THE EFFECTS OF DIETARY CRUDE PROTEIN ON FERTILITY OF BROILER BREEDER MALES

By

STEPHANIE VON WALTSLEBEN
BSc. Agric., University of KwaZulu-Natal, Pietermaritzburg

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School of Agricultural, Earth and Environmental Sciences
College of Agriculture, Engineering and Science
University of KwaZulu-Natal
Pietermaritzburg

ABSTRACT

Fertility of Broiler Breeders (BBs) has been researched over many years with inconclusive findings. Genetic selection and improvements in growth traits have had negative effects on fertility of BB. One explanation is related to overweight birds, resulting in the inability of birds to copulate successfully, with no cloacal contact. The requirements of CP for egg production in BB females have been quantified, but there is less literature on how CP affects fertility in male BBs. The objective of this experiment was to investigate the effects of feeding BB males different dietary CP intakes (10.4, 12.4, 14.2, 17.8, 19.3 and 20.1 g CP/bird/day) on fertility in flocks with natural mating and in birds that were artificially inseminated (AI). Results showed that birds consuming 10.4 and 12.4 g CP/bird/day resulted in weight loss (between 24.9 and 23.6% and 26.5 and 22.4% below target BW) over the 29 weeks of the experimental period in both natural mating and individual pens respectively. Intakes of higher protein content (17.8-20.1 g CP/bird/day) however resulted in BW gain over the experimental period. Hatch percentage across all CP intakes throughout the duration of the study was found to be high, ranging between 75- 100 and 80-95 % in AI and naturally mated birds respectively, and not affected by CP intakes. Similar results for predicted fertility using the methods published by Brillard & Antoine (1990) and Wishart (1997) were found; however Brillard & Antoine (1990) is more lenient requiring less outer perivitelline layer (OPVL) sperm/mm^2 to pronounce an egg fertile. Improved fertility predictions could have been made by using examination of inner perivitelline layer (IVPL).

There was a tendency for a superior response in predicted fertility from birds with a protein intake of 14.2 g CP/bird/day. This intake also least affected the BW of the male birds and thus 14.2 g CP/bird/day can be recommended for optimal BB male performance.

PREFACE AND DECLARATIONS

The experimental work described in this dissertation was carried out in the School of Agricultural Sciences and Agribusiness, University of KwaZulu-Natal, Pietermaritzburg, from February 2010 to December 2010, under the supervision of Dr Nicola C. Tyler and Dr M Ciacciariello.

I, ……. Declare that

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