EM-Silage®

EM AUTHORIZED DISTRIBUTOR

Effective Micro-organisms Limited

Maximising Utilisation of Home Grown Forage & Feeds

EM Silage® is an additive to enhance the fermentation process in grass, maize, whole crop silages and crimped grain. EM silage consists of a mixture of micro-organisms, including lactic acid bacteria and yeasts, which during the ensiling process, not only guarantee an accelerated pH decline but also produce a number of bio-active substances. These not only enhance palatability and intakes but also inhibit heating of the silage.

- **Improve clamp stability**
- **Inhibit rise in clamp face temperature**
- **Reduce wastage**
- **Improve silage palatability**
- **Increase animal intakes**
- **Improve animal performance**
- **Increase profitability**

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Grass

EM-Silage as standard

With rapid rises in global feed prices, making the most efficient use of home grown forage and feeds has never been more important. But today's high genetic merit dairy and beef cattle require high quality feeds to exploit their potential for milk and beef production. With feed costs representing between 40–60% of the cost of milk production, producing top quality forage using EM-Silage can help maximise feed conversion efficiency.

What is EM-Silage?

The EM family of micro-organisms were isolated and developed for use in agriculture by Professor Dr Teruo Higa at Ryukyus University, in Okinawa, Japan. EM Silage has been a development by EM Agriton in the Netherlands for the European market. Following extensive trials it has now been proven in the field in commercial use over a 10 year period.

- **EM-Silage is a liquid ready-to-use product, which is diluted with water before use.**
- **EM-Silage is the only product on the market which contains a live yeast and has been proven to be effective in grass, maize, wholecrop silages and crimped grain. Therefore there is no need to source separate products for each type of silage**
- **EM-Silage is a microbial inoculant based on an unique combination of different strains of lactic acid bacteria and live yeast**

How does EM-Silage work?

- **Bacteria convert sugars in the crop into acids causing a rapid pH decline, ensuring clamp stability**
- **Yeasts produce metabolites which enhance feed energy values and prevent unwanted moulds**
- **The silage stabilises between pH 3.8 - 4.2**

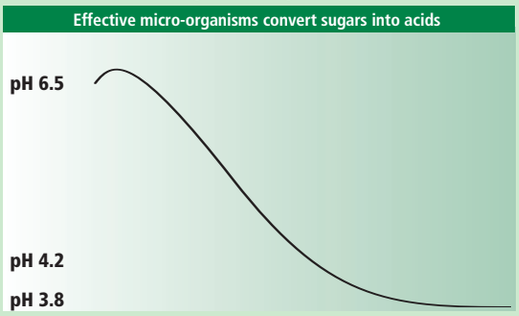
Homo-fermentative lactic acid bacteria quickly ferment some of the sugars in the forage into lactic acid, ensuring a low pH as quickly as possible, which not only results in a more stable silage but also conserves its feed value.

Effect of EM-Silage on Characteristics of Silage After Two Months Incubation

	Control	EM-Silage Treated
Dry Matter (g/Kg)	451	440
pH	5.11	4.42
Yeasts (log/cfu/g)	2.15	<2
Moulds (log/cfu/g)	<2	<2
Lactic Acid (g/Kg/DM)	41.9	79.3
Actetic Acid (g/Kg/DM)	7.6	36.2
Ethanol (g/Kg/DM)	11.2	17.7
1,2 propanediol (g/Kg/DM)	0	10.0
2,3 Butandiol (g/Kg/DM)	0.3	0.3
Propionic Acid (g/Kg/DM)	2.2	2.4
1 Propanediol (g/Kg/DM)	0	2.3
Ammonia (g/Kg/DM)	**2.5**	**3.5**

Source; ID Lelystad report 2165

EM-Silage as Silage Improver



Values of the acid level (pH) versus time in perfectly fermented silage.

Wholecrop

Maize

Crimp

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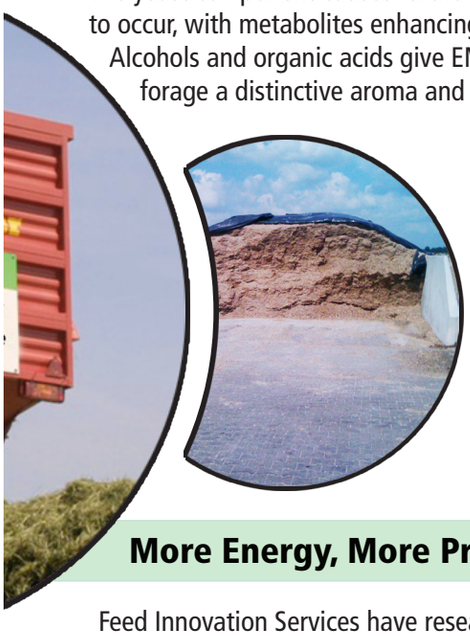
Greater Stability, Less Waste

Hetero-fermentative lactic acid bacteria produce lactic and acetic acid which improves aerobic stability, inhibiting the growth of wild yeasts and moulds, the main cause of heating and spoilage once the clamp is opened and the silage is fed out.

The yeast component causes further fermentation to occur, with metabolites enhancing the feed value. Alcohols and organic acids give EM-Silage treated forage a distinctive aroma and good palatability.



Effect of EM-Silage on Aerobic Stability of Grass Silage

	Control	EM-Silage Treated
pH	4.38	3.88
Lactic acid (gm/Kg DM)	25.68	44.73
Acetic acid (gm/Kg DM)	13.83	31.51
Ethanol @de-siling (gm/Kg FW)	9.27	10.85
Ethanol 7 days after de-siling (gm/Kg FW) (hours)	0.0	9.9
Aerobic stability	42.46	>200

Source : University College Ghent

More Energy, More Profit

Feed Innovation Services have researched (April 2003) the effect of EM-Silage treated grass silage on the **rumen fermentation** in dairy cows. The in-vitro studies showed a significant increase of propionic acid and decrease in the production of acetic acid and methane gas. The change in the VFA composition and reduction of methane in the rumen are beneficial to both the cow and the environment. In particular the increase in available glucose precursors for milk and milk protein production from 11.5Kg DM of EM-Silage treated grass silage is worth on average an extra 1 litre milk per cow per day.

The positive effects of EM-Silage on forage and rumen fermentation makes using it cost effective not only under poor harvesting conditions but also under favourable conditions too.

Effect of EM-Silage on volatile fatty acid production in the rumen

		Grass Silage	
Volatile Fatty Acid	Unit	Control	EM Silage Treated
Acetic	Mmol/gm DM	3.76	3.39*
Propionic	Mmol/gm DM	1.40	1.48*
Acetic	%	64.3	60.9*
Propionic	%	23.00	25.40*
Acetic : Propionic		2.85	2.42*

Difference between control silage and EM-Silage treated silage is significant (: p<0.01)
Source: Feed Innovation Services April 2003

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Application:

Forage	Volume of EM Silage (Ltr)	Dilute with luke warm water (Ltr)	Application rate of diluted product (Ltr/T forage)
Grass silage <35% DM	8	192	2
Grass silage >35% DM	4	196	4
Maize silage	8	192	2
Wholecrop silage <35% DM	8	192	2
Wholecrop silage >35% DM	4	196	4
Crimp	8	192	10

A Dosatron pump system available from EM can be used to automatically dilute and apply the product from the sealed bag-in–box or the diluted product can be applied through most liquid silage additive applicators.

EM-Silage® Product Information

Active Ingredients:
Lactobacillus plantarum ATCC 8014
Lactobacillus casei ATCC 7469
Saccharomyces cerevisiae IF00203

Packaging:
20L bag-in-box treats 250 tonnes silage
4L container treats 50 tonnes silage
1L container treats 12.5 tonnes silage

Storage:
Store in a cool dry place.
Do not allow to freeze.
Do not use after expiry date .
Use within 24 hours after dilution.

What do our customers say about EM-Silage®?

"We used EM-Silage on our crimped wheat for the first time last year and it kept really well. It smelt beautiful, the cows loved it and there was no waste. We will definitely be using it again this year"
M. Barrett

"I have used many additives over the years but EM-Silage has proved to be very successful in keeping both clamps cool, stable and fresh smelling. It is well priced and the cows forage intake definitely increased and we saw a rise in the milk and protein"
B. Sumption

"We used EM-Silage on our whole-crop and have never seen it keep so cool and stable with no waste"
A. King

"Our Grass and maize clamps have fed out really well and there has been no waste at all. The maize was very cool and smelt lovely"
J. Bellringer

"We treated half of our maize clamp and as soon as we fed the EM treated maize, the milk went up by approx 1L/day"
D. Treleaven

"I am really impressed with EM-Silage Additive. It gave us great results on the grass silage, the cows loved it and yield and quality were fantastic. I will be doubling my order this year."
R. Drew

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