

# Does pre-grazing herbage mass affect cow performance at grazing?

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# Grass is King

Grazed grass in diet



**10%**

Production cost



**€ 0.025**

*(Dillon et al. 2005)*

# Pre-grazing herbage mass influences animal-sward interaction



900 kg DM/ha



1,500 kg DM/ha



2,300 kg DM/ha

# Objectives

Effects of pre-grazing herbage mass from April to October 2010 on:

Grass dry matter intake

Milk production

Grazing behaviour

Body condition score

Live weight

# The experiment

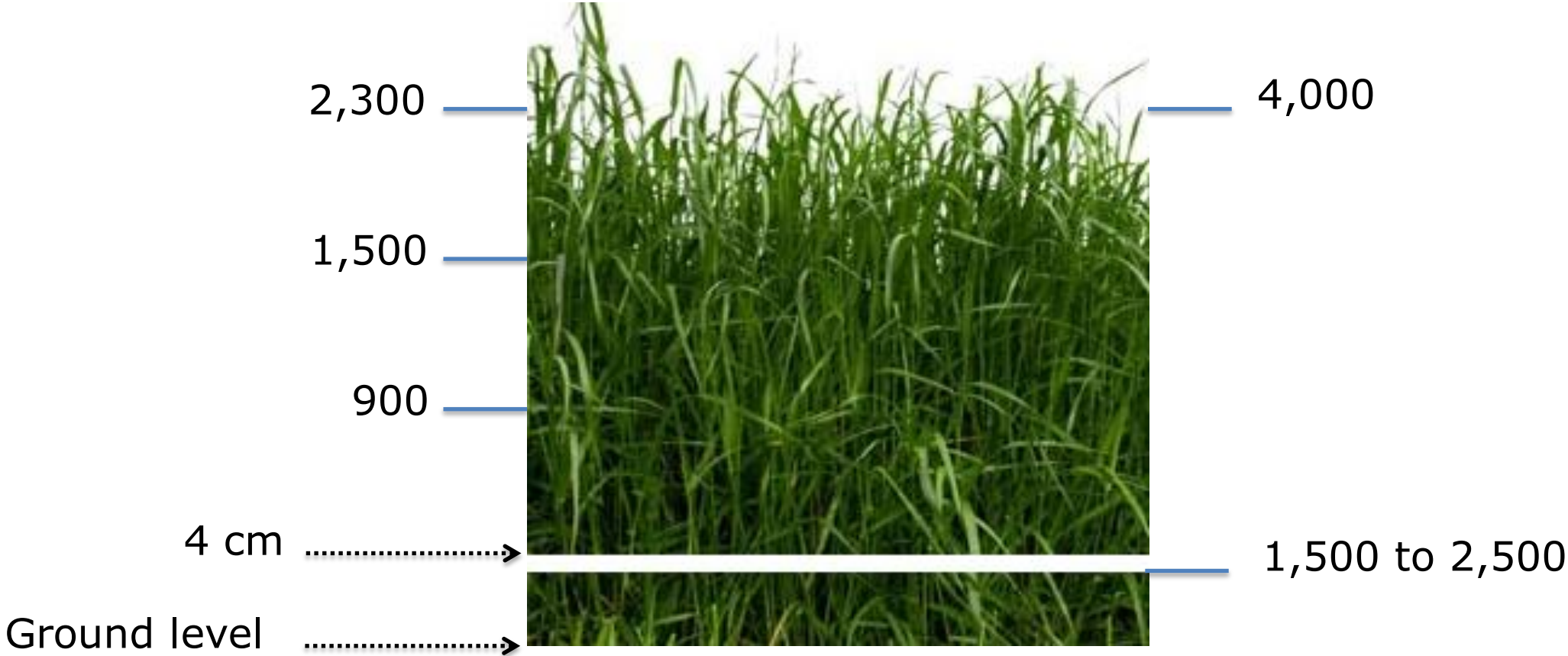
	Low mass	Medium mass	High mass
Target pre-grazing herbage mass <b>above 4 cm</b> (kg DM/ha)	900	1,500	2,300
Animals per group	15	15	15
Stocking rate (cows/ha)	2.7		
Target post-grazing height (cm)	3.9 to 4.5		
Target herbage allowance (kg DM/cow/day)	17		

# Herbage mass measurement

Ireland

(kg DM/ha)

Ground level



# Measurements

**Pre-grazing herbage mass** weekly x 2

**Pre- and post-grazing height** with plate meter daily

**Grass dry matter intake** with Alkane technique x 2

*(June and August)*

**Milk production** daily

**Grazing behaviour** *(August)*







# IGER grazing behaviour headset recorder



# Statistical analysis

Mixed model (SAS)

$$y = \text{treat} + \text{lactation week} + \text{treat} * \text{lactation week} + \text{cow} + e$$

25 weeks

24 paddocks

45 Animals

*treat* = 978, 1521 and 2300 kg DM/ha

*lactation week* = 5 to 30

Covariance structure: compound symmetry



# Results

# Three levels of pre-grazing herbage mass

	Low mass	Medium mass	High mass	s. e. d.	P value
Pre-grazing herbage mass (kg DM/ha)	978 <sup>a</sup>	1,521 <sup>b</sup>	2,300 <sup>c</sup>	167.7	0.001
Post-grazing height (cm)	4.0	4.2	4.3	0.13	0.096

# Grazing management

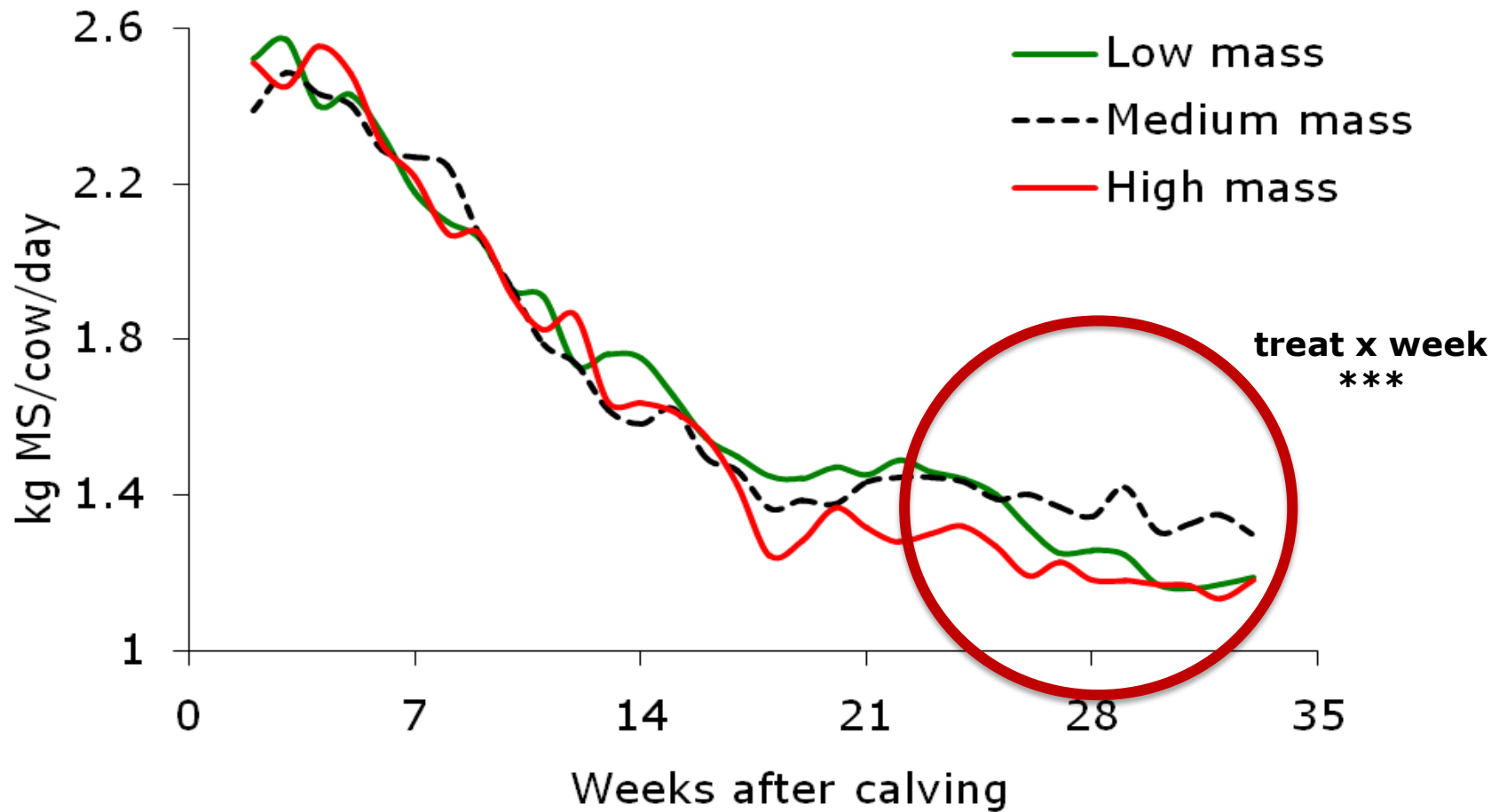
	<b>978</b> kg DM/ha	<b>1,521</b> kg DM/ha	<b>2,300</b> kg DM/ha
Number of rotations	11	9	6
Mean grazing interval (days)	16	20	30
Daily grazing area per cow (m <sup>2</sup> )	176	113	74

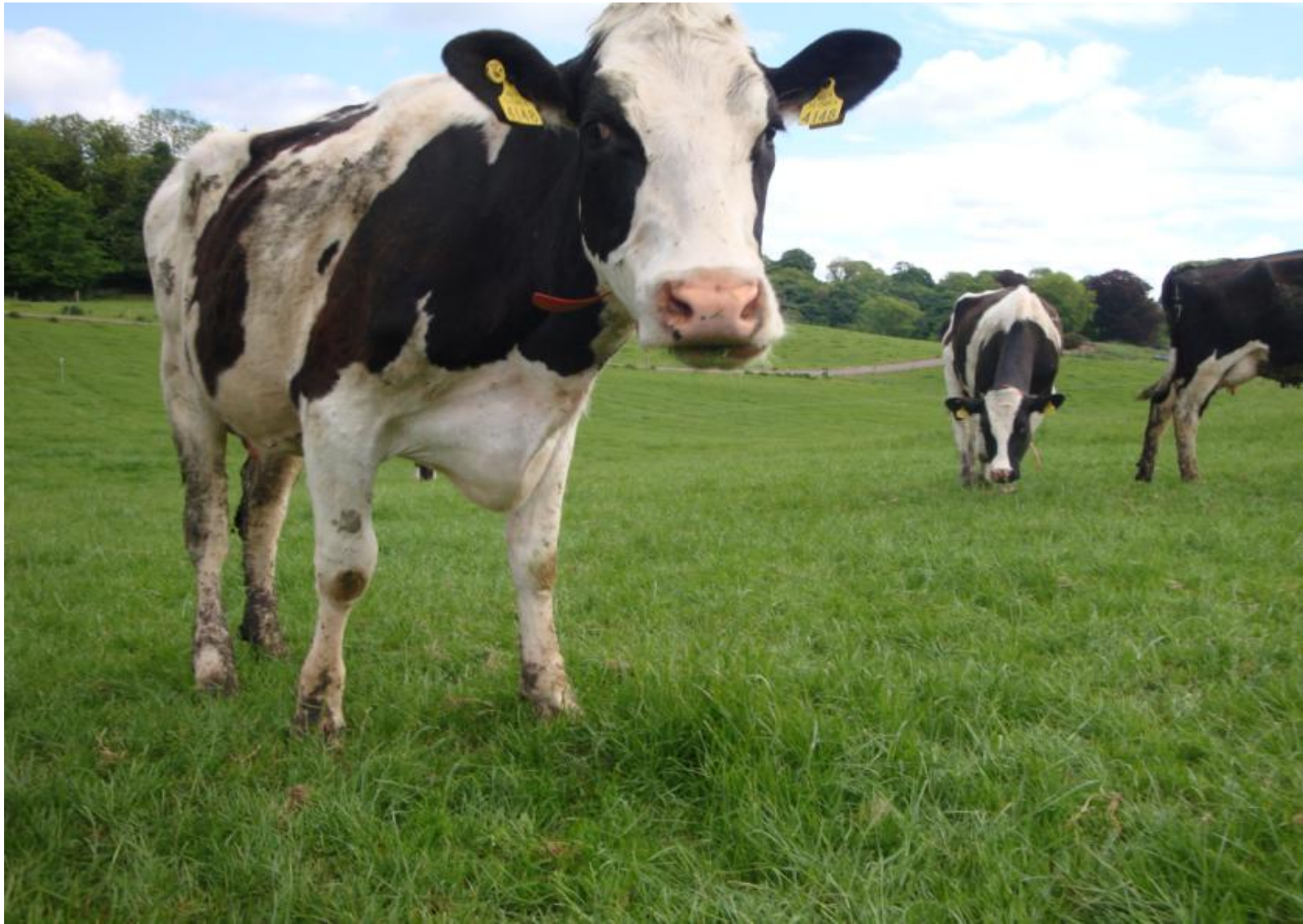
# Grass dry matter intake and grazing behaviour

	<b>978</b> kg DM/ha	<b>1,521</b> kg DM/ha	<b>2,300</b> kg DM/ha	<b>s. e. d.</b>	<b>P value</b>
Dry matter intake I (kg/day) June	15.4	16.0	16.6	0.62	0.231
Dry matter intake II (kg/day) August	15.2	16.5	15.7	0.53	0.090
Rumination time (hours/day) August	8.4 <sup>a</sup>	9.0 <sup>b</sup>	9.9 <sup>b</sup>	0.50	0.001
Grazing time (hours/day) August	10.8 <sup>a</sup>	9.3 <sup>b</sup>	9.3 <sup>b</sup>	0.43	0.030



# Milk solids





# Summary of results

	<b>978</b> kg DM/ha	<b>1,521</b> kg DM/ha	<b>2,330</b> kg DM/ha
Dry matter intake in August (kg/cow/day)	15.2	16.5 <b>+ 1 kg</b>	15.7
Milk solids in second half (kg/cow/day)	1.33	1.37	1.24 <b>- 0.14 kg</b>
Grazing time in August (min/cow/day)	648 <b>+90 min</b>	558	558

# Implications for grazing management



978 kg DM/ha



larger grazing areas

needs high level of supervision



1,521 kg DM/ha



optimum level



2,300 kg DM/ha



difficult to maintain post-grazing

height at 4 cm

# Take home message

Cows on low herbage mass struggle to maintain intake

Evidence to support recommendations for pre-grazing

**1,400 to 1,600 kg DM/ha**

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