

Field Demonstration Summary: Practical application of Hydro-Lac[®] supplementation during the fresh period in commercial dairies.

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Background:

The transition period immediately after calving, commonly referred to as the “fresh period”, often presents the challenges of metabolic diseases related to negative energy balance, namely ketosis, in early lactation dairy cows. The fresh period also is a time that the dairy cow must replenish lost fluids and heal or repair tissue associated with the calving event. This process also requires an extra energy, fluids and minerals in ample quantities to maintain and perform to optimal health status. Ultimately, high production of peak milk levels and fast return to estrus activity for timely rebreeding are the goals for profitable production in commercial dairies.

Hydro-Lac[®] (HL) is a timed-event nutrition (T.E.N.[™]) product that is formulated to provide essential nutrients, electrolytes, sugars, and other proprietary ingredients necessary to maintain homeostasis and performance in live cattle, particularly during periods of transport and heat stress. Research in cattle supplemented with Hydro-lac prior to harvest at various rates has shown significant improvements in glycolytic potential (measurements of available energy in tissue), lipid oxidation and water-holding capacity or tissue shrink^{2,3}. These improvements in harvest cattle are proven to be applicable to improving energy balance, hydration status and cell repair and ultimate performance preservation during heat stress events⁴. The potential use of Hydro-lac, therefore, could be a profitable tool in helping the cow cope with the stress endured post-calving to improve animal health and performance.

Demonstration Design and Methods:

To demonstrate the use of Hydro-lac in fresh period lactating cows and measure its potential value, a series of field demonstrations were conducted from January through June of 2014 in commercial dairies in Minnesota. Seventeen (17) herds were randomly selected to feed a variable rate of 0.25-0.50 lbs. of Hydro-lac per cow per day starting the day of calving through graduation from the fresh pen to a high group ration. Herds were monitored for gross changes in herd size dynamics, feedstuffs and environmental challenges, as well as implementation and proper timing of the protocol, which resulted in two (2) herds being removed from the dataset.

Using DairyComp305/DHIA records, herds were compared for two (2) DHIA test periods prior to Hydro-lac and two (2) DHIA test periods after initiation of Hydro-lac supplementation to fresh cows for Fresh Cow Mature Equivalent (FreshME) and First Test Day Butterfat (FTDBF%). FreshME was used as a standardized measurement of fresh period milk production and future potential impact on lactation production curve. Number and percent (%) of cows with FTDBF%>5.0% (Holsteins) or >6.0% (Jerseys) as a threshold predictor of potentially ketotic cows. (It is important to note that herds varied in their clinical definitions of ketosis inputted into DHIA records.)

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²Kern, et. al. 2011, 2012

³Hoffmann, et. al. 2013

⁴Abuajamieh, et.al. 2013

Results & Discussion:

FreshME was significantly higher for fresh cows receiving Hydro-lac (Table 1, $P < .006$). This indicates that Hydro-lac has the potential to provide significant economic opportunity for the entire production curve, by improving initial fresh cow performance.

Both number and percentage of cows with FTDBF% > 5.0% (Holstein) or 6.0% (Jersey) were numerically reduced (Table 1), indicating a small potential reduction in ketosis risk in cows supplemented with Hydro-lac. This improvement was numerical but was not statistically significant.

Summary:

Hydro-lac supplementation to lactating dairy cows during the fresh period immediately after calving has been demonstrated to significantly improve fresh cow performance as measured by FreshME. Since FreshME is often used as a standardized metric in commercial dairies to evaluate potential production response to changes in fresh cow programs, this would indicate that a high return on investment (ROI) potential exists for supplementing fresh cows with Hydro-lac.

Table 1.

Qualifying criteria: Herd must have a minimum of five fresh cows in pre and post-test groups
15 qualifying herds

Treatments: Pre-Hydro-Lac (Pre) and Hydro-Lac (HL)

Means are averages of 1-3 tests/herd collected before or after Hydro-Lac initiation

Results:

Item	Pre ¹	HL ¹	SEM ²	P-value
Day of Collection ³	-31.5	46.9	4.5	<0.0001
Fresh Cow ME	19,627	20,606	895	0.006
Number of Fresh Cows Less Than 45 DIM at Test	26.3	28.0	7.8	0.64
Percent of Fresh Cows Less Than 45 DIM at Test	12.8	13.3	1.1	0.77
Number of Fresh Cows with Butter Fat Greater Than 5.0% (6.0% for Jerseys)	4.12	3.40	1.30	0.42
Percent of Fresh Cows with Butter Fat Greater Than 5.0% (6.0% for Jerseys)	11.6	11.3	2.2	0.93

¹ Pre = Milk test collected before Hydro-Lac feeding. HL = Milk test collected after Hydro-Lac feeding was initiated

² Standard error of the mean

³ Day of collection relative to initiation of Hydro-Lac feeding
