



***BSAS 2011***

***Food security – Challenges and opportunities for  
animal science***

***The response of grazing dairy cows to a ‘flat rate’  
or a ‘feed-to-yield’ concentrate allocation strategy***

**Andrew Dale, Conrad Ferris and Shane M<sup>c</sup>Gettrick**

# *Introduction*

- ◆ Concentrate supplementation is essential to meet the nutrient requirements of higher yielding dairy cows
- ◆ Concentrates account for large proportion of variable costs of milk and so must be used efficiently
- ◆ There is little information available on optimum concentrate allocation strategies for dairy cows while grazing

# *Materials and Methods*

- ◆ Two concentrate allocation strategies examined - **Flat rate**  
**Feed to yield**
- ◆ Continuous design study (12 May – 11 September)
- ◆ 28 Holstein-Friesian dairy cows/treatment (18 cows; 10 heifers)
- ◆ Mean days in milk – 154 (cows), 113 (heifers)
- ◆ Pre-experimental daily milk yield - 33.2 kg (cows), 26.7 kg (heifers)
- ◆ Concentrate offered at 0.6 kg/litre of milk above the potential of grass
- ◆ Data analysed by REML component analysis in a model containing parity and pre-experimental data as covariates

# *Concentrate allocation strategies during the study*

	<b>Concentrate feed level (kg/day)</b>			
	<b>Flat rate</b>		<b>Feed to yield</b>	
	<b>Cows</b>	<b>Heifers</b>	<b>Cows</b>	<b>Heifers</b>
May	5.5	4.9	1.0 - 10.0	2.5 - 8.0
June				
July				
August				
September				
<b>Total meal input</b>				

# Concentrate allocation strategies during the study

	Concentrate feed level (kg/day)			
	Flat rate		Feed to yield	
	Cows	Heifers	Cows	Heifers
May	5.5	4.9	1.0 - 10.0	2.5 - 8.0
June	4.1	3.8	1.0 - 8.9	1.4 - 8.0
July	3.6	4.1	1.0 - 7.3	1.0 - 8.0
August	2.6	4.3	1.0 - 5.0	1.0 - 8.0
September	1.5	4.3	1.0 - 2.5	1.0 - 7.9
<b>Total meal input</b>	<b>451</b>	<b>508</b>	<b>451</b>	<b>508</b>

# *Effect of concentrate allocation strategy on cow performance*

	Supplementation strategy		s.e.d	Sig.
	Flat rate	Feed to yield		
Total milk output (123 days) (kg/cow)	2711	2798	102.5	NS
Milk yield (kg/cow/day)	22.4	23.0	0.81	NS
Milk fat (g/kg)	39.6	40.1	1.06	NS
Milk protein (g/kg)	33.2	33.5	0.33	NS
Milk fat + protein yield (kg/cow/day)	1.62	1.67	0.061	NS

- ◆ Final liveweight similar between treatments (560 vs 559 kg)

# *Conclusions*

- ◆ Concentrate allocation strategy had no effect on average cow performance

