

EFFECTS OF SUPPLEMENTING VENDA HENS WITH VITAMIN E ON EGG  
PRODUCTION, HATCHABILITY AND CHICK PRODUCTIVITY

M. M. MONYAMANE



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AGRICULTURE, UNIVERSITY OF LIMPOPO

SUPERVISOR : PROF. J.W. NG'AMBI  
CO-SUPERVISOR : PROF. D. NORRIS

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## DECLARATION

I declare that the mini-dissertation hereby submitted to the University of Limpopo for the degree of Master of Science in Agriculture (Animal Production) has not previously been submitted by me for a degree at this or any other university, that it is my own work in design and execution, and that all material contained therein has been duly acknowledged.

.....

Monyamane Moeti Mochaki (Miss)



November, 2010

## **ACKNOWLEDGEMENT**

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Above all, I am most sincerely thankful to the Almighty God, for His strength, comfort and wisdom. Glory be to the Father, the Son and the Holy Spirit, Amen.

## **DEDICATION**

This mini-dissertation is dedicated to my lovely mother Raisibe Monyamane and my late father, Philip Lesetja Monyamane, for their support in educating me. To my lovely partner Tshepo Rakgalakane for the moral support during this period.

## Abstract

A study was conducted to determine the effect of vitamin E supplementation to the diets of Venda hens on egg production, hatchability and chick productivity. The first part of the study determined the effect of vitamin E supplementation to the diets of Venda hens on feed intake, number of eggs, egg weight, egg content, egg hatchability and chick hatch-weight. Supplementation levels of 0, 200, 400, 800 and 1000 mg of vitamin E per kg DM feed were used in a completely randomized design having five replications with two birds per replicate. Vitamin E supplementation did not have any effect ( $P < 0.05$ ) on number of eggs and feed intake of Venda hens. However, egg weight, egg content, hatchability and chick hatch-weight of Venda chickens improved ( $P < 0.05$ ) with vitamin E supplementation.

Dietary vitamin E supplementation values for optimal egg white weight, egg yolk nitrogen content, egg white nitrogen content, egg hatchability and number of eggs were 476 ( $r^2 = 0.756$ ), 750 ( $r^2 = 0.170$ ), 750 ( $r^2 = 0.182$ ), 445 ( $r^2 = 0.670$ ) and 113 ( $r^2 = 0.966$ ) mg of vitamin E per kg DM feed, respectively.

The second part of the study determined the effect of vitamin E supplementation to the diets of Venda hens on performance of their progenies between one and seven weeks old. A completely randomized design was used. All the chickens were fed the same commercial grower diet. Dietary vitamin E supplementation to the diets of Venda hens had no effect ( $P < 0.05$ ) on growth rate and mortality of their progenies between one and seven weeks. Feed intake, feed conversion ratio and live weight of progenies improved ( $P < 0.05$ ) with supplementation of vitamin E to the diets of Venda hens. Dietary vitamin E supplementation to the diets of Venda hens did not have any effect ( $P < 0.05$ ) on dry matter intake, dry matter digestibility, nitrogen retention and metabolisable energy of their progenies at seven weeks old.

The third part of the study determined the effect of vitamin E supplementation to the diets of Venda hens on performance of their male progenies aged between eight and 13 weeks. A completely randomized design was used. All the chickens were fed the same commercial grower diet. Vitamin E supplementation to the diets of Venda hens did not improve ( $P < 0.05$ ) feed intake, growth rate, feed conversion ratio, live weight and mortality of their male progenies between eight and 13 weeks old. However, Venda hens supplemented with vitamin E produced male progenies with improved ( $P < 0.05$ ) dry matter intake, digestibility, nitrogen retention metabolisable energy, breast meat nitrogen content, gizzard weight, liver weight and heart weight at 13 weeks old. Carcass weight, breast meat yield, drum stick, thigh and wing weight of chickens at 13 weeks old were not affected ( $P > 0.05$ ) by vitamin E supplementation to the diets of the hens

It is concluded that supplementation of vitamin E to the diets of indigenous Venda hens improved ( $P < 0.05$ ) egg weight, egg content and chick hatch-weight during the laying period. Vitamin E supplementation to the diets of Venda hens improved ( $P < 0.05$ ) feed intake, live weight, feed conversion ratio, gizzard and liver weight of their progenies. Production variables were optimized at different levels of vitamin E supplementation. Thus, this study provided new information on the effect of vitamin E supplementation to the diets of indigenous Venda hens on chick productivity and carcass characteristics of their progenies.

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