

... preserves the energy in your silage!

Quality Control

Naturally ahead



### Mode of action

The **selected homofermentative bacteria contained in the product line Biomim® BioStabil** produce mainly (80 - 90 %) lactic acid. The lactic acid plays also an important role for palatability and represents a source of energy. The silages treated with **Biomim® BioStabil** show lower pH values than other treated or not treated silages.

The selected **heterofermentative bacteria in Biomim® BioStabil** are responsible for the acetic acid production, which partly dissociates, causing a lowering in the pH value. The undissociated molecules penetrate the cell wall of undesired microorganisms, dissociate in the cell cytoplasm and disrupt cell functions. This way, the acetic acid produced by heterofermentative bacteria inhibits the yeast and bacteria growth in the opened silo. Longer aerobic stability is to be expected.

Due to its optimal formula **Biomim® BioStabil product line** contributes not only for well fermented and stable silages but, above all, for preserving also the energy content. The number of and the ratio between homo- and heterofermentative bacteria in the product minimize the energy and protein losses. This provides an extra profit in the silage production and is a consequence of a great product design.

### Use of Biomim® BioStabil product line

The **Biomim® BioStabil product line** is used during harvest or preparation of the silages. The forage (e.g. grass, alfalfa, clover, whole crop maize or maize grains) to be ensiled, must be well compacted and air-tightly sealed either in silos or in bales. *Errors during the ensiling process cannot be compensated by the use of the product.*

Quality Management is one of the most decisive factors in food and feed safety. For this reason, it was BIOMINs top priority to implement ISO 9001:2000 as a highly accepted quality management system. Furthermore, the HACCP concept was included to ensure the avoidance of all kinds of hazards to our products.

BIOMIN takes effort to produce high quality products by purchasing raw material from carefully selected suppliers, controlling all production steps, approving all end products before they leave the plant, and finally controlling the delivery to the customers. Our routine quality control guarantees standardized quality and reliable results.



Certified:

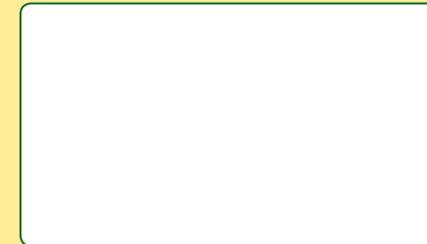


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# Biomim® BioStabil

Naturally ahead in silage production!



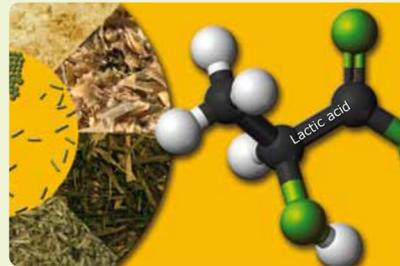
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Naturally ahead in silage production! Biomim® BioStabil

**Biomin® BioStabil product line** is a formula of selected lactic acid bacteria. Due to the well balanced metabolic products lactic and acetic acid the fermentation process and the aerobic stability are improved. This results in a higher energy content of the silages.

## Key factors in the silage production

**Fermentation is the primary and main phase in the silage process.** Lactic acid bacteria under anaerobic conditions convert the simple water soluble sugar into lactic acid. Lactic acid is the most important acid in the silage which guarantees stable silages. The lactic acid content and the pH value of the silage have a high negative correlation.



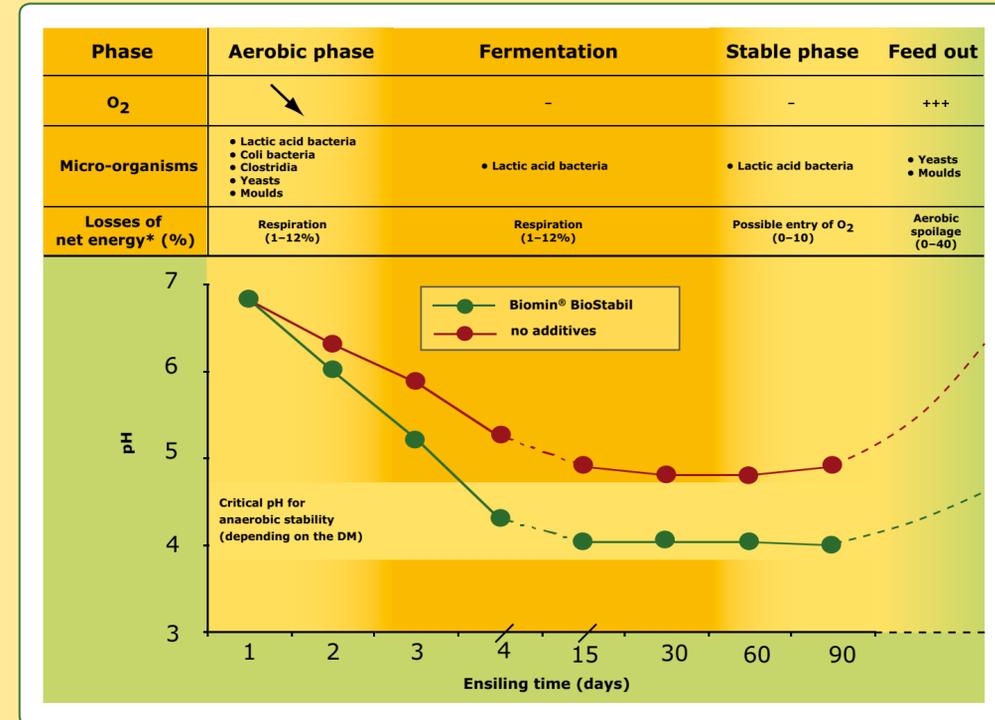
**The aerobic stability of the silage is compromised when the silage begins to heat during feed out phase. The aerobic stability can vary dramatically.** Substrates very rich in sugar (for example, corn silages), or very well fermented silages are an ideal substrate for yeasts and moulds, even with good silage management.



**The energy content is often a limiting factor in the nutrition of high yield domestic animals.** Every preservation process is related to nutrient and energy losses, many of them are avoidable. To avoid/ minimize these losses is one of the most important aims in the ensiling production. Therefore silage additives must be designed taking in account the ability to preserve the nutrient and energy content in the silage.



The ensiling process is divided into **4 main phases**. The first one is the **aerobic phase** and is characterized by respiration and proteolysis caused, for example, by own enzymes, *Coli* bacteria and *Clostridia*. In the **fermentation phase**, the quick and deep acidification together with the absence of oxygen stops the growth of undesirable microorganisms. In the **phase of stability** the ensiled matter does not change significantly if the anaerobic conditions are guaranteed.



The feed out phase occurs after the opening of the silo. Under aerobic conditions yeasts and moulds become active, unless if they are inhibited by short chain organic acids, for example, acetic acid. These acids prevent the silage spoilage, the increase of the temperatures and energy losses.

In the figure above it is shown that the addition of **Biomin® BioStabil silage inoculants** causes a more rapid and deeper acidification than the control silages. The higher acetic acid content makes the silages more stable. In this way the silage inoculants of the **Biomin® BioStabil product line** preserve the energy in the silages.

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...is designed using selected homo- and heterofermentative bacteria formulated for **optimal anaerobic and aerobic stability of silages**. Besides an improved fermentation process and excellent aerobic stability, it proved to have a **preserving effect on the energy content** in the silages in many laboratory and field trials conducted world wide. The **Biomin® BioStabil product line** is suitable for the ensiling of substrates very different like grass, alfalfa, clover and whole plant maize and maize grains.

The **Biomin® BioStabil product line** contains strains of *Lactobacillus* and *Enterococcus spp.* in optimal ratios of homo- to heterofermentative bacteria. Maize silages, commonly known as instable under aerobic conditions, can also be ensiled with excellent results.

The **Biomin® BioStabil product line** is also designed to preserve the nutrients, reducing the energy and ammonia losses in the ensiled material. The production of acids lactic and acetic is adequate, striving a balance between fermentation quality, aerobic stability and palatability. The **Biomin® BioStabil product line** contains live naturally occurring microorganisms in silages, which are **Generally Recognized as Safe (GRAS)**.

## Advantages of Biomin® BioStabil product line:

- effective use in various forage crops and DM contents
- accelerated acidification avoiding energy losses
- excellent aerobic stability (for up to 7 days)
- low DM and energy losses after opening of the silos