

Dietary self-selection in a single feeder by layers at normal environmental temperature

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We recently reported that layers allowed to self-select feedstuffs from whole maize, protein meal and oyster-shell grit in a single feeder at high (32° C) environmental temperature laid more eggs of larger size and gained more body weight while maintaining similar total feed intake, feed conversion ratio (FCR), ME intake, protein intake, Ca intake, Haugh units, yolk colour, egg-shell thickness and egg specific gravity compared to layers on a complete, meal diet (1).

The present study was designed along the same lines as (1) to study the ability of layers (24 to 32 weeks of age) to meet their nutrient requirements by self-selecting from whole maize, a protein meal and oyster-shell grit in a single feeder at a 'normal' (20° C) environmental temperature compared with birds fed a complete meal diet. Seventy-six 24-week-old light hybrid pullets of White Leghorn x Australorp genotype (Tegel Tint, Hy-Line 300) were used in this experiment. All basic procedures for this experiment were the same as described by Henuk *et al.* (1,2,3). The results are summarised in the table below.

Nutrient	CF	CD		Performance	CF	CD	
Grain intake (g/hen/d)	81.4	83.8	**	Egg production (%)	93.3	94.2	NS
ME intake (kJ/hen/d)	1463	1503	**	Egg weight (g)	54.3	53.8	*
Protein meal intake (g/hen/d)	28.9	29.7	**	Haugh units	98.6	97.4	NS
Protein intake (g/hen/d)	19.8	20.4	**	Yolk colour (Roche® Fan)	11.0	11.0	NS
ME: protein intake ratio	73.9	73.7	-	Egg-shell thickness (µm)	365.0	358.0	**
Shell-grit intake (g/hen/d)	10.0	10.3	**	Egg specific gravity (g/cc)	1.083	1.082	NS
Ca intake (g/hen/d)	3.8	3.9	NS	Body weight (g)	1719	1693	*
Total feed intake (g/hen/d)	120.3	123.8	**				
FCR (g total feed /g eggs)	2.37	2.44	**				

CF: choice feeding; CD: complete diet; *: P<0.05; **: P<0.01; NS: not significant.

This study demonstrates that layers allowed to self-select a diet from whole maize, a protein meal and oyster-shell grit *ad libitum* in a single feeder at a 'normal' (20° C) temperature consumed about 2.9, 2.7 and 3.0% less total feed, protein and ME respectively, and showed an increase in body weight, egg weight, egg-shell thickness and improved feed conversion while maintaining a similar Ca intake, egg production, albumen quality, yolk colour and egg specific gravity compared to hens fed a complete meal diet compounded from the same ingredients.

1. Henuk YL, Thwaites CJ, Hill MK, Dingle JG. Dietary self-selection in a single feeder by layers at high environmental temperature. *Asian-Aus J Anim Sci* 2000;13:A:208.
2. Henuk YL, Thwaites CJ, Hill MK, Dingle JG. The effect of temperature on responses of laying hens to choice feeding in a single feeder. In: *Proc Aust Poult Sci Sym* 2000;12:117-120. University of Sydney, Sydney, Australia.
3. Henuk, YL, Thwaites, CJ, Hill MK, Dingle JG. The effect of fluctuating environmental temperature on responses of laying hens to choice feeding in a single feeder. In: *Proc Qld Poult Sci Sym* 2000;9(6):1-8. School of Animal Studies, University of Queensland, Gatton, Australia.