jbs progas® ferm b

Silages additive, improves the silage's stability

An old acquaintance in a new light

Lactobacillus buchneri is a strain of bacteria commonly used in silages – first and foremost to improve the stability, as it is a heterofermentative strain.
The results of various trials conducted with miscellaneous strains of *buchneri* in Europe to apply for registration show that life in a family of bacteria is quite similar to life in a real family. Even though John and Jack Smith do belong to the same family, John may get an A in maths while Jack only gets a D.
Similar to that, the performance and characteristics of diverse strains of *buchneri* differ greatly. The following charts illustrate trial data published in the EFSA* journal. These are the trial results of four different strains of *buchneri*.

Dry matter losses

It is commonly acknowledged that the dry matter losses occuring during the heterofermentative fermentation of *Lactobacillus buchneri* are higher than the ones occuring during natural fermentation in untreated silages. The strain of *Lactobacillus buchneri* used in **jbs progas® ferm b** is however fortunately atypical. EFSA also attests to the strain's unusually positive nature.
As opposed to other strains, the strain used in **jbs progas® ferm b** could provide trial results that showed a significant reduction in dry matter losses. This means that due to an improved efficiency of the fermentation, more nutrients will remain in the forage than untreated. In contrast, a significant tendency to higher losses resp. to inconsistent and not significant results may be observed with strains A, B and C.

Fachverband Biogas e.V.

source: Data from trials the respective manufacturer submitted to EFSA, published in the EFSA journal in 2013

DM losses
Essentially, these losses affect sugar and starch. However, easily digestible cellulose – to the point of „pure protein" – gets lost as well while indigestible feed components are not affected!

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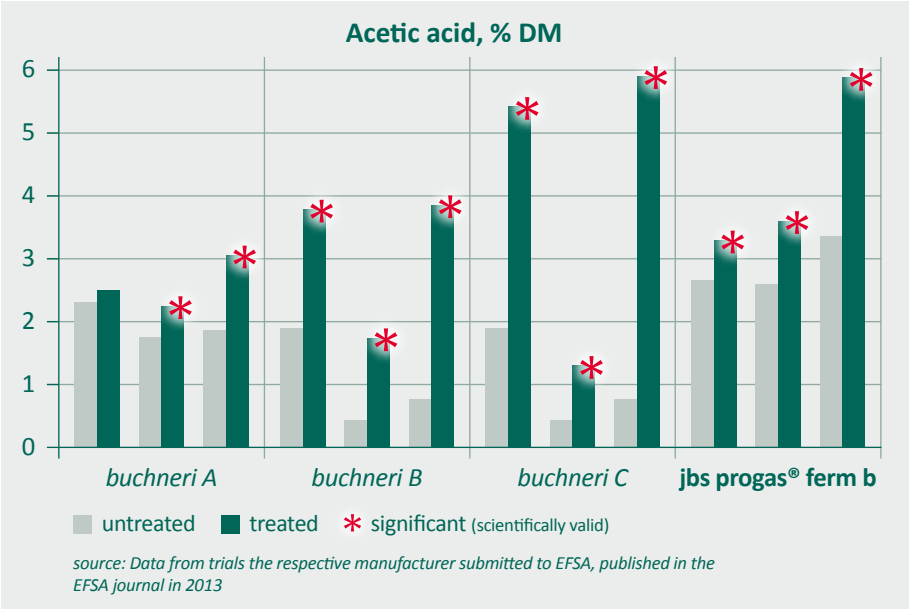
At a glance

- reduces DM losses that occur during fermentation
- safeguards the silage's quality
- efficient against harmful microorganisms such as bacteria, mould and yeasts
- improves the stability after opening
- suitable for grass and maize silages
- silages treated with **jbs progas® ferm b** may be fed to animals

** EFSA = European Food Safety Authority*

Fermentation acids

Lactic acid – as opposed to acetic acid – has direct effects against yeasts and fungi. As a general rule, *buchneri* strains produce more acetic acid than lactic acid – the *buchneri* strain used in **jbs progas® ferm b** being the exception, as it produces not only more acetic acid but also more lactic acid than untreated silages.

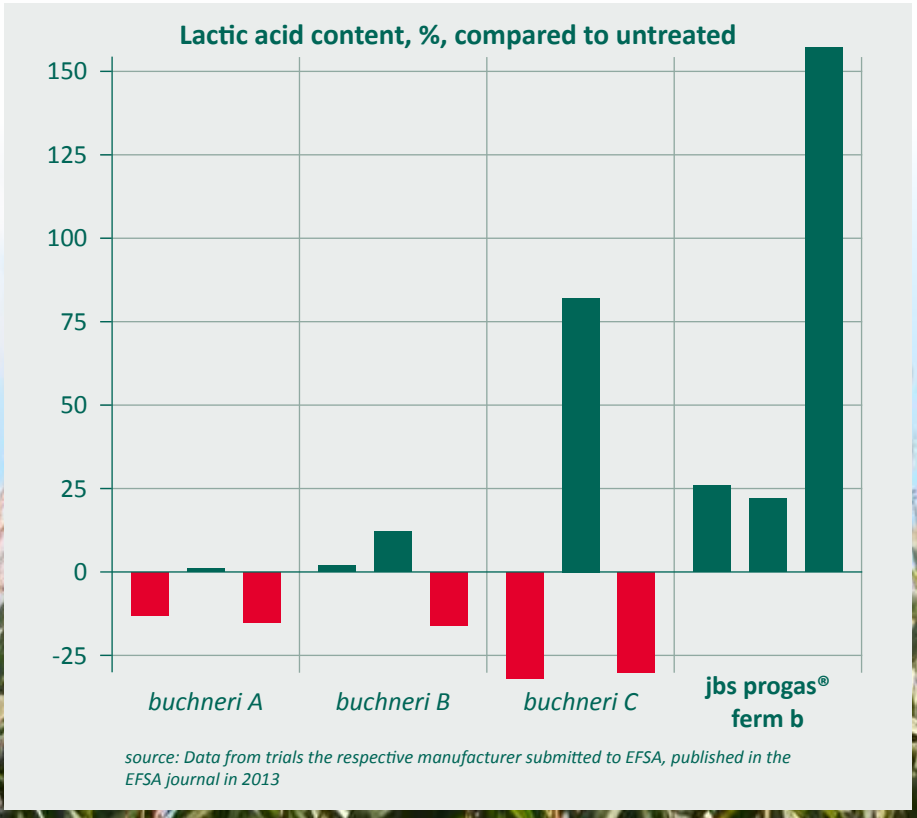


source: Data from trials the respective manufacturer submitted to EFSA, published in the EFSA journal in 2013

Acetic acid content

The effects of acetic acid depend upon the lactic acid produced as well as the consequentially lower pH.

The formation of **lactic acid** indicates a good and fast fermentation. Lactic acid is not volatile and has no negative consequences on feed intake as it is virtually odourless. Lactic acid ensures the lowering of the pH. It is only in silages with a pH below 4.7 that acetic acid is available in a form that is chemically efficient against yeasts and mould. This means that the more lactic acid is produced and the faster it is formed the sooner and safer are the acetic acid's effects against yeasts. Lactic acid is the foundation for the acetic acid's efficiency.



source: Data from trials the respective manufacturer submitted to EFSA, published in the EFSA journal in 2013

Lactic acid content

indicates the fermentation's quality and speed.

** EFSA = European Food Safety Authority*

Ammonia – parameter for nutrient protection

The ammonia content is a parameter for protein degradation, which primarily occurs due to the activity of harmful microorganisms – e. g. clostridia. As harmful microorganisms do not only degrade protein but other nutrients as well, an increased ammonia content generally indicates overall massive nutrient losses.

Low ammonia contents confirm a fast and efficient fermentation which safely inhibits harmful microorganisms. The buchneri strain used in **jbs progas® ferm b** guarantees nutrient protection. This is demonstrated in three trials that all exhibit a scientifically valid lower ammonia content than the raw silage.

Only two of the buchneri strains had trial results regarding the ammonia content. An efficient fermentation is especially important in wet forages with a higher ash content – otherwise, the clostridia contained in the dirt will take over and the silage will spoil – with catastrophic implications for feeding.

source: Data from trials the respective manufacturer submitted to EFSA, published in the EFSA journal in 2013

Ammonia content

Inhibiting harmful microorganisms is a necessary step to preserve as many nutrients as possible.

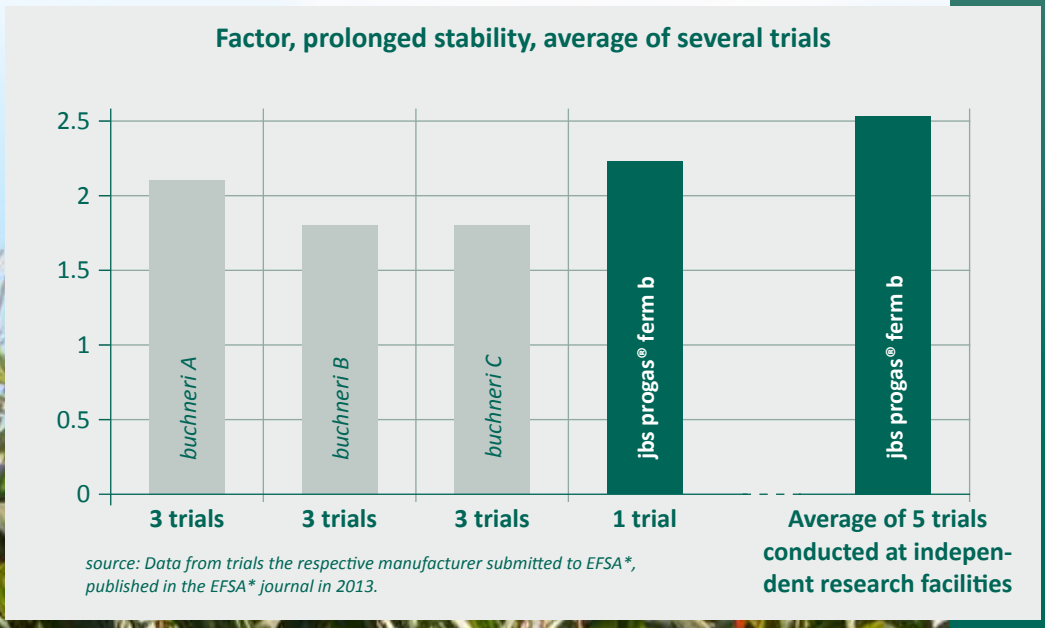
Aerobic stability

In addition to the reduced DM losses and a significant production of lactic acid, the *buchneri* strain used in **jbs progas® ferm b** can demonstrate a safe increase in the stability after opening. Silage exposed to air stayed an average 2.6 times longer stabil than the untreated silage.

As for **jbs progas® ferm b**, the improved stability does not result in higher DM resp. nutrient losses. The treated silages show an improved stability after an efficient fermentation.

Stability

jbs progas® ferm b extends the period of time needed to rise the silage's temperature by more than 3 °C above ambient by a factor of 2.6.



source: Data from trials the respective manufacturer submitted to EFSA, published in the EFSA* journal in 2013.*

Usage recommendations

Problems with stability occur particularly in high DM silages with insufficient compression. An irregular filling may also result in mould clusters, as the compression in thick layers (thicker than 40 cm) is insufficient.

After opening, the cutting surface should be protected from penetration of air – for example use silage gravel bags to build an air barrier. We recommend a speedy extraction of the forage.

These aspects of silage management should be observed in any case, even when using a silage additive that improves the stability such as **jbs progas® ferm b**. When chopping dry forage take care to cut deep (the drier the forage the deeper you should cut).

jbs progas® ferm b may be used in all types of energy crops. DM content should be above 30 %. Silages with a lower dry matter content require a lowermost ash content and a sufficient amount of sugar in order for the fermentation to be successful. The higher the DM content the deeper must be cut (maize: 4 - 6 mm) and the more care must be taken in compression. Silages with a DM content above 50 % run the risk of not providing enough residual water for bacterial activity – which results in a lower efficiency and performance.

Packaging

One pouch of 500 g treats 1,000 tonnes of forage.

Application

Use 0.5 g of **jbs progas® ferm b** per tonne of forage. Dissolve the freeze-dried product in a sufficient amount of water and apply evenly onto the forage using the customary amount of water for your applicator.

The mixed solution should be used up within 48 hours. Once the product is mixed with water do not refreeze it.

Storage and shelf life

24 months from date of manufacture (DOM) if stored in a freezer,
12 months if stored at a temperature of 4 °C and
3 months if stored at temperatures above 20 °C.

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