



LEIBER BREWERS' YEAST IN DAIRY COWS INCREASES MILK YIELD AND QUALITY!

The major revenue of dairy farmers depends on delivered milk quantity, fat and protein contents as well as its quality parameters, like somatic cells. All milk parameters are significantly affected by several factors, e.g. lactation stage, breed, health and immune status. However, some of these can be notably impacted through nutrition. Starch-rich diets enhance lactate-producing bacteria in the rumen, resulting in fatty acids ratio changes and higher risk of acidosis (SARA). Reasons and consequences of SARA are summarised in Figure 1.

Due to climate change, nowadays heat stress is becoming an increasing problem also in temperate zones. Hot weather conditions are associated with reductions in dry matter intake. Moreover, milk yield and fat are depressed and somatic cell count increases (West, 2003; Hammami et al., 2013; Garner et al., 2017).

To avoid economic losses due to metabolic diseases, an excellent management and feeding programme is necessary for promoting milk quality and output. There are different feed supplements available to improve rumen health and efficiency. Among these, a very effective one is surely inactive brewers' yeast.

Figure 1: Sub-acute rumen acidosis (SARA) can result in reduced milk yield and quality

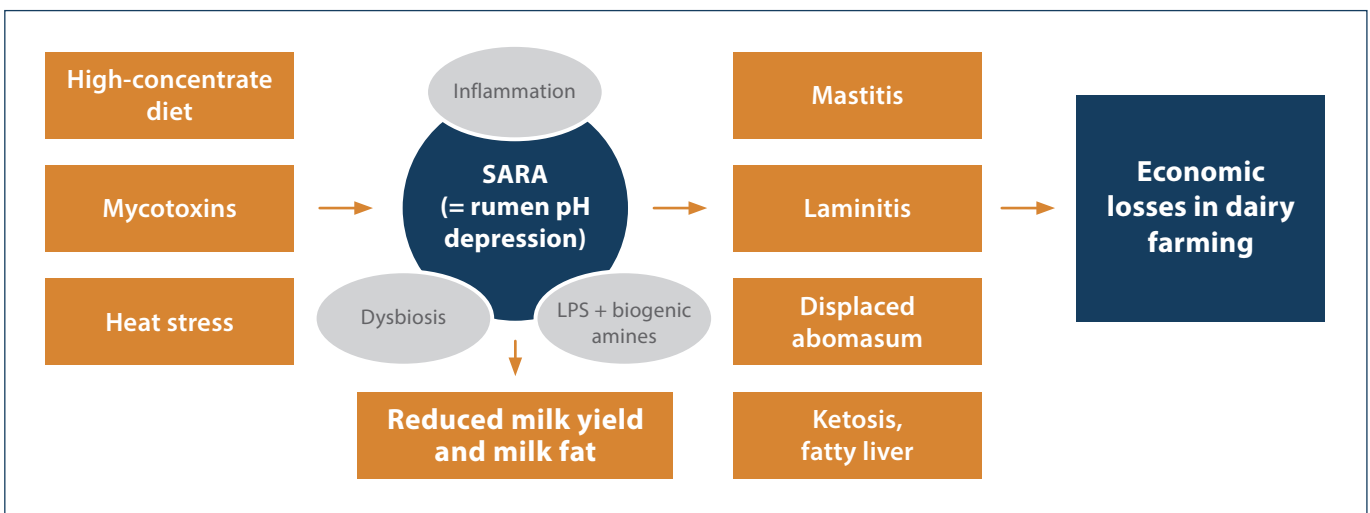




Table 1: Composition and effects of **Leiber YeaFi® BT** for dairy cows

	Leiber YeaFi® BT*
Ingredients and technical features	40% brewers' yeast (<i>Saccharomyces cerevisiae</i>), 60% spent grains Inactivated by a gentle drying process; long shelf life; thermostable; compatible with other feed components
Recommended dosage	150–300g per cow and day
Mode of action	Prebiotic and dietetic effects Provides essential amino acids, minerals, trace elements, vitamins (niacin, folic acid, biotin, ...) Functional carrier: spent grains provide high UDP (46%), improve product handling and palatability

*Leiber YeaFi® products are also available with other functional carriers

Leiber YeaFi® products are made from 100% real brewers' yeast (*Saccharomyces cerevisiae*) from breweries manufacturing according to the German Purity Law*. **Leiber YeaFi® BT** is completely inactivated and consists of 40% brewers' yeast and 60% of the functional fibre spent grains. A gentle drying process ensures that valuable ingredients of brewers' yeast (e.g. vitamins and trace minerals) are well preserved. Spent grains provide a high content of undegradable protein and increase palatability of ruminant diets. A recently conducted trial of LLG Sachsen-Anhalt (Engelhard et al., 2020) confirms beneficial effects of brewers' spent grains in dairy cows. Moreover, **Leiber YeaFi® BT** is a free-flowing product, which is user-friendly and shows excellent processing and storage properties (Table 1).

Positive effects of **Leiber Brewers' Yeast** (Leiber YeaFi®) products on rumen metabolism and performance of dairy cows have been demonstrated in several university and field trials. Researchers from Schothorst (2012) found that supplementing 200g **Leiber YeaFi® BT** to SARA-challenged cows significantly stabilises rumen pH. Duration of ruminal pH depression below 6 was reduced from 7.5 hours to 3.5 hours. Instead of 1 hour in control group, in trial group only 5 minutes pH was below 5.5 (Table 2).

* German Purity Law of 1516 requires that "nothing other than barley, hops and water can be used" to produce beer.

Another university study showed that 200 g **Leiber YeaFi® BT** significantly increases milk fat from 3.41 to 3.73% and reduces urea from 284 to 255mg/l in the first 120 days of lactation (Siedenlangenbeck, 2012) as shown in Table 3. In the same trial CLA (Conjugated Linoleic Acid) and OBCFA (Odd- and Branched-Chain Fatty Acid) contents in milk fat were increased. According to Vlaeminck et al. (2006) OBCFA is a parameter of microbial activity in rumen. So the difference in milk fat synthesis is an indicator of improved fibre degradation and higher count or more effective cellulose-degrading bacteria due to the use of brewers' yeast (Figure 2).





Table 2: Influence of **Leiber YeaFi® BT** on ruminal pH (min./d)

Parameter	Control	Leiber YeaFi® BT
pH < 6.0	453	212
pH < 5.8	209	68
pH < 5.5	56	5
pH < 5.2	10	1

Source: Schothorst Feed Research

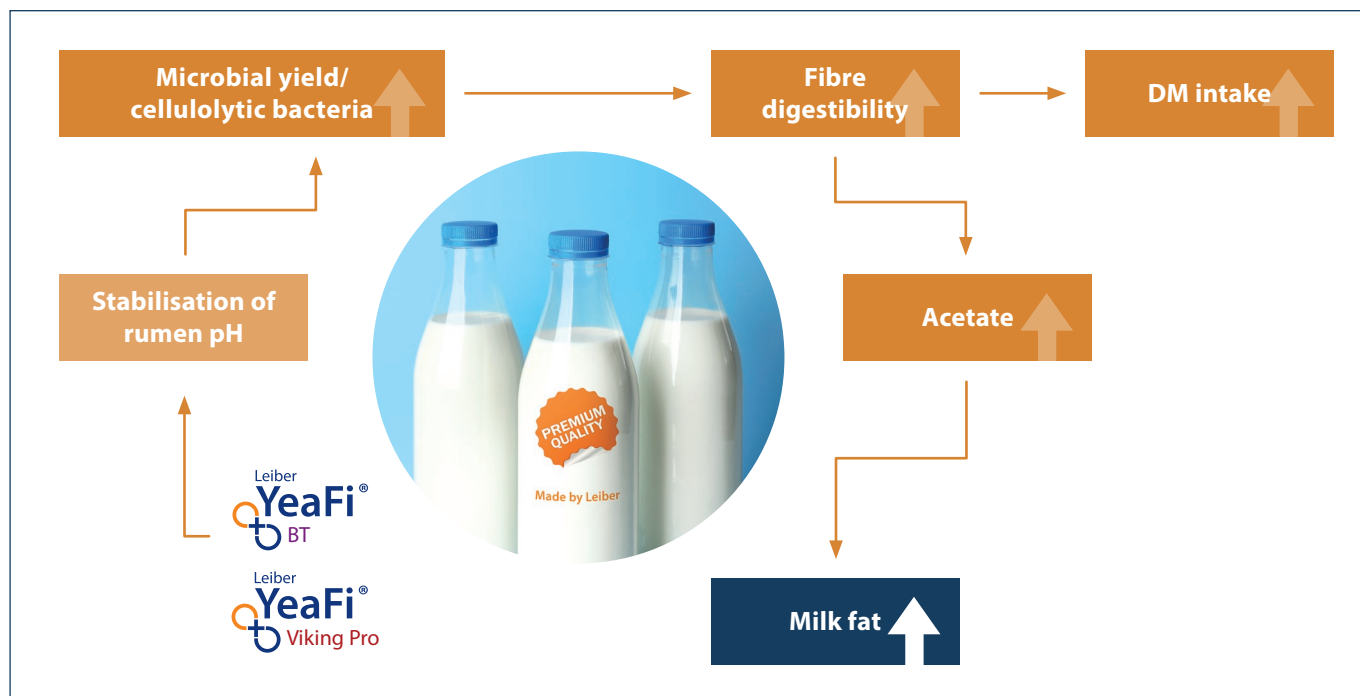
Table 3: Effects of **Leiber YeaFi® BT** on milk parameters until day 120 of lactation (n = 84)

Parameter	Control	Leiber YeaFi® BT	Difference
Milk fat (%)	3.41 ^a	3.73 ^b	+ 9.4%
Milk protein (%)	3.15	3.23	+ 2.5%
Urea (mg/l)	284.1 ^a	255.1 ^b	-10.0%
ECM (kg)	33.5	35.9	+ 7.2%

^{a,b}: p ≤ 0.05

Source: Anhalt University of Applied Sciences

Figure 2: Volatile fatty acids ratio in the rumen and milk fat synthesis depends on microbial yield and activity



Microbial yield is related to feed intake and composition. The higher the count and activity of cellulolytic bacteria the higher the fibre digestibility and acetate content in the rumen. High levels of acetate result in high levels of acetyl-CoA and consequently good conditions for milk fat synthesis. **Leiber YeaFi® BT** stabilises rumen pH and thus increases milk fat. In another trial at Anhalt University of Applied Sciences (Breitenworbis, 2013) only 150g **Leiber YeaFi® Viking Pro** (40% brewers' yeast bound to

60% DDGS based on wheat) were added per cow and day. Nevertheless, milk fat was significantly increased by 8% from 3.38% to 3.66% after 88 days as shown in Figure 3. This trial confirmed reduced urea content as well as higher OBCFA and CLA contents (Figure 4). Results indicate a better energy supply for milk protein synthesis. Due to improved fat and protein contents in milk, energy-corrected milk (ECM) yield increased from 37 to 39kg.

Figure 3: Leiber YeaFi® Viking Pro significantly increases milk fat content

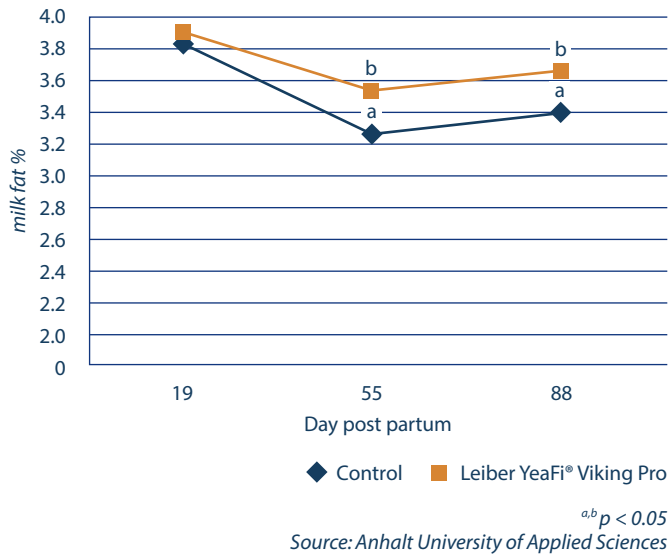
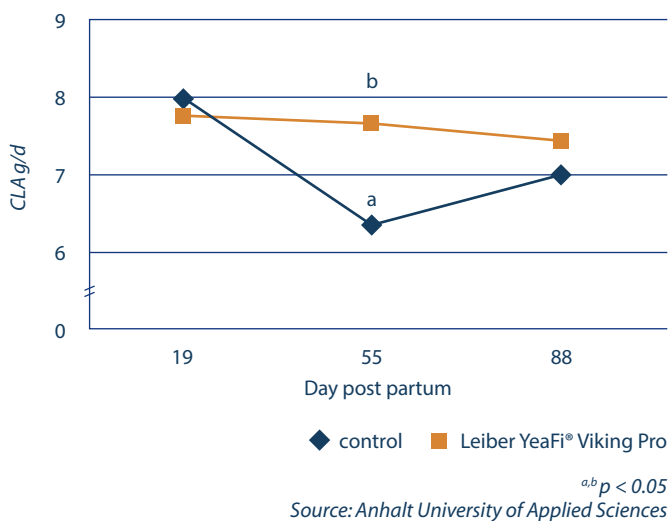


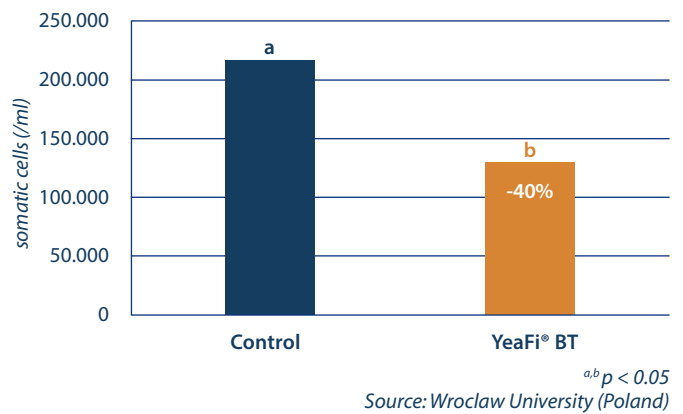
Figure 4: Leiber YeaFi® Viking Pro significantly increases CLA (Conjugated Linoleic Acid)



In addition to milk yield and its nutrient content, quality parameters like bacterial count and number of cells determine the milk price as well.

In a trial from Poland a lower somatic cell count was found in milk of dairy cows after supplementing **Leiber YeaFi® BT** (Dobicki et al., 2006). As shown in Figure 5, somatic cells were reduced by 40% (corresponding to 87.000 cells).

Figure 5: Leiber YeaFi® BT improves milk quality by reducing somatic cell count



A recently conducted field trial in Ukraine confirms positive effects of **Leiber YeaFi® BT** on quality parameters. Milk from this farm (average milk yield of 12.500kg) is sold to a dairy processing plant for cheese production. Hence, the aim of this trial was to increase milk fat and protein content.

164 Holstein dairy cows of 2nd and 3rd lactation were divided into two groups with 82 animals in each group. Cows were fed with the same diet. On top, trial group was supplemented with 300g **Leiber YeaFi® BT** per cow and day.

Figure 6: Leiber YeaFi® BT increases milk fat and protein contents

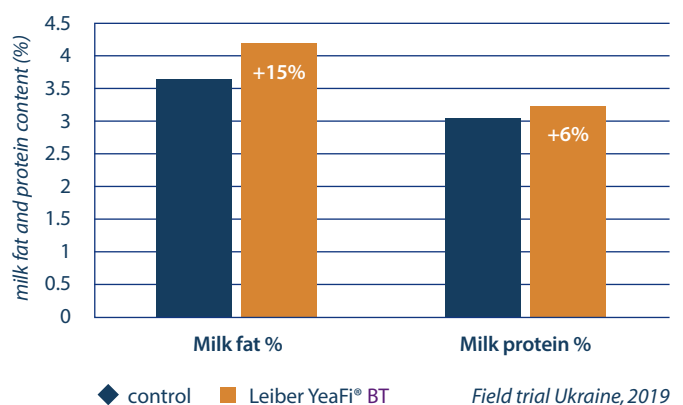
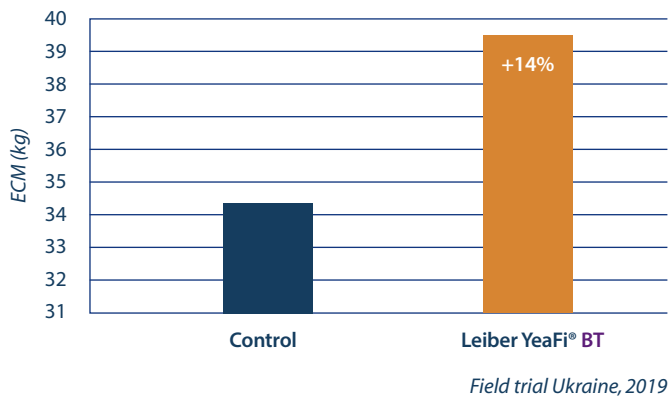




Figure 7: Leiber YeaFi® BT increases energy-corrected milk (ECM)

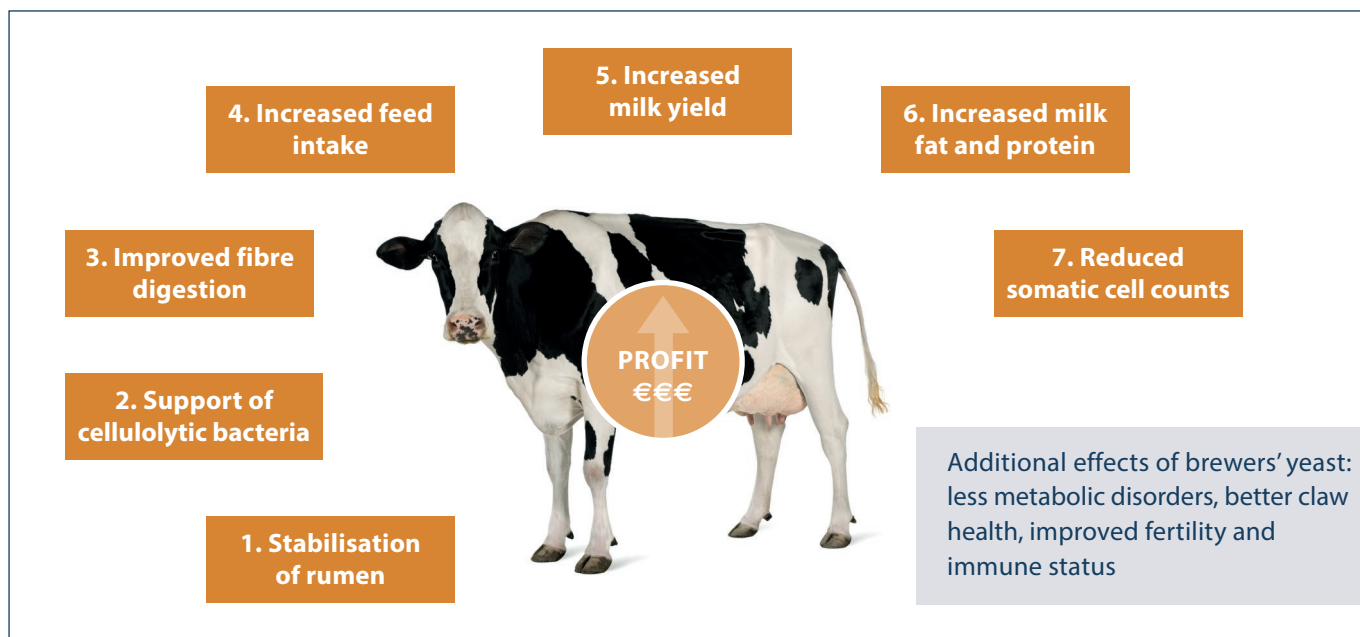


As demonstrated in Figures 6 and 7 milk protein increased by 6% and milk fat increased by 15%. Milk yield was also higher by 2.3kg after 65 days of trial. Energy-corrected milk (ECM) of trial group increased from 34.4kg to 39.5kg. ROI in this trial was 2,8:1.

Conclusion

To achieve a high profitability, milk quantity and quality are of paramount importance. **Leiber Brewers' Yeast** supports rumen metabolism and increases feed intake, resulting in higher milk yield, increased milk fat and protein and lower somatic cell counts. Positive effects of supplementing dairy cow diets with **Leiber YeaFi®** products are summarised in Figure 8.

Figure 8: Benefits of Leiber YeaFi® products in dairy cows



We have been upcycling at world-market level since 1954 and keeping the environment and climate in mind.



Leiber
Excellence in Yeast

Sustainable. Innovative. Effective.

