SILAGE DIAGNOSTICS -

A systematic approach towards troubleshooting and future preventive action

Siriwan D. Martens, Mariana Schneider, Christian Maack, Wolfgang Wagner, Katrin Harms, Detlef Kampf and Reinhard Resch

All authors contribute to the Federal Working Group Forage Conservation and/or the DLG Committee Forage and Substrate conservation, German Agricultural Society (DLG), Frankfurt a.M., Germany

siriwan.martens@lfulg.sachsen.de

Introduction

- Feed deficiencies lead to performance losses and reduced animal
- Silages are usually more prone to spoilage than dry feed.
- Systematic feed monitoring is essential for prevention and troubleshooting in daily routines and acute problem situations.
- Five complementary approaches for holistic silage quality evaluation to ensure proper use, storage, and handling.
- **Update** of current silage evaluation systems.

Materials and methods

These are the recommended parts of the silage assessment:



Approach the silo, inspect it from all sides. Examine the silo cover for any damages, determine the degree of compaction, the impact of the removal technique on the silo face, and temperature.

Conclusions

Understanding the relations **processes in the field ≠ final feed** quality helps planning for the following growing season!

The five suggested parts of silage assessment:

- > Help to characterize a silage holistically
- > Offer the chance to identify its problems for consequent troubleshooting.

Fig 1. Left: Open silo face





Fig 5. Petri dishes with fungal/bacterial colonies. Pipetting decimal dilution on culture medium.

If hygienic issues are suspected, take samples aseptically for microbiological analyses.

Silage assessment system

Take silage samples and evaluate their dry matter, odor, color and



Part I

measurement of

Part II

ensory aspects

Silage

quality

Part III

hygienic status

Part IV

evaluation of

mical analys

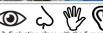




Fig 4. Fresh samples of grass and maize silage for

Take representative samples, mix them; send a sample to the laboratory for analyzing and evaluating parameters of fermentation and nutritional quality

TIT Monitor signs of aerobic spoilage regularly. Temperature, pH changes, sensory evaluation = valuable indicators.

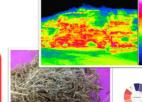


Fig 3. Thermal image / Yeast infestation / pH indicator



porosity/compaction smell/appearance of yeasts , - -

Exemplary grass silage sample description

- ± high pH value in relation to the low dry matter content (DM) (I, II, IV).
- Traces of butyric acid perceptible (II).
- Ammonia content (IV) confirms proteolytic processes.
- Smeary leaf structure (II).
- Dark colour (II).
- Clostridial spores present (V).
- Dirt remains on the hands after handling the silage (II).

Derived recommendation

- Compensate the lower energy content (faulty fermentation, dirt) in the ration!
- Do not feed the hygienically deficient feed in the sensitive phases of the cattle's
- ➤ Next harvest season: cut at dry weather conditions & wilt rapidly >30 % DM!
- > Apply a suitable ensiling agent to support lactic acid fermentation!



colour chang Fig 6. Example of a grass silage evaluation











