Poultry News
JULY 2025
from the team at AgriHealth

ISSUE 14

B-Act® in Layers: Enhancing Productivity from the Inside Out

Gut Health - The Engine of Productivity and Bird Wellbeing

In modern poultry production, the gastrointestinal tract (GIT) plays a central role not only in nutrient absorption but also in maintaining bird health, performance, and welfare. A well-functioning GIT is essential for consistent egg production, optimal feed conversion, and the overall resilience of the flock. As antibiotic use becomes increasingly restricted and consumer demand for sustainable, natural solutions rises, poultry producers are turning to scientifically backed probiotic strategies to support the gut as a cornerstone of productivity.

B-Act, a probiotic feed additive based on *Bacillus licheniformis* DSM 28710, addresses these challenges directly. Its spore-forming capabilities ensure it reaches the intestine intact, where it plays a key role in enhancing digestive function, stabilizing microbial populations, and supporting the bird's immune response. The result? A healthier gut that translates to healthier, more productive birds.

Product Profile: What Is B-Act?

B-Act contains viable spores of a carefully selected strain of *Bacillus licheniformis*, a robust, Gram-positive, spore-forming bacterium with strong performance in animal nutrition. The formulation is tailored to withstand the challenges of feed processing, storage, and gastric conditions, ensuring it reaches the site of action – the gut – in full strength.

Key Features of B-Act:

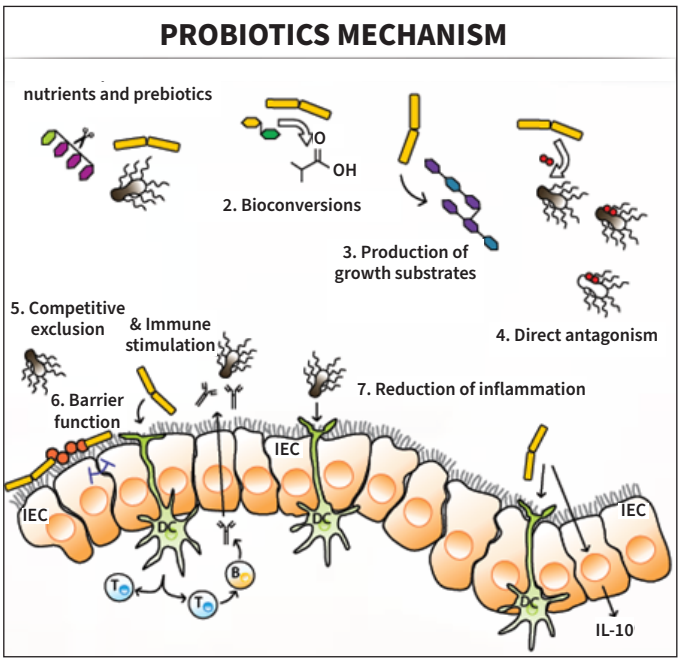
- **High spore stability**: Maintains viability through pelleting and long storage periods
- **Thermal resistance**: Tolerant to high temperatures and mechanical processing
- **Long shelf-life**: Remains effective for up to 24 months
- **Versatile integration**: Compatible with acidifiers and other common feed additives
- **Accurate dosing**: 100 g/ton provides 1.6×10^{12} CFU/ton of feed

These features guarantee a consistent probiotic effect, helping support intestinal health throughout all phases of production.

Mechanism of Action: Strengthening the Gut from the Inside Out

B-Act exerts its benefits through a multifaceted action within the gastrointestinal tract. Each mechanism contributes to a more stable, efficient, and disease-resilient digestive environment – critical for optimal egg production and bird wellbeing.

The figure to the right illustrates potential or known mechanisms whereby probiotic bacteria might impact on the microbiota.



1. Competition for Dietary Ingredients

Probiotic bacteria compete with harmful microorganisms for essential nutrients within the gut, such as sugars, amino acids, and vitamins. By **outcompeting pathogens for these limited resources**, probiotics can limit their growth and reduce their ability to establish harmful populations. This mechanism helps maintain a **favourable balance of gut microbes**, supporting digestion and bird performance. *Bacillus licheniformis* consumes simple carbohydrates that could otherwise fuel the growth of *E. coli* or *Clostridium perfringens*, helping prevent gut imbalances.

2. Bioconversion

Probiotic strains can **transform non-digestible or poorly utilized dietary components** into bioavailable nutrients or beneficial metabolites. Through fermentation and enzymatic activity, they help **release short-chain fatty acids (SCFAs)**, vitamins, or other growth-promoting compounds that improve nutrient absorption and support gut health.

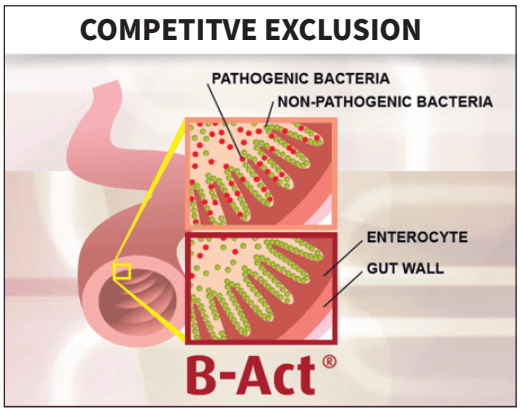
3. Production of Growth Substrates

Probiotics not only aid in digestion but also produce compounds that **stimulate the growth of other beneficial microbes**, including lactic acid bacteria. These growth substrates include SCFAs, peptides, and vitamins (e.g., B-group vitamins), which foster a more robust and diverse microbiota. By producing lactic acid, probiotics lower gut pH, favoring acid-tolerant beneficial bacteria while suppressing pathogenic species.

4. Direct Antagonism

Probiotics can **produce antimicrobial compounds**, such as bacteriocins, hydrogen peroxide, and organic acids, which **inhibit or kill pathogenic bacteria**. This is a form of direct chemical warfare against harmful microbes, providing a first line of defense against intestinal infections. *Bacillus* strains in B-Act® produce bacteriocin-like substances that inhibit *Salmonella* and *Clostridium* species, reducing their colonization and virulence.

5. Competitive Exclusion for Binding Sites



The gut lining offers limited real estate for microbes to attach and colonize. Probiotics can **occupy these attachment sites**, physically preventing pathogens from adhering to intestinal cells. This process, known as **competitive exclusion**, lowers the risk of pathogenic colonization and subsequent disease. Probiotic bacteria adhere to intestinal villi, forming a protective barrier that blocks harmful microbes from establishing infection.

6. Improved Barrier Function

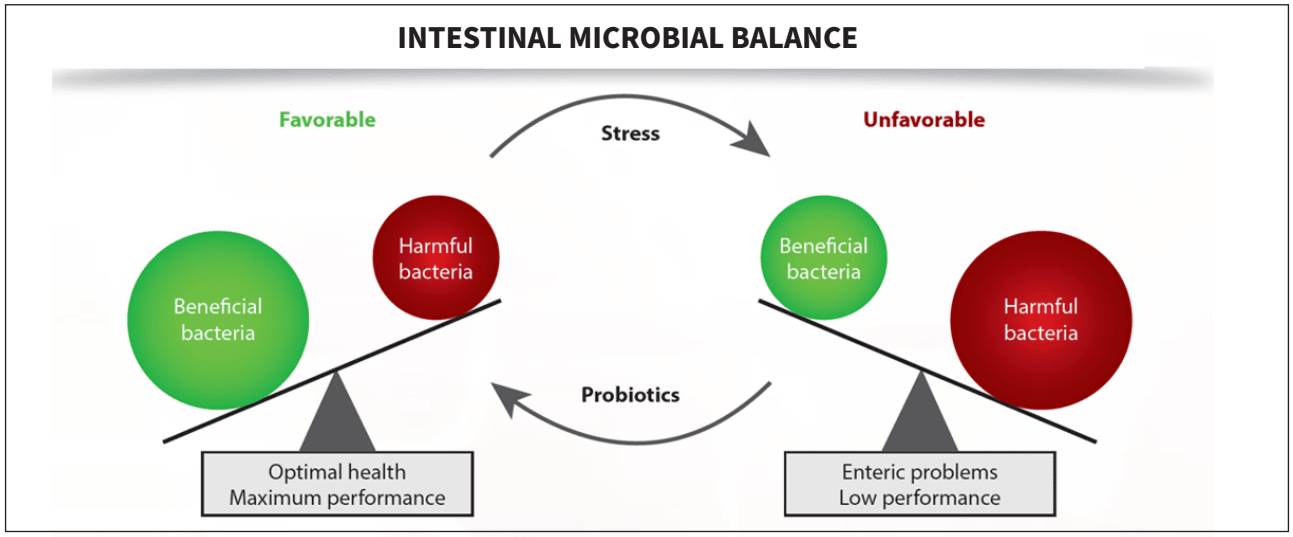
The intestinal epithelium forms a critical barrier between the gut lumen and the rest of the body. Probiotics can **enhance the structural integrity of this barrier** by stimulating the production of tight junction proteins and mucus. A stronger barrier reduces "leaky gut" conditions, where toxins or pathogens can enter the bloodstream. Probiotics promote mucin production, creating a thicker mucus layer that protects epithelial cells and limits pathogen access

7. Reduction of Inflammation

Chronic low-grade inflammation in the gut can impair nutrient absorption and reduce performance. Probiotics help **modulate the host's immune response**, decreasing the expression of pro-inflammatory cytokines and promoting anti-inflammatory signals. This leads to a **calmer intestinal environment** conducive to growth and efficiency. Probiotics reduce gut inflammation during feed transitions or heat stress, improving bird comfort and maintaining productivity.

8. Stimulation of Innate Immune Response

Probiotics interact with gut-associated lymphoid tissue (GALT) and intestinal immune cells to **stimulate the innate immune system**. This includes activation of macrophages, dendritic cells, and the release of protective cytokines. Enhanced innate immunity helps birds respond more effectively to infections and stressors, especially during early life stages or production peaks. Birds fed probiotics show enhanced mucosal immunity and are better equipped to resist enteric diseases without antibiotics.



Why Gut Health Matters: Addressing Core Issues in Layers

Common challenges in layer production – such as **loose droppings, dirty eggs, fluctuating production, and shell quality problems** – can often be traced back to an underperforming gut. An imbalanced or inflamed GIT compromises digestion, weakens immune defenses, and allows opportunistic pathogens to thrive.

B-Act improves gut function, resulting in:

- Firmer droppings and **cleaner eggs** due to better nutrient absorption and reduced intestinal irritation
- **More stable egg production** and improved laying persistence
- Stronger shell formation and fewer deformities, linked to enhanced mineral uptake and reduced stress
- By proactively maintaining gut health, B-Act helps break the cycle of performance dips, intestinal disorders, and the overuse of reactive treatments.

Impact on Layer Performance: Measurable Benefits

Multiple controlled trials with leading commercial layer breeds have confirmed the effectiveness of B-Act in real-world production systems.

Hy-Line Brown (21–45 weeks):

- Significant improvement in laying rate and daily egg output
- Enhanced feed efficiency (lower FCR)

Isa Brown (22–34 weeks):

- Higher peak production and better persistency
- Lower feed intake with sustained egg mass output

Lohmann Brown (25–45 weeks):

- Improved shell strength and shell uniformity
- Fewer dirty or cracked eggs, reflecting improved gut and overall health
- Decreased nitrogen excretion, indicating better protein utilization and digestion

Health Resilience: Supporting Birds Under Pressure

B-Act is not only a performance enhancer – it also supports birds during periods of stress or change. Whether due to environmental shifts, feed transitions, or disease challenges, stress often manifests first in the gut.

Benefits in stress-prone scenarios:

- Helps **reduce pathogen load** during bacterial challenges
- Maintains gut function in the absence of antibiotics
- Supports microbial balance and immune readiness during early and peak laying stages

By reinforcing gut stability, B-Act helps birds cope more effectively with stressors, minimizing production losses and health complications.

Practical and Economic Advantages

B-Act offers a cost-effective, easy-to-use solution for gut health management:

- **Non-antibiotic, natural mode of action**
- **No withdrawal period**, safe for continuous use
- **Low inclusion rate**, compatible with all standard poultry feed programs
- Proven **return on investment** through improved FCR, egg quality, and reduced mortality

Whether your focus is on optimizing production or reducing reliance on antibiotics, B-Act provides a sustainable and practical solution grounded in gut health.

Conclusion: Better Guts, Better Birds, Better Results

A healthy gastrointestinal tract is the foundation for optimal productivity, bird welfare, and long-term farm profitability. With its scientifically validated action and spore-based stability, **B-Act delivers reliable, consistent support for intestinal health** – which in turn helps reduce issues like loose droppings, dirty eggs, and production dips.

By improving digestion, stabilizing microbiota, and enhancing immune readiness, **B-Act transforms gut health into a direct driver of performance** – from the first egg to the last.

Please contact: **paul@agrihealth.co.nz** or **nic@agrihealth.co.nz** for more information