

## Preliminary results on the effect of dietary energy and protein levels on the production of male breeding Ostriches.

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### Introduction

Commercial intensive farming of ostriches requires accurate evaluation of the nutritional content of ingredients available for the formulation of diets as well as adequate knowledge of the nutritional requirements of the birds at different stages of production. Incorrect feeding is most likely an important contributing factor to the poor breeding results obtained in the past. The main reason seems to be the ignorance of nutrient requirements during the breeding season. The usual practice in the past was to supply breeders with diets high in energy and protein in an attempt to elevate production. It was, however, found that the overfeeding of breeders is the main cause of a high percentage of infertile eggs. Experimental results from the Oudtshoorn research farm showed that breeding birds which were fed *ad libitum* laid 24.5% infertile eggs, whilst breeding birds that received 2 kg (dry matter) of a breeder diet per bird only laid 11.5% infertile eggs (Smith *et al.*, 1995). This experiment was conducted to determine the effects of feeding diets containing low energy or protein levels on the performance of male breeding ostriches.

### Materials and Methods

The experimental birds used in the study were obtained from the commercial ostrich breeding flock at the Klein Karoo Agricultural Development Centre near Oudtshoorn. The management of the breeding flock and the treatment of the eggs were described by Van Schalkwyk *et al.* (1996). Ninety pairs of adult breeding ostriches were randomly divided into nine groups of ten pairs per group. Birds were fed according to a 3 x 3 factorial design with dietary energy levels of 7.5 MJ/kg, 8.5 MJ/kg or 9.5 MJ/kg and protein levels of 10%, 12% or 14% (breeding season June–January). The diets were milled to pass a 3 mm sieve and pelleted. The birds were fed three times a week. The formulation and composition of the experimental diets is shown in Table 1.

**Table 1** Composition of the nine experimental diets fed to breeding birds during the breeding season (kg/ton)

Ingredients	Diet 1	Diet 2	Diet 3	Diet 4	Diet 5	Diet 6	Diet 7	Diet 8	Diet 9
	7.5 MJ ME 10% Protein	8.5 MJ ME 12% Protein	9.5 MJ ME 14% Protein	7.5 MJ ME 10% Protein	8.5 MJ ME 12% Protein	9.5 MJ ME 14% Protein	7.5 MJ ME 10% Protein	8.5 MJ ME 12% Protein	9.5 MJ ME 14% Protein
Lucerne	138.6	69.3	0.0	280.5	216.7	152.9	422.3	364.0	305.7
Oats	700.0	701.7	703.3	486.6	502.7	518.8	273.2	303.8	334.3
Maize	14.0	7.0	0.0	130.8	108.5	86.2	247.6	210.0	172.4
Soybean oilcake	81.5	91.7	102.0	40.8	78.0	115.2	0.0	64.2	128.4
Cottonseed oilcake	0.0	59.6	119.2	0.0	29.8	59.6	0.0	0.0	0.0
Dicalcium phosphate	39.9	37.4	34.8	39.6	37.6	35.7	39.3	37.9	36.5
Limestone	13.9	20.8	27.7	10.3	15.1	19.9	6.6	9.3	12.0
Salt	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Mineral & vitamin premix	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Synthetic lysine	1.3	1.6	1.8	1.2	1.1	0.9	1.1	0.6	0.0
Synthetic methionine	1.8	2.0	2.2	1.3	1.6	2.0	0.9	1.3	1.7

## Results and Discussion

The main effects of energy and protein are presented separately as no significant interactions were observed. The effects of energy level are shown in Table 2. The starting mass of birds fed the different diets did not differ significantly. The end mass for birds fed the 7,5 MJ energy diet differed ( $P \leq 0.05$ ) from that of birds that received the 8,5 MJ and 9.5 MJ diets. Livemass change of all three groups differed significantly: the high-energy groups gained weight and the low energy groups lost weight. Results indicated that males tend to get fatter during the breeding season if the energy levels in the diet is too high.

**Table 2** The effect of dietary energy levels fed during the breeding season on the livemass of male ostriches (mean  $\pm$  SE)

Measurement	Energy level (MJ/kg)			Level of significance
	7.5	8.5	9.5	
Starting mass (kg)	123.5 $\pm$ 2.6	121.4 $\pm$ 2.6	117.2 $\pm$ 2.6	0.190
End mass (kg)	110.6 $\pm$ 2.7 <sup>a</sup>	120.1 $\pm$ 2.7 <sup>b</sup>	121.9 $\pm$ 2.7 <sup>b</sup>	0.001
Mass change (kg)	-13.0 $\pm$ 1.8 <sup>a</sup>	-1.3 $\pm$ 1.8 <sup>b</sup>	4.7 $\pm$ 1.8 <sup>c</sup>	0.001

<sup>a,b,c</sup> Row means with different superscripts differ

The effects of protein level is shown in Table 3. The mass at the onset of the experiment did not differ significantly between the different diets. The end mass of the males in all three diets was lower at the end of the experiment, but there was no significant difference between treatment groups.

**Table 3** The effect of dietary protein levels fed during the breeding season on the livemass of male ostriches (mean  $\pm$  SE)

Measurement	Protein, %			Level of significance
	10	12	14	
Starting mass (kg)	123.5 $\pm$ 2.5	121.4 $\pm$ 2.5	117.3 $\pm$ 2.5	0.200
End mass (kg)	118.7 $\pm$ 2.7	119.7 $\pm$ 2.7	114.3 $\pm$ 2.7	0.308
Mass change (kg)	-4.9 $\pm$ 1.8	-1.7 $\pm$ 1.8	-3.0 $\pm$ 1.8	0.455

<sup>a,b,c</sup> Row means with different superscripts differ

## Conclusion

The results of this study indicate that male ostriches receiving 2.5 kg daily of a diet containing 7.5 MJ/kg ME will lose weight, but will maintain their weight when receiving a diet containing 8.5 MJ/kg ME. Birds receiving a diet containing 9.5 MJ/kg ME will become fat. Protein levels between 10% and 14% had no effect on the live weight of the birds.

## References

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