote early rumen development and as a result, the rumen tissue and papillae can be delayed and stunted. This results in a calf entering the post-weaned phase of growth with a poorly developed rumen, compromised forage digestion, reduced feed efficiency and slow growth. It is important to have a feeding strategy that will accomplish the goals of weight gain and proper rumen development.

A study conducted by the University of Pennsylvania on pre-weaned calf rumen development provided the next two slides. **Figure 1** shows the stunted rumen papillae development of a calf that has been fed only milk and hay for twelve weeks as compared to **Figure 2** that displays excellent rumen papillae development of an eight week old calf that was fed milk, grain and hay. Key volatile fatty acids like propionic acid and butyric acid are required to stimulate good rumen papillae development. Grains are excellent sources of these key volatile fatty acids, where as hay and milk are not. The rumen lining development in **Figure 2** is needed for a calf entering into the post-weaned stage where efficient forage digestion is necessary.

Effect Of Feeding Program On Rumen Development



Figure 1:
Poor rumen development

Feeding Program:
Milk and Hay
Calf Age in the Picture:
12 weeks



Figure 2:
Exceptional rumen development

Feeding Program:
Milk, Grain and Hay
Calf Age in the Picture:
8 weeks

Swift Start™ Calf Milk Replacer

Swift Start™ Calf Milk Replacers 25/18 High Gain and 22/20 are specifically formulated to support rumen

papillae development from the first day they are fed to the calf, even before the introduction of grain.

Swift Start™ Calf Milk Replacer Is Research Supported:

Research studies on ingredients and formulation concepts found in the Swift Start™ Calf Milk Replacers showed:

- 21% Less Scours² (14 trials on 1206 calves)
- 9% Higher Average Daily Gain² (12 trials on 867 calves)
- 6% Less Calf Mortality² (14 trials on 1448 calves)
- 11.8% Higher ADG, Days 1 to 14² (2 trials on 48 calves)

Feed Higher Volumes Of Milk To The Calf

Doubling the body weight of a calf before weaning is an important goal, however, doubling the calf's weight with additional frame (skeletal and muscle growth) is more desirable than doubling the calf's weight through excess body fat deposition. How pre-weaned calves are fed can significantly affect pre and post-weaned calf performance, as well as impacting their lifetime production (see **Table 2**). See Dr. Ryan Leiterman's article "Accelerated Calf Feeding Yields More Milk During First Lactation" in the April 2012 Crystal Creek® Cow Tales newsletter.

• Benchmark:

Double the calf's body weight in the first 8 weeks of life, emphasizing lean gain. This involves feeding higher levels of milk (at least two gallons/calf/day) or calf milk replacer/CMR (2 lbs. of CMR powder/calf/day).

• Tools to double your calves birth weight at weaning

1. Swift Start™ High Gain 25/18 calf milk replacer or Swift Start™ 22/20 calf milk replacer. The Swift Start™ calf milk replacers listed are designed for higher intake levels.
2. Swift Start™ Calf Pellets are mixed with corn and oats to make a complete calf grain mix.
3. Swift Start™ Calf & Heifer Mineral which can be fed in a grain mix or as a free choice mineral.
4. Calf Shield® can be added to CMR and/or to whole milk. Calf Shield® improves feed efficiency, ADG and reduces the risk of gram negative bacteria like salmonella and E. coli. Calf Shield® also reduces the risk of protozoal parasites like cryptosporidium and coccidiosis.



Note: For calves being fed whole milk, add Calf Milk Mate™ to each whole milk feeding. Calf Milk Mate™ will fortify whole milk with important vitamins, trace minerals, selenium and iron to a comparable level found in the highly fortified Swift Start™ calf milk replacers.



• **Results of increased milk/calf milk replacer feeding programs**

Impact On Lifetime Milk Production When Pre-Weaned Calves Are Fed Higher Levels Of CMR³ is displayed in **Table 2.**

Table 2

Amount of CMR Fed/Calf/Day (lbs.)	1.25	2.2
Weight at Calving (lbs.)	1,276*	1,278
Milk Production 1st Lactation (lbs.)	19,844	21,687
Net Increase In Milk Production (lbs.)		+ 1,843

* Although the two groups of heifers were similar weights, the ones fed lower levels of calf milk replacer were shorter and had more body fat deposition.

In summary, the three key calf management steps that will give all of your calves a better chance to become an ultimate prize cow for your herd and increase your profitability are:

- Properly Managed Colostrum Feeding
- Feeding Swift Start™ Calf Milk Replacer
- Feeding Higher Levels Of Nutrition

Put your calves on the Swift Start™ Program, so you can have more prize cows in your herd.

1 Effects of Colostrum Ingestion on Lactation Performance, Pro. Animal Scientists, 2005

2 Journal of Dairy Science, Quigley et al. 2003, 2002, 2001, 1999,1996 (86-586, 85:413, APC, 79:1881), Arthington et al. 2002 (85:413), Morrill et al. 1995 (78:902). Fd & Ag Imm 12,311 Drew et. al. 2000. Vitek Doppenberg, 1993, 1992, Milk Specialties, Sowinski et al. 1991. Vet Med. (A46:185) Nollet et al. 1999, Pediatric Res. Hunt et al. 2002. (51:3:370). APC/U of MN Hayes et al. 2009, Animix Wood et al. 2007, Animix Research #07-01.

3 Drackley et al., Journal of Dairy Science, abstract, 2007