



Milk Replacer Research Bedding and MR Feeding Rate in Winter Months

Dry hardwood shavings (W) are commonly available and used by many producers because of their availability, ease of handling, and relatively affordable cost. Wheat straw (S) is also commonly used for similar reasons. Both have insulation value in cold weather. Two trials were designed to compare W and S as bedding materials when different types and amounts of milk replacers (MR) were fed.

In each trial, 48 Holstein calves initially 3-5 days of age and 95 lb were used. Trial 1 began in December and the average temperature was 20 °F. Trial 2 began in January and the average temperature was 22 °F. Calves were maintained in 4 by 8 feet pens in a curtain sided and naturally ventilated barn with no added heat. Fecal material was removed daily and new bedding material was weighed and added periodically as needed to maintain a dry floor. A small amount of fresh straw was maintained in the corner of each pen since it is believed that calves will consume straw bedding. Free-choice water and an 18% CP starter were offered at all times. In Trial 1, a 26% milk protein, 17% fat MR was fed at 1.5, 1.75, or 2.0 lb of powder daily. In Trial 2, a 20% milk protein, 20% fat milk replacer (MR) was fed at 1.0, 1.25, or 1.5 lb of powder daily. Calves were weaned at 42 days and the trials lasted through 56 days.

In Trial 1, the calves bedded with S gained 5% faster (+4.7 lb) and in Trial 2, the calves bedded with S gained 12% faster (+9.0 lb) than calves bedded with W and this difference was statistically significant ($P < 0.05$). In Trial 1, bedding material used per calf averaged 171 lb of W and 151 lb of S. In Trial 2, bedding material used per calf averaged 184 lb of W and 155 lb of S. Uncompressed volumes were estimated to be .211 cubic feet per lb of W and .241 cubic feet per lb of S.

In each trial, rate of gain increased with rate of MR fed during the first three weeks but decreased with rate of MR fed during the last three weeks, resulting in no difference of rate of gain over the 56-day trials. From 0-21 days, calves fed the high rate of MR in Trial 1 grew 15% faster (+3.2 lb) and calves fed high rate of MR in Trial 2 grew 52% faster (+5.2 lb) compared to calves fed the low rate of MR. Starter intake decreased linearly with rate of MR fed during the last 4 weeks of Trial 1 and 6 weeks of Trial 2 resulting in a linear reduction in starter intake and efficiency (gain per unit starter and MR consumed) with increasing rate of MR fed over the 56-day trials.

After Trial 2, the calves were moved by MR program to group pens and offered the common starter blended with 5% chopped grass hay (15% CP) and water free-choice. Calf gain, gain to feed efficiency, and intake declined with increased rate of MR fed during the nursery period.

If extra MR is fed during cold weather, it might yield the most benefit if fed during the first three weeks because of its negative effect on starter intake and efficiency of feed converted to gain. Under above average management during cold weather, straw was a better bedding material than shavings. These data can be used by producers to calculate the costs and returns associated with bedding types and feeding programs.

Table 1. Intake and body weight gain of calves fed different amounts of MR.						
MR feeding rate, lb/day	Trial 1: 26% CP, 17% fat MR			Trial 2: 20% CP, 20% fat MR		
	Akey Pinnacle MR			Akey White Gold MR		
	1.50	1.75	2.00	1.00	1.25	1.50
0-56 days						
MR intake, lb	60.8	70.9	81.0	40.5	50.6	65.3
Starter intake, lb	105.0	96.3	90.5	115.5	110.5	105.4
Body weight gain, lb	89.7	86.1	85.1	76.6	78.0	78.2
56-84 days						
Starter/hay intake, lb	--	--	--	230.8	209.6	101.2
Body weight gain, lb	--	--	--	86.2	72.7	67.1

Reference: Prof. Anim. Sci. 23:656-664 (2007)