

BioStable

MICROBIAL ACTIVATOR

for Ammonia and Odor Reduction in Stables

■ INTRODUCTION

Intensive live stock breeding uses concentrates for feeding. These concentrates is partly shipped into Europe from third world countries. As the minerals present in the organic fraction from the manure are not returned to their place of origin, countries using concentrates are facing a surplus of these minerals. These minerals can cause odor problems in the form of ammonia (NH_3), hydrogen sulphide gas (H_2S) and several other compounds like mercaptants and which are created by an unbalanced manure. By adding **BioStable** to the manure the balance is restored resulting in a considerable reduction of odor. Futhermore it stimulates bacteria that take care of the mineralisation of the manure. The manure maintains a much more homogener composition.

■ HOW IT WORKS



BioStable is a product that restores and enhances the natural balance in a stable. No microbes are added but the naturally occuring microbes are stimulated to reproduce. This increases the rate of degradation of especially the urea fractions. Urea is initially degraded by the enzym urease, this step

produces ammonium (NH_4^+) which in it's turn can change into gaseous ammonia (NH_3) when water is absent or evaporates. For futher degradation of the ammonium nitrifying and denitrifying bacteria are needed. In an optimal environment these bacterial strains are in balance with eachother.

Scientific research has demonstrated that using **BioStable** results in a reduction of the ammonia emission. This has a positive effect on the animals that life in the stable. They receive less stress and less disorders to their respiratory tract. This improves the food conversion and reduces the mortality.



BioStable is composed out of fermented plant and seaweed extracts and contains trace elements, vitamins and enzymes that can be fully taken up by micro organisms which are present in the manure or living floor. This results in:

- A more stable ecosystem in the stable
- A more effective degradation
- Less ammonia emission to the atmosphere
- Improved living conditions for the animals which experience less stress and diseases.
- Reduced mortality

■ APPLICATION

BioStable is a highly concentrated liquid which can be diluted before use and the dilution can be nebulized over the floor surface of the stable. The dosage is 1 liter for every 1000 m² of floor surface.

- For pig stables nebulize 1x per week
- For small chickens nebulize once after 4 days after the growing cycle over the floor surface.

BioStable works as a biocatalyst and enhances the ecosystem in the stable to a higher level.

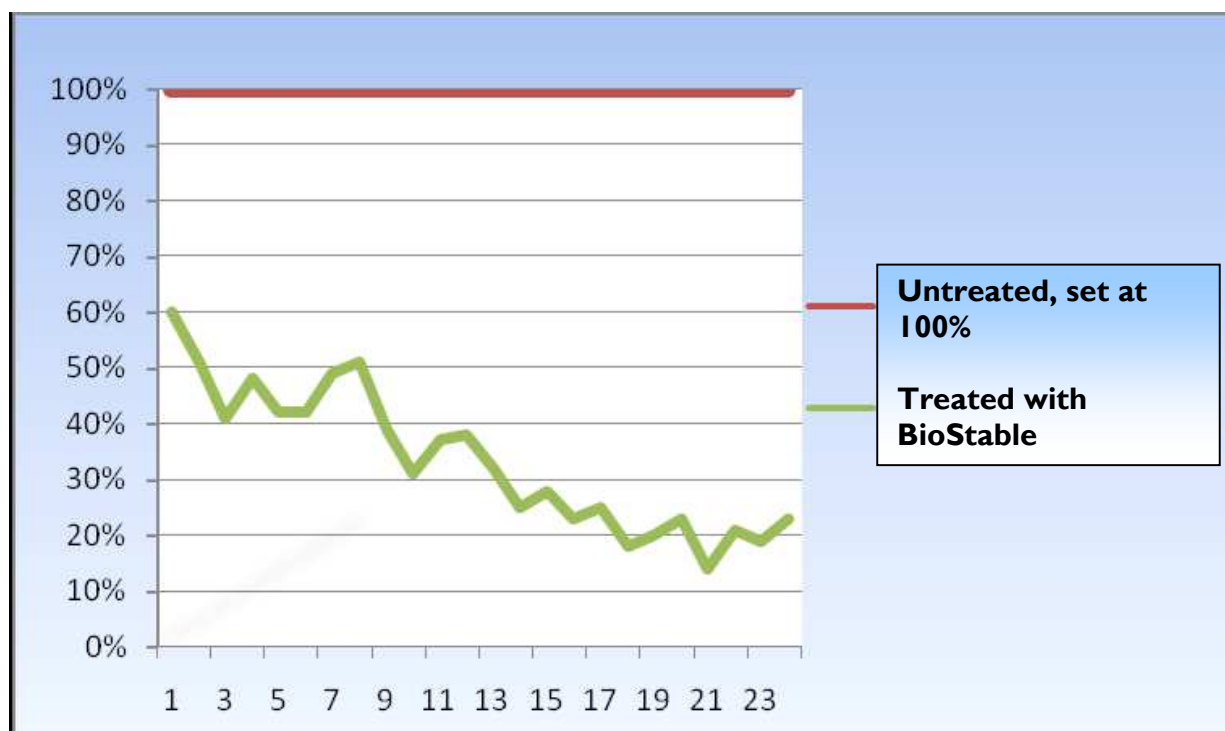
BIOSTYM TEST RESULTS

Trial 1:

At a pig breeder a test was conducted under the supervision of the Van Hall/Larestein Institute and the Department of Animal Health.

- 2 identical stables with each 54 piglets, mixed in such a way that both groups were equal in age and condition.
- The manure cellars were physically separated to prevent exchange between the 2 cellars.
- In each stable manual (Dräger) and digital ammonia sensors were installed at the ventilation ducts. The sensors were linked to a computer and measured the flow rate of the ammonia during the duration of the experiment.
- 1 Stable was treated with **BioStable** (1x per week using ¼ liter of **BioStable** diluted in 10 liter water), which was nebulized over the floor surface. The floor in the control stable was nebulized with 10 liter water.

After 24 weeks (the animals were transported to the slaughterhouse) the results were:



- The ammonia emission in the treated stable was during the experiment 70% less than in the none treated stable.
- The mortality in the treated stable was zero (0), in the none treated stable 4 animals died.
- Unilateral pneumonia and lameness occurred less in the treated stable.

Trial 2:

A chicken breeder in the Province of Groningen in The Netherlands with 2 identical stables containing each 22.000 chickens. The stables were filled with baby chickens of 1 day old and after 6 weeks the chickens leave the stable with an average weight of 2 kilogram.

Starting Situation:

1. 2 identical stables of each 1000 m²
2. 22.000 1 day old chickens in each stable
3. Similar conditions in both stables (temperature, nutrition, water, etc...)
4. The living floor of one stable is treated with a solution of 1 liter **BioStable** in 10 liter water by using a manual nebulizer when the chickens are 4 days old.
5. The test was conducted over a period of 1 ½ year, switching the treatment from one to the other stable. In total 12 trials were conducted.

Test Results:

1. The chickens in the stable treated with **BioStable** demonstrated more vital behaviour than the chickens in the non treated stable. The treated stable demonstrated a reduction in mortality of 4 to 6% (that's 880 to 1320 chickens) in comparison to the non treated stable.
2. The chickens in the treated stable demonstrated an increased slaughter weight between 50 and 80 grams (2,5 to 4% more weight) compared with the chickens in the non treated stable.
3. The stable treated with **BioStable** emitted less ammonia than the non treated stable (measurements were conducted every day in the ventilation ducts with Dräger). In the non treated stable the ammonia emission was 80 ppm NH₃ on average and in the treated stable the average ammonia emission was 20 ppm NH₃ during the 12 cycles, a reduction of 75% ammonia emission.

Advantages of BioStable:

1. No microbes are added, so no Health and Safety issues
2. A stable, homogene and active ecosystem is created
3. Odor reduction (mainly NH₃) for the environment
4. Better food conversion
5. Less disease and mortality hence less veterinary and medical costs
6. Good price/quality relation
7. **BioStable** is safe for humans, animals, plants and the environment.