Which silage additive for green rye?

Harvesting green cut rye (feed rye, green rye) produces a range of fundamental special features. There are many, very different truths floating around about optimal ensiling and correct use of silage additives! For this feed crop there might even be two contradictory advisory recommendations which could be right for quite different locations, using varied fertiliser intensities!

The following points are facts:

- The natural amount of lactic acid bacteria is especially low in green-cut rye
- The amount of clostridia and other pests differs considerably depending on the type of soil and fertilizer management
- The average fermentability coefficient (FC = 35) is indicative of a harvested crop which is difficult to ensile
- The Z/PK quotient depends considerably on the N-fertilisation of the crop, i.e. with increasing fertiliser intensity the sugar content is restrained!

Fertiliser intensity	Dry matter	Sugar	Buffer capacity	Z/PK	Fermentability coefficient
	g/kg	g/kg DM	g MS/kg DM		
75 kg N/ha	170	140	45	3.1	42
100 kg N/ha	160	130	50	2.6	37
150 kg N/ha	150	100	56	1.8	29

Under these conditions it is especially important for the silage additive chosen to include all general conditions!

<u>Recommended:</u>

- At the time of harvest: in ear emergence (ear is noticeable, beards not yet visible)
BBCH- scale 49 - 51
- Crop height: approx. 65 – 75 cm
- Place the cuttings straight on the windrow
- Minimum cut height: > 7 cm
- **Field retention time 24 - max. 48 hours** when withering conditions (sun, wind) are extreme
- **Chaffing:** straight from the windrow, without additional tedding and swathing!
- **Chaff length:** 40 mm
- **Minimum dry matter content:** dependent on sugar content and buffer capacity (see formula!)

Under no circumstance are biological silage additives to be used when dry matter is below 20 %!

DM_{min} = 45 – 8 Z/PK
Minimum dry matter content for green-cut rye depending on Z/PK:

Green-cut rye	
Z/PK	**Minimum DM %**
1.8	**31**
2.2	**27**

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Z/PK	Minimum DM %
2.4	**26**
2.6	**24**
2.8	**23**
3.1	**21**

The **buffer capacity (BC)** can range in green-cut rye between **45 and 56 g MS/kg DM**.

The **sugar content (S)** is on average approx. **135 g/kg TS**
(margin of fluctuation 90 – 165 g/kg TS).

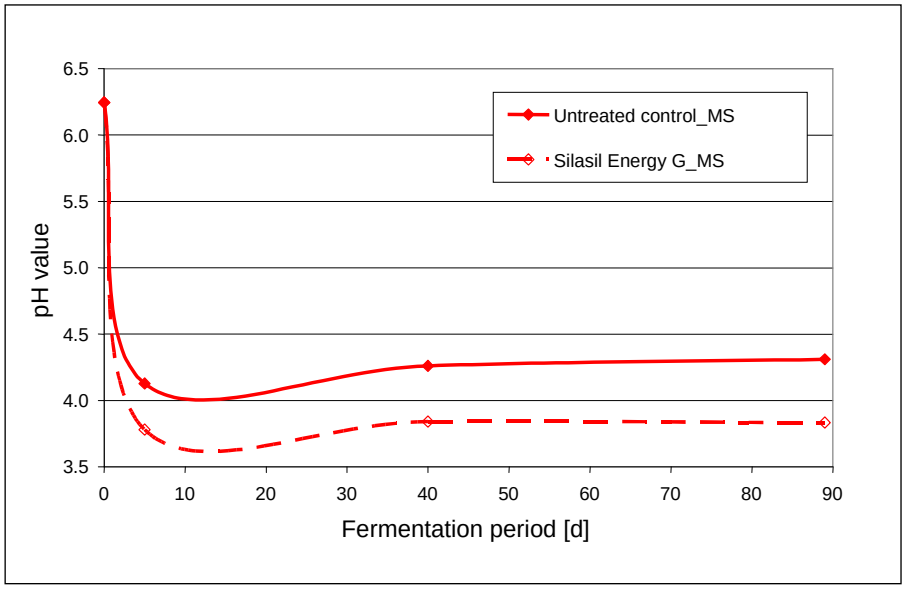
From **one clostridium,** in a cell division rate of 0.5 h,

- in 1 h 4 Clostridia
- in 5 h 1024 Clostridia
- **in 10 h 1,048,576 Clostridia** can develop!

The specific baseline conditions in the harvested crops can only be met with very precise application of the right silage additive, while adhering to all the rules of silage management!

As a rule in green-cut rye purely homofermentative silage additive **which acts specifically to counter clostridia** must be used. For the bio gas area this is **SILASIL ENERGY.BG;** only **BONSILAGE FORTE** is intended for animal feed and **SILASIL ENERGY.G** is for universal use in both areas!

Only in special cases (on withered crops, lowest N-fertiliser use, minimal contamination/raw ash levels, DM > 32 %) can silage additives be used with heterofermentative lactic acid bacteria (**SILASIL ENERGY;** SILASIL ENERGY.C; BONSILAGE PLUS) are recommended!



Progression of pH in untreated green-rye silage and using SILASIL ENERGY.G.

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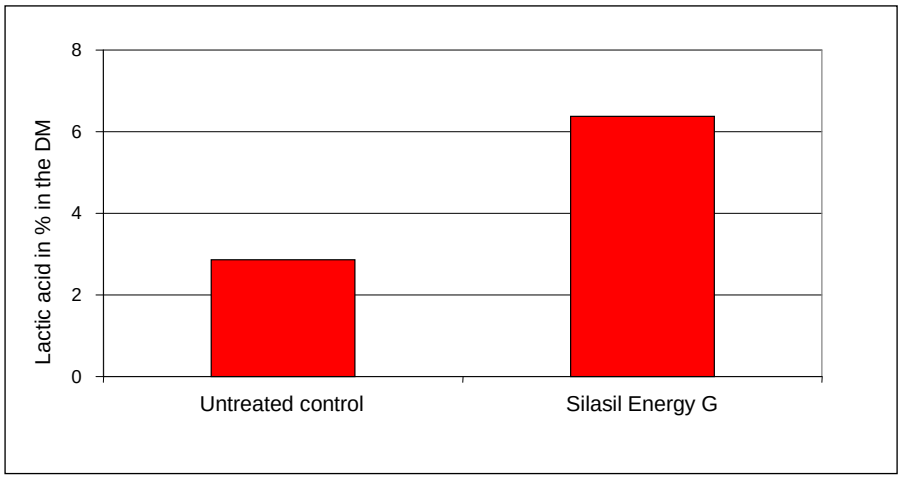
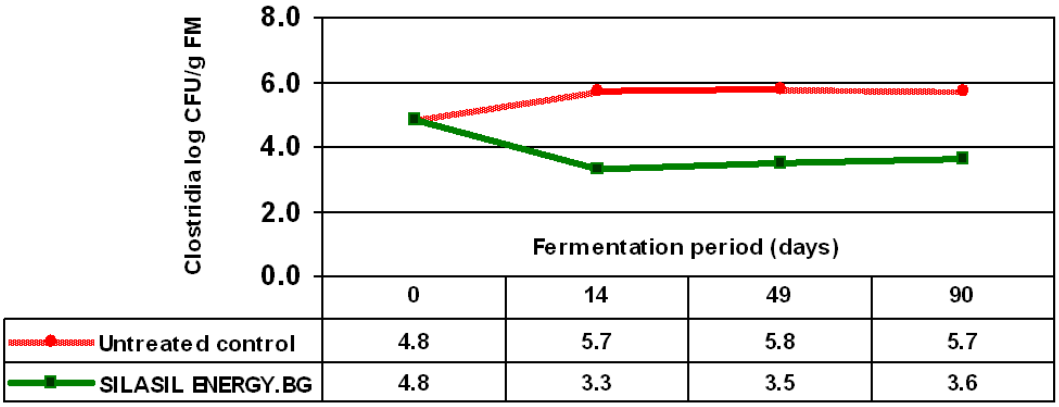


Concentration of lactic acid in untreated green-rye silage and using SILASIL ENERGY.G.



	0	14	49	90
Untreated control	4.8	5.7	5.8	5.7
SILASIL ENERGY.BG	4.8	3.3	3.5	3.6

Effect of SILASIL ENERGY.BG on **clostridia content**

In silages for bio gas production SILASIL ENERGY.BG produces:

- *speedy and considerable **pH lowering,** even in silages which have low fermentation coefficients;*
- *a significant **reduction in clostridia,** in comparison to the control silage;*
- *extensive **prevention of butyric acid** formation;*
- *a considerable **reduction in the formation of ammonia-N**.*

Can the same silage additive used for green rye also be used for *cereal TPS*?

NO,
for cereal TPS a fundamentally different spectrum of damage inducers is to be expected. It is for this reason that it is heterofermentative strain groups which are fundamentally used here:

SILASIL ENERGY for silages used in biogas production.
SILASIL ENERGY.C for universally applicable silages (biogas + animal production)
BONSILAGE MAIS purely for use in animal nutrition

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