

## Mineral feed containing yeast suitable for ecological farming (DE-ÖKO-006)

The live yeast in **jbs rinderhefe 5-10 b** is covered with a layer of inactive yeast during production and formed into stable beads. Thus, it only becomes active in the rumen and ensures better fibre digestion. Brewer's yeast, sodium chloride and minerals form the carrier substances. Oregano oil is added as a flavouring and dust binder. At the same time, oregano has a health-promoting effect as it suppresses unwanted microbes and has antioxidant properties.

### Organic certified and FiBL-listed

**jbs rinderhefe 5-10 b** contains: live and inactive yeast, sodium chloride, minerals, oregano oil.

### Feeding

**Dairy cattle:** 20 g per animal per day

To get the most out of **jbs rinderhefe 5-10 b**, we recommend feeding it from 4 weeks before calving through the entire lactation period.

**Beef cattle:** 35 g per animal per day

**Calves for rearing:** 10 g per animal per day

Frequent feed provision and high feed quality promotes feed intake and ensures the energy supply of the cows and cattle.

**Packaging:** 20 kg bag

### In practice

**A practical test from the Czech Republic showed the following results**

	Untreated	Live yeast
pH value	6.4	6.6
lactate	16.4	9.3
fatty acids	104.7	112.0
Ø kg of milk ECM	37.0	39.4
glucose	3.2	3.3
BHBA	0.6	0.5

source: Mohamed Mammeri von Phileo

All measured values have improved significantly: Less lactate and more fatty acids indicate a reduction in the risk of acidosis and an optimization of rumen processes. At the same time, the increase in fatty acids ensures a higher energy yield from the feed. Together with the increased glucose content, this leads to more milk in the tank. The beta-Hydroxybutyric acid value (BHBA in the blood) provides information about the energy balance. The higher it is, the greater the ketosis risk. The low value shows that the live yeast has relieved the cow's metabolism.



### At a glance

- stabilizes the rumen, especially if animals are stressed (heat, change of feed)
- reduces the risk of acidosis
- more microbial protein
- increases ruminal production of vitamins and biotin
- reduces the amount of feed residue in the manure
- with oregano oil



**DE-ÖKO-006**

may be used in organic production in accordance with Regulation (EC) 2021/1165, Annex III

## Sieve test

Using the simplest of means, the sieve test provides the easiest way to see the effects of feeding live yeast. Put a sample of manure in a common kitchen sieve and rinse until the water runs clear.

The undigested feed components will remain in the sieve. The amount and type of the residue shows the digestion's intensity. After 3 - 4 weeks of feeding live yeast, repeat the test. Through the feeding of live yeast the amount of residues is significantly reduced – especially the amount of undigested maize kernels is significantly reduced.



feed ration **without** live yeast



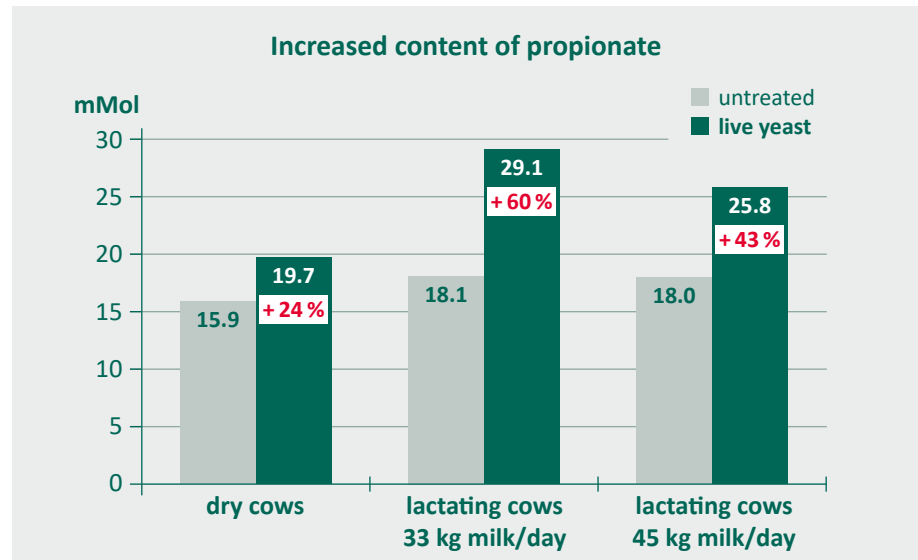
feed ration **with** live yeast

## Effects of the live yeast used in jbs rinderhefe 5-10 b, *Saccharomyces cerevisiae*, on the rumen

### Live yeast consumes ruminal oxygen

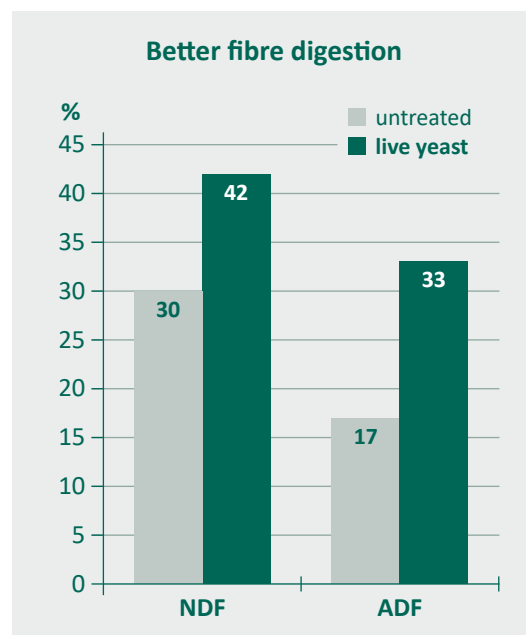
Oxygen is toxic for most ruminal microorganisms. Live yeast reduces oxygen, so the number of cellulose-degrading microorganisms increases. This may be observed in the animals' manure after just a short period of time (see pictures on the left): fibre and kernel residue is reduced. As live yeast binds the oxygen, a higher amount of free hydrogen will be available for the formation of propionic acid. In the liver, this acid is subsequently transformed into the energy source glucose.

In the dry period as well as during lactation, feeding low-energy rations results in an increased production of propionic acid in the rumen.



source: Lesaffre Feed Additives

### Live yeast support the fibre degrading bacteria in the rumen



source: Lesaffre

Live yeast support the fraction of the sensitive fibre degrading bacteria.

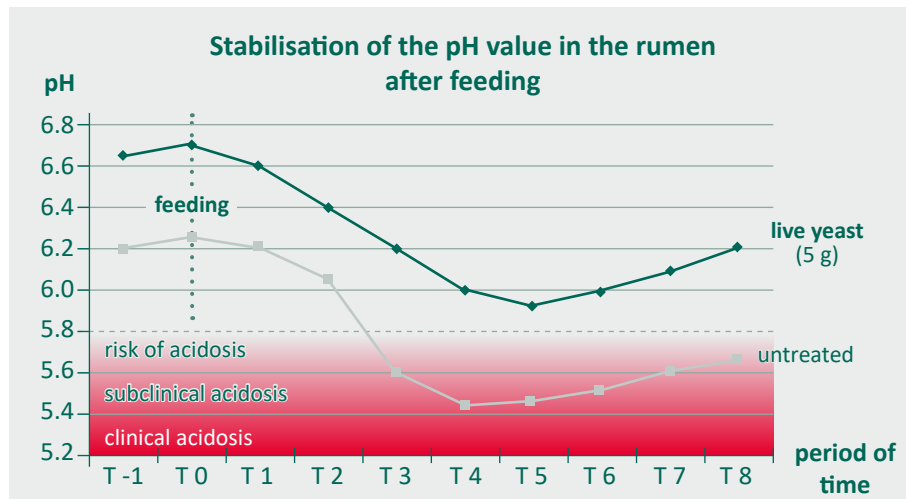
The trial showed an improved digestibility for plant fibre components (NDF).

Interestingly, this effect mainly consisted of doubling the digestibility of the fibre that is difficult to digest (ADF).

## Stabilizing the pH

Stabilizing the rumen pH is of special significance (see chart).

A pH-level below 5.8 bears the risk of irreversible damage to the ruminal mucosa caused by the acid as well as the risk of killing a great number of ruminal bacteria. When degrading, bacteria release endotoxins which cause symptoms of poisoning like laminitis. This development may be avoided by feeding live yeast, keeping the pH at a safe level above 6 (see upper graph). This protects both ruminal bacteria and ruminal mucosa.



source: Lesaffre Feed additives

## Ruminal cross-section



A high-capacity rumen features a dense "lawn" of villi. Low pH values can really burn the rumen villi due to acid, so that the „lawn“ gets holes and feed digestion deteriorates.



### Please note: detoxification function ceases!

If the pH drops below 6, a vital function of the rumen will falter: The degradation of toxins by single cell organisms like protozoa. Protozoa degrade complicated molecules such as mycotoxins but require a higher pH level for maintaining their vital functions. Thus, a rumen with frequently low pH levels bears the high risk that toxins are not degraded; and further on in the intestinal tract, will get into all organs via the bloodstream.

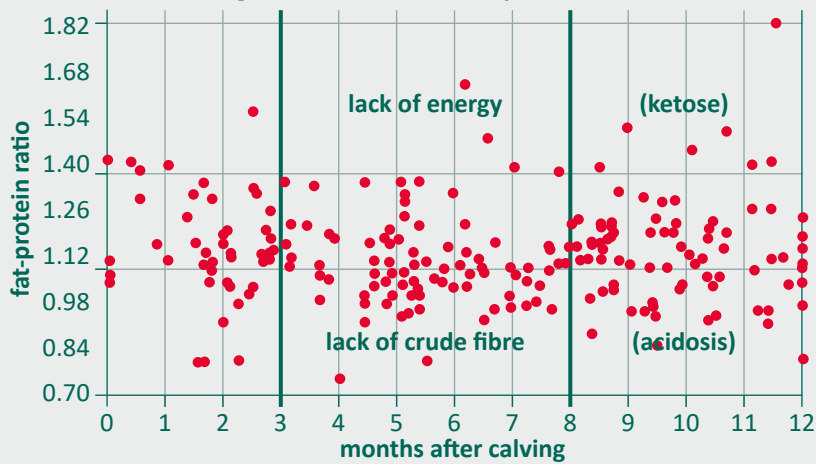
## Improved protein supply

A well-functioning rumen is the basis for healthy, high-yielding dairy cows. The more microorganisms are active in the rumen, the better the feed conversion.

**jbs rinderhefe 5-10 b** increases the ruminal microbial population and provides the cow with a better supply of high-quality, easily digestible bacterial protein in addition to improving feed conversion and increasing feed intake.

This in turn has positive effects on milk yield.

### Monitoring the metabolism: fat-protein ratio (FPR)



### Milk fat content

The milk fat content depends upon the rumen's acetic-propionic acid ratio. The higher the content of acetic acid, the higher the content of fat in the milk. Even though the rumen and therefore the fat content is mainly influenced by the feeding, it is also affected by other criteria such as genetics, breed, season and lactation state as well as by milking equipment and cooling technology.

### Evaluating the feeding's success by evaluating milk components

Intensive studies are necessary if specific problems in animal health need to be solved. However, the drawing of samples from the dairy tank as well as the individual results of the analyses required for dairy milk's quality control provide a good data set for a first evaluation of the feeding's success.

#### Low milk fat content (< 3.6 %) → check causes:

- shortage of textured crude fibre, reduced rumination (< 40 chewings per bite) → acidosis
- ration's particle size is altogether too small or particles are too big so that the cows are able to sort through the ration and reject certain parts
- too many readily digestible carbohydrates in the ration → acidosis
- too much crude fat (app. > 1 kg/day) results in the formation of conjugated linoleic acid and the inhibiting of the udder's milk fat synthesis
- lack of feed
- faulty cooling, temperature is too close to freezing point resulting in foaming in the tank

#### Increased milk fat content (> 5 %) → check causes:

- consider the risk of ketose if protein content is simultaneously low (fat-protein ratio  $\geq 1,5$ )
- crude fibre content is too high

### Milk protein content

The milk protein content is an indicator for the energy supply. It does not depend as much on the feeding as the milk fat content and is also influenced by genetics, race, season and lactation state. The difference between the protein content in the first and third third of lactation should not exceed 0.6 percentage points per single animal.

#### Low protein content (< 3.0 %) → check causes:

- insufficient feed intake
- ration's energy content is insufficient for an adequate performance
- lack of (high quality) protein in the ration

#### High milk protein content (> 3.8 %) → check causes:

- amount of concentrated feed / energy components is too high → risk of acidosis
- the protein content tends to be higher if there are problems with udder health

### Milk urea content

The urea content in milk should always be considered together with the protein content (see above). It says something about the utilization of the crude protein and thus the rumen function. Elevated levels of protein in the ration increase the milk's urea concentration.

#### Based on the milk yield, the following applies:

- milk protein normal: 3.2 - 3.8 %
- upper limit 300 mg urea per kg milk, above → reduce protein intake to avoid liver load

DE-ÖKO-006

may be used in organic production in accordance with Regulation (EC) 2021/1165, Annex III