Risk and prediction of aerobic-induced silage bale deterioration

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Silage Reheating Experiments
1. Introduction

- Great importance of silage in animal production
- Process of ensiling is completely understood
  - conditions for high silage quality are known
  - risc of silage deterioration is small

(Woolford, 1984)

- Deterioration of silage is a worldwide problem for farm profitability and feed quality
- Silage deteriorates as it is exposed to air

(Tobacco et al. 2011)

Silage Reheating Experiments
1. Introduction

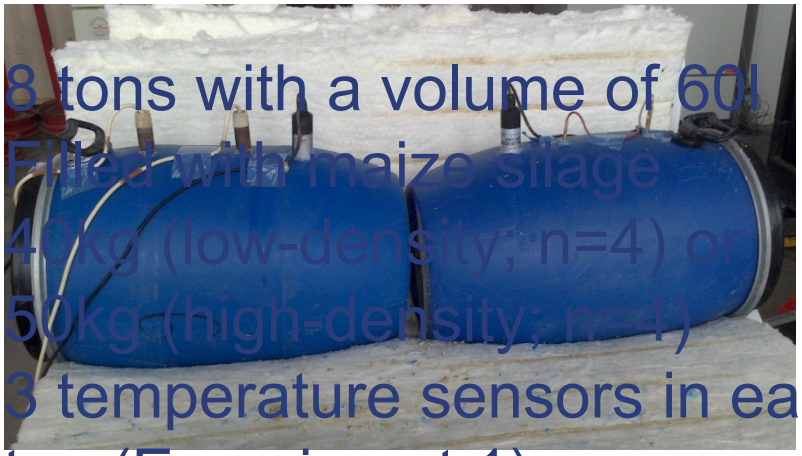
- Low compacted silage bales are strongly threatened by reheating (Büscher et al. 2013)

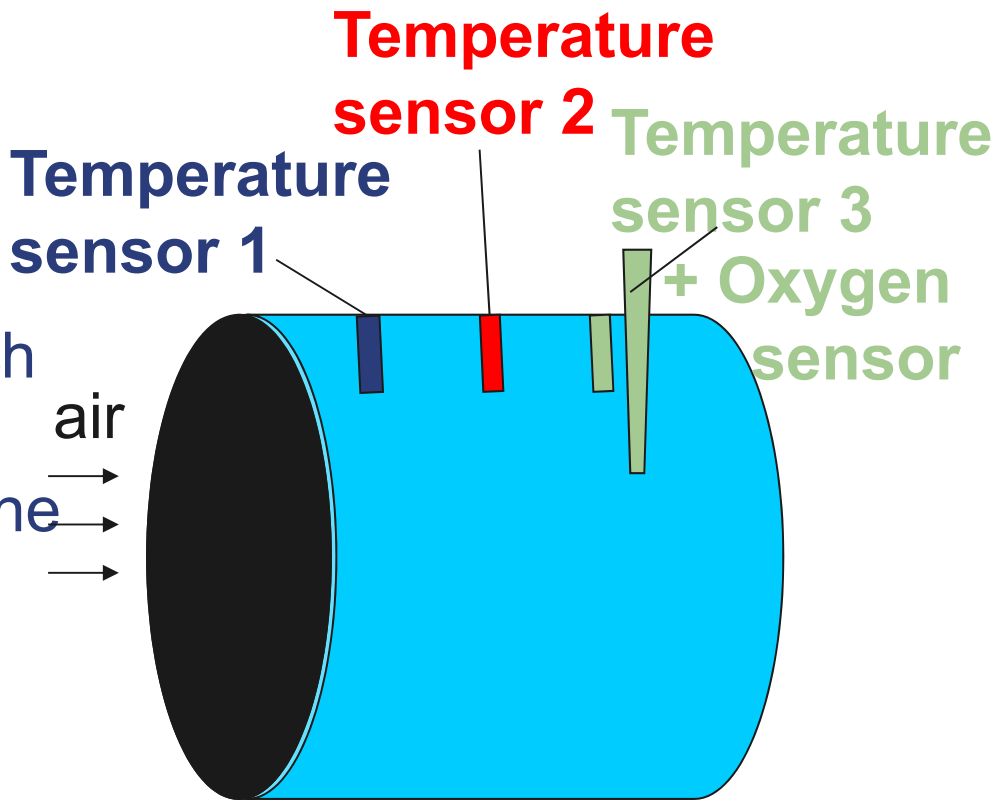
- High compaction and airtight coverage prevent and reduce energy losses (Maack et al., 2007)

- If plastic film is opened time of air influence has to be short (Büscher et al. 2013)

Silage Reheating Experiments
2. Material and Methods

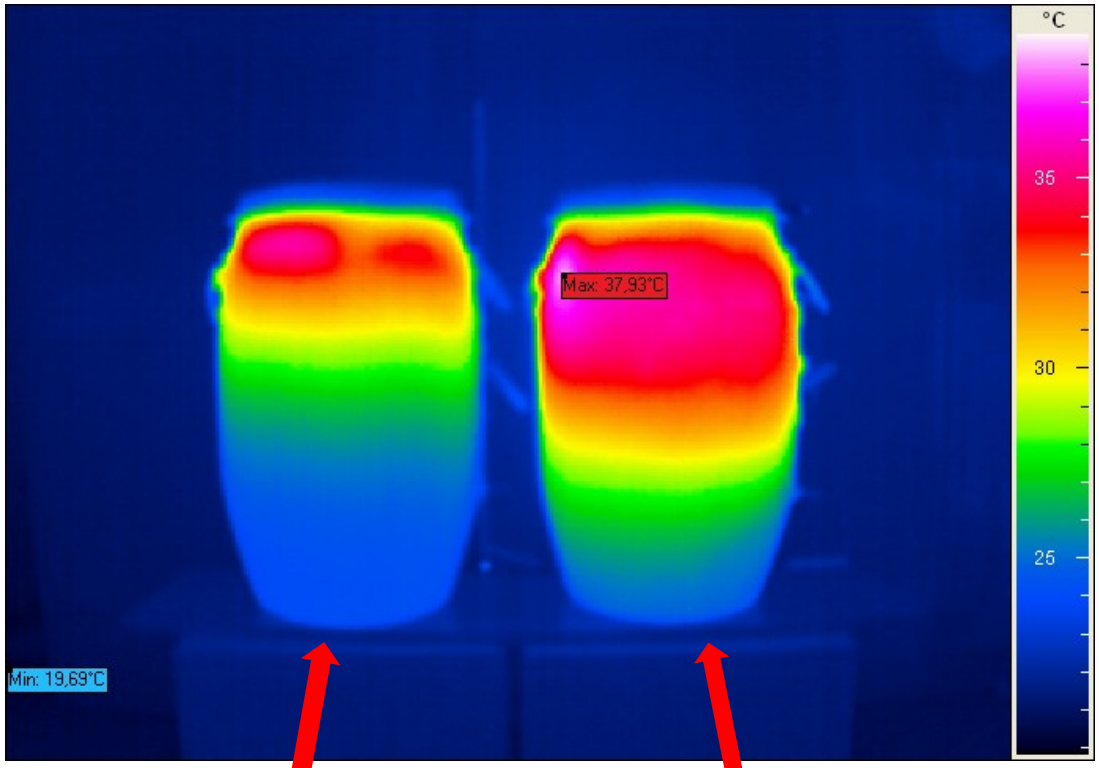
- 8 tons with a volume of 60l
- Filled with maize silage
- 40kg (low-density; n=4) or 50kg (high-density; n=4)
- 3 temperature sensors in each ton (Experiment 1)
- 3 temperature sensors and one oxigen sensor in each ton (Experiment 2)





Silage Reheating Experiments
3. Results (Experiment 1)

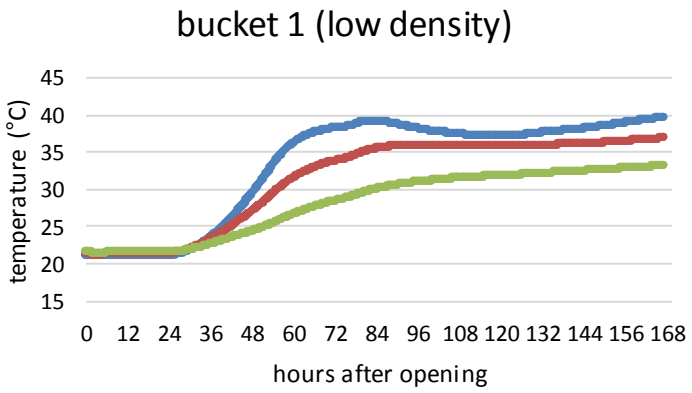
Reheating of corn silage in tons of different densities

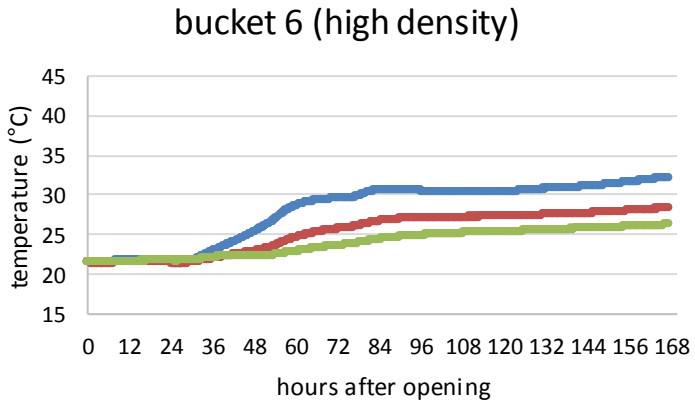


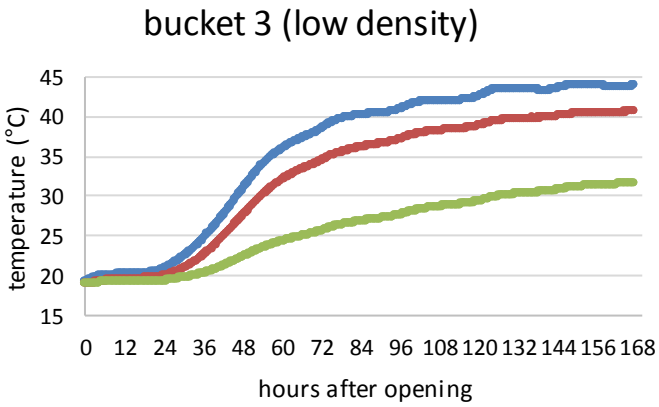
Weight: 50kg

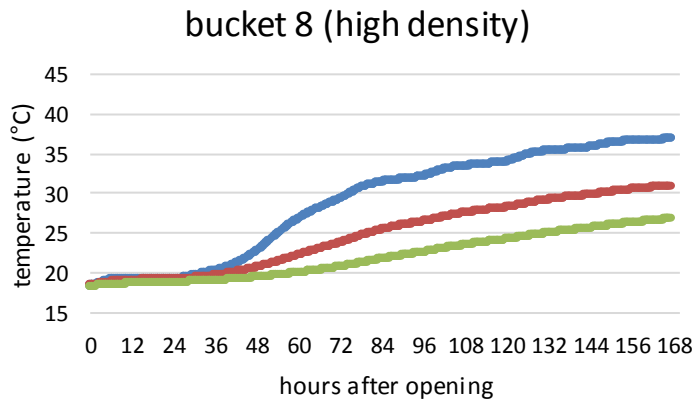
Weight:40kg

Silage Reheating Experiments
3. Results (Experiment 1)





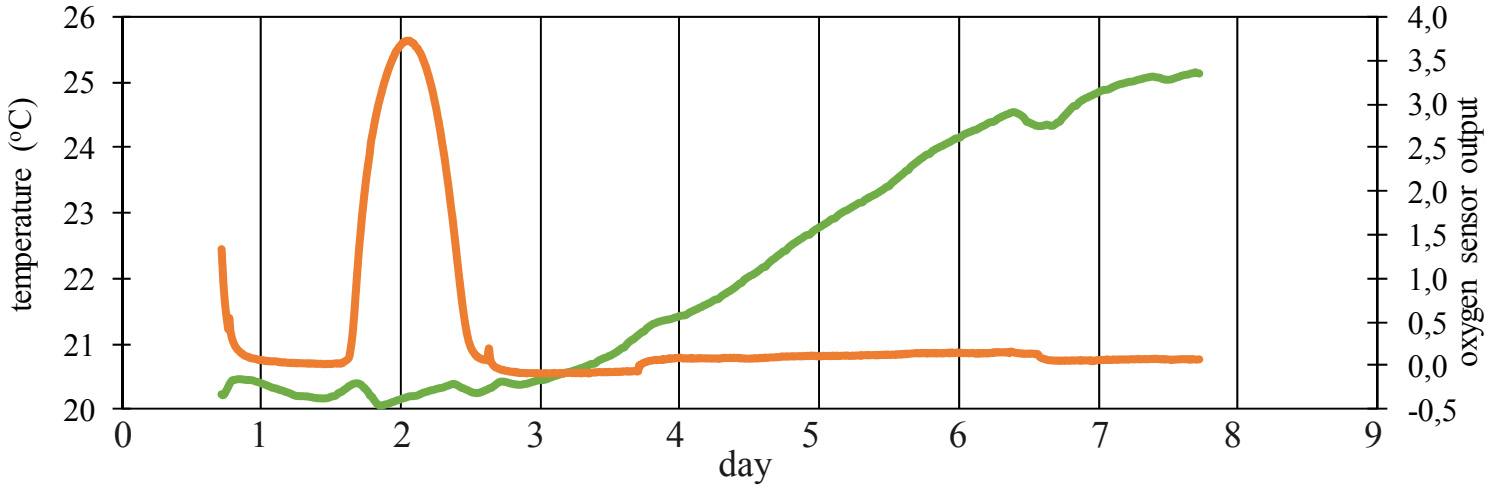


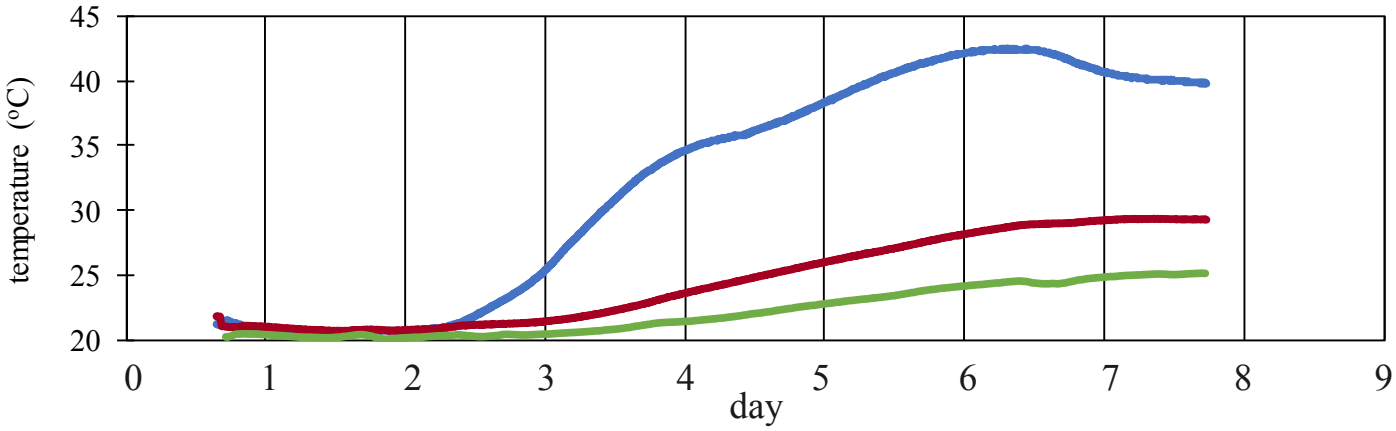


Sensor 1 Sensor 2 Sensor 3

Silage Reheating Experiments

3. Results (Experiment 2)





Silage Reheating Experiments
4. Conclusions and Future Prospects

High compaction of plant material reduces energy losses

Physical factors have great influence on silage deterioration

→Further investigation of physical influencing factors

→create a prediction model for silage deterioration

5. References

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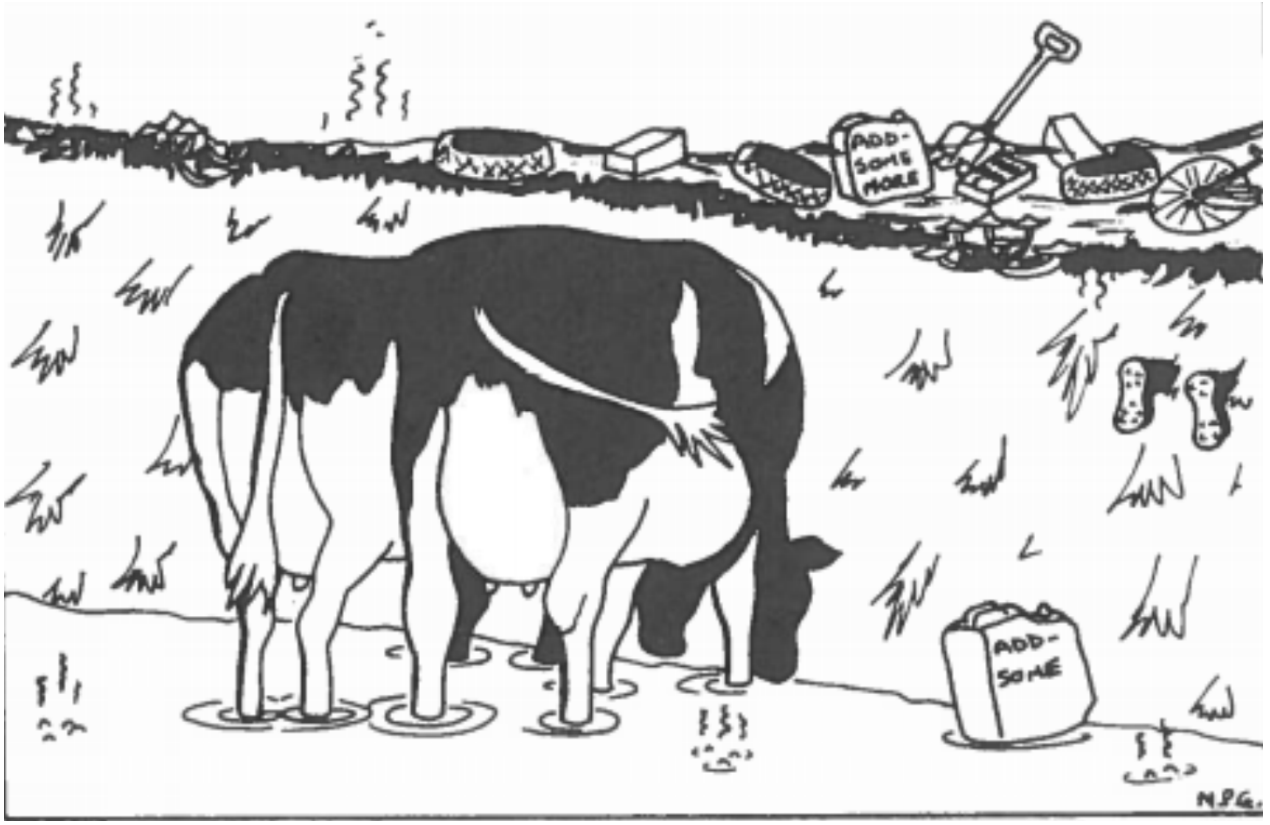
Thank you for your attention!



„I would recommend this to any cow – it´s good acids, preservatives, toxines, bugs, effluent – there´s even some grass here somewhere!“ (Woolford, 1984)