

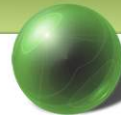
Impact of maturity of permanent grassland

(Gruber et al. 2006)




Livestock Research

DI Marc Urdl



rauberg
gumpenstein

Introduction

- Federal Research and Education Centre
 - province of Styria (Austria)
 - six years (1998 – 2003)
- 
- cutting frequency & fertilisation level
 - » yield & nutrient content in Alpine permanent grassland
 - » agronomic parameters of milk production

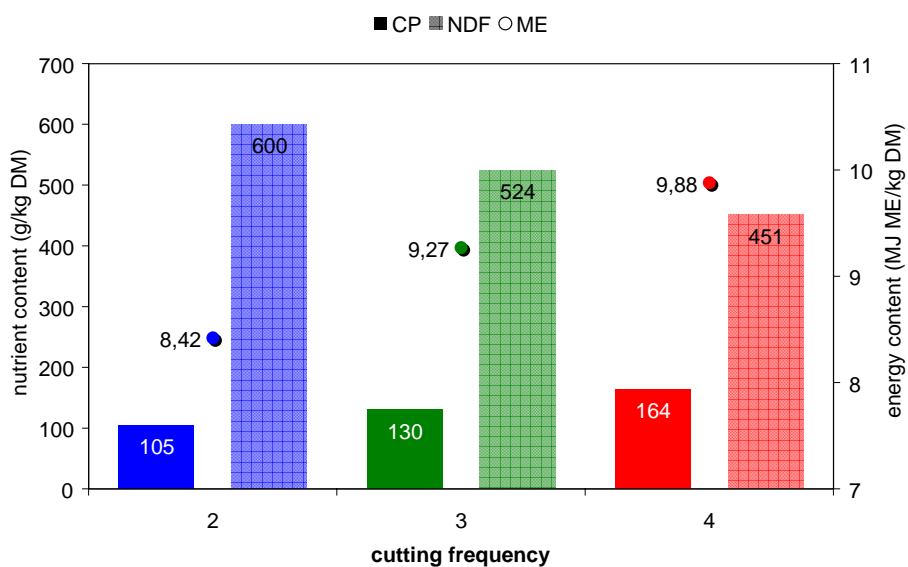
Experimental design

- 3 × 3 two-factorial

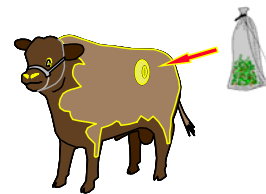
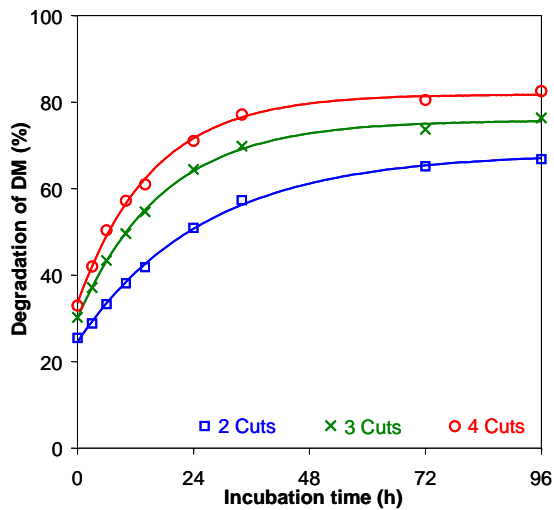
Fertilisation Level	kg N/hectare	Cutting frequency		
		2 cuts/year	3 cuts/year	4 cuts/year
Low	80	2-L	3-L	4-L
Medium	160	2-M	3-M	4-M
High	240	2-H	3-H	4-H

- level of fertilisation
 - » Austrian grassland management
 - » liquid manure, mineral fertilizers

Nutrient content of forages

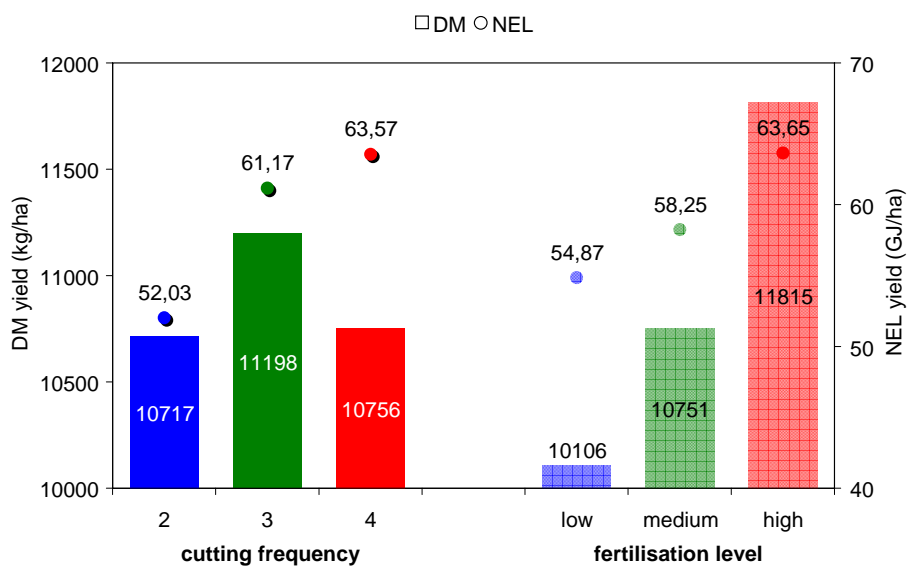


In situ ruminal degradation

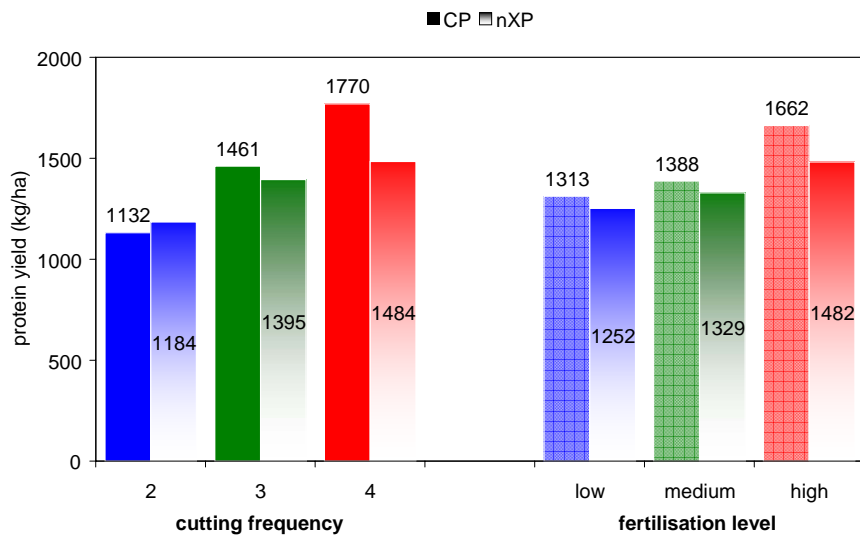


	2	3	4
a	27,6	30,8	33,6
b	41,5	45,2	48,4
c	3,7	5,8	6,7
ED 2	53,4	63,9	70,4
ED 5	43,6	54,4	60,8
ED 8	38,9	49,0	55,1
lag	1,83	0,32	0,09

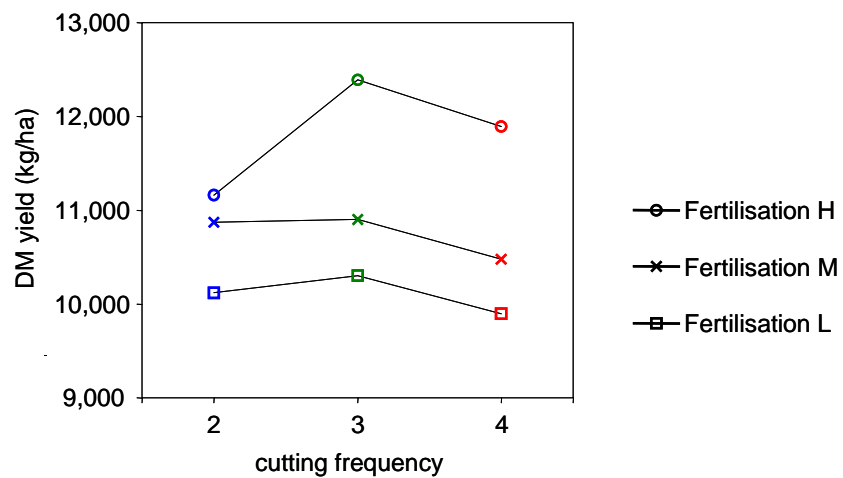
Grassland yield (DM, NEL)



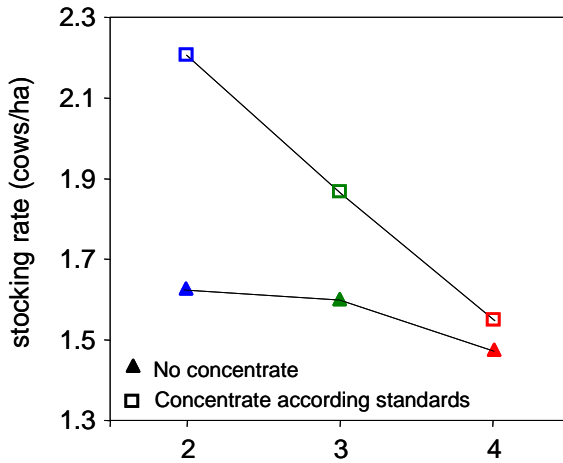
Grassland yield (protein)



Cutting frequency × fertilisation

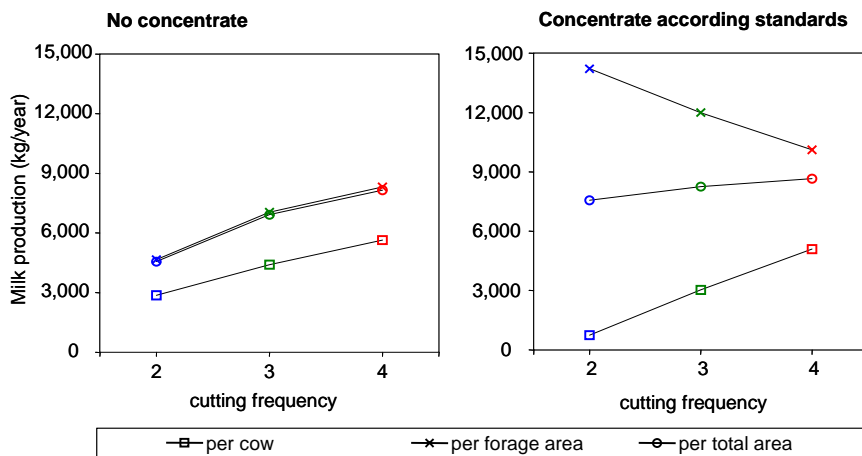


Model calculations

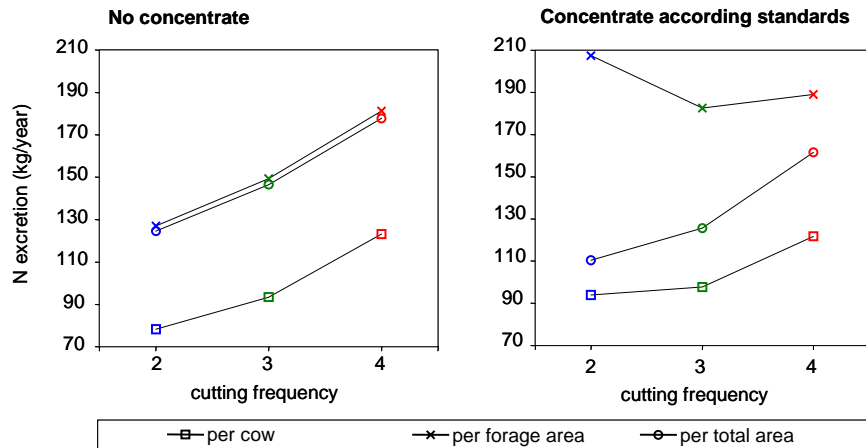


	2	3	4
▲ No concentrate	1,62	1,60	1,47
◻ Concentrate according standards	2,21	1,87	1,55

Milk production



Nitrogen excretion



Implications (I)

- impact of cutting frequency
 - » feed quality increases
 - » DM yield highest: 3 cuts
 - high fertilisation (240 kg N)
- farm level
 - » possible stocking rate is reduced
 - » improved feed intake (milk yield) per animal

≠

higher milk productivity / N excretion per area

Implications (II)

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- interaction cutting frequency of grassland
x concentrate level (dairy cow)

- total area for milk production
(forage plus concentrates)



highest milk yield / N excretion with
→ high cutting frequency of grassland

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