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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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## Relationship between pre-wilting and *in vitro* digestibility of organic matter

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**Key words:** silage making, pre-wilting, digestibility of organic matter, fermentability

**Introduction** Several factors determine the influence of pre-wilting on the digestibility of organic matter. These determinants are the variation in physical traits of the herbage and the conditions for the wilting process. Because of this variability and the fact that the influence of pre-wilting is frequently only identifiable by the evaluation of the fermentation products, it is worthwhile to research the context in factorial experiments including the factors plant species, growth number, and degree of pre-wilting. To obtain reliable results concerning the effects of pre-wilting, biomass losses caused by crumbling of dried herbage must be avoided.

**Materials and methods** Herbage was pre-wilted on a drying kiln with cold air ventilation. Considering the weather conditions and the aimed degree of pre-wilting, the maximum wilting period was 48 hours. Herbage was filled into gauze bags which were pervious to air before wilting to avoid losses by crumbling. Digestibility of organic matter was estimated according to Tilley and Terry (1963). The coefficient of fermentability, potential effects of water soluble carbohydrates, buffering capacity, and dry matter concentration were calculated using the equation of Weissbach et al. (1974). The evaluation of digestibility and fermentability was started immediately after the wilting process.

**Results and discussion** Depending on the factor growth number, the degree of pre-wilting is of significant importance ( $\alpha=0,05$ ) for the digestibility of organic matter (Figure 1). The *in vitro* digestibility of organic matter decreased by 3 percent units in *Lolium perenne* and 4 percent units in *Trifolium pratense* with increasing the dry matter content from 20% to 50%. This effect is also evident for silages made from this herbage. The coefficients of fermentability (Figure 2) show the necessity of pre-wilting for obtaining a sufficient ensilability.

**Conclusions** On the one hand pre-wilting decreased the digestibility of organic matter up to 4 percent units even when losses by crumbling were avoided, on the other hand wilting was necessary to obtain a sufficient fermentability of herbage. The selective application of silage additives allows lower degrees of pre-wilting because of compensatory effects. This is a way to decrease losses in digestibility and to reduce the risks of bad weather and decreases intensity of work for the wilting process. With regard to forage quality the degree of pre-wilting must be reduced to a marginal intensity.

### References

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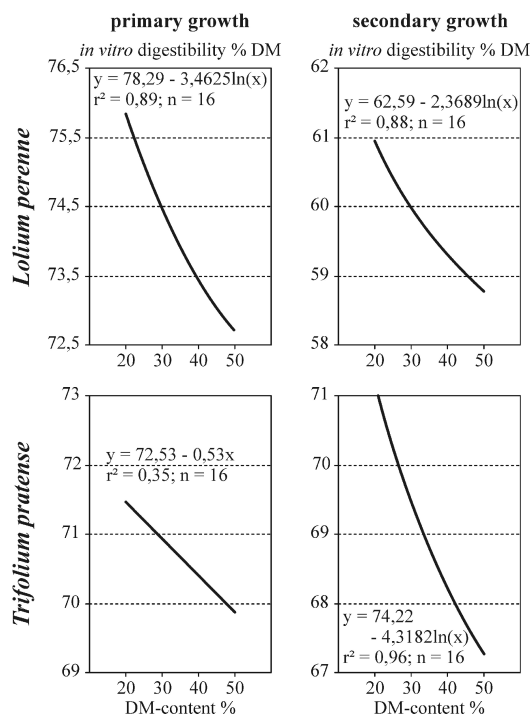


Figure 1 *in vitro* digestibility of organic matter depending on plant species, growth number, and degree of pre-wilting.

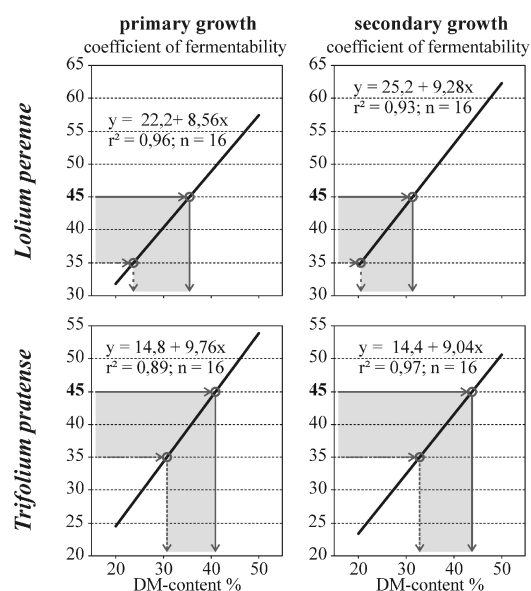


Figure 2 Fermentability depending on plant species, growth number, and degree of pre-wilting.