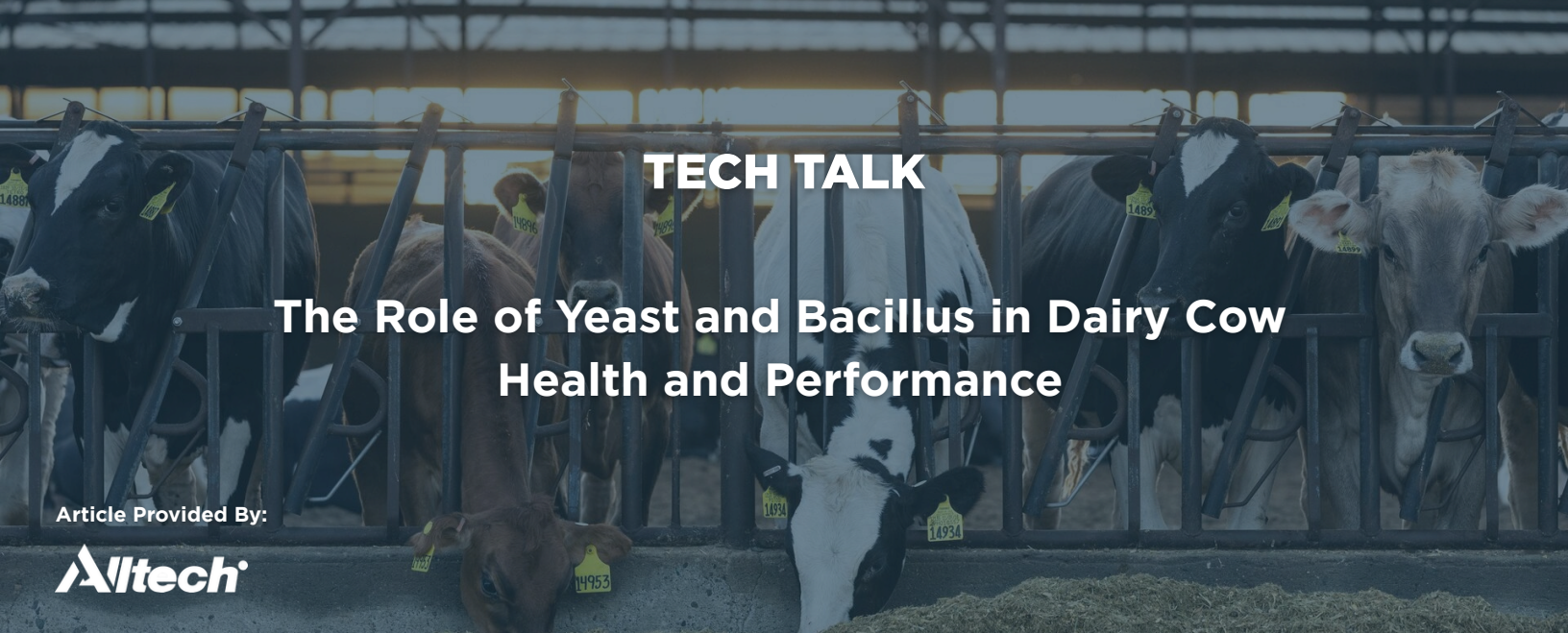




## TECH TALK

# The Role of Yeast and Bacillus in Dairy Cow Health and Performance

Article Provided By:

**Alltech**

The health and performance of the intestinal tracts of dairy cows is critical for the success of every dairy. As the primary site of microbial fermentation and digestion in dairy cattle, the rumen plays a pivotal role in both the well-being and production of individual cows and in the overall profitability of the entire dairy operation. Optimal nutrient absorption in the gastrointestinal tracts of dairy cattle is especially imperative for achieving optimal herd health and performance. With so much at stake, nutritional solutions like yeast and Bacillus are two tools we cannot ignore.

### Enhancing rumen function with yeast

The research on yeast is clear: When formulated properly into dairy rations, yeast can help deliver more milk and establish a more stable rumen pH, leading to more consistently high-quality milk production and elevated rumen efficiency overall. But which yeast is the best choice for your cows?

Not all strains of yeast preparations are equal in terms of their benefits for ruminal fermentation. The process used to produce Yea-Sacc®, Alltech's leading yeast feed additive, makes it unique — and helps preserve the benefits of yeast and metabolites, thereby elevating animal performance. Introducing Yea-Sacc 1026 into the diet enhances the diversity of the animal's microbial population through rumen conditioning. This process of changing and enhancing the rumen microbial population can take up to two weeks to fully go into effect.

### Benefits of Yea-Sacc supplementation for dairy cattle:

1. **A more stable rumen pH:** By stimulating lactate-utilizing bacteria, the cow is able to maintain a more stable rumen pH — which, in turn, decreases its risk of rumen acidosis.
2. **Improved feed efficiency:** Yea-Sacc encourages nutrient digestion by stimulating cellulolytic bacteria, allowing for greater feed intake.
3. **Increased microbial protein synthesis:** Increased amounts of anaerobic bacteria trigger increased protein synthesis, allowing for an increase in protein flow in the duodenum.

The inclusion of yeast products, such as Yea-Sacc 1026, in the diets of dairy cows has been shown to increase milk production by an average of 2.2 lbs. per day.

### Protecting the lower GI tract with Bacillus

While the rumen performs the vital task of initial digestion and fermentation, it's the lower gastrointestinal (GI) tract that takes on the responsibility of nutrient absorption. However, this phase is not without its challenges. The complex interplay of enzymes, nutrients and the gut environment can sometimes hinder efficient nutrient uptake. The lower GI tract also gives negative bacteria an opportunity to establish a foothold, potentially leading to digestive disorders, reduced nutrient absorption and compromised cow health.

Bacillus species, including *Bacillus licheniformis* and *Bacillus subtilis*, are known for their ability to form spores that survive harsh conditions, including pelleting and processing. That allows them to colonize the gut and create an environment that is more conducive to improved nutrient absorption, thereby effecting the overall well-being of the cow.

Bacillus can also combat undesirable organisms linked to potentially deadly issues, such as hemorrhagic bowel syndrome and abdominal distension. More specifically, Bacillus has been proven to target Clostridium perfringens by producing organic acids that inhibit the growth of this bacteria, making it an ideal dietary component supporting the GI tract.

### Benefits of Bacillus supplementation in dairy cattle:

1. **Improved nutrient absorption:** Nutrients are often present in complex forms in the cows' diet. For instance, carbohydrates can be present in the form of starches and cellulose, proteins can be offered as complex polypeptides, and fats can be included as triglycerides. These complex molecules need to be broken down into simpler forms (e.g., glucose from carbohydrates, amino acids from proteins and fatty acids from fats) for absorption into the bloodstream. Bacillus species have the capability to produce various digestive enzymes, which assist in breaking down these complex nutrients into simpler, more bioavailable forms. This makes it easier for the cow's digestive system to absorb these nutrients through the walls of their digestive tracts and into the bloodstream.
2. **The inhibition of undesirable bacteria:** Bacillus bacteria's unique ability to produce antimicrobial compounds, including bacteriocins and enzymes, helps suppress the growth of harmful pathogens within the gut. These compounds can disrupt the cell membranes or metabolic processes of harmful microorganisms, which prevents them from thriving.
3. **Elevated milk production:** The improved digestion and nutrient absorption facilitated by Bacillus probiotics can contribute to increased milk production in dairy cows. Milk production requires a significant amount of energy and nutrients — and when these are readily available, cows can produce more milk.

### Synergistic benefits of combining yeast and Bacillus

When dairy cattle can efficiently convert the nutrients from their diets into milk, the result is often higher milk yields. This is a significant benefit for dairy farmers, as it means they can produce more milk with the same amount of feed, effectively lowering their feed costs per unit of milk produced.

Yea-Sacc 1026 BAC provides continual support to the entire GI tract, which helps condition the rumen for optimal efficiency and offers support against undesirable organisms. Yea-Sacc 1026 BAC combines the proven rumen modifier Yea-Sacc 1026 with the combined powers of Bacillus licheniformis and Bacillus subtilis, making it a cost-effective solution for optimizing the overall health and efficiency of the rumen and the gut.