



Milk Replacer Research Pros and Cons of Feeding High Rates of Milk Replacers

Feeding milk replacers (MR) at rates higher than 1 lb of a 20-22% protein, 20% fat MR per calf daily (conventional program) is gaining popularity but there is still concern as to whether these programs are correct for the calf and the pocketbook. Here are some research results and field experiences to consider.

Nutrient Profile of MR

In order to achieve optimum lean tissue gain, the MR should be higher in protein (26%) and lower in fat (17%) than conventional programs (Figures 1 and 2). High protein is needed to achieve lean tissue gain rather than excessive fat gain. Low fat is needed to avoid depressing starter intake.

Feeding Rate of MR

Feeding too much MR results in a substitution for starter consumption (Figure 3). This has two negative consequences. The first is that at weaning the calf's starter intake will be low and growth during the weaning transition and the few weeks post-weaning will be slowed (Figure 4). Thus, the fast weight gains achieved during the MR feeding phase will be lost. MR research suggests that 1.75 lb of a 17% fat MR is the maximum that should be fed, but that 1.5 lb is more cost effective and easier to manage. The second is that MR is much more expensive than starter, therefore, the costs of gains would be very high.

Feeding and Calf Management

When feeding 1.5 lb of a 26% protein, 17% fat MR (Akey Pinnacle), the calf can go right on this feeding rate immediately after colostrum feeding stops. Weaning is accomplished easily at 6 weeks of age by terminating the PM feedings for 2 days before feeding no MR. When the goal is to feed approximately 2.5 lb of a 28% protein, 20% fat MR (high feeding rate program), you need a step-up and step-down program. For example, the first week you feed about half the target amount, the second week you feed about 75% of the target amount, and the third through fifth or sixth weeks you feed the target amounts. However, you will have some calves that cannot be increased this fast and may have to have their MR reduced after they reach the target amount due to scouring or rejection of MR (see Figure 5). It also takes about a week to reduce the amount of MR to encourage starter intake, because starter intake will be low. Additionally, if there is a significant amount of scouring on a conventional program, switching to a high feeding rate program will typically increase the problems with scouring. Additionally, labor and management requirements are significantly increased

when calves are being stepped up and down on MR and there are calves of all ages on various feeding rates. Thus, this high feeding rate program is harder to manage than the Akey Pinnacle program.

Calf Performance

Controlled research shows that healthy calves fed the high feeding rate or Akey Pinnacle program will grow faster than calves fed a conventional program (Figure 6). Rate of gain is proportional to the amount of MR fed during the MR feeding period. However, immediate post-weaning gain will be slower with a high feeding rate program. Post-weaning gain will be much faster in Akey Pinnacle or conventional programs because of higher starter intake. Structurally, the calves fed either the Akey Pinnacle or a high feeding rate program will be of similar frame size and larger than calves fed a conventional program. The results are similar with healthy farm-raised and healthy shipped calves. The growth rates of calves experiencing bacterial or viral enteritis will be severely compromised if they are being fed a high feeding rate program (Figure 7). The variability in post-weaning body weights are larger when calves are fed a high feeding rate program (Figure 8). Calves fed the Akey Pinnacle program are more uniform.

Starter Protein Levels

An 18% crude protein (as-fed) starter can be fed with both Akey Pinnacle and conventional programs (Figure 9). There is no advantage for frame, weight gain, etc. to feed a higher protein diet. Many nutrition advisors and researchers have suggested feeding a higher protein starter with the higher feeding rate programs, however, there is no published research addressing this. Possibly higher protein starters are needed with the higher feeding rate programs since starter intake is compromised with these programs, however, it seems that energy intake would be limiting growth before protein in calves post-weaning from these programs.

Economics

Feed costs per calf rank as follows for the 3 programs: high feeding rate program > Akey Pinnacle > conventional. Calf performance through the immediate post-weaning period rank as follows: Akey Pinnacle > high feeding rate program > conventional. Feed cost per lb of gain ranks: Akey Pinnacle < conventional < high feeding rate program. The big cost in the high feeding rate program is the high cost for MR (Figure 5). High feeding rate programs are approximately \$50 to \$60 more per calf than conventional programs, whereas, Akey Pinnacle programs cost approximately \$20 more per calf. Table 1 contains more specific economic data for these programs.

Figure 1. Protein effects on calf gain

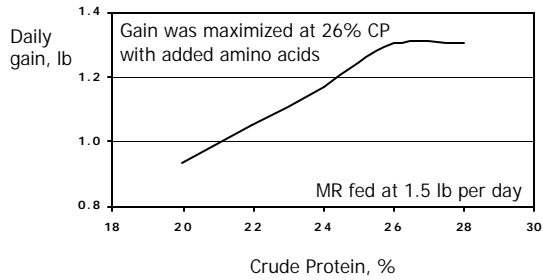


Figure 2. Fat effects on calf gain

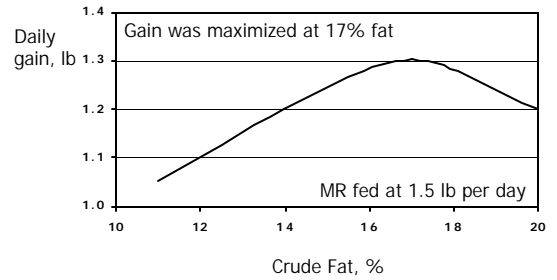


Figure 3. Starter intake decreases when more of a 20% fat MR is fed

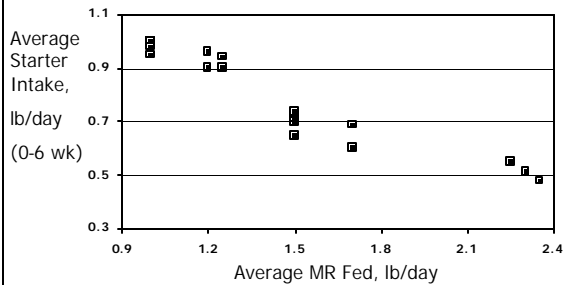


Figure 4. Starter intake and gain of calves on 3 programs

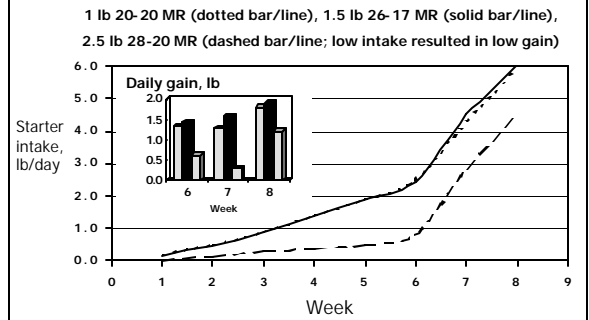


Figure 5. Variation in milk replacer intake with a high feeding rate program compared to Akey Pinnacle

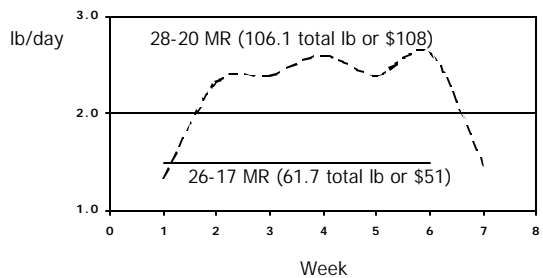


Figure 6. Gains of calves fed different MR programs

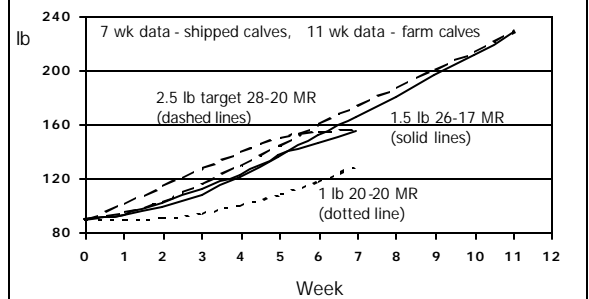


Figure 7. Health challenges in a high feeding rate program on calf gain

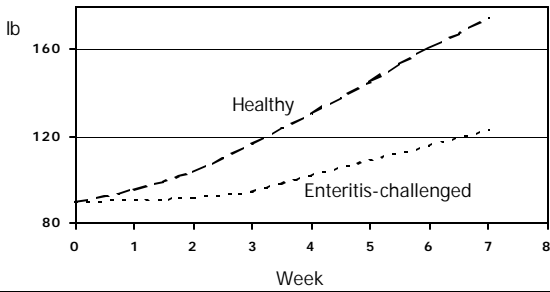


Figure 8. Variability in calf body weights increase with a high feeding rate program

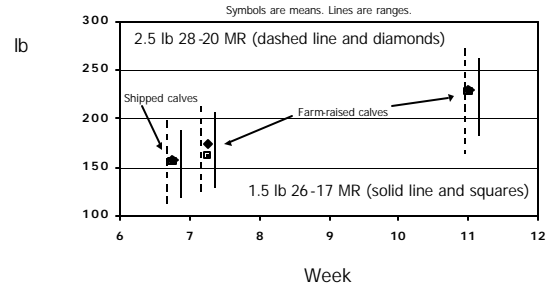


Figure 9. 18% crude protein is optimum level of CP in starter

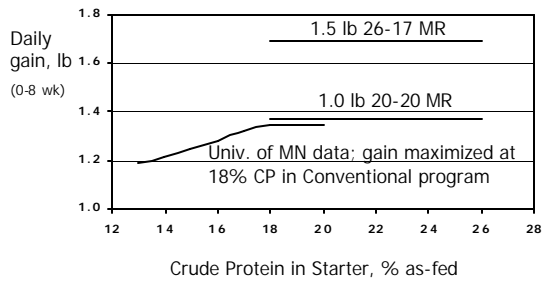


Table 1. Performance summary and economics of 3 MR programs

	Conventional	Akey Pinnacle	High Feeding Rate
Milk replacer, \$/lb	\$.82	\$.86	\$1.02
Milk replacer, lb/calf	41.0	61.5	101.3
Milk replacer, \$/calf	\$33.62	\$53.89	\$103.33
Starter, \$/lb	\$.17	\$.17	\$.17
Starter, lb/calf	123.2	121.45	66.36
Starter, \$/calf	\$20.94	\$20.64	\$11.28
Total feed, \$/calf	\$54.56	\$74.53	\$114.61
Weight gain, lb/calf	40.0	66.2	67.3
Feed cost \$/lb gain	\$1.364	\$1.126	\$1.703