EFFECT OF MATURITY STAGE ON ESTIMATION OF NET ENERGY OF CLOVER FORAGE

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OBJECTIVE

The aim of this study was to determine the nutrients and the energy level of different maturity stage of clover forage (divided into three miters) used in ruminant nutrition by chemical, in vitro and in vivo analyses.

MATERIAL AND METHODS

Twelve samples of clover (Trifolium pratense) in different maturity stage were analysed for:

1) chemical composition of dry matter (DM), organic matter (OM), ash, ether extract (EE), crude protein (CP), crude fibre (CF), nitrogen-free extract (NFE), neutral-detergent fibre (NDF), acid-detergent fibre (ADF), acid-detergent lignin (ADL) (AOAC, 1990);
2) gross energy (GE) content using of calorimeter equipment (IKA C 5000 control, Germany);
3) in vitro digestibility of organic matter using an enzymes techniques (Vencl, 1990; Homolka, 1994);
4) in vivo sheep digestibility of organic matter determined in metabolic trials on wethers;
5) calculations treated by statistical program (Environment R, 2005).

CONCLUSIONS

Generally the maturation caused the increase ($P < 0.05$) in crude fibre, neutral-detergent fibre, acid-detergent fibre and acid-detergent lignin. The in vitro and in vitro calculated digestibilities of organic matter were in average 75.4 and 70.6 %. With increasing maturity of forage samples the in vivo, in vitro and in vitro calculated digestibilities of organic matter linearly decreased.

Gross energy, digestible energy, metabolizable energy and net energy for lactation were in average 18.12, 12.41, 9.60 and 5.67 MJ/kg of absolute dry matter. Comprehension of effect of first miter, second miter and third miter means that in general the observed nutritional variables of clover varied for different miters, although a significance of this variation was not statistically confirmed.

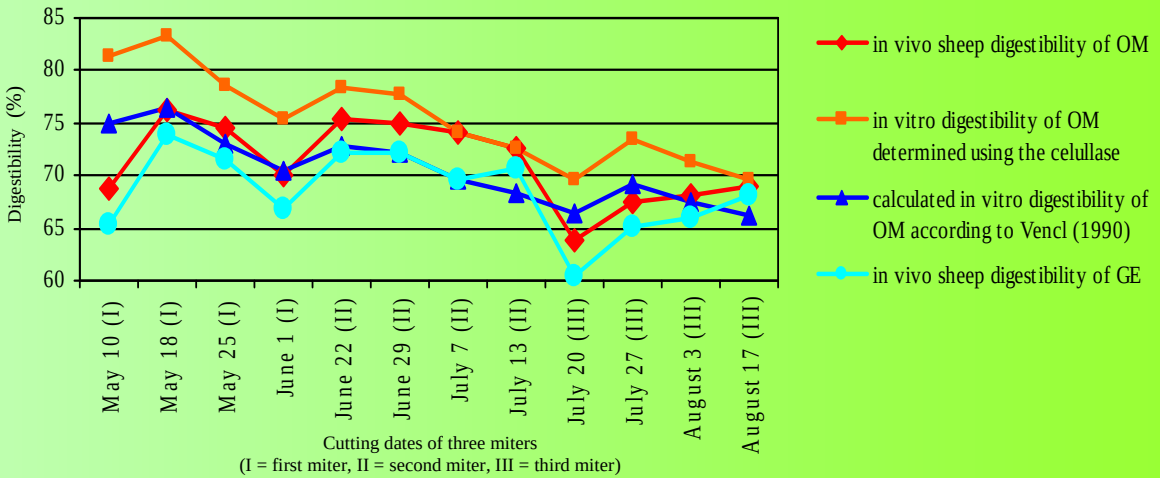
RESULTS

Fig. 1. Trifolium pratense

Tab. 1. Chemical composition (g/kg of absolute DM).

	Average	Minima	Maxima	SE
DM	166.7	130.3	241.0	30.2
OM	880.5	854.7	908.8	16.1
ASH	119.5	91.2	145.3	16.1
EE	22.6	19.8	24.3	1.3
CP	197.4	177.4	218.8	14.5
CF	239.3	181.4	338.2	36.8
NFE	421.2	273.5	487.8	52.4
NDF	415.0	375.1	445.0	22.3
ADF	307.5	258.0	352.2	29.5
ADL	76.2	49.5	97.5	13.8

Fig. 2. The digestibility of OM and GE of clover measured by four different techniques.



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