

The forage's quality is a key factor to successful dairy farming – not only regarding the animals' performance but their health as well. Our silage additives **harvest INTERNATIONAL® duo, plus** and **pH** are able to specifically control the fermentation due to enhanced quality of the silage.

The natural stocking of lactic acid-producing microorganisms on the plant depends on climate and forage and varies with each harvesting. Therefore, it is uncertain whether the lactic acid-producing bacteria will be able to dominate the large amount of other microbes and if the fermentation will be successful. It is only possible to lower the pH through the formation of lactic acid.

The faster the drop in pH, the sooner the microbial activity in the silo will stop and fewer nutrients will be dismantled by microbes. Dry matter losses will be reduced. Simply put: more of the harvested dry matter remains – this concerns especially valuable nutrients like sugar and protein.



harvest INTERNATIONAL® duo

Fermentation and stability after opening

One pouch of 150 g treats 100 t of forage



harvest INTERNATIONAL® plus

Area of focus: stability

One pouch of 100 g treats 100 t of forage



harvest INTERNATIONAL® pH

Area of focus: fermentation

One pouch of 75 g treats 50 t of forage



harvest INTERNATIONAL® duo

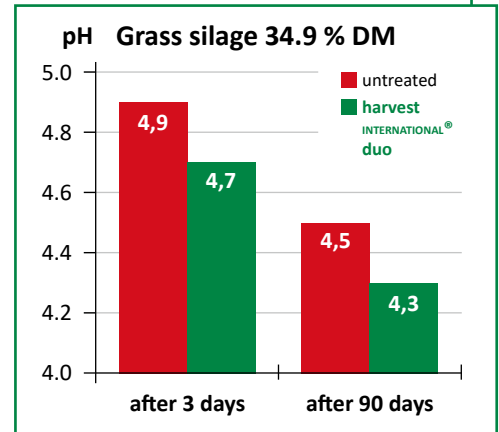


Fermentation and stability after opening

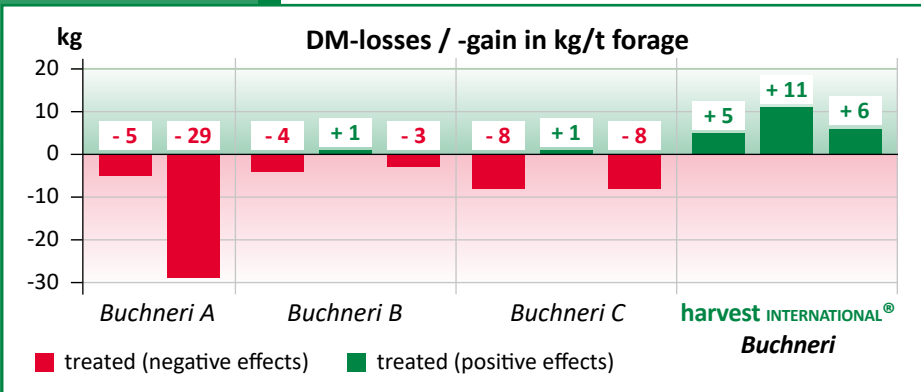
harvest INTERNATIONAL® duo is a combination of a homofermentative strain with a tried and tested *L. buchneri*. This accelerates the lowering of the pH and improves at the same time the stability of the silage. As soon as oxygen is available and the silage warms up, important nutrients vanish because of the yeast's increasing activity. A secure lowering of the pH is required for the possibility of letting the acetic acid, produced by the *L. buchneri*, fully develop its yeast and fungus inhibiting effect.

A special *Lactobacillus buchneri*

Lactobacillus buchneri is mainly used to improve the stability. Life in a family of bacteria is not unlike real life, as can be seen by the results of trials conducted with various strains of *buchneri*. Even though Paul and Henry Smith belong to the same family, Paul might be great in math while Henry is only average. And characteristics of the different strains of *buchneri* differ just as widely. – The following chart illustrates the trial data of four strains of *buchneri* as published in EFSA* journal.



source: University of Animal Science, Lithuania



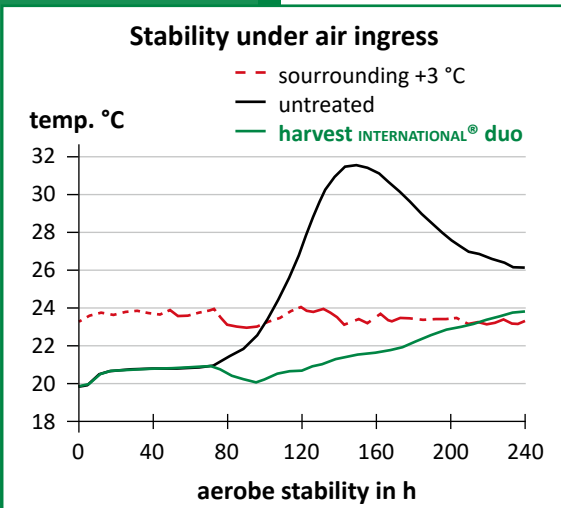
Dry matter losses

It is common knowledge that dry matter losses with *Lactobacillus buchneri* are higher than the ones occurring in untreated silages (see chart on the left). The strain of *Lactobacillus buchneri* used in **harvest INTERNATIONAL® duo** and **plus**, however, is atypical as it significantly reduces dry matter losses. Compared to untreated silages, this efficient fermentation saves more nutrients.

Stability after opening

Through using **harvest INTERNATIONAL® duo**, the stock of yeast and fungus in the silage decreases immensely (see chart on the right). Consequently, the stability after opening enhances (see chart on the left below).

source: data provided by the trials the respective manufacturers submitted to EFSA*. Published in EFSA* journal in 2013

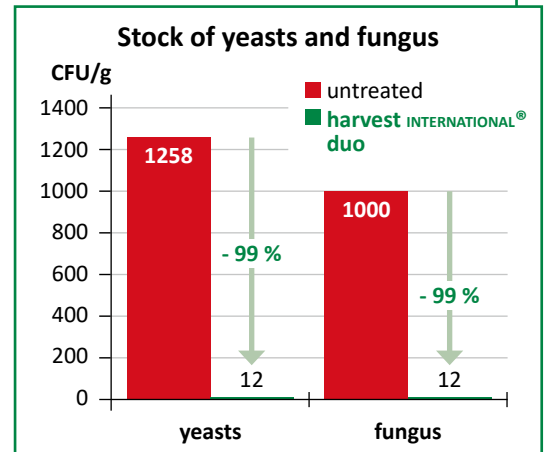


Usage recommendations

- grass silages and grass/clover mixtures > 30 % DM
- whole plant silages (WPS) from 30 % DM
- maize silages

harvest INTERNATIONAL® duo can be used for ecological and organic farming.

Dosage: 1.5 g per t



source: University of Animal Science, Lithuania

harvest INTERNATIONAL[®] plus

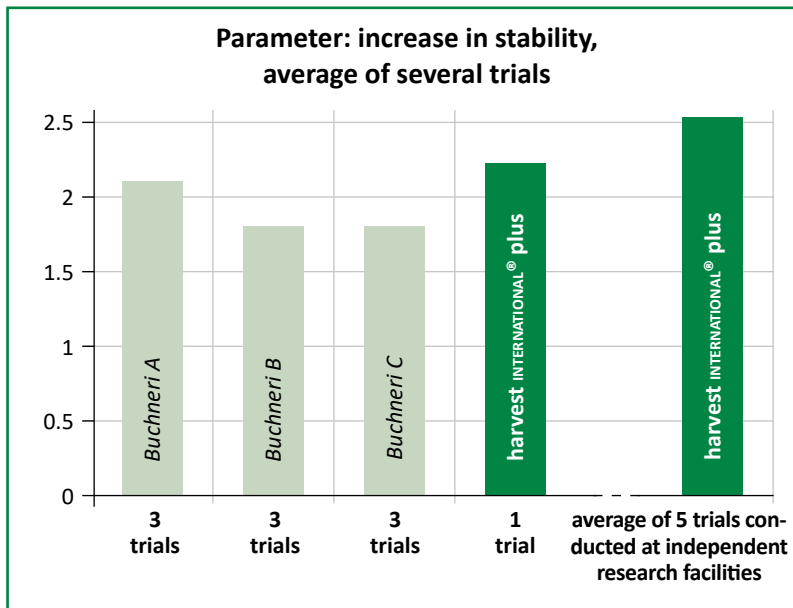


Area of focus: stability

harvest INTERNATIONAL[®] plus is the product for the improvement of stability after opening.

Aerobic stability

In addition to the reduced DM losses and a significant production of lactic acid, the *buchneri* strain in **harvest INTERNATIONAL[®] plus** is able to document a reliable improvement in the stability after opening. Once the silage is exposed to air, it remains an average 2.6 times longer stable than untreated silages.



Data provided by the trials the respective manufacturers submitted to EFSA*. Published in EFSA* journal in 2013

Usage recommendations

- grass, maize and WPS, DM: 30 - 50 %

Silages with high DM contents and inadequate compression as well as an inadequate filling have a tendency to mould. After opening, make sure to secure the cutting surface from penetration of air – e. g. by installing a silage gravel bag air barrier. Maintain a feeding rate of at least 1.5 m in winter and 2.5 m in summer.

Dosage: Apply 1 g of **harvest INTERNATIONAL[®] plus** per tonne of forage.

harvest INTERNATIONAL[®] pH



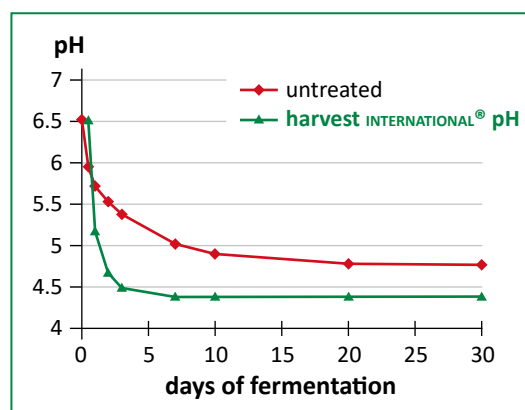
Area of focus: fermentation

- dominant, homofermentative lactic acid bacteria
- fast production of lactic acid in order to rapidly lower the pH
- low sugar consumption, preserves nutrients
- better digestibility of organic substances
- high palatability, improves feed intake

Usage recommendations

- wet grass silages
- protein plants (clover, lucerne)
- late cuts of grass in autumn (low sugar)

Dosage: Apply 1.5 g of **harvest INTERNATIONAL[®] pH** per tonne of forage.



source: Jones, Satter & Muck 1992

Usage instructions

harvest INTERNATIONAL® silage additives

Dissolve the freeze-dried powder in a sufficient amount of water and apply evenly over the forage using the suitable amount of water for your applicator. The mixed solution should be used up within 48 hours.

Recommendation of usage



harvest INTERNATIONAL®		duo	plus	pH
	grass: < 30 % DM, dirt			✓
	grass: > 30 % DM, forage rye	✓		
	grass: > 30 % with a lot of sugar	✓	(✓)	
	corn: < 35 % DM	✓	(✓)	
	corn: > 35 % DM	(✓)	✓	
	whole crop cereal silage	✓		
	lucerne			✓

Shelf life	duo	plus	pH
from date of manufacture (DOM)			
if frozen (-18 °C)	18 months	24 months	24 months
if stored at a temperature of +4 °C	12 months	18 months	18 months
if stored at a temperature of +20 °C	3 months	12 months	12 months

Distributor: