

Nutrient and mineral content of herbage from pastures and fresh indoor feeding

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Introduction

Grazing and/or indoor feeding of fresh herbage are very common feeding strategies for dairy cows in Switzerland.

In the framework of an on-farm dairy production system comparison, the nutrient and mineral contents of herbage for fresh indoor feeding were regularly analysed throughout the vegetation period and compared to the contents of herbage from pastures (full grazing).



Materials and methods

The system comparison was conducted on the experimental farm in Hohenrain, Switzerland (620 m above sea level, annual precipitation 1086 mm, mean air temperature 10.8 °C).

In 2014 and 2015 from spring to autumn, herbage samples from pastures (full grazing) and from fields cut for fresh herbage for indoor feeding were taken every two weeks.

Content of calcium (Ca), phosphorus (P), magnesium (Mg), potassium (K), sodium (Na), copper (Cu), iron (Fe), manganese (Mn) and zinc (Zn) were analysed.

Results

The swards for fresh indoor feeding contained lower proportions of grasses (60% vs. 70%, mainly ryegrass) and herbs (6% vs. 9%) but a higher content of legumes (34% vs. 21%) than the herbage from pastures. Despite the lower legume proportions, the CP content of the herbage from the pastures was substantially higher and both ADF and NDF contents were lower. This might be related to the generally younger growth stage.

The Ca contents of the herbage for fresh indoor feeding were substantially higher than from pasture herbage. Lower contents were found for P, K and Zn in herbage for fresh indoor feeding. The Mg contents were similar in the two different herbages and increased from spring to summer. Sodium, Cu and Mn contents were similar for the two herbages.

Conclusion

The results demonstrate that fresh herbage represents a major source of minerals for herbivores. Despite the high seasonal fluctuations, which are more pronounced in herbage for fresh indoor feeding, Ca, P, K, Cu, Fe and Mn may cover the mineral requirements for dairy cows. However, due to the lower content of Mg, Na and Zn, these minerals should be supplemented.

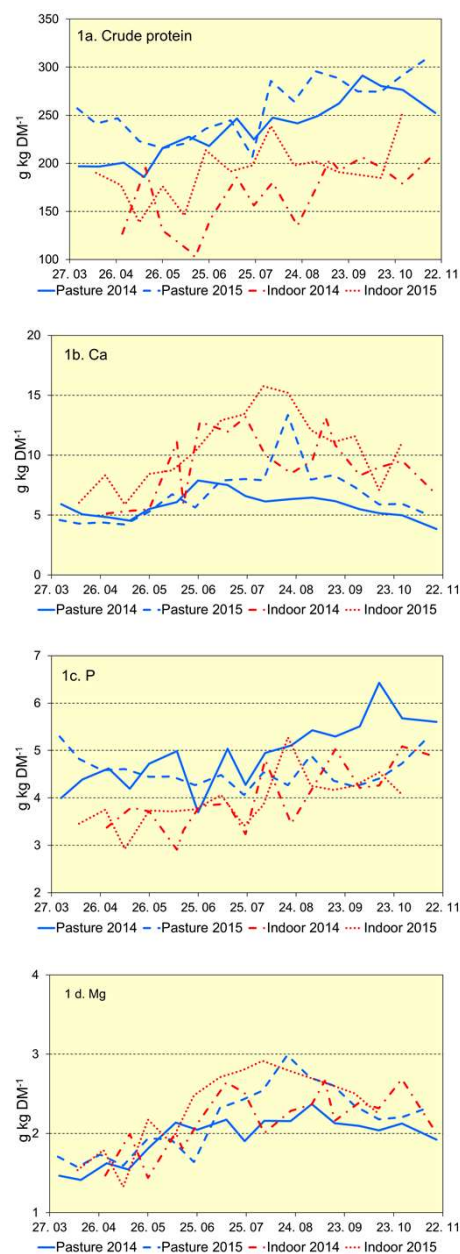


Figure 1 a–d: Crude protein, Ca, P and Mg contents during the two vegetation periods 2014 and 2015