vol.29

THE NUTRITIONAL CONSULTANT'S DIGEST

PUBLISHED BY
MILKSPECIALTIES GLOBAL
ANIMAL NUTRITION
Providing Science Based Solutions

ENERGY BOOSTER select

ENERGY BOOSTER SELECT™ is an economical source of rumen stable free fatty acids designed to maximize milk production and milk fat yield without depressing dry matter intake. The combination of saturated fatty acids in ENERGY BOOSTER SELECT is highly digestible providing energy for both milk and fat synthesis. Research at the University of Georgia has shown feeding ENERGY BOOSTER SELECT increases milk production, milk fat yield and feed efficiency compared to an animal/vegetable fat supplement.

Study material and methods. Thirty two mid lactation Holstein cows were fed a diet containing either ENERGY BOOSTER SELECT (EB SELECT) or a mixed fat blend, FA profile reflecting liquid fats commonly in-use by Midwest feed mills. Cows averaged 158 days in milk and 100 lb of 3.7% fat milk at the start of the 8 week study. Diets were formulated to be isonitrogenous and isocaloric providing approximately 1 lb of fat supplement per day.

Diet ingredients and analysis – DM basis

	Feed Mill Liquid Fat (Linoleic = 15%)	EB SELECT (Linoleic = 0.5%)
Corn silage, %	33.4	33.4
Alfalfa hay, %	16.7	16.7
Corn, %	18.7	18.7
Cottonseed, %	5.6	5.6
DDGS, %	7.5	7.5
Protein/Min, %	16.2	16.2
Fat Supplement, %	1.9	1.9
DM, %	61.9	61.9
CP, %	17.5	17.5
RUP, % DM	7.0	7.0
NEL – Mcal/cwt	86	86
NDF, %	29.3	28.4
Starch, %	27.7	26.7
Fat, %	6.6	6.5
RUFAL, % (grams/day)	4.5 (1248)	3.7 (983)

RUFAL (rumen unsaturated fatty acid load) is the sum of oleic (18:1), linoleic (18:2) and linolenic (18:3) fatty acids and reflects the amount of unsaturated fatty acids being fed. Exceeding the capacity of rumen microorganisms to biohydrogenate unsaturated fatty acids leads to milk fat depression and reduced milk fat yields.

Results. Cows fed ENERGY BOOSTER SELECT produced significantly more milk and fat at a similar dry matter intake of cows fed the liquid fat blend. The designed fatty acid composition of ENERGY BOOSTER SELECT is proven to not only improve milk fat concentration, but also support a more efficient energy metabolism for increased milk production.

Production responses to fat supplementation

	Feed Mill Liquid Fat (Linoleic = 15%)	EB SELECT (Linoleic = 0.5%)
	lb/cow/day	
Dry matter intake	60.6	58.6
Milk*	89.5	95.2
Fat*	2.75	3.42
Protein	2.60	2.71
Energy Corrected milk*	84.9	96.1
Feed Efficiency*	1.40	1.64
Milk composition - %		
Fat*	3.08	3.58
Protein	2.91	2.86
Lactose	4.73	4.72

*Treatment means significantly different ($P<0.05$)

Milk fat production and the fatty acid composition of milk confirms feeding a fat with 15% linoleic acid or more than 50% of the total FA as RUFAL leads to milk fat depression and milk fat content with greater than 35% of the fatty acids as unsaturated fats. ENERGY BOOSTER SELECT contains only 5% RUFAL promoting both milk fat yield and milk fatty acid composition contributing to a harder butterfat with less than 31% unsaturated fats.

Appreciation is extended to Dr. John Bernard at the University of Georgia for conduct of this study (Spring 2012).