

# Proceedings

of the British Society of Animal Science  
and the Agricultural Research Forum

# 2010

## Advances in Animal Biosciences

This book is part of a series which is a companion to the journal ANIMAL



- 275 Effect of urea and polyethylene glycol on chemical composition of pistachio by-products silage  
A Mokhtarpour, A Naserian, R Valizadeh, A Tahmasebi

## REPRODUCTION

- 276 Logistic regression analysis of some environmental factors affecting days open in Iranian primiparous Holstein cows  
H Farhangfar, P Rowlinson, S Hassani, M H Fathi Nasri
- 277 Prediction of live-weight from linear body measurements in Iranian buffaloes  
B Taheri Dezfuli, M Babaee, M Reza Mashayekhi, S Savar Sofla

## SOILS AND WATER

- 278 The impact on groundwater of the land spreading of organic wastes onto biomass crops  
P Galbally, K McDonnell, J Finnan, D Ryan
- 279 Characterisation of soiled water on Irish dairy farms  
D Minogue, P Murphy, P French, F Coughlan, T Bolger
- 280 Use of geophysical techniques to conceptualise groundwater connectivity and sub-surface nutrient (NO<sub>3</sub>) fluxes in hydrogeologically complex terrain  
O Fenton, A Haria, M G Healy, K G Richards
- 281 Maintaining biodiversity in intensive grassland: Ground beetle communities in watercourse margins  
D Madden, J Finn, S Harrison, D O hUallachain
- 282 Composting the solid fraction of separated pig manure with sawdust, chopped straw or shredded green waste  
T Cota Nolan, S M Troy, P B Lynch, P G Lawlor
- 283 The use of Integrated Constructed Wetlands for the treatment of swine wastewaters  
C M Harrington, M Scholz, B Lynch, P Lawlor, N Culleton

## FREE COMMUNICATION

- 284 Predicting beef cut composition and meat quality traits by spiral computed tomography  
N Prieto, E A Navajas, R I Richardson, D W Ross, J J Hyslop, G Simm, R Roehe
- 285 Prediction of beef carcass and selected primal subcutaneous fat yields using data from images captured on-line in abattoir  
N Prieto, D W Ross, E A Navajas, R I Richardson, J J Hyslop, C Craigie, G Simm, R Roehe
- 286 Use of biodiesel co-product from *Jatropha curcas* as ingredient for animal feed  
B Berenchtein, A L Abdalla, A S Morsy, A L Abdalla Filho, L A Castilho, P B G Schiavinatto, P P dos Santos, M R S R Peçanha, J D F Gomes, J Silva, C G Shen, R C Lucas, N F Arieta

## DAIRY NUTRITION

- 287 The effect of nutritional management of dairy cows post-calving and yeast supplementation on milk fatty acid profiles in the first eight weeks of lactation  
R Alibrahim, F M Mulligan, R A Palladino, K M Pierce
- 288 Effect of cobalt extra-supplementation on milk production and composition of heat stressed lactating Holstein dairy cows  
K Karkoodi
- 289 The effect of high fat sunflower meal treated with formaldehyde and sodium hydroxide on milk yield and composition in Holstein dairy cow  
T Mohammadabadi, M Danesh Mesgaran, M R Nasiri, M Chaji

## The effect of high fat sunflower meal treated with formaldehyde and sodium hydroxide on milk yield and composition of Holstein dairy cows

T Mohammadabadi<sup>1</sup>, M Danesh Mesgaran<sup>2</sup>, M.R Nasiri<sup>2</sup>, M Chaji<sup>1</sup>

<sup>1</sup>Department of Animal Science, Ramin Agriculture and Natural Resource University, Molasani, Ahvaz, Islamic Republic of Iran, <sup>2</sup>Excellence Center for Animal Science, Ferdowsi University of Mashhad, Mashhad, Islamic Republic of Iran

Email: t.mohammadabadi@gmail.com

**Introduction** Sunflower meal is entirely adequate as the sole source of supplemental protein in dairy rations. Owing to the relatively high protein degradability of sunflower meal, dietary inclusion levels are limited in dairy cattle diets (Erasmus *et al.*, 1988). Treating proteins have been used to reduce their degradation in the rumen, formaldehyde that combined with proteins and sodium hydroxide denatures protein (Cozzi *et al.*, 1995). The objective of this study was to determine the influence of high fat sunflower meal (containing 165 g fat /kg DM) as untreated or treated with formaldehyde or NaOH on dry matter intake (DMI) and milk yield and composition.

**Material and methods** Twenty-one multiparous early lactation Holstein cows averaging 620 kg of body weight were allotted at day 25 to 35 of lactation to three groups of seven cows. Cows were fed individually a total mixed diet based on corn silage and supplements for *ad libitum* intake over a 7-weeks period (1-week adaptation). Treatments included untreated sunflower meal (USM), sunflower meal treated with 30 g/kg DM formaldehyde (FSM), or sunflower meal treated with 40 g/kg DM sodium hydroxide (SHSM). The composition of concentrate of experimental diets was 10.69 % untreated and treated sunflower meal, 2.76% soy bean meal, 4.88 % canola meal, 6.96 % cotton seed, 14.07 % barley grain, 15.66 % corn grain, 6.2 % wheat bran, 0.24 % D calcium phosphate, 0.54 % NaHCO<sub>3</sub> and 0.78 % vitamin-mineral supplement (DM basis). Diets were fed twice daily at 0900 and 2100 h for 10%orts. Milk yield and DMI was recorded daily. Milk samples were obtained weekly from each cow for three consecutive milkings and after mixed and get a sample were analyzed to determine fat, protein, lactose and SNF percentage. All results were subjected to least squares ANOVA for a completely randomized design. Data were analysed using the general linear models procedure of SAS (1991) as repeated measurements using covariance analysis.

**Result** The effect of treatment on milk yield and composition and dry matter intake (DMI) of cows was significant (Table 1). Milk yield and DMI for treatments containing formaldehyde and NaOH was the highest. Formaldehyde and NaOH treatment significantly increased protein and lactose percentage of milk in compared with untreated sample ( $P < 0.05$ ).

**Table 1** Dry matter intake, milk yield and compositions of lactating dairy cows fed diets containing sunflower meal

	Experimental diets			s.e.d	P
	USM	FSM	SHSM		
Milk yield (kg/d)	41.0 <sup>b</sup>	42.8 <sup>a</sup>	42.4 <sup>a</sup>	0.04	0.04
Milk protein (%)	2.48 <sup>b</sup>	2.67 <sup>a</sup>	2.62 <sup>a</sup>	0.03	0.003
Milk fat (%)	2.85	2.9	2.85	0.06	0.71
Milk lactose (%)	4.49 <sup>c</sup>	4.65 <sup>b</sup>	4.58 <sup>a</sup>	0.02	0.002
SNF (%)	7.73 <sup>b</sup>	7.88 <sup>a</sup>	7.78 <sup>b</sup>	0.04	0.03
DMI kg/d	27.92 <sup>b</sup>	28.69 <sup>a</sup>	28.52 <sup>a</sup>	0.02	0.02

**Conclusions** It appears formaldehyde and NaOH increased DMI, milk yield, percentage of fat, protein and lactose in cows fed with high fat sunflower meal, and the effect of formaldehyde was more than sodium hydroxide. Wilson (1970) reported that increase milk protein percentage by formaldehyde due to the protection of the protein from rumen microbial degradation.

### References

- Cozzi, G., Andrighetto, I.P., and Berzaghi Polan, C.E. 1995. Journal of Dairy Science. 78, 161-171.  
 Erasmus, L.J., Botha, P.M., and Meissner, H.H. 1988. South African Journal of Animal Science. 18, 23-30.  
 SAS, Institute. 1996. User's guide: Statistics, version 6 edition. Cary, NC: SAS Institute Inc.  
 Wilson, M. and Palmquist, D.L. 1974. Journal of Dairy Science. 57, 1050-1055.