Tech note

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Why should I use Si-Lac® Extra with *Lactobacillus buchneri* when making silage & hay?

Si-Lac Extra has two freshly growing cultures to enhance the fermentation process.
These are *Enterococcus faecium*, and *Lactobacillus plantarum*
The third freshly growing bacterium, *Lactobacillus buchneri* will:-

- Reduce heating at feed out
- Greatly reduces growth of moulds and yeasts that cause silage spoilage
- Easier management
- Much improved stability - resulting in far less waste
- Feed can stay fresh for days after opening the pit or bales.
- You can mix up tomorrows feed today with no heating to affect quality
- Treated round bales can be opened and fed out with significantly reduced feed-out losses and animal rejection.
- Very effective on all High Moisture Hay - maximum 25%

SI-LAC *EXTRA* is the only Australian made silage inoculant containing *Lactobacillus buchneri (L. buchneri)* to reduce the likelihood of heating at feed-out.

SI-LAC *EXTRA* like **SI-LAC** contains *Lactobacillus plantarum*, which is vital in the ensiling process and when mixed with *L. buchneri* produces a lethal weapon against microbial attack during silage making and feed-out by inhibiting microbial growth.

WHAT IS *L. BUCHNERI*?

Lactobacillus buchneri (L. buchneri) is a naturally occurring bacterium originally isolated from aerobically stable silages. It is a heterofermentative bacterium that produces lactic and acetic acid during fermentation and is proven to improve the aerobic stability in silage if added at the time of ensiling.

"*Lactobacillus buchneri* is a bacterial inoculant approved for use in grass silages, corn silages, legume silages and high moisture grains. *Lactobacillus buchneri* has been demonstrated to improve aerobic stability of silages by reducing the growth of yeasts. **The net result is that silages inoculated with *L. buchneri* are more resistant to heating at feed out (exposed to air) as compared to untreated silages**" Ref. David K. Combs and Patrick C. Hoffman " Focus On Forage" Vol 3: No.14 " *Lactobacillus buchneri* for Silage Aerobic Stability."

CAN I USE JUST *L. BUCHNERI* IN SILAGE?

There are many conflicting studies out regarding this question and equally as many theories but all of the research to date indicates that due to the ability of *L. buchneri* to become active only after pH 4 has been reached, **it is necessary that L. buchneri is used in conjunction with *Lactobacillus plantarum* to ensure rapid pH drop**.

"The combination of *L. buchneri* and *L. plantarum* reduces the ammonia (N) concentrations and fermentation losses in the silage compared with L. buchneri alone." Ref: I.Filya Dept of Animal Science, Faculty of Agriculture, Uludag University, Turkey

SI-LAC *EXTRA* contains both bacteria and

Grevillia Ag
PO Box 5510 Brendale QLD 4500
Ph: 07 3205 1788 Fax: 07 3205 4327

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www.grevilliaag.com.au

is therefore the obvious choice. Growth of yeast and mould has been found to be lower at feed out thanks to *L. buchneri*, contained in **SI-LAC *EXTRA.***

" The beneficial impact of *L. buchneri* appears to be related to the production of acetic acid. Although the precise mechanism has not yet been determined it is likely that aerobic stability is improved because acetic acid inhibits growth of specific species of yeasts that are responsible for heating upon exposure to oxygen." Ref. David K. Combs and Patrick C. Hoffman " Focus On Forage" Vol 3: No.14 " *Lactobacillus buchneri* for Silage Aerobic Stability."

"In research trials yeast and mould growth in silage treated with *L. buchneri* has been lower at feed out than for untreated control silage. Yeast and mould levels in silage inoculated with *L. buchneri* also do not increase as rapidly as in untreated controls when exposed to air. **As a result, temperature of silage inoculated with *L. buchneri* does not readily rise upon exposure to air and tends to remain similar to ambient temperature for several days, even in warm weather**." Ref. David K. Combs and Patrick C. Hoffman " Focus On Forage" Vol 3: No.14 " *Lactobacillus buchneri* for Silage Aerobic Stability."

"**The end result is inhibition of yeasts and moulds when ensiled feed is exposed to air**" Ref: Limin Kung University of Delaware " Hay and forage Grower" Banking on buchneri by Linda Leake.

WHAT IS AEROBIC STABILITY?

This is the ability of silage to remain fresh (and not spoil) in the feed bunker, in bale or in the pit. A simple method to measure aerobic stability is to expose silage to air and measure heat generated from the forage mass. Heat is produced from spoilage organism (usually yeasts) that degrade the nutrients in silage.

WHEN IS AEROBIC STABILITY A PROBLEM?

Aerobic stability can be a problem during warm weather and when the silage is exposed to air this encourages the growth of spoilage microbes. Slow removal of silage and poor pit face management can also lead to spoilage.

Silage treated with *L. buchneri*, contained in **SI-LAC *EXTRA,*** has been shown to have elevated concentrations of acetic acid (antifungal compound) and lower levels of lactic acid leading to reduced heating of the face for several days.

WHEN SHOULD I CONSIDER USING L. BUCHNERI?

"If the weather is exceptionally wet or dry, if forages will be fed during hot weather, or if a silo has a large exposed face, *L. buchneri* is a good tool to implement at the time of ensiling." Ref: Limin Kung University of Delaware " Hay and forage Grower" Banking on buchneri by Linda Leake

If losses have occurred at any stage of ensiling you should consider using *L. buchneri*. **SI-LAC *EXTRA*** will reduce these losses when used in a well structured silage management system.

BENEFITS IN MIXING AND USE

If mixed correctly and put in a clean container (no contaminant) the product should never block nozzles.

Because the bacteria has the food supplied with it in the product formulation, the mixed inoculant has a long tank life, from 5 to 14 days depending on temperature. (7 days at 30 degrees C.)

The ideal production of bacteria in the application tank is at 33 - 40 degrees C.

Very few bacteria like to work or multiply below 17 degrees C.

If preparation time is cut to a minimum - mix the Si-Lac or the Si-Lac Extra in hot water from the tap (NOT BOILING).

When you have product surplus at the end of the season (or for what ever reason) do not waste it. Put it in a clean container and put it in a cold room or refrigerator. DO NOT FREEZE. It will last for a period of time if it can be stored at 5 degrees C or less.