1-G CALF 10-G MICRO

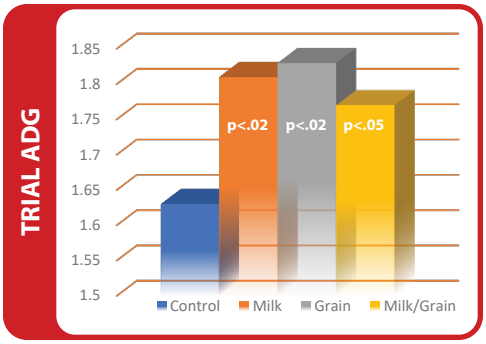
DIRECT-FED MICROBIAL EFFECTS ON HOLSTEIN HEIFER CALF PERFORMANCE

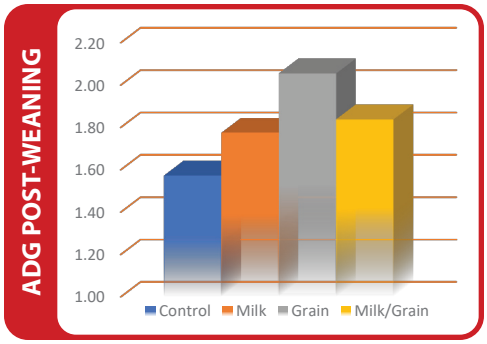
TRIAL PROTOCOL

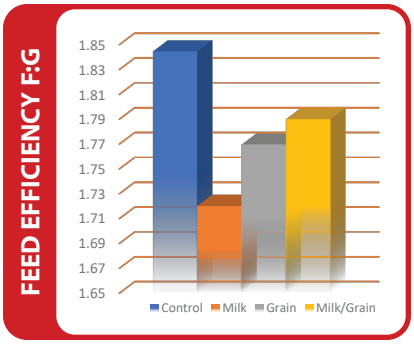
- 120 Holstein heifer calves were randomly assigned at birth to one of four groups
- 4 L of colostrum fed after birth
- Total serum proteins measured between 48-72 hours of age
- Heifers were fed pasteurized milk twice a day averaging 12.6% solids. (**TABLE 1.**)
- Calf starter was offered starting on day 3
- Milk and starter intakes monitored daily
- Heifers were weighed at birth, day 28, at weaning - day 50 and day 70

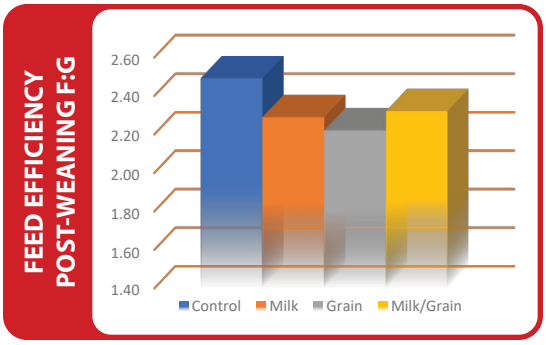
TABLE 1.

Day	Volume		DMI lb
0-13	3 Q	2x/d	1.63
14-27	5 Q	2x/d	2.71
28-40	7 Q	2x/d	3.79
41-43	5 Q	2x/d	2.71
44-46	3 Q	2x/d	1.63
47-49	1.5 Q	2x/d	0.81
50	0 Q		









Life Products® Direct-Fed Microbial *significantly* improved **Average Daily Gains** over controls of **8.5%** to **12.2%** and improved **Feed Efficiencies** of **2.2%** to **6.9%**.

Life Products® Direct-Fed Microbial calves did ***not*** show a post-weaning slump maintaining post-weaning **Average Daily Gains** of **12.7%** to **30.1%** over controls.

Ensure You are Investing Your Money on Bacteria that will Reach the Digestive Tract Alive

TUCKER MILLING
P: 256-582-2552
F: 256-582-2554
info@tuckermilling.com
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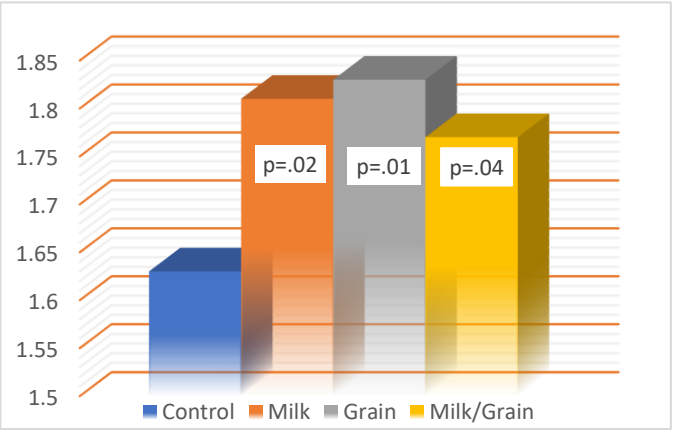
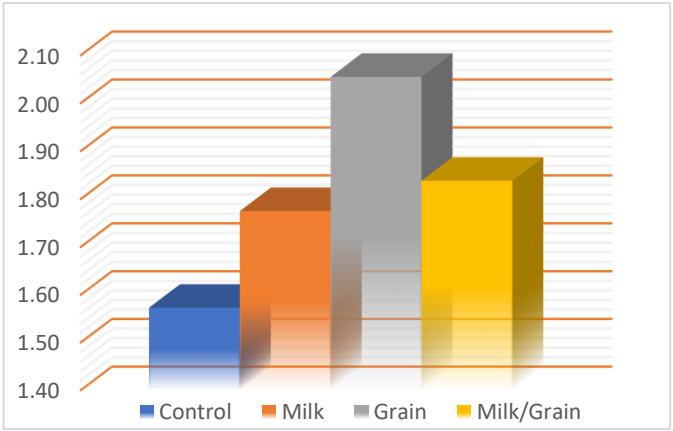
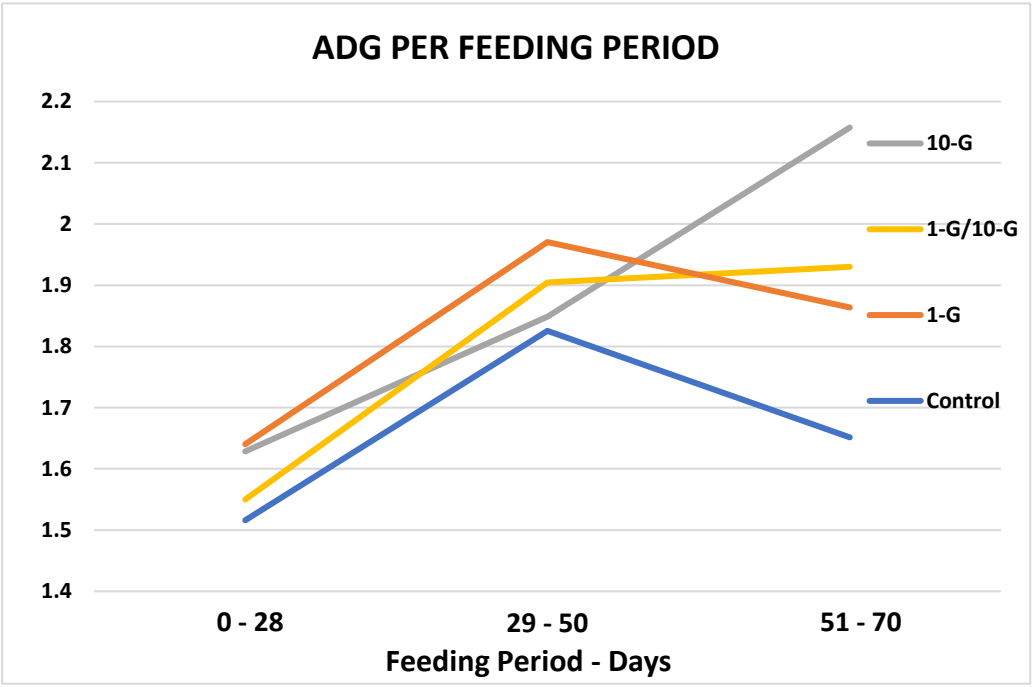
ADG FOR TRIAL



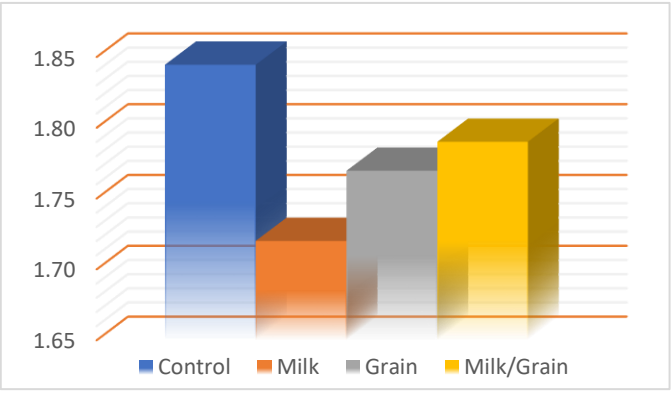
ADG POST-WEANING



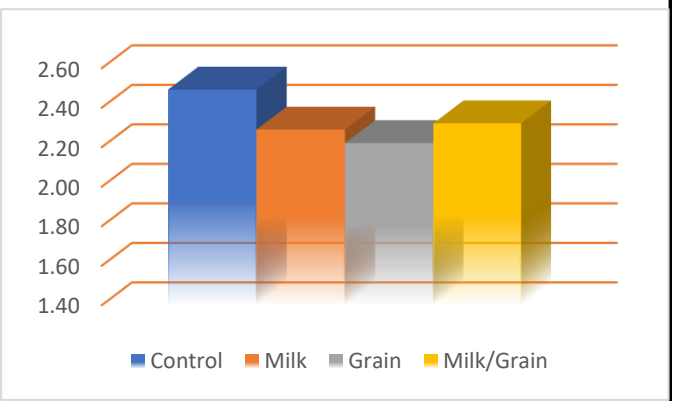
ADG PER FEEDING PERIOD



FEED:GAIN FOR TRIAL



FEED:GAIN POST-WEANING



Life Products Direct Fed Microbial Effects on Holstein Heifer Calf Performance

Pond Hill Dairy Research and Development Center Kevin Martens DVM, Life Products Inc.

Objective:

To evaluate the effects on performance of feeding Life Products Direct Fed Microbial to Holstein heifer calves.

Materials and Methods:

120 Holstein heifer calves were assigned at random to one of four treatments at birth: 1) Untreated Control (n=30); 2) 1-G Calf in milk at a feeding rate of 1g/hd/d, administered 2x/d at 0.5g/feeding (n=30); 3) 10-G Micro Concentrate Dairy at a feeding rate of 2g/hd/d with calf starter beginning on day 3(n=30); 4) 1-G Calf and 10-G Micro Concentrate Dairy (n=30).
Calves were weaned by day 50 with trial conclusion at day 70.

Immediately following birth, all newborn calves had their navels dipped with 7% tincture iodine, received 4L of colostrum, ear-tagged and administered Stressmate, *Colostridium perfringens* type C &D antitoxins, Inforce 3, *Arcanobacterium pyogenes- Escherichia coli-pasteurella multocida-salmonella typhimurium antibody*, *Bo*-Se, and First Defense Colostrum Supplement Bolus prior to placement in an individual hutch. Method of colostrum administration was recorded (i.e. bottle vs tube) and colostrum quality via a colostrometer. A 3ml jugular blood sample was collected 48-72 hours after receiving colostrum for determination of total serum blood protein levels via a refractometer.

All calves received pasteurized waste milk 2x/day at levels based on age (Table 1). Individual calf daily milk consumption was recorded. Daily milk samples were taken and tested for solids via Brix refractometer and calculated as total milk solids = Brix % +2. Whole milk averaged 12.6% solids. Calf starter was offered beginning at day 3 and intakes were recorded daily.

Growth parameters measured included body weight at birth (day 0), day 28, weaning (day 50) and at the end of the trial (day 70) to determine ADG. Wither heights were measured at the same time as body weights. Feed efficiency (Gain: Feed) was also determined per group at the conclusion of the trial. Fecal scores were recorded after the AM feeding using the UW-Madison McGuirk 0 – 3 scale for each calf up to 21 days of age.

Health parameters were evaluated by recording the incidence of enteric and respiratory events as determined by the farm personnel. Treatment duration and re-treated cases were recorded.
Necropsies were performed on all dead calves by a veterinarian from the Whitewater Clinic.

Table 1: Milk feeding schedule

Day	Volume	Frequency	DMI lbs
0-13	3 Q	2x/d	1.63
14-27	5 Q	2x/d	2.71
28-40	7 Q	2x/d	3.79
41-43	5 Q	2x/d	2.71
44-46	3 Q	2x/d	1.63
47-49	1.5 Q	2x/d	0.81
50	0	2x/d	

Calf Starter:

GUARANTEED ANALYSIS

Crude Protein	(Min)	21.2%
Crude Fat	(Min)	2.0%
Crude Fiber	(Max)	3.6%
Acid Detergent Fiber	(Max)	4.4%
Calcium	(Max)	0.4%
Potassium	(Actual)	0.3%
Vit A	(Min)	20IU/LB
Vit E	(Min)	4IU/lb

INGREDIENTS
Grain products, LOL HEIFER EDGE NON MED, Molasses Products, Plant protein products, CORID(Amprolium) 1.25.

Bulk ingredients put into a weigh hopper. The pre-weighed amount of the 10-G was placed onto the conveyor ahead of the hopper. As the system is turned on, the bulk ingredients chased the 10-G up the conveyor into the leg and into a 3-ton paddle mixer. While mixer was on, 0.5% soy oil and 6.25% molasses were added. It was mixed for 7 minutes (validated by our CV tests) before dropping through a chute into the bags.

Results:

Calf Intakes:

Milk consumption ave, qts.	437.8	441.3	443.4	426.7
	Calf starter offered at day 3			
Grain intake ave pre-weaning lbs.	8.51	8.41	11.09	10.02
Grain intake ave day 0-70, lbs.	90.8	93.8	106.49	99.2

Calf Performance:

	Control	**1-G Calf (milk)**	**10-G Micro (grain)**	**1-G/10-G (milk+grain)**
Heifer calves, N	30	30	30	30
Average Wt. lb, day 0	88.1	90.24	88.36	92.33
Average Wt. lb, day 28	130.55	136.17	133.96	135.73
Average Wt. lb, day 50	170.71	179.52	174.63	177.63
Average Wt. lb, day 70	203.74	216.79	217.78	216.23
ADG lbs Day 0-28	1.48	1.64	1.63	1.55
ADG lbs Day 0-50 - off milk	1.62	1.79	1.73	1.71
ADG lbs Day 0-70	1.63	1.81	1.83	1.77
		p<0.02	**p<0.02**	**p<0.05**
ADG post weaning	1.57	1.77	2.05	1.84
Feed:Gain Pre-weaning	1.55	1.43	1.52	1.47
Feed:Gain Post-weaning	2.49	2.29	2.22	2.32
Feed:Gain Day 0 -70	1.84	1.72	1.77	1.79

Health Parameters:

Fecal scores, McGuirk 0-3	0.57	0.55	0.61	0.55
1st pull - antibiotic therapy	12	13	11	10
Second pulls	4	0	2	1
Mortalities	2	0	1	0

Summary:

Life Products direct fed microbial calves showed ***significantly*** improved **Average Daily Gain of 8.5% to 12.2%** and **Feed Efficiency** improvements of **2.7% to 6.9%** over the control calves.

Life products direct fed microbial calves outperformed the control calves post-weaning with **Average Daily Gain** improvements of **12.7% to 30.5%** and **Feed Efficiency** improvements of **7.3% to 12.1%.**

Feeding 1-G Calf in the milk alone, 10-G Micro in the starter alone or both in combination resulted in similar improvements.

Research has shown that the performance and health of the calves in the first few months has significant impacts on future production.

Incorporating Life Products direct fed microbial into the calf feeding program can have a positive influence on a calfs current performance as well as the future production of the operation.