

* Chr. Hansen and Novozymes are now Novonesis

BEEF CULTURE® PLUS AND CLOSTRIDIA



Feedlot cattle face many challenges during the journey from arrival to harvest. One of these challenges comes from exposure to environmental pathogens such as Clostridium. BEEF CULTURE® Plus combines the proven bacterial strains from BEEF CULTURE® (*Propionibacterium freudenreichii* PF24 and *Lactobacillus animalis* LA51) with two of the most proven strains of *Bacillus* (*Bacillus licheniformis* CH200 and *Bacillus subtilis* King), to effectively prepare cattle to withstand a variety of environmental stressors. Chr. Hansen believes in harnessing The Power of Good Bacteria™ and providing science-based, research-proven technologies for feedlot managers and nutritionists looking to find solutions to these types of challenges.

Clostridium is a genus of anaerobic, gram-positive, spore-forming bacteria. In healthy beef cattle, a relatively low presence of *Clostridia* in the gastrointestinal tract may not cause any problems; however, when cattle are exposed to multiple stressors, such as changes in the diet or management, the opportunistic *Clostridia* can become an overwhelming threat, leading to disease and possibly death.

Repeatedly, researchers have shown that daily feeding of an effective probiotic such as BEEF CULTURE® Plus, supports normal functions of the gastrointestinal tract: digestion, absorption, barrier, and immune functions.

BEEF CULTURE® Plus for support during Clostridium challenges

BEEF CULTURE® Plus may support cattle health during periods of stress by reducing the impact of Clostridium challenges. Internal *in vitro* trials clearly demonstrated that BEEF CULTURE® Plus inhibited *C. perfringens* type A and C (Figure 1). Through the Hedgehog analysis we were able to determine that BEEF CULTURE® Plus inhibited *C. perfringens* Type A (8.7mm) and Type C (15.3mm) during the 24h test.

These *in vitro* results have been corroborated in a live animal study (Guimaraes *et al.*, 2023) in which 21-day-old beef calves were fed BEEF CULTURE® Plus or control diet starting on day -7 up to day 14. On day zero, calves were orally dosed with 1.0×10^8 CFU/head of *C. perfringens* type A. All animals were observed daily for diarrhea score, appearance, and general impression through 14-day post-challenge by personnel blinded to the treatments.

The results of this study showed a greater percentage of the scores for the calves receiving BEEF CULTURE® Plus were normal compared to those in the control group (Figure 2).

Summary

Clostridia are opportunistic organisms that lie in wait to cause physiological problems for your cattle and management problems for you. Using The Power of Good Bacteria™ is in the best interest of every beef cattle producer, manager, and nutritionist. Feeding BEEF CULTURE® Plus supports a properly functioning digestive system and reduces the impact of pathogenic bacteria.

Figure 1: BEEF CULTURE® Plus inhibitory potential againsts *C. perfringens* Type A and C using the Hedgehog methodology

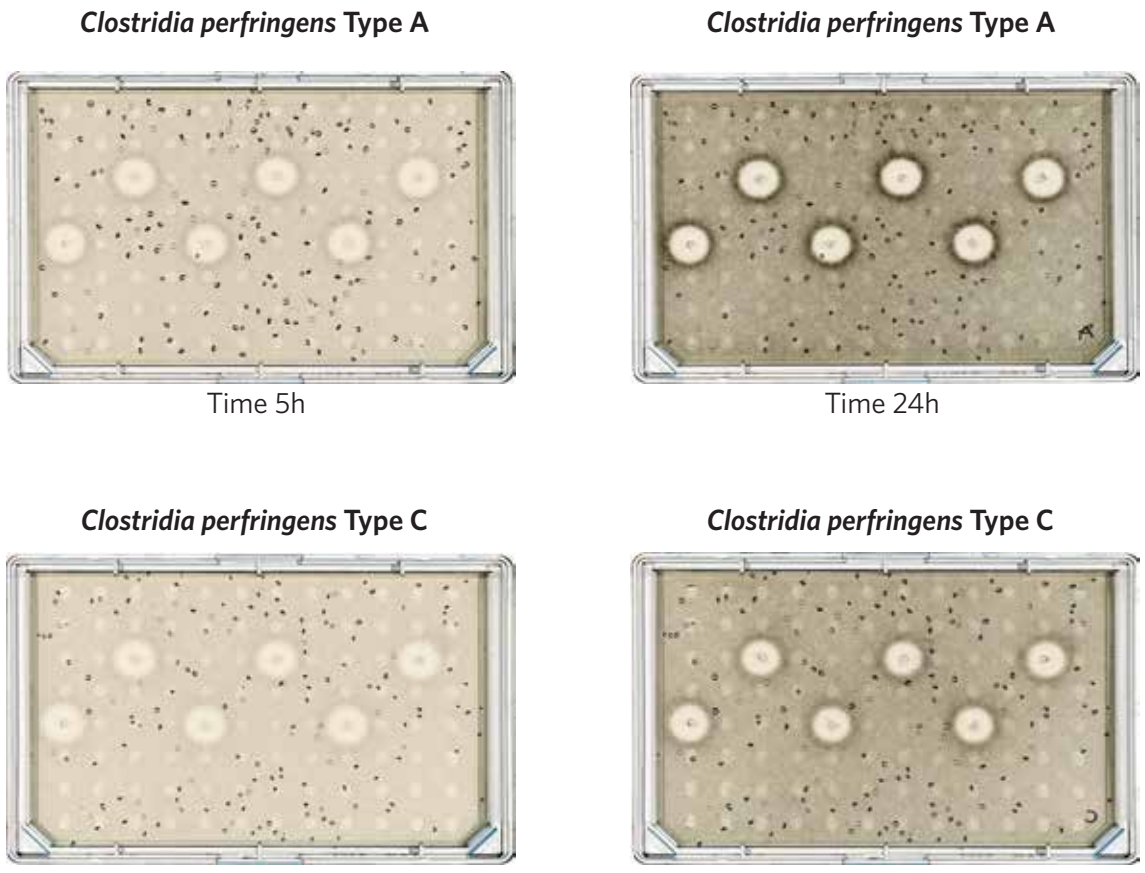
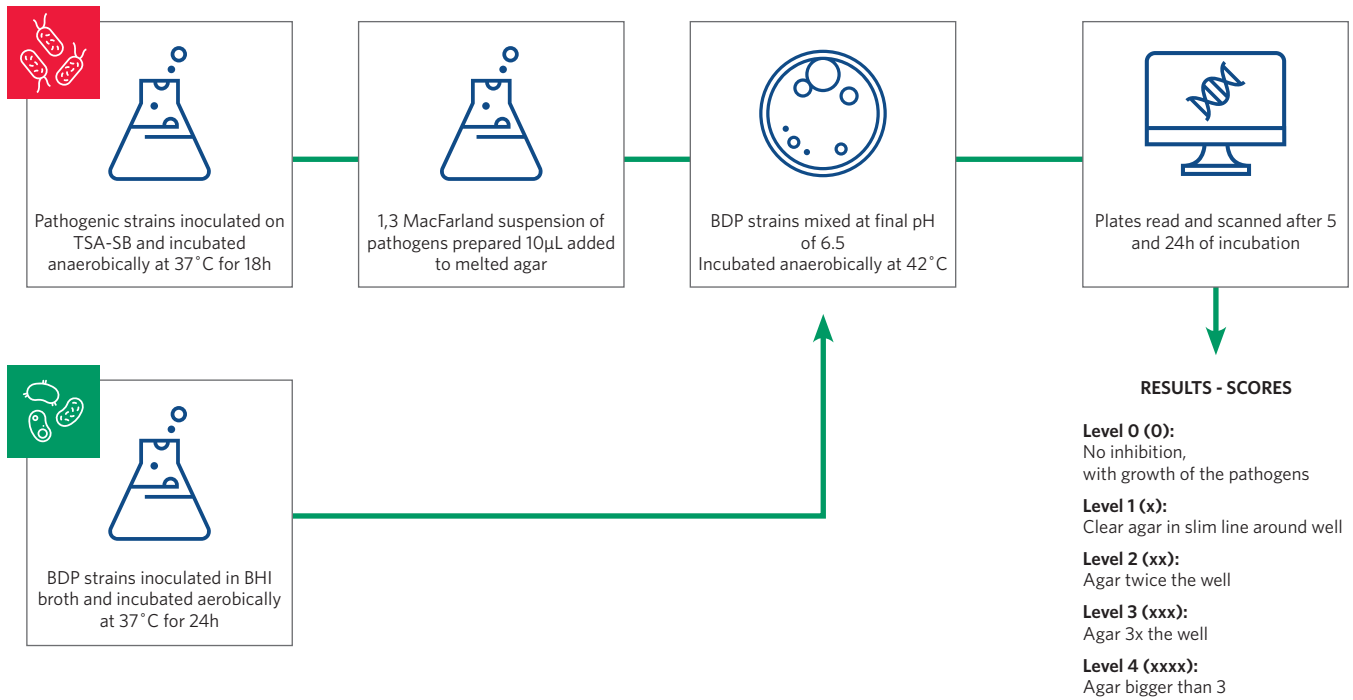
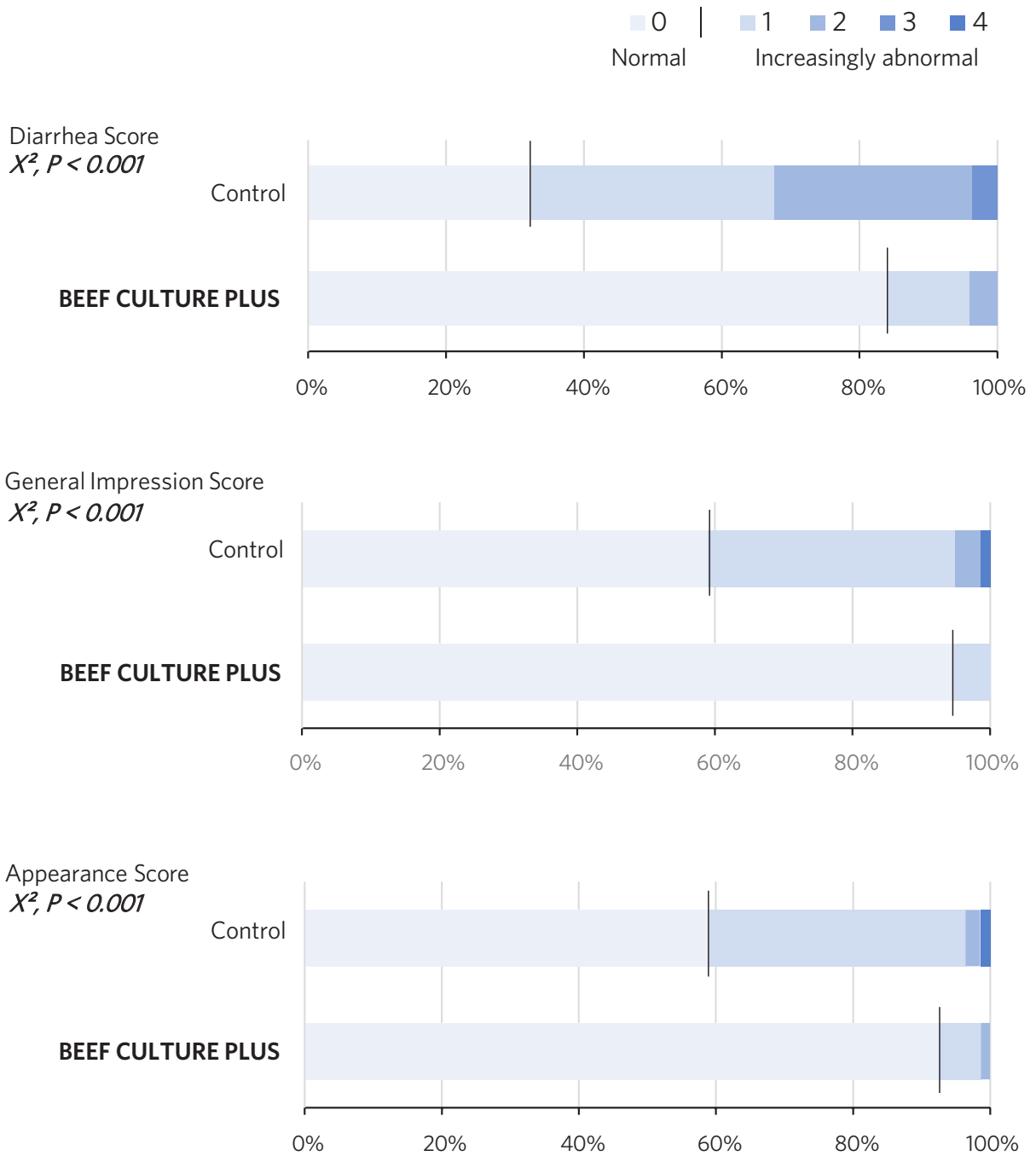


Figure 2: Effect of BEEF CULTURE® Plus on the health of calves exposed to *C. perfringens* Type A



Usage, Application and Storage

In an easy-to-use free-flowing powder, BEEF CULTURE® Plus is available to Australian operations at 10,000 head/day (500 gram).

Store in a freezer. Place any unused content in a sealed container and store in a freezer.