



# Harvest dates affect fungal counts and fungal composition of baled haylage

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# Aim

To study effects of harvest date in fungal counts and fungal composition in grass and haylage

# Materials

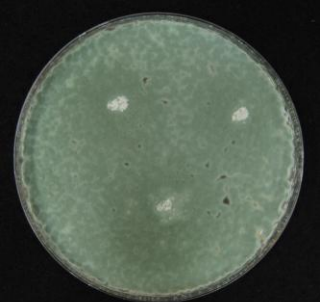
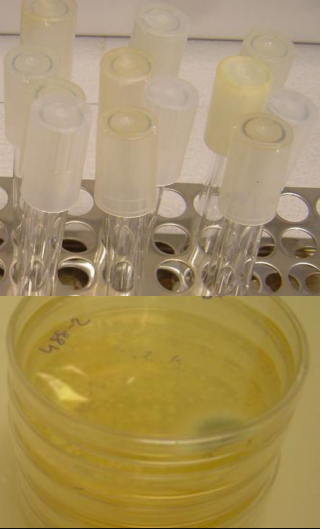
Grass-dominated sward (timothy, meadow fescue and red clover)

- Grass (pre-conserved)
  - June, July and August 2009
  - First harvest
  - Wilted to 550-610g DM/kg
- Haylage (post-conserved)
  - 10 layers of white stretch film
  - October to December 2009

# Microbiological methods

## Cultivation

- Dilution series
- Malt extract agar
- Plating
- Yeast (2 days)
- Mould (5 days)
- Macro- and microstructure of moulds





# Results and Discussion

## Grass

### Yeast

- Counts increased in later harvests
- $\log$  1.65 to 7.42 CFU/g

### Mould

- Counts increased in later harvests
- $\log$  1.89 to 2.11 CFU/g
- Number of mould species increased
- *Cladosporium* spp., *Fusarium* spp., *Mucor* spp. and *Penicillium* spp.



# Results and Discussion

## Haylage

### Yeast

- Counts increased in later harvests
- $\log$  4.96 to 6.53 CFU/g

### Mould

- Counts increased in later harvests
- $\log$  1.26 to 2.04 CFU/g
- Number of mould species increased
- *Mucor* spp.





# Conclusion

- Delaying harvest resulted in higher yeast counts both pre- and post-conservation
- Moulds counts generally low
- Number of mould species were higher in pre- than post-conservation



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# Future

## Molecular methods

- Polymerase chain reaction (PCR)
  - Fungi isolates from microbiological cultivation
  - Sequences under analysis
- 454 sequencing
  - Extract fungi DNA directly from haylage
  - Large-scale parallel pyrosequencing system
  - Mould community

Molecular methods – Useful tools to detect moulds/fungi in haylage

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