

EFFECTS OF NOILER HEN STRAINS ON YOLK, ALBUMEN AND EXTERNAL EGG QUALITY PARAMETERS

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ABSTRACT

A study was conducted to determine the effects of Noiler hen strains on yolk, albumen and external egg quality parameters. A total of one hundred and twenty Noiler hens were divided into three treatments at the Bauchi State Agricultural Development Project. The hens were housed in a two tier battery cage, they were further divided into three treatments of forty hens each comprising three strains namely Brown, Black and Spotted. The results obtained from the study shows that strains did not significantly affect ($p < 0.05$) yolk length, yolk width, yolk height, yolk weight and yolk colour. The results also indicates that ($p < 0.05$) there were no significant difference in albumen length, albumen width and albumen height but it was observed that there was significant difference in albumen weight with Black (25.46g) and Spotted (25.40g) performing better than Brown (23.92g). Furthermore the results for external egg quality parameters showed that there was no significant difference ($p < 0.05$) among the strains tested, this implies that strains did not affect egg weight, egg length, egg width, shell weight and shell thickness. From the finding of this research it was therefore concluded that the strains studied did not influence yolk quality parameters and external egg quality parameters but significantly influenced albumen weight. It is recommended that either black, spotted or a combination of the two strains should be used by local farmer.

Keywords: Noiler, Strain, Yolk, Albumen

INTRODUCTION

Noiler chicken breed is one of the breeds of poultry birds with a great prospect, raising Noiler hens is comparatively cheaper than other chickens. The demand for animal protein has globally increased, in the last five years meat consumption has gone up satisfactorily, with Noiler chicken breed, the production of animal protein is cheaper and sustainable. The Noiler chicken is a dual-purpose breed of chicken developed in Nigeria. Noilers are suitable for rural communities and smallholder farmers and can address the challenges of animal food insecurity (justagric.com, 2019). Noiler hens come in different strains such as black, brown, spotted etc, these strains affect the quality of the eggs produced by the hens such as yolk, albumen and external quality parameters which in turn influence the marketability of the eggs and also the quality of chicks obtained from the eggs after hatching. This research was therefore conducted to evaluate the effects of some selected Noiler strains (brown, black and spotted) on yolk, albumen and external egg quality parameters of eggs.

MATERIALS AND METHODS

The study was conducted at the Bauchi State Agricultural Development Project (BSADP) Bauchi State, Nigeria. It lies between latitude 9.30° and 12.3° North of the equator, and Latitude 8.48° and 11° East of the Greenwich meridian. One hundred and twenty Noiler hens were purchased from the bauchi state agricultural development project and housed in two tier battery cages, they were allotted to three treatments in a complete randomized design with each treatment having 40 hens. The research work lasted a period of twelve weeks.

Egg and shell weight

The eggs were collected within four hours of lay and weighted using a digital weighing scale and weights were recorded to the nearest 0.1mm.

Egg length And width

The egg length and width were measured with a vernier calliper to the nearest 0.1mm.

Egg shell thickness

The thickness of the shell with intact membrane were measured at three different points and the average of the broad, sharp and middle parts of the egg shell were obtained using micro screw gauge.

Albumen length, width and height

Albumen length, width and height were measured using vernier calliper to the nearest 0.1mm.

Yolk length, width and height

Yolk length, width and height were measured using vernier calliper to the nearest 0.1mm

Yolk colour

Yolk colour was measured using Roche Colour Chart.

Yolk and albumen weight

Yolk and albumen weight were measured using a digital weighing scale

Data analysis

Data obtained were analysed using General Linear Model Procedure of SAS (2015) and significant ($p < 0.05$) means differences among treatment means were compared using Duncan's Multiple Range Test (Duncan, 1995) of the SAS package.

RESULTS AND DISCUSSION**Table 1: Effects of strain on yolk quality parameters**

Parameters	Yolk Length (mm)	Yolk Width (mm)	Yolk Height (mm)	Yolk Weight (g)	Yolk Colour
Strains					
Brown	4.02 ^a	4.01 ^a	1.56 ^a	15.61 ^a	4.59 ^a
Black	4.03 ^a	4.03 ^a	1.59 ^a	15.53 ^a	4.71 ^a
Spotted	4.03 ^a	4.03 ^a	1.56 ^a	15.50 ^a	4.70 ^a

Means within column having different superscript are significantly different ($P < 0.05$)

The results for effects of strain on yolk quality parameters is outlined in table 1. The results showed that ($p < 0.05$) there was no significant difference in all the parameters tested, this implies that the strains did not influence the out come of yolk length, yolk width, yolk height, yolk weight and yolk colour.

Table 2: Effects of strain on albumen quality parameters

Parameters	Albumen Length (mm)	Albumen Width (mm)	Albumen Height (mm)	Albumen Weight (g)
Strains				
Brown	6.80 ^a	4.88 ^a	0.63 ^a	23.92 ^b
Black	6.80 ^a	4.92 ^a	0.65 ^a	25.46 ^a
Spotted	6.72 ^a	4.82 ^a	0.63 ^a	25.40 ^a

Means within column having different superscript are significantly different ($P < 0.05$)

The results for effects of strain on albumen quality parameters is outlined in table 2. The results obtained in table two indicates that ($p < 0.05$) there were no significant difference in albumen length, albumen width and albumen height but it was also observed that there was significant difference in albumen weight with Black (25.46g) and Spotted (25.40g) performing better than Brown (23.92g).

Table 3: Effects of strain on external egg quality parameters

Parameters	Egg Weight (g)	Egg Length (mm)	Egg Width (mm)	Shell Weight (g)	Shell Thickness (mm)
Strains					
Brown	54.43 ^a	5.59 ^a	4.12 ^a	6.09 ^a	0.38 ^a
Black	53.74 ^a	5.56 ^a	4.13 ^a	5.84 ^a	0.38 ^a
Spotted	53.31 ^a	5.51 ^a	4.12 ^a	5.80 ^a	0.38 ^a

Means within column having the same superscript are not significantly different ($P < 0.05$)

The results for external egg quality parameters are outlined in table 3. The results indicates that there was no significant difference among the parameters tested, this shows that strains did not affect egg weight, egg lenght, egg width, shell weigth and shell thickness.

CONCLUSION AND RECOMMENDATIONS

From the finding of this research it was therefore concluded that the strains studied did not influence yolk quality parameters and external egg quality parameters but significantly influenced albumen weight. It is recomended that either black, spotted or a combination of the two strains should be used by local farmers.

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