EFFECT OF FEEDING DIFFERENT LEVELS OF RED AND BLACK VARIETIES OF FINGER MILLET (*ELEUCINE CORACANA)* AS REPLACEMENT FOR MAIZE ON CARCASS EVALUATION OF BROILER CHICKENS

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ABSTRACT

An experiment was conducted to evaluate the effect of replacing maize with two varieties of finger millet (*Eleucine coracana)* on the carcass evaluation of broiler chickens. Significant (P<0.05) main effect was observed in dressing percentage, back, thigh, wings and lungs of the replacement levels. However, there was significant (P<0.05) interaction in all the prime cuts across the dietary treatments. Therefore, red and black finger millet can be recommended for farmers to incorporate into broiler feeds, since birds fed with these varieties of finger millet can perform fovourably with birds fed maize based diets.

INTRODUCTION

Broiler chickens being part of poultry birds have greatly influenced the lives of human beings positively by providing them with sources of proteins/food, employment and income. Delgado *et al*., (1999) projected that per capita consumption of livestock products will increase by about 50% from 1993 to 2020, with most of the increases attributed to developing countries, as a result of population growth, urbanization and rising incomes. FAO, (2010) reported that poultry has contributed to improving human nutrition and food security by being a source of high-quality protein, economic, social and cultural significance in small societies. It is no longer news that the cost of feed ingredients has continued to soar high everyday so that the ordinary farmers are finding it difficult to remain in poultry business. Conolly, (2012) reported that feed cost is expected to continue in the upward swing.

MATERIALS AND METHODS

Source of Finger Millet

The grain which is popularly called finger millet or *tamba* locally was purchased from local markets in Ganawuri in Riyom Local Government Area of Plateau and Manchok in Kaduna States of Nigeria.

RESULTS AND DISCUSSION

Main effect of feeding diets containing different level s of red and black varieties of finger millet as replacement for maize on carcass evaluation of broiler chickens

The result of the main effect of red and black finger millet on the carcass evaluation of broiler chickens is presented in Table 1. It can be observed that there is no significant (P>0.05) main effect of variety on all the parameters measured, however there is significant (P<0.05) main effect of replacement levels on prime cuts and organ such as; back, thigh, wings and lungs. This relatively low dressing % observed could be due to the impact of the replacement levels of finger millet on the birds. The result of dressing % range of 62.46-68.95g obtained in this study is lower than 68.43-73.99g recorded by (Tok *et al*., 2018) when *gayamba* millet was fed to broiler chickens, however, live weight range of 2012-2143g recorded in this study is better than 1750-2220g obtained by (Yunusa *et al*., 2015). Finger millet had no significant (P>0.05) main effect on the remaining prime cuts and organs. This suggests that finger millet is a potential alternative energy source that can be used to replace maize in feeding broiler chickens.

Interaction effect of feeding diets containing different levels of red and black varieties of finger millet as replacement for maize on carcass evaluation of broiler chickens

The result of interaction effect of red and black finger millet varieties with their replacement levels on carcass evaluation of broiler chickens is presented in Table 2. There is significant ($P<0.05$) interaction effect of variety and replacement levels of the carcass evaluation on live weight, back and thigh of broiler chickens. The live weight of the birds was increasing inconsistently as the finger millet replacement level was increasing across the dietary treatments. The best performance (2276g) was put up by broilers fed diets containing 75% red finger millet, which indicates that finger millet if given the opportunity can be an alternative energy feed resource. The live weight range 2010-2276g disagree with the result of Tok *et al*., 2018) who reported live weight range of 1880-2160g after feeding varying levels of *gayamba* millet to broiler chickens. The carcass weight and the dressing % did not give values as expected from the live weight; the reason may be that some of the birds had more feathers and organs weight that added to their live weights. Similar observation was made by Adeniji, (2004) that the number of feathers and viscera possessed by birds depend on their body surface area and weight respectively which can increase or decrease their dressed weights. However, it can be observed that there is no significant ($P>0.05$) interaction effect of red and black finger millet and replacement levels in some of the prime cuts and organs of the carcass of broiler chickens. This result is in conformity with what was obtained by Tok *et al*., 2018) where most of the carcass parameters were not significantly ($P>0.05$) different after feeding broiler chickens with varying levels of *gayamba* millet. This result is also supported by (Bedford, 2006 and Panda, 2006). The interaction effect observed in all the parameters measured is an indication of the better ability of the birds to tolerate the anti-nutritional factors that may be found in finger millet.

CONCLUSION

It can be concluded that finger millet is energy rich which is can improve the carcass quality of broiler chickens and therefore can be use in compounding feed for broilers without any deleterious effects.

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Table 1: Main effect of Finger millet varieties and levels of replacement on Carcass Characteristics of broiler chickens

	Varietal Effect (%)			Replacement levels (%)					
Parameter	Red	Black	SEM	0	25	50	75	100	SEM
Live weight (g/)	2105	2072	28.00	2012	2070	2104	2143	2112	44.27
Carcass weight (g)	1378	1338	30.60	1388	1293	1392	1339	1378	48.30
Dressing %	65.51	64.59	1.06	68.95^{a}	62.53^{b}	66.12^{ab}	62.46^{b}	65.17^{ab}	1.68
Prime cuts expressed as % carcass weight									
Drumsticks	14.90	14.59	0.25	14.33	14.61	15.07	14.97	14.73	0.39
Back	18.46	18.00	0.27	18.31^{b}	17.35^{c}	19.90^{a}	18.38^{b}	17.22^{c}	0.43
Thigh	18.31	17.83	0.67	15.88^{c}	18.68^{b}	17.49^{a}	20.21^{a}	18.09^{b}	0.66
Breast	35.14	34.67	0.73	35.49	35.33	33.08	35.08	35.04	1.15
Wings	12.76	12.71	0.16	12.23^{b}	12.80^{a}	13.05^{a}	13.04^{a}	12.56^{a}	0.14
Organ weights expressed as % live weight									
Heart	0.52	0.54	0.02	0.56	0.55	0.52	0.53	0.48	0.03
Liver	1.74	1.63	0.07	1.79	1.74	1.67	1.61	1.62	0.10
Lungs	0.62	0.61	0.03	0.61^{ab}	0.61^{ab}	0.70^{a}	0.55^{b}	0.60^{ab}	0.04
Gizzard	1.66	1.66	0.05	1.59	1.67	1.72	1.56	1.77	0.07
Spleen	0.10	0.11	0.01	0.12	0.10	0.10	0.09	0.10	0.02
Abdominal	1.15	1.18	0.11	1.60	1.19	1.26	0.98	0.80	0.17

abc: Means on the same row with these superscripts differ significantly ($p<0.05$)
SEM: Standard error of means

Table 2: Interaction effect of finger millet varieties and replacement levels on carcass characteristics of broiler chickens

	Red variety (%)					Black variety (%)					
RBFM levels	**0**	**25**	**50**	**75**	**100**	**0**	**25**	**50**	**75**	**100**	
Parameters	**T1**	**T2**	**T3**	**T4**	**T5**	**T6**	**T7**	**T8**	**T9**	**T10**	**SEM**
Live weight (g/)	2012^{b}	2041^{b}	2141^{ab}	2276^{a}	2051^{b}	2012^{b}	2098^{ab}	2065^{b}	2010^{b}	2174^{ab}	62.60
Carcass weight (g)	1388	1318	1429	1426	1330	1388	1268	1354	1253	1425	48.30
Dressing (%)	68.95	64.44	66.76	62.61	64.77	68.95	60.63	65.48	62.30	65.57	2.38
Prime cuts expressed as % carcass weight											
Drumstick	14.33	14.75	14.75	15.32	15.34	14.33	14.47	15.40	14.62	14.12	0.55
Back	18.31^{b}	17.25^{b}	19.52^{a}	19.15^{a}	18.06^{b}	18.31^{b}	17.45^{b}	20.28^{a}	17.61^{b}	16.37^{c}	0.40
Thigh	15.88^{b}	18.44^{b}	17.09^{b}	21.56^{a}	18.58^{b}	15.88^{b}	18.91^{b}	17.88^{b}	18.87^{b}	17.61^{b}	1.22
Breast	35.49	35.29	34.57	36.24	34.12	35.49	35.36	31.60	34.93	35.96	1.62
Wings	12.23	13.84	12.55	13.34	12.83	12.23	12.75	13.54	12.74	12.28	0.35
Organ weights expressed as % live weight											
Hear	0.56	0.56	0.48	0.53	0.47	0.56	0.54	0.55	0.53	0.49	0.04
Liver	1.79	1.86	1.81	1.57	1.69	1.79	1.63	1.53	1.66	1.55	0.15
Lungs	0.61	0.62	0.76	0.48	0.62	0.61	0.60	0.63	0.61	0.59	0.06
Gizzard	1.59	1.68	1.67	1.61	1.77	1.59	1.67	1.78	1.51	1.77	0.10
Spleen	0.12	0.11	0.08	0.06	0.11	0.12	0.10	0.11	0.12	0.09	0.02
Abdominal fat	1.60	1.12	1.49	0.94	0.60	1.60	1.27	1.03	1.01	1.01	0.25

abc: Means on the same row with these superscripts differ significantly ($p<0.05$)
SEM: Standard error of means