



Intensive Milk Replacer Feeding Program Comparison

Intensive milk replacer feeding has generated considerable interest and has led to a variety of programs currently being offered. Evaluating the performance of each program and figuring out its adaptability to individual farm situations can prove a bit perplexing. To simplify the task intensive milk replacer feeding programs can be categorized into two basic types. One type strives for maximum growth rate through major changes to calf feeding practices and is described below under *Aggressive Growth*. Limitations and challenges associated with this system led to development of more modest growth programs that are easier to apply. Merrick's Super Star Formula 25-15 and Land O'Lakes Cow's Match are compared and contrasted under *Moderate Growth* to illustrate the performance differences that exist among programs within this category.

Aggressive Growth. This approach is very aggressive where the objective is to maximize milk replacer intake during the first few weeks of life. To get the best results, calves should be fed as much as they will drink 3 times per day.

Milk replacer formulation needs to reflect this higher feeding rate. Energy intake drives the protein requirement, and both need to be properly balanced with the feeding rate. With intensive milk replacer feeding, energy intake increases. If too little protein is provided relative to fat, the calf consumes excess energy. Without the needed protein to convert this energy into lean tissue, the calf simply converts the excess energy to body fat. (This is what happens when a 20% protein, 20% fat milk replacer is used in an intensive feeding situation). In this aggressive growth situation, the protein percentage of the milk replacer needs to be up around 28% and fat should be about 17%.

Applied correctly, the aggressive growth approach can support a growth rate of 2-lb or more per day. Implementing a successful program places new demands on the farm operation, requiring changes to conventional calf raising practices. Labor and management must be able to handle a step-up milk replacer feeding process that results in calves drinking different volumes and concentrations of milk replacer.

Achieving adequate starter intake is also a concern with this program. To minimize problems at weaning, a milk replacer step-down process is needed to support adequate starter intake for rumen development. Due to inability or unwillingness to implement a complete program, calf raisers may modify the program, often with disappointing results.

Moderate Growth. These programs limit-feed milk replacer similar to conventional feeding, but at a higher level. Growth rates are not as high as with an aggressive program, but they are often dramatic when compared to conventionally raised calves.

Moderate growth programs take one of two forms. The simplest approach is to feed the conventional 2 qt/feeding of milk replacer, but in this case it's mixed at a higher concentration. The other approach utilizes a step-up program that changes the amount and concentration of milk replacer offered, usually at the end of week one.

Major factors affecting calf growth rate on any program include milk replacer formulation, its concentration in water, volume fed, starter formulation and starter intake. The impact of these factors on feed intake and growth can be more clearly illustrated through a program comparison. Table 1 compares feed intake of calves fed Merrick's Super Star 25-15 milk replacer to calves grown on the Land O'Lakes program.

Table 1

Week Of Trial		Feed Intake (lb) (cumulative from beginning of trial)	
		Merrick's Super Star 25-15	Cow's Match 28-20
6 ^a	Milk Replacer	63	104
	Starter	49	16
	Total	112	120
7 ^b	Milk Replacer	63	122
	Starter	76	28
	Total	139	150
8	Milk Replacer	63	122
	Starter	118	58
	Total	181	180

^a Merrick's calves were weaned at the end of 6 weeks.

^b Land O'Lakes calves were weaned at the end of 7 weeks

The large differences in milk replacer and starter intake between the two programs are immediately obvious. Total feed intakes, however, are quite similar throughout weeks 6 to 8. (Note that values reported for each week are cumulative from the beginning of the trial).

Reasons for these feed intake differences are related to program design. Land O'Lakes calves are on a 28-20 milk replacer fed in a step-up program. Calves receive 1.8 pounds powder in 5 qt of water (17% solids) during week 1, then 2.6 pounds of powder in 7 qt of water (18% solids) and are weaned after 7 weeks. As a result, Land O'Lakes calves ate 41 pounds more milk replacer than Merrick's calves by the end of week 6 and consumed a total of 59 pounds more milk replacer over the course of the program.

Calves on Merrick's Intensive Feeding Program receive Super Star Formula 25-15 milk replacer fed at a rate of 1.5 pounds powder in 4 qt of water (18% solids). Merrick's calves are weaned after 6 weeks. As a result, Merrick's calves ate about 33 pounds more starter at week 6. By week 8 Merrick's calves out-consumed Land O'Lake calves by 60 pounds of starter.

Table 2 shows the effects on weight gain. Land O'Lakes calves were about 5 pounds heavier at the end of week 6, but the situation reversed by the end of week 8 with Merrick's calves outgaining Land O'Lakes calves by 5 pounds. Overall, during this two week period Land O'Lakes calves grew 25 pounds, while Merricks' calves grew about 35 pounds.

Table 2

Week Of Trial	Weight Gain (lb) (cumulative from beginning of trial)	
	Merrick's Super Star 25-15	Cow's Match 28-20
6	60.3	65*
7	76	74.4
8	95	90*

* values are approximates and were determined from Land O'Lakes graphic data

Table 3 shows the average daily gain for each group of calves. Merrick's calves gained 1.44 lb/day by week 6 compared to 1.55 lb/day for Land O'Lakes calves. However, by the end of week 8, Land O'Lakes calves were growing only 1.61 lb/day compared to 1.70 lb/day for the calves fed Merrick's Super Star 25-15.

Table 3

Week Of Trial	Average Daily Gain (lb) (cumulative from beginning of trial)	
	Merrick's Super Star 25-15	Cow's Match 28-20
6	1.44	1.55
7	1.55	1.52
8	1.70	1.61

Summary. Total feed intake of calves fed Merrick's Super Star Formula 25-15 was similar to Land O'Lakes calves, but Merrick's calves ate nearly twice as much starter and half the milk replacer. By week 8, Merrick's calves had gained more weight and were growing at a faster rate.

Merrick's Intensive Feeding Program is simple and is based on conventional calf management practices. There is no step-up program to change milk replacer feeding amounts. Calves receive two quarts of milk replacer twice per day, just like they always did.

Since calf starter feeds typically provide around 18% crude protein, Merrick's calves were fed an 18% crude protein starter feed during the trial. This compares to a 22% crude protein starter typically used in the Land O'Lakes program. However, there is no reason calves on Merrick's Intensive Feeding Program could not be fed a 22% protein starter, as calves may actually benefit from the higher protein starter.

Medications. A final comment should be made about medications. Programs that feed varying amounts or concentrations of milk replacer do not lend themselves to medications. With a medicated milk replacer, calves in this situation receive a variable level of medication depending on milk replacer feeding level. With its single feeding level, calves on Merrick's Intensive Feeding Program receive a constant level of medication throughout the milk replacer feeding stage.

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