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Genotype and Sex Variations in Growth and Heat Tolerance of Three Broiler Turkey Breeds Raised in Derived Savannah Zone of Nigeria

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ABSTRACT

Heat stress is an important constraint to turkey production in tropical environments because high ambient temperatures can affect growth and physiological stability. This study evaluated growth performance and physiological heat-tolerance responses of three commercial turkey genotypes under a derived savannah environment. Sixty-six poults comprising British United Turkey (BUT), Hybrid Converter Turkey (HCT) and Nicholas White Turkey (NWT), with 22 poults per genotype, were evaluated for 14 weeks. The experiment used a 3 × 2 factorial arrangement of genotype and sex in a randomized complete block design. Body weight and linear body measurements were recorded, while respiratory rate, pulse rate, body temperature, rectal temperature and heat-stress index were assessed at 2 weeks intervals. Data were analyzed using ANOVA and significant means were separated using Duncan's multiple range test at $P < 0.05$. At 14 weeks, HCT had the highest body weight (4,393.41 g), followed by NWT (4,286.06 g) and BUT (3,991.50 g). Males were heavier than females (4,530.21 vs. 3,873.63 g). Heat-response traits differed among genotypes. The NWT recorded the highest respiratory rate (75.88 breaths/min), pulse rate (187.29 beats/min) and heat-stress index (1.76), whereas HCT had the lowest values (38.53 breaths/min, 147.29 beats/min and 1.13, respectively). The study indicated substantial genotype and sex differences in growth and physiological responses to environmental heat. HCT showed favourable growth and comparatively lower heat-response values at 14 weeks. Selection of appropriate genotype, together with improved heat-management practices, is recommended for turkey production in warm tropical environments.

Keywords: Turkey genotype, growth performance, heat stress, respiratory rate, pulse rate, heat-stress index

INTRODUCTION

Turkey production is becoming increasingly important as a source of high-quality animal protein and income. Poultry responds to heat exposure through mechanisms such as increased respiration, panting and changes in cardiovascular activity. However, production in tropical environments is challenged by high ambient temperature, which can compromise growth, welfare and productivity. Physiological indicators such as respiratory rate, pulse rate, body temperature and rectal temperature are useful measures for evaluating the response of birds to thermal challenges (Oni *et al*., 2025). Heat stress occurs when environmental heat load exceeds the bird's ability to dissipate body heat and maintain normal physiological balance. Heat-stress responses may also vary with age, sex, body size and environmental conditions (Fathi *et al*., 2022). Prolonged heat exposure may eventually reduce feed intake, growth and production efficiency (Brugaletta *et al*., 2022).

Genetic make-up of an individual is an important factor influencing how poultry respond to environmental stress. Turkey genotypes have been selected primarily for rapid growth and production efficiency, and differences among genetic lines may therefore be accompanied by differences in metabolic heat production and thermoregulatory capacity. The heat-stress index provides an additional composite indication of physiological strain.

Growth characteristics are equally important when evaluating turkey genotypes because body weight and linear body dimensions determine production potentials (Havenstein *et al*., 2007). Differences in body weight and conformation among genetic lines have been reported in

turkeys, reflecting differences in genetic selection and growth potential (Shehata and Hafez, 2024). Therefore, the aim of the study is to determine the effect of genotype, sex and their interaction on growth performance and heat tolerance of three commercial broiler turkey breeds in a in tropical environment.

MATERIALS AND METHODS

Experimental location and birds

The experiment was carried out at the Poultry Unit of Teaching and Research Farm, Ladoke Akintola University of Technology Ogbomoso, Oyo State Nigeria. The area is in derived savannah zone of Nigeria. It lies on longitude 4.5^0 east of greenish meridian and latitude 8.5^0North-East towards Ibadan the capital of Oyo State. The mean annual rainfall is 1247mm while relative humidity is between 75% and 95%. It is situated at about 300-600 matters above the sea level with a mean annual temperature of 27^0C (Google Earth, 2024). The experiment was conducted during the dry season, from November to February, and lasted 14 weeks.

Birds and Management

A total of 66 turkey poults were obtained from a reputable commercial hatchery in Ibadan, Oyo State, Nigeria. The birds comprised 22 poults each of Hybrid Converter Turkey (HCT), Nicholas White Turkey (NWT) and British United Turkey (BUT). The poults were individually identified using wing tags. The three genotypes were reared in a deep litter within the same pen. The turkey poults were brooded for four weeks and were fed a starter diet containing 28 % Crude Protein and 2 , 800 kcal/ kg Metabolizable Energy. From four to eight weeks, a grower diet containing 24% Crude Protein and 2,900 kcal/kg Metabolizable Energy was offered, while a finisher diet containing 18% Crude Protein and 3,000 kcal/kg Metabolizable Energy was fed from eight to 14 weeks. Feed and water were provided *ad libitum*. Vaccination were administered and all routine management were observed.

Experimental design and management

A 3 x 2 factorial arrangement in a Randomized Complete Block design was adopted. There were three turkey genotypes and each has male and female turkeys.

Measurement of growth traits

Body weight (BDW) was measured in grams using a sensitive weighing scale (kg). Linear body measurements were taken using a measuring tape (cm) and this included, body length (BDL), chest girth (CHG), keel length (KLL), shank length (SHL), thigh length (THL), wing length (WGL) and neck length (NKL). Growth measurements were recorded at day-old and at 14 weeks of age.

Body weight (BDW): This was recorded by measuring individual bird at day old and every week with a sensitive digital scale in kilograms.

Body length (BDL): This was measured from as the distance between the bases of the neck to the caudal using a measuring tape in centimeters.

Chest Girth (CHG): This was measured as the circumference of the breast around the deepest region of the breast using a measuring tape in centimeters.

Keel Length (KLL): This was taken as the length of the sternum using a measuring tape in centimeters.

Shank Length (SHL): This was measured as the distance between the tips of the metatarsus to the hook using a measuring tape in centimeters.

Thigh Length (THL): This was measured as the length of the longest bone (Femur) from the pelvic bone to the knee joint using a meaning tape in centimeters.

Wing Length (WGL): This was measured as the distance between the tips of either of the wing after stretching out in full span, it is measured using a measuring tape in centimeters.

Assessment of heat tolerance traits

The parameters assessed included respiratory rate (RER), pulse rate (PSR), body temperature (BDT) and rectal temperature (RTT). Each bird was measured for each of these parameters between 1300 hrs and 1500 hrs fortnightly. Respiratory rate was determined by counting abdominal/flank movements for one minute, while pulse rate was determined using a stethoscope. Body temperature was measured using a clinical thermometer placed under the wing, and rectal temperature was obtained using a clinical thermometer inserted into the vent for a minute.

Heat-stress index was calculated from observed respiratory and pulse rates using Adedeji *et al*. (2015).

Statistical analysis

Data obtained for growth and heat-tolerance traits were subjected to analysis of variance using the General Linear Model procedure of SAS (2003). Significant differences among means were separated using Duncan's multiple range test at $P < 0.05$.

Model: $Y = \mu + \alpha + \beta + (\alpha\beta) + e$

Where: $_{i \quad j \quad ij \quad ijk}$

Y = Individual measurements

μ = Overall mean for the parameter of interest
α_i = Fixed effect of i^{th} genotype (i = 1, 2, 3)
β_j = Fixed effect of the j^{th} sex (j= 1, 2)
$(\alpha\beta)_{ij}$ = interaction of i^{th} genotype and j^{th} sex
e = Random residual error normally distributed

RESULTS AND DISCUSSION

Growth Traits

Effects of genotype and sex on growth characteristics and linear body measurements are presented in Table 1. The result revealed that at day old, there was significant effect of genotype on BDL, CHG, THL, WGL and NKL. The BUT recorded greater BDL (8.81 ± 0.15 cm) and WGL (6.22 ± 0.08 cm), while greater CHG (11.43 ± 0.15 cm), THL (5.24 ± 0.15 cm), and NKL (5.02 ± 0.07 cm) were recorded for NWT. However, at week 14, there was no significant effect ($p>0.05$) of genotype on CHG, BDW, THL and NKL. However, BDL, KLL, SHL and WGL were significantly ($p<0.05$) affected. Greater BDL (36.31 ± 0.57 cm) and WGL (34.62 ± 0.75 cm) were recorded in BUT while HCT recorded greater KLL (13.87 ± 0.39 cm) and SHL (14.67 ± 0.39 cm) than other genotypes. The findings of this study disagree with the reports of Channa *et al*. (2018) and Adeoye *et al*. (2017), who compared exotic turkey breeds to local turkey breeds and reported significant effect of genotype on body weight and linear body measurements of turkey. The difference recorded in their study can be attributed to the superior growth rate of exotic turkey as earlier reports suggests that exotic breed performed better for both Body Weight and Linear Body Dimensions than the local breed (Utulu *et al*., 2022; Ilori *et al*., 2018). Furthermore, at day old, sex significantly influenced BDL, SHL and NKL with male turkey having greater values (8.31 ± 0.21 cm), (2.73 ± 0.09 cm) and (4.60 ± 0.10 cm) respectively. Also, there was significant ($p<0.05$) effect of sex on all parameters measured at week 14 with the males having heavier BDW (4530.21 ± 297.88 g) and greater linear body measurements than the female turkeys. Significant sex effects on almost all measured linear body dimensions was reported by Dudusola *et al*. (2020), who worked with exotic and locally adapted turkeys. The heavier body weight and l inear body measurements recorded among the males agrees with other authors who reported sexual dimorphism in turkey. Adeoye *et al*., (2019) also reported that male turkey recorded higher body weights than female turkeys. This study also agrees with Ajayi *et al*., (2012) who suggests that the greater size of males is linked to the level of polygyny and the need for males to appeal to females and compete with other males for dominance in the flock. The weight recorded in the study aligns with the reports of Ilori *et al*., (2021). Growth characteristics as affected by the interaction of genotype and sex are presented in Table 2. Interaction of genotype and sex at day old significantly ($p<0.05$) influenced all parameters except for SHL among females and KLL among males. The NWT females and NWT males recorded the highest value for CHG (11.10 ± 0.20 cm; 11.73 ± 0.21 cm), THL (5.35 ± 0.14 cm; 5.15 ± 0.25 cm), NKL (5.00 ± 0.09 cm; 5.09 ± 0.11 cm) respectively while HC female turkeys and NW male turkeys had highest BDW (72.20 ± 2.07 g; 71.64 ± 1.28 g), WGL was highest in NW female turkeys (6.30 ± 0.21 cm) and BU male turkeys (6.32 ± 0.10 cm) respectively, KLL and SHL were highest in NW females turkeys (2.12 ± 0.07 cm) and BU male turkeys (2.83 ± 0.08 cm). However, at week 14, there was significant ($p<0.05$) effect of genotype and sex interaction on all parameters studied except KLL in female turkeys. HC male turkeys recorded the highest body weight (4813.56 ± 359.82 g), chest girth (58.23 ± 1.34 cm), body length (37.36 ± 0.64 cm), keel length (14.93 ± 0.39 cm), shank length (15.48 ± 0.56 cm), thigh length (21.23 ± 0.59 cm) and neck length (24.81 ± 0.42 cm) while British United male turkey recorded the highest wing length (35.63 ± 0.41 cm). These findings are consistent with the report of Sola-Ojo *et al*. (2017), who also noted significant interaction effects ($p<0.05$) between sex and genotype on body weight and other linear body measurements studied. The stronger male response observed in HCT and NWT suggests that sex-specific expression of genetic potential may be particularly important in intensively selected commercial genotypes (Brugaletta *et al*., 2022; Fathi *et al*., 2022).

Table 1: Mean Values of Bodyweight and Linear Body Measurements of different Turkey Strains as Affected by Genotype and Sex at Day old and Week 14

Variables	Obs	BDW (g)	CHG (cm)	BDL (cm)	KLL (cm)	SHL (cm)	THL (cm)	WGL (cm)	NKL (cm)
				Day old					
Genotype									
BUT	22	68.55±1.44	10.35±0.10^b	8.81±0.15^a	2.05±0.05	2.75±0.06	4.30±0.11^b	6.22±0.08^a	4.15±0.07^b
HCT	22	71.18±1.52	10.71±0.15^a	8.09±0.17^b	2.16±0.07	2.63±0.06	4.23±0.09^b	5.53±0.12^b	4.30±0.10^b
NWT	22	69.62±1.13	11.43±0.15^a	7.53±0.12^c	2.17±0.06	2.61±0.07	5.24±0.15^a	6.10±0.15^a	5.02±0.07^a
Sex									
Female	28	69.28±1.99	10.80±0.18	7.94±0.17^b	2.03±0.08	2.57±0.08^b	4.73±0.15	6.00±0.18	4.37±0.12^b
Male	38	70.23±1.82	10.87±0.19	8.31±0.21^a	2.20±0.08	2.73±0.09^a	4.49±0.17	5.94±0.14	4.60±0.10^a
				Week 14					
Genotype									
BUT	14	3991.50±196.06	55.54±1.01	36.31±0.57^a	12.71±0.25^b	13.59±0.33^b	21.22±0.34	34.62±0.75^a	21.92±0.68
HCT	17	4393.41±255.67	55.26±1.31	35.62±0.71^a	13.87±0.39^a	14.67±0.39^a	20.85±0.45	30.62±0.93^b	23.44±0.27
NWT	18	4286.06±215.35	56.21±1.05	34.00±0.76^b	12.79±0.24^b	13.60±0.37^b	20.01±0.59	33.58±0.44^a	23.25±0.54

[abC] = means occupying same column within each genotype and sex having different superscripts are significantly different (P<0.05), BUT = British United Turkey, HCT = Hybrid Converter Turke**y**, NWT = Nicholas White Turke**y**, OBS = number of observation, BDW = body weight, CHG = chest girth, BDL = body length, KLL = keel length, SHL = shank length, THL = thigh length, WGL = Wing length, NKL= neck length

Table 2: Body Weight and Linear Body Measurement as Affected by Interactions of Genotype and Sex at Day Old and Week 14

Genotype	Sex	OBS	BDW(g)	CHG (cm)	BDL (cm)	KLL (cm)	SHL (cm)	THL (cm)	WGL (cm)	NKL (cm)
					Day Old					
BUT	F	8	72.20 ± 2.07[e]	10.86 ± 0.19[e]	7.98 ± 0.18	2.02 ± 0.09[e]	2.52 ± 0.06	4.33 ± 0.14[e]	5.64 ± 0.22[e]	4.10 ± 0.17[e]
HCT	F	10	68.25 ± 2.18[e]	10.45 ± 0.15[e]	8.58 ± 0.19	1.94 ± 0.08[e]	2.60 ± 0.07	4.50 ± 0.16[e]	6.05 ± 0.12[e]	4.00 ± 0.11[e]
NWT	F	10					2.58 ± 0.10			
BUT	M	14	67.40 ± 1.71[e]	11.10 ± 0.20[e]	7.25 ± 0.13[e]	2.12 ± 0.07[e]	2.72 ± 0.10[e]	5.35 ± 0.14[e]	6.30 ± 0.21[e]	5.00 ± 0.09[e]
HCT	M	12	70.33 ± 2.23[e]	10.58 ± 0.22[e]	8.18 ± 0.27[e]	2.28 ± 0.09	4.15 ± 0.12[e]	5.43 ± 0.10[e]	4.46 ± 0.10[e]	
NWT	M	12	68.71 ± 1.95[e]	10.29 ± 0.14[e]	8.94 ± 0.20	2.12 ± 0.07	2.83 ± 0.08[e]	4.18 ± 0.14[e]	6.32 ± 0.10[e]	4.24 ± 0.09[e]
BUT	F	7	71.64 ± 1.28[e]	11.73 ± 0.21[e]	7.80 ± 0.17[e]	2.21 ± 0.08	2.64 ± 0.10[e]	5.15 ± 0.25[e]	6.08 ± 0.21[e]	5.09 ± 0.11[e]
HCT	F	10	Week 14							
NWT	F	9	3892.50 ± 391.00[e]	55.08 ± 1.88[e]	36.00 ± 1.22[e]	12.58 ± 0.50	13.35 ± 0.57[e]	20.70 ± 0.71[e]	33.28 ± 1.56[e]	21.91 ± 1.08[e]
BUT	M	7	3920.75 ± 301.24[e]	51.93 ± 1.77[e]	33.66 ± 0.94[e]	12.67 ± 0.37	13.76 ± 0.30[e]	20.41 ± 0.68[e]	27.66 ± 0.47[e]	21.90 ± 0.65[e]
HCT	M	7	3807.63 ± 150.72	54.55 ± 0.88[e]	32.08 ± 1.01[e]	12.44 ± 0.34	12.19 ± 0.39[e]	19.43 ± 0.31[e]	32.69 ± 0.57[e]	22.93 ± 1.07[e]
			4065.75 ± 202.94	55.87 ± 1.17	36.55 ± 0.48[e]	12.80 ± 0.24[e]	13.76 ± 0.41[e]	21.61 ± 0.24[e]	35.63 ± 0.41[e]	21.93 ± 0.93[e]
			4813.56 ± 359.82[e]	58.23 ± 1.34[e]	37.36 ± 0.64[e]	14.93 ± 0.39[e]	15.48 ± 0.56[e]	21.23 ± 0.59[e]	33.26 ± 1.13[e]	24.81 ± 0.42[e]
			4711.33 ± 330.89[e]	57.68 ± 1.74[e]	35.72 ± 0.77[e]	13.10 ±				

[abc] Means occupying same column having different superscripts are significantly different (P<0.05), BUT = British United Turkey, HCT = Hybrid Converter Turke**y**, NWT = Nicholas White Turke**y**, OBS = number of observations, BDW = body weight, CHG = chest girth, BDL = body length, KLL = keel length, SHL = shank length, THL = thigh length, WGL = Wing length, NKL= neck length, M=Male, F=Female

The effect of genotype and sex on heat tolerance are presented in Table 3. Respiratory rate and pulse rate were significantly (p<0.05) affected by genotype at week 2. Highest value for RER (56.90±2.23 breath/min) and PSR (64.70±2.40 beats/min) was recorded in NWT. At week 14, respiratory rate, pulse rate and heat stress index were significantly (p<0.05) affected by genotype while body and rectal temperatures were not significantly (p>0.05) influenced. Higher values of RER (63.38 ± 6.78; 75.88 ± 5.78 breath/min), PSR (180.23 ± 3.16; 187.29 ± 2.86 beats/min) and HSI (1.54 ± 0.17; 1.76 ± 0.13) were recorded for BUT and NWT respectively while HCT recorded significantly lower values. This study corroborates the findings of Ilori *et al*., (2011) who reported that genotype significantly affected heat tolerance traits in local and crossbred turkeys. The rectal temperature recorded in this study falls between the normal range (40.2 °C to 41.3 °C) reported by Ilori *et al*., (2021) on locally adapted turkey.

Heat tolerance as affected by genotype and sex interaction is presented in Table 4.

At week 2, all heat tolerance traits measured were significantly (p<0.05) influenced by the interaction between genotype and sex. Respiratory rate and pulse rate were highest in NW female turkeys (54.10 ± 3.18 breath/min; 59.40 ± 3.47 breath/min) and NW male (59.70 ± 3.01 breath/min; 70.00 ± 2.46 breath/min) turkeys respectively. Body temperature recorded highest value in BU female turkeys (40.38 ± 0.08 °C) and HC male turkeys (40.44 ± 0.09 °C). Rectal temperature and heat stress index were highest in BU female turkeys (42.08 ± 2.02 °C); NW male turkeys (40.34 ± 0.18 °C) and NW female turkeys (4.02 ± 0.22); HC male turkeys (4.36 ± 0.24) respectively. All heat tolerance traits measured were significantly affected by genotype and sex interaction except for RTT amongst female turkeys. Lower values of RER (38.06 ± 2.05 breath/min), PSR (143.88 ± 2.61 beats/min), BDT (39.74 ± 0.26 °C), HIS (1.14 ± 0.07) were recorded for HC female turkeys while RTT was not significantly affected. Similarly, lower RER (39.00 ± 4.92 breath/min), PSR (148.56 ± 3.64 beats/min), RTT (40.50 ± 0.04 °C) and HSI (1.13 ± 0.12) were recorded for HC male turkeys while NW male turkeys recorded lower value for BDT (39.88 ± 0.30 °C).

This study disagrees with Ilori *et al*., (2021) who reported that genotype and sex interaction had no significant effect on heat stress index. However, this finding supports previous evidence that Hybrid Converter turkeys, despite their selection for rapid growth and irrespective of their sex, possess considerable adaptability to varying environmental and management conditions Durosaro *et al*. (2022).

Table 3: Heat Tolerance of Different Turkey Strains as affected by Genotype and Sex at Week 2 and Week 14

Variables	Obs	RER (bpm)	PSR (bpm)	BDT (°C)	RTT (°C)	HSI
			Week 2			
Genotype						
BUT	22	52.41±1.55[ab]	56.68±1.31[b]	40.24±0.09	41.02±0.83	4.05±0.14
HCT	22	51.32±1.83[b]	54.27±2.03[b]	40.39±0.07	40.05±0.16	4.17±0.15
NWT	21	56.90±2.23[a]	64.70±2.40[a]	39.51±0.19	40.49±0.17	3.88±0.15
Sex						
Female	29	51.87±2.36	57.62±2.63	40.07±0.15	40.98±0.83	3.95±0.16
Male	36	54.98±2.74	59.62±2.45	40.04±0.17	40.17±0.19	4.09±0.21
			Week 14			
Genotype						
BUT	13	63.38±6.78[a]	180.23±3.16[a]	40.34±0.06	40.61±0.06	1.54±0.17[a]
HCT	17	38.53±2.70[b]	147.29±2.24[b]	39.95±0.14	40.54±0.05	1.13±0.07[b]
NWT	18	75.88±5.78[a]	187.29±2.86[a]	40.34±0.38	40.60±0.16	1.76±0.13[a]
Sex						
Female	21	57.50±5.05	171.69±4.78	40.29±0.35	40.52±0.15	1.44±0.13
Male	27	60.19±8.02	171.88±3.32	40.13±0.16	40.62±0.08	1.49±0.19

[a,b] = means occupying same column having different superscripts are significantly different (P<0.05), BUT = British United Turkey, HCT = Hybrid Converter Turkey, NWT = Nicholas White Turkey, OBS = number of observation, RER = respiratory rate, PSR = pulse rate, BDT = body temperature, RTT = rectal temperature, HSI = heat stress index

Table 4: Heat Tolerance as Affected by Interactions of Genotype and Sex at Week 2

and Week 14

GENOTYPE	SEX	OBS	RER (brpm)	PSR (bpm)	BDT (°C)	RTT (°C)	HSI
			Week 2				
BUT	F	9	50.22 + 2.21^{b}	56.56 + 2.12^{b}	40.38 + 0.08^{a}	42.08 + 2.02^{a}	3.87 + 0.13^{b}
HCT	F	10	51.30 + 1.68^{b}	56.90 + 2.29^{b}	40.33 + 0.13^{a}	40.24 + 0.18^{b}	3.95 + 0.13^{b}
NWT	F	10	54.10 + 3.18^{a}	59.40 + 3.47^{a}	39.49 + 0.23^{b}	40.63 + 0.29^{b}	4.02 + 0.22^{a}
BUT	M	13	53.92 + 2.09^{b}	56.77 + 1.75^{b}	40.14 + 0.13^{b}	40.29 + 0.15^{c}	4.18 + 0.21^{a}
HCT	M	12	51.33 + 3.13^{b}	52.08 + 3.14^{c}	40.44 + 0.09^{a}	39.89 + 0.25^{b}	4.36 + 0.24^{a}
NWT	M	11	59.70 + 3.01^{a}	70.00 + 2.46^{a}	39.53 + 0.30^{b}	40.34 + 0.18^{a}	3.73 + 0.19^{b}
			Week 14				
BUT	F	5	56.00 + 5.02^{b}	184.20 + 6.72^{a}	40.26 + 0.06^{b}	40.48 + 0.04	1.34 + 0.15^{b}
HCT	F	8	38.00 + 2.05^{c}	145.88 + 2.61^{b}	39.74 + 0.26^{c}	40.58 + 0.09	1.14 + 0.07^{c}
NWT	F	8	68.00 + 10.54^{b}	177.75 + 3.98^{a}	40.39 + 0.08^{a}	40.69 + 0.07	1.68 + 0.26^{a}
BUT	M	8	78.50 + 8.09^{a}	185.00 + 3.00^{a}	40.46 + 0.72^{a}	40.50 + 0.22	1.85 + 0.18^{a}
HCT	M	9	39.00 + 4.92^{c}	148.56 + 3.64^{c}	40.13 + 0.10^{b}	40.50 + 0.04^{b}	1.13 + 0.12^{b}
			73.56 + 8.59^{a}	189.33 + 3.23^{a}	39.88 + 0.30^{c}	40.68 + 0.13^{a}	1.68 + 0.19^{a}

^{a,b,c} = means occupying same column having different superscripts are significantly different (P<0.05), BUT = British United Turkey, HCT = Hybrid Converter Turkey, NWT = Nicholas White Turkey, OBS = number of observation, RER = respiratory rate, PSR = pulse rate, BDT = body temperature, RTT = rectal temperature, HSI = heat stress index, F = Female, M = Male

CONCLUSION AND RECOMMENDATIONS

It can be concluded from the findings of this study that Hybrid Converter male turkeys exhibited greater body weight and linear body measurements over other genotypes and sex. Also, both male and female Hybrid converter turkeys responded better to heat stress than their other counterparts from this study. Hybrid converter turkeys can therefore be recommended for commercial production and indigenous breed improvement in the derived savannah zone of Nigeria due to its superior body weight and better adaptability to heat stress.

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