



RFCs boost dairy calf health and performance

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Raising healthy dairy heifers means optimising performance and reducing illness and morbidity, especially during the pre-weaning phase. This has always been, and will continue to be, of primary importance for producers and heifer raisers. Changing regulations and consumer attitudes about on-farm antibiotic usage also mean that farmers are looking for ways to reduce the use of these tools, while supporting optimal calf health. A recent trial was conducted at two Wisconsin dairy farms to evaluate health and performance of milk-fed commercial Holstein calves supplemented with the Refined Functional Carbohydrates™ (RFC™) in CELMANAX™.

THE ABCS OF RFCS

RFCS are the components harvested from yeast cells (*S. cerevisiae*) using specific enzymes during the manufacturing process to ensure a high level of bioavailability. This proprietary enzymatic hydrolysis yields:

- Mannan oligosaccharides (MOS).
- Beta glucans (1,3-1,6).
- D-Mannose.

The proprietary enzymatic hydrolysis method of processing used to refine the yeast cells influences the size and structure of these liberated components, which affects bioavailability and functionality. Research shows that each RFC has a specific mode of action and outcome when fed to livestock. When it comes to heifers, RFCs help provide a healthy foundation for dairy calf and heifer development. RFCs help support the beneficial bacteria of the intestine while blocking sites for attachment by certain pathogens.

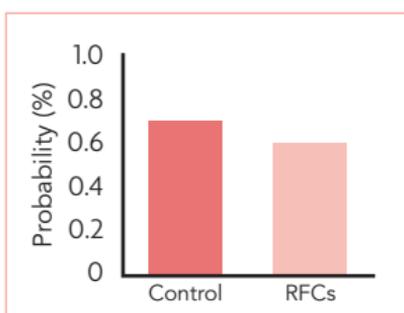
RESEARCH AND RESULTS

During this on-farm study, calves were housed individually indoors for days 1-6, then group housed with an automatic feeder until day 56. Three-day-old calves were randomised into treatments with about 80 calves per treatment. Throughout the trial, calves were monitored for overall health, faecal pathogen shedding and average daily gain (ADG) during the preweaning period. As dairy farmers know, raising calves is not always a simple, straightforward process due to a variety of factors, as was experienced during the trial. For example, in addition to treatment interactions, interactions were also noted between farm origin, study week, study month and calf passive transfer status. However, the following overall conclusions were found and bear noting.

First, RFCs numerically reduced predicted probability of severe diarrhoea ($P=0.15$) as shown in Fig. 1. Second, RFCs also reduced the prevalence of *Salmonella* ($P=0.03$) and rotavirus ($P=0.03$), but did not change the prevalence of *C. parvum* and coronavirus. Third, RFC-fed calves had numerically higher body weight at 48 days of age compared to control calves. On average, the RFC-calves gained more than four pounds vs. calves in the control group.

Ultimately, RFCs improved some gut health parameters, which led to numerical improvement of growth and performance in preweaned dairy calves. Keep in mind, though, it appears that the ability of RFCs to protect young dairy calves from developing severe diarrhoea likely depends on factors, such as specific pathogen species and management strategies, found on individual farms.

Fig. 1. Probability of developing severe diarrhoea within the first 21 days (faecal score = 3).



References available on request

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Risk of subclinical clostridial infections



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The impact of clostridia on dairies is often underestimated. But new evidence reinforces the prevalence of clostridia on dairy farms across the United States and demonstrates its widespread risk. ARM & HAMMER researchers collected data¹ from 39,000 cows in 16 representative dairy herds in California, Idaho, Iowa, Texas and Wisconsin. Almost three-quarters of total mixed ration (TMR) samples on the dairies tested positive for clostridia. Researchers measured clostridia and *C. perfringens* counts in faecal samples prior to and after feeding CERTILLUS for 90 to 150 days. Each sample was assigned a level of clostridial risk:

- High risk >1,000 CFU/g faeces
- Moderate risk 100 to 1,000 CFU/g faeces
- Low risk <100 CFU/g faeces

Tests showed that clostridial risk rates varied across dairies and regions, but all had significant numbers of at-risk cows prior to feeding CERTILLUS.

CERTILLUS delivers proprietary strains of *Bacillus* to combat harmful pathogens. After feeding CERTILLUS, producers in all five states saw their rates of high-risk levels significantly decrease (Table 1).

State	Prior to feeding CERTILLUS (% high-risk for clostridia)	Post-feeding CERTILLUS (% high-risk for clostridia)
Idaho	60.0	25.0
Texas	39.7	14.6
Wisconsin	39.5	18.4
California	26.6	16.7
Iowa	25.0	22.5

Table 1. Results by state showed significant decreases in high-risk levels.

Averages across all dairies (Fig. 1) showed that feeding CERTILLUS:

- Reduced high-risk category by 26.4%
- Increased percent of cattle in low-risk category by 83.8%
- Decreased high-risk associated with *C. perfringens* by 25.6%
- Increased percent of cattle in low-risk category of *C. perfringens* by 23.3%



Fig. 1. Shift in risk associated with total clostridia and *C. perfringens* before and after treatment with CERTILLUS (16 farm summary).

IMPROVED RESILIENCY

In addition to decreasing the risk associated with clostridia and *C. perfringens* on dairies, farms observed many other benefits of feeding CERTILLUS: more consistent feed intakes and fewer off-feed events; fewer cows in the sick pen with fewer gastro-intestinal related deaths; smoother transition and a positive milk response; increased rumination with more consistent manure.

¹ Data collected and analysed by ARM & HAMMER. Data on file, 2018.

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