

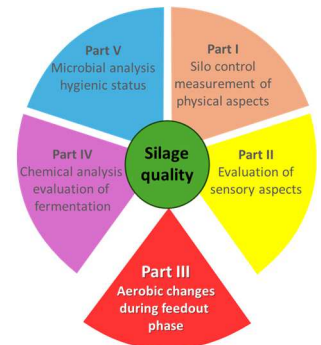


SILAGE TROUBLESHOOTING – PART III: Detecting aerobic changes on farm

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Introduction

- Aerobic instability - a major problem in silage management.
- Definition: Any metabolism at exposure to air, resulting in:
 - losses in dry matter, energy,
 - a decline in hygienic and nutritional quality.
- Processes occur during feedout phase or when silo cover is damaged.
- When animals refuse feed and milk production decreases, the factors must be checked and controlled as an important aspect of silage assessment.

Indicators

- Sensory evaluation in the daily working routine:

Conclusions

- The daily check for aerobic changes by the human senses is a valuable tool for early detection of spoilage and consequent measures.
- Temperature should be protocolled already at ensiling to draw the right conclusions with regard to current temperatures at different silo depths.
- To detect changes in pH at the surface it has to be determined regularly at different silo heights.

Indicator	Signs of aerobic spoilage	Remark
 Optical (sight)	- Steam at the silo surface  - Mould growth - Cream-coloured yeast points - Dark parts  Fig 1. Fungal infestation on the surface of grass silage. a) mould, b) yeast points	Heat development as a result of microbial activity Discard spaciosusly around the spot! Accelerate feed rate! Signs of rot and decomposition – do not feed!
 Olfactory (smell)	- Smell of rot - Alcoholic / smell of must  - Fruit esters  and acetone-like odours (volatile organic compounds)  - Ammonia, fishy odour (amines) 	May lead to feed refusal. Decomposition of proteins and volatilisation
 Tactile (touch)	- Heat - Smeary consistency - Sand, soil	Microbial decomposition Contamination, reduced digestibility and energy
 Temperature	- Silo face warmer > ambient - Inner temperature of a flat, small silo > 20 °C in winter - Core temperature of a large, high silo pile > 5-10 ΔK above the temperature at ensiling	Strong microbial activity, high instability
 pH	Increase by > 0.2 units	Lactate degradation by yeasts, precursor for further spoilage

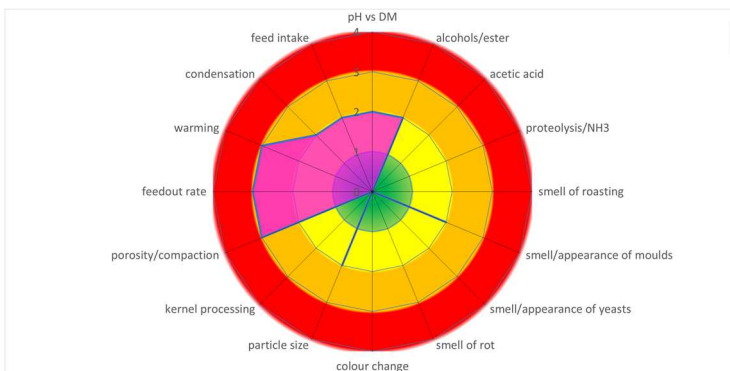


Fig 2. Sample of a maize silages with various signs of aerobic changes.

MEASURES

- Once aerobic spoilage is detected (Fig. 2 as an example), the following immediate measures should be taken:
- Seal any unintended openings of the silo.
 - Discard visibly molded and rotten parts spaciosly.
 - Accelerate the feed rate.
 - Freshly prepare the mixed ration before feeding, ideally several times a day.
 - Possibly apply stabilisers when mixing the ration after assessing the hygienic status (see Poster Part V).