SurpHace™

Performance Starts with pH

TECHNICAL BULLETIN

SurpHace™ IMPROVES DAIRY CALF GROWTH AND IMMUNE HEALTH

Ammonia, the result of the urea in urine/manure, is unavoidable in dairy calf housing. Even at very low levels (>4 ppm), prolonged ammonia exposure irritates the respiratory mucosa, impairs local immune defenses, predisposes calves to bovine respiratory disease (BRD), and has been linked to mild lung lesions[1]. Keeping ammonia levels in calf housing low protects airway integrity, supports immune function, reduces disease pressure, and helps calves maintain feed intake and growth.

A field trial conducted at Casper's Calf Ranch, LLC, assessed the ability of **SurpHace** (sodium bisulfate) to control ammonia in calf housing and measured performance parameter differences between calves raised in hutches treated with **SurpHace** versus untreated hutches.

Over eight weeks, 1 pound of **SurpHace** was applied twice weekly using a hand-held grass seeder while calves were present in the hutch. Ammonia readings were taken weekly in treated and control hutches beginning in week three. Hutches treated with **SurpHace** had consistently lower ammonia concentrations than untreated pens, keeping levels at or just above zero until week seven **(Chart 1)** despite the use of soybean hulls as bedding which are shown to increase ammonia concentrations.

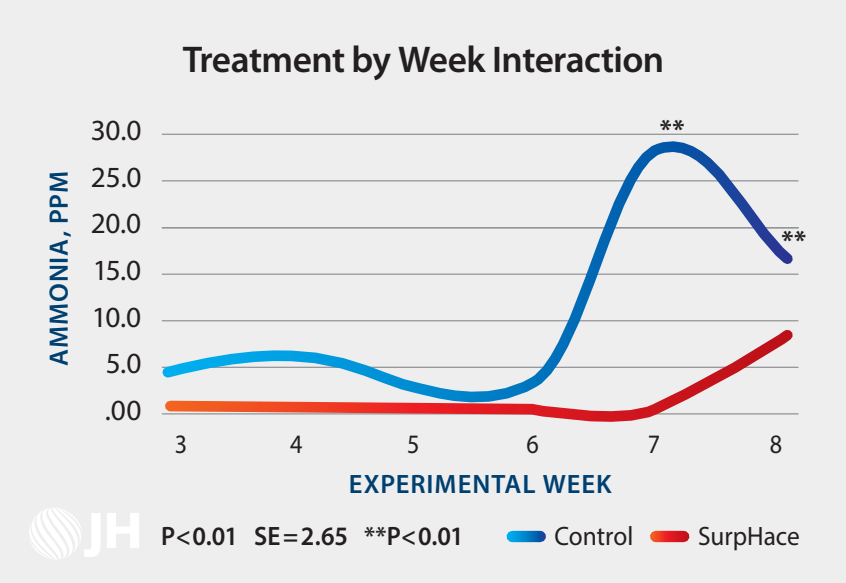

Chart 1. *Ammonia concentrations in calf hutches (SurpHace vs Control)*

Throughout the trial, calf body weight and calf starter intake was also recorded, with calves raised in treated hutches showing a significant increase in body weight **(Chart 2)**, average daily gain, calf starter intake **(Chart 3)** and dry matter intake as compared to the control.

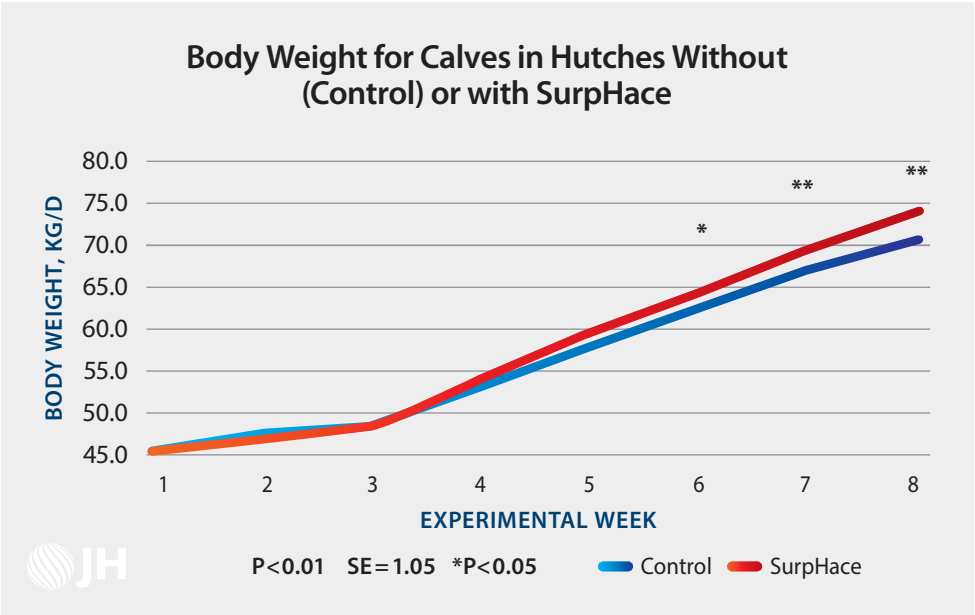

Chart 2. *Body weight of calves in treated vs untreated hutches*

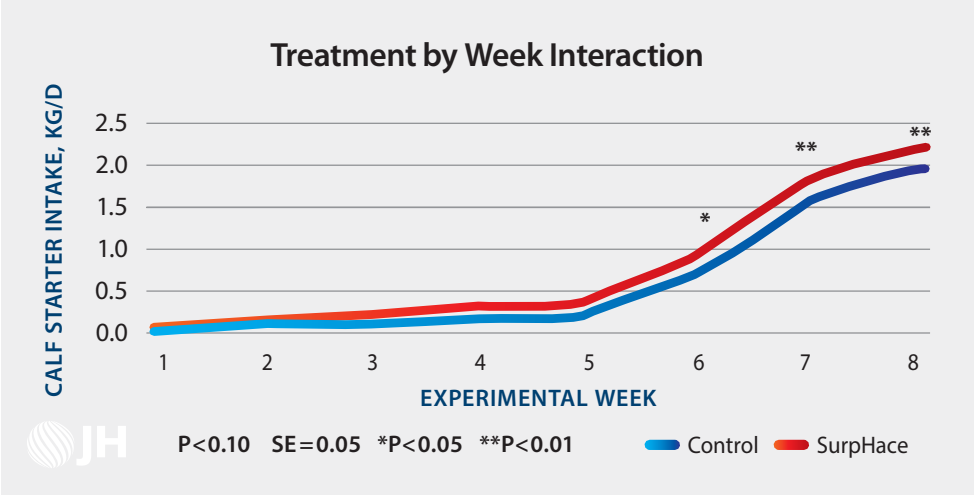

Chart 3. *Calf starter intake in treated vs untreated hutches*

ASSESSING RESPIRATORY HEALTH WITH LUNG LESION SCORES

A separate study was conducted in 2024 on a South Dakota dairy to better understand the ability of **SurpHace** to impact calf lung health.

Two weeks after calf placement, the hutches on the north side of the barn received weekly applications of **SurpHace** while the hutches on the south side received no treatment. Additional product was applied on the north side pens, as needed, based on ammonia levels. All hutches were top dressed with new bedding weekly.

One week after relocation to transition pens, the lungs of all calves were assessed for the presence of lesions, with a 0 score indicating ideal lung health and a score of 2 or above indicating compromised lungs. The calves on the north side of the barn treated with **SurpHace** had a statistically significantly greater number of 0 scores than the south side **(Chart 4)**.

Calves raised in pens treated with **SurpHace** also showed a statistically significantly lower number of 2+ scores as compared to the non-treated calves **(Chart 5)**.

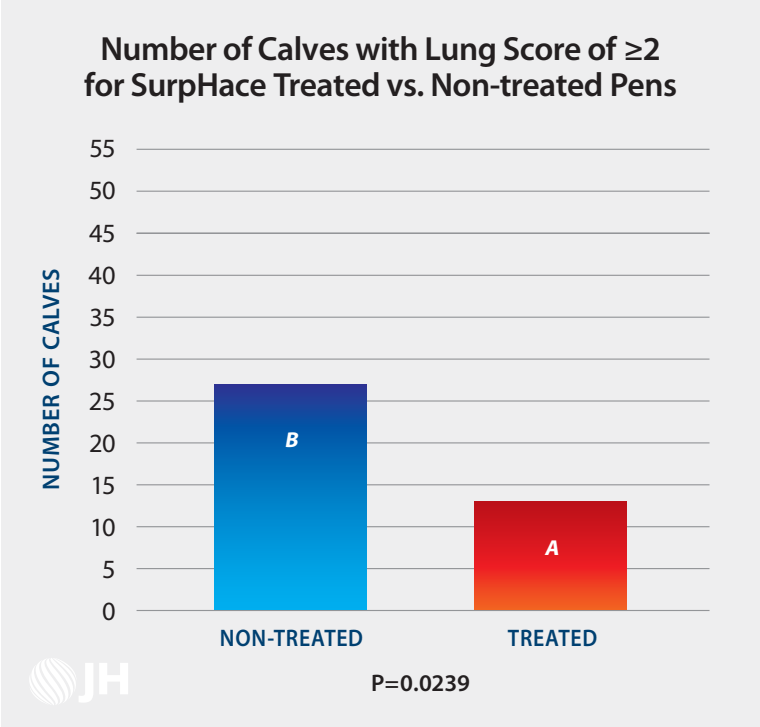

Chart 4.

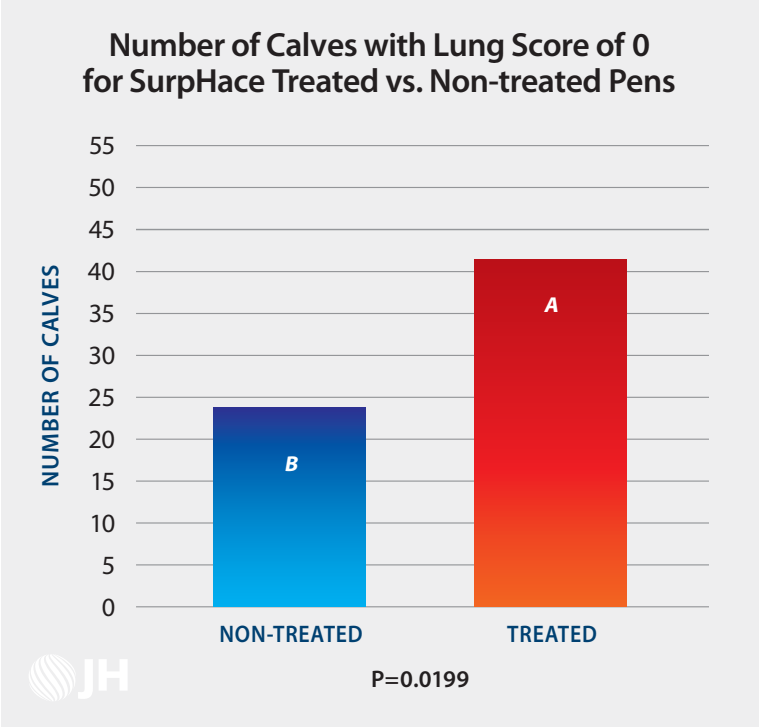

Chart 5.

THE VALUE OF AMMONIA CONTROL

By lowering ammonia, **SurpHace** helps protect the airway and reduce inflammatory load, a known risk factor for BRD and subclinical lung lesions. Fewer respiratory insults typically translate to fewer treatments, better appetite and steadier growth[2].

In addition, the increase in starter and total DMI shown in the trial is consistent with the idea that calves in cleaner-air environments eat more, accelerating rumen development[2] and supporting higher ADG – as observed in the **BW increase of +3.6 kg in treated hutches**.

The increase of 3.6 kg body weight at $13.23/kg would generate an additional income of $47.62 – all at a cost of approximately $8.00, equating to an ROI of nearly 6:1. This is before considering potential reductions in BRD treatments or labor, which would further improve ROI.

[1] *https://pubmed.ncbi.nlm.nih.gov/32540718/*
[2] *https://dairy.extension.wisc.edu/files/2025/04/Air-quality-in-hutches-article.pdf*

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