

## Ensilability and silage quality of different cocksfoot varieties

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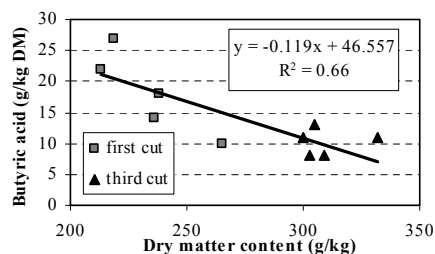
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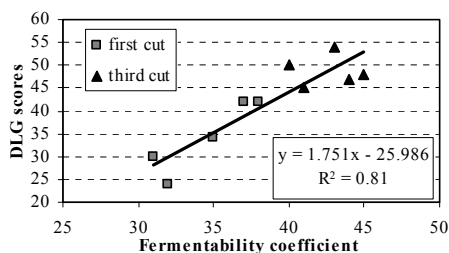
**Introduction** Various factors determine the ensilability of plant crops. In addition to dry matter content, sugar and protein content, buffering capacity, plant structure, soil contaminations and epiphytic microflora are also important. In Switzerland, various mixtures and also pure swards are continuously revised on the basis of results from variety testing programs. The main parameters for these tests are the yield and nutrient contents. However, in terms of ensilability and silage quality, no systematic tests have been carried out. For this reason, we have tested the ensilability of different cocksfoot varieties as well as the quality of the silages.

**Materials and methods** In a trial five different cocksfoot varieties were tested, which were part of the testing program of the Swiss Federal Research Station for Agroecology and Agriculture in Zürich-Reckenholz. Forage was ensiled of the first as well as of the third cut. The forage was pre-wilted, short chopped and ensiled in laboratory silos each having a volume of 1.5 litres. Chemical parameters were analysed before ensiling and after a storage period of five months. Fermentation acids, ethanol, ammonia and pH were also analysed in the silage. Furthermore, the fermentability coefficient was calculated in the green forage. This parameter summarises the potential effects of dry matter as well as the ratio of sugar content and buffering capacity on the fermentation.

**Results** The dry matter contents in the green forage varied between 220 and 270 g/kg for the first cut and between 310 and 340 g/kg for the third cut. Concerning the nutrient contents, the forage of the first cut had higher protein contents as well as lower crude fibre contents in comparison to the third cut. The ash and sugar contents were only slightly higher for the forage of the first cut. Within the five varieties there were some differences. The fermentability coefficients varied between 31 and 38 for the first cut and between 40 and 45 for the third cut. There were significant variety and also cut number effects. One reason for the higher fermentability coefficients of the third cut is the higher pre-wilting degree. Forage with fermentability coefficients below 35 is reputed to be difficult to ensile. All silages contained butyric acid and only low lactic acid contents. The butyric acid contents were significantly different between the varieties. The relation between the dry matter content and butyric acid content is shown in Figure 1. According to the DLG evaluation scheme developed by Weissbach and Honig (1997) the silages attained scores between 24 and 42 for the first cut and between 45 and 54 for the third cut, out of a maximum of 100. There is a strong correlation between the fermentability coefficient and the DLG scores (Figure 2).



**Figure 1** Relation between dry matter content and butyric acid



**Figure 2** Relation between fermentability coefficient and DLG scores

**Conclusions** There were some differences concerning the nutrient contents and the fermentation parameters for the five cocksfoot varieties. However, the cut number and especially the dry matter content proved to be the major influencing factors for the ensilability as well as for the silage quality.

## References

Weissbach, F. & H. Honig (1997). DLG-Schlüssel zur Beurteilung der Gärqualität von Grünfuttersilagen auf der Basis der chemischen Untersuchung. *Tagung des DLG-Ausschusses für Futterkonservierung vom 2. Juli 1997 in Gumpenstein.*