A Replacement Report

Calf Starter Research
Fatty Acids Compared with Popular Starter Ingredients

Various ingredients are promoted for inclusion in calf starters and are frequently used by producers. Whey and lactose have been ingredients widely used in calf starters to bridge the gap between a high lactose diet (milk) and a high starch diet (starter and grower feeds). Recent research sponsored by Diamond V Mills (ref. 1) showed a 14% increased starter intake and 23% increase in hip width change with 2% inclusion of their XP Yeast vs. no XP Yeast. Additionally, their data showed a non-statistical 11% increase in gains (.749, .632, .670 lb daily gain from 0-42 days for 2%, 1%, and 0% XP yeast, respectively). Fermenten, a unique protein source from Church and Dwight, Co., Inc. that is used to replace a portion of the soybean meal in a starter is promoted to improve gain and frame development. Some producers have reported reduced starter intake from Fermenten and C&D has responded by recently reducing its recommended inclusion rate to 4.5% of calf starters. However, we are not aware of controlled research where Fermenten was fed to calves. Akey manufactures A-Boost, a blend of functional fatty acids reported to increase average daily gain and feed efficiency in calves (ref. 2, 3).

In the present trial, the five starters compared were (A) a control, (B) 5% sweet whey, (C) 4.5% Fermenten, (D) Akey Calf Premix with *A*-Boost, and (E) 2% XP Yeast. Starters were complete pellets based on corn, soybean meal, 15% wheat midds, 5% distillers grains, 1.5% blood/fish/corn gluten meal blend, 1.0% fat, minerals and vitamins. Corn and soybean meal were adjusted to maintain 18% crude protein when experimental ingredients were included. The milk replacer (.05%) and starters (.0025%) contained decoquinate.

Fifty calves initially less than one-week old were housed in individual pens bedded with straw. Calves had access to clean, fresh water and dry starter feed at all times. Milk replacers (20% all milk protein and 20% fat) were fed at 1 lb per head daily in two equal feedings. The nursery was naturally ventilated with no heat. Starter feed offered and refused was weighed daily. Feces were scored daily. Medical treatments were recorded daily. Calves were weighed initially and weekly. Body condition score and hip widths were measured initially and every 2 weeks thereafter. Calves were weaned at 6 weeks. Data were analyzed as a completely randomized design and Tukey's test performed to compare means.

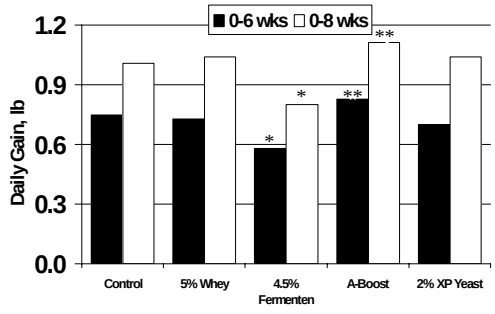
Initial calf body weight averaged 86 lb. Daily gains from 0 to 6 and 0 to 8 weeks were greatest ($P < .1$) for calves fed *A*-Boost and lowest ($P < .1$) for calves fed Fermenten (Figure 1). Daily starter intake from 0 to 6 and 0 to 8 weeks was lowest ($P < .1$) for calves fed Fermenten and tended ($P > .1$) to be greatest for calves fed *A*-Boost (Figure 2). Hip width changes for weeks 4 to 6 and 6 to 8 were lowest ($P < .1$) for calves fed Fermenten. Calves fed *A*-Boost tended ($P > .1$) to have the greatest hip width changes and fewest medical treatments. Feed cost per lb of gain was 6.5% less ($P < .1$) for calves fed *A*-Boost and 16.8% more ($P < .1$) for calves fed Fermenten (Table 1). Value of gain was $7.20

more ($P < .1$) per calf for calves fed *A*-Boost and $14.09 less ($P < .1$) per calf for calves fed Fermenten (Table 1). No other measurements were different ($P > .1$) for the treatments.

Whey and XP Yeast did not improve calf performance relative to the control. The protocol used by Penn State University in the XP Yeast trial (ref. 1) showing an intake response differed from our current trial. Calves started the trial at 21 days of age. The trial lasted 42 days. A 20% all milk protein, 20% fat (non-medicated) milk replacer was fed for the first 35 days of the trial. The starter was textured, 22% crude protein, and based on rolled, roasted corn and rolled oats. Thus, the older calf fed a liquid diet for 77 days and a 22% protein, textured starter may respond differently. Fermenten was counterproductive depressing starter intake, gain, and possibly structural growth as indicated by small hip width changes. Over the 8-week trial, calves fed the starter with *A*-Boost had 9% faster gains, 6.5% lower feed costs per lb of gain, and $7.20 more value than calves fed the control starter, consistent with previous research.

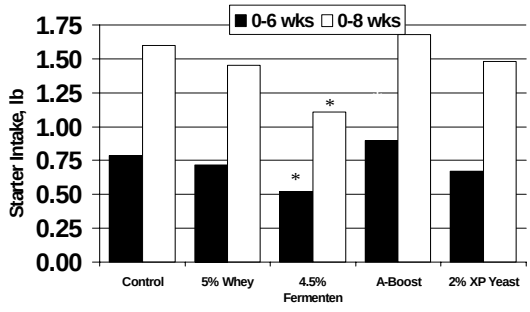
References:
1. J. Dairy Sci. 91:1497-1509 (2004)
2. Prof. Anim. Sci. 23:665-671 (2007)
3. J. Dairy Sci. 92:782-789 (2009)

Figure 1. Effect of Ingredient on Calf Gains



*Significantly less than others, $P<.1$, ** Significantly greater than others, $P < .1$

Figure 2. Effect of Ingredient on Starter Intake



* Significantly less than Control, $P < .1$

Table 1. Feed Costs and Value of Gain over the 8-week Trial*

	Control	5% Whey	4.5% Fermenten	Calf Pmx w/ *A*-Boost	2% XP Yeast
Starter cost, $/ton	**$290**	**$310**	**$304**	**$307**	**$303**
Feed cost per lb gain, $/lb**	**$.839**	**$.807**	**$.980**	**$.784**	**$.807**
% Change vs. Control**	**---**	**---**	***+ 16.8%***	***- 6.5%***	**---**
Value of gain – feed costs, $/calf**	**$37.40**	**$40.34**	**$23.31**	**$44.60**	**$40.36**
Value vs. Control, $/calf**	**---**	**---**	***- $14.09***	***+ $7.20***	**---**

***Other costs used in calculations: milk replacer = $34.44/calf, calf gain = $1.50/lb.**
****Fermenten and *A*-Boost treatments were significantly different ($P < .1$) from other treatments.**