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USING SOME BODY MEASUREMENTS AS PREDICTORS OF LIVE BODY WEIGHT AND CARCASS TRAITS IN FOUR BROILER STRAINS

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ABSTRACT:A total of 354 chicks at marketing age (6 weeks) of four broiler strains (Arbor Acres, 91 chicks; Hubbard, 99 chicks; Hypro, 86 chicks and Lohman, 78 chicks) were used in this study to investigate the influence of the strain on live body weight, dressed and carcass weights as well as some body measurements, the correlation between slaughter parameters and some body measurements in the four broiler strains and predicting live body weight and carcass weight using some body measurements.

The obtained results demonstrated that, the strain had insignificant effect on the studied traits. Live body weight and carcass weight were positively and significantly ($p<0.01$) correlated with all body measurements in different strains. From this study results, the breast circumference, breast width and body length could be used for predicting carcass weight as well as body weight in different broiler strains.

Key word: Broiler strains, body measurements, carcass, prediction.

INTRODUCTION

An important goal of broiler industry is to improve carcass and meat quality, consequently increase consumer acceptability. Before applying genetic procedures to make such changes, broiler breeders must be able to assess meat properties. The value of broilers produced during 2017 was $30.2 billion (USDA, 2018) which reflects the importance of broiler industry all over the world. Verma et al. (1979), Mishra et al. (1984) and Singh et al. (1985) pointed out that birds having larger shank and keel bones are expected to be heavier. Ojedapo et al. (2012) indicated that body weight would increase with linear body dimensions (chest girth and keel length).

Few reports are published on the relationship between body measurements and carcass yields in different strains. Therefore, this experiment was carried out to investigate the influence of broiler strain on live body weight, some different carcass traits as well as some body measurements in four locally reared broiler strains, examine the relationship among these traits and to develop regression equations for predicting carcass weights from linear measurements in four different broiler strains.

MATERIALS AND METHODS

A total of 354 chicks at marketing age (6 weeks) of four strains namely: Arbor Acres (AA, 91 chicks), Hubbard (HU, 99 chicks), Hypro (HY, 86 chicks) and Lohman (LO, 78 chicks) were used in this study in the farm of Poultry production Dept., Fac. of Agric., Fayoum University. All chicks were reared on floor from hatch until marketing age. All birds raised under the same environmental conditions. They were fed ad libitum on a commercial broiler diet composed of 22% crude protein and 3000 ME Kcal/Kg. The diet contains Aureomycin and Cocciodiostat. The birds were vaccinated at hatch against Newcastle disease using the eye drop method.

At 6 weeks of age, shank length (SL), keel length (KL), body length (BL), breast width (BW) and breast circumference (BC) were measured for all birds in each strain to the nearest centimeter using a measuring tape. Measurements were carried out as follows:

- Shank Length (SL): Length from hock joint to bottom of foot pad.
- Keel Length (KL): Taken as the length region of the sternum.
- Body Length (BL): Length between the tip of the Rostrum maxillare (beak) and that of the Cauda (tail, without feathers).
- Breast Width (BW): This was taken from the point of depression to the sharp edge.
- Breast Circumference (BC): taken as the circumference of the breast around the deepest region of the breast.

Then, all birds fasted for 12 hours and weighted to the nearest gram before slaughter (BWt). They weighted after bleeding {slaughter weight (SW)}. Birds were plucked after weighting to obtain the N.Y. dressed weight (NYDW) using a sensitive weighing balance of 0.05 g sensitivity. Record, as to each bird within a strain were kept for total edible weight (EPW), carcass weight with neck (CWN) and carcass weight without neck (CWWN). The carcasses were deboned and meat weight (MW) was computed.

Least square means of the traits were estimated by Harvey (1960) to determine the effect of broiler strain on these traits. The correlation coefficients (r) among all parameters under study were calculated according to Snedecor and Cockren

(1978) using SAS (2001). Also, the regression equations for predicting carcass weights from linear body measurements were calculated according to Steel and Torrie (1984) using the following formulas for the simple and multiple regression equations 1 and 2 respectively:-

$Y = a + b\,x$……… (1)

Where Y is the dependent variable (carcass weight); **x** is one of the body measurements (shank length; keel length; body length; breast width; and breast circumference**); a** is the intercept that represents the estimate of dependent variable when the independent variable is zero; b is the regression coefficient associated with the independent variable.

$Y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5$ ………… (2)

Where Y is the dependent variable (carcass weight); $\mathbf{x_1}$, $\mathbf{x_2}$, $\mathbf{x_3}$, $\mathbf{x_4}$ and $\mathbf{x_5}$ are shank length; keel length; body length; breast width and breast circumference **; a** is the intercept that represents the estimate of dependent variable when the independent variable is zero; b_1, b_2, b_3, b_4 and b_5 are the regression coefficients associated with the independent variables.

RESULTS AND DISCUSSION

The least square means of the absolute weights of different carcass yields and some body measurements are presented in Tables 1 and 2. It was clear that broiler strain had insignificant effect on the studied traits; this may be due to the decrease of weights at slaughtering age. This result disagrees with Udeh et al. (2011) who detected a highly significant ($p<0.01$) differences among four strains of broilers at the final body weight. Ige et al. (2016) found that body weight, body length, chest circumference and keel length were significantly differentiated ($p<0.05$) in Hubbard and Arbor Acres broiler chickens.

In this study Lohmann strain had the heaviest live body; N.Y. dressed and total edible weights, while Hubbard strain had the lowest values of these parameters. Arbor Acres and Hybro strains had approximate numeric values for the same traits, and also were intermediate between Lohmann and Hubbard strains. On the other hand, the Arbor Acres had the higher numeric values of carcass and meat weight than the other three strains.

Arbor Acres had the highest numeric values of shank length and body length, while Lohmann had the highest values of breast width and breast circumference. On the other hand, Hubbard had the highest value of the keel length.

Estimates of correlation coefficients among the different variables of body weights, carcass traits and body measurements of the grouped data of the four strains are presented in Table (3). There were highly significant ($P<0.01$) positive correlation among live body, slaughtered and dressed, weights, weight of total edible parts, carcass weight and meat weight (correlation coefficients were in the range of 0.874 - 0.997).

It was clear that breast circumference and body length were highly correlated ($P<0.01$) with body weight and different carcass traits (correlation were in the range of 0.701 - 0.797). Keel length and breast width showed medium positive correlation with body weight and different carcass traits (correlation were in the range of 0.649 - 0.701). Shank length showed lowest positive correlation with the parameters under study (correlation were in the range of 0.601 - 0.617).

These correlation results showed that there were strong association among body weight, carcass weight and body measurements which corroborates the results of Yahaya et al. (2012) and Alabi et al. (2012) who found high positive correlation between body weight and linear body measurements in broilers and naked neck/venda chickens of South Africa, respectively. Similar trends were also reported by Gwaza and Elkana (2017). In addition, an improvement in body weight of commercial broiler chickens would lead to an improvement in carcass weight. Also, an improvement in body measurements could lead to an improvement in live body and carcass weights, this agreed with the findings of Verma et al. (1979), Mishra et al. (1984) and Singh et al. (1985) who reported that birds having larger shank and keel bones are expected to weight more. Ajayi et al. (2008) concluded that an increase in any of the body measurement will invariably lead to corresponding increase in body weight of chicken. The high positive correlation values indicated that as live body weight increases, the linear body measurements will also increase (Egena et al., 2014). Also these findings were in line with the results of Ige et al. (2016) who reported that body weight was positively and significantly ($p<0.0001$) correlated with all body measurements in both male and female Arbor Acres and Hubbard strains.

Tables (4, 5, 6 and 7) showed the correlation coefficients for different carcass yield and body measurements in the four broiler strains. It was found that the relationships among various traits were strongly affected by broiler strain in which the estimates were done. Live body weight in Arbor Acres had high positive ($P<0.01$) correlation with slaughter, N.Y. dressed, edible parts, carcass with neck and carcass without neck weights ($r>0.964$). The same trend was also observed in Hubbard and Hybro strains ($r>0.968$). On the other hand, Lohmann strain had the lowest positive ($P<0.01$) correlation between live body weight, slaughter weight and N.Y. dressed weight ($r> 0.895$).

Body measurements (shank length, keel length, body length, breast width, and breast circumference) and their correlation coefficients with the different carcass traits were also affected by the broiler strain. Shank length had high positive correlation ($P<0.01$) with live body weight, slaughter weight, N.Y. dressed weight, edible part weights, carcass weight and meat weight in the four broiler strains under study the coefficients of correlations ranged from 0.47 to 0.68 (Tables 4, 5, 6 and 7).

The correlation estimates between keel length and each of live body weight and carcass weight were highly significant and positive, 0.76 and 0.77 for Hybro, 0.74 and 0.74 for Hubbard, and 0.66 and 0.67 Arbor Acres and were low 0.53 and 0.51 for Lohmann, respectively. Also, it was found that the correlation between keel length and meat weight were 0.76, 0.74, 0.66 and 0.51 for Hybro, Hubbard, Arbor Acres, and Lohmann respectively.

Body length correlated with live body weight, carcass weight and meat weight. The values were positive and equal to 0.60, 0.59 and 0.59 for Arbor Acres, 0.79, 0.79 and 0.79 for Hubbard, 0.84, 0.84 and 0.84 for Hybro and 0.67, 0.67 and 0.67 for Lohmann, respectively.

Meanwhile, correlation between breast width and each of live body weight, carcass weight and meat weight were 0.75, 0.65, 0.78 and 0.61 for Arbor Acres, Hubbard, Hybro and Lohmann strains, respectively. However, breast circumference had positive correlation coefficients with live body weight, carcass weight and meat weight which were 0.73, 0.80, 0.86 and 0.81 for Arbor Acres, Hubbard, Hybro and Lohmann, respectively.

The results of this study suggest that there are high positive correlations among body weight, different carcass traits and linear body measurements in broilers (Table, 3). Therefore, body measurements are good predictors for body weight and different carcass traits; a finding, which agreed with that of (Fry et al., 1962; Ige et al., 2007; Ojedapo et al., 2012 and Ige et al., 2016).

Table (8) shows the prediction equations and simple regression equations for the carcass weight and body measurements in broiler strains. The coefficient of determination varied from 60 to 80% and the magnitude of these coefficients of determination for each parameter in the regression equation shows the relative contribution of each body measurement to the carcass weight of bird. Moreover, breast circumference revealed 80% of the total variations of carcass weights as pointed by their corresponding R^2. On the other hand, body length and breast width revealed 70% of total variations of carcass weight. These findings indicate that the three traits can be considered as good predictors for carcass weight. Meanwhile, keel length and shank length revealed 60% of the total variations of carcass weights as pointed by their corresponding R^2. These results concur with those of Singh et al. (1985) who found that the direct and joint effect of body weight contributed by shank length and keel bone length was 55.40 in males and 55.82 in females and applying shank length and keel bone length for predicting the variation in body weight development. These results indicate that carcass weight of birds can easily be predicted from linear body measurements which agreed with the conclusion of Adeniji and Ayorinde (1990) and Ojedapo et al. (2012) that body weight of birds can be predicted by body measurements.

Nosike et al. (2017**)** concluded that linear body parameters whose R^2 values were above 50% could be used to predict the body weights of the broiler strains, although the accuracy of prediction increase with an increase in the R^2value. Therefore, in our study the best predictor for carcass weight in broilers is breast circumference, whose R^2 were 80%. Ukwu et al. (2014) and Dzungwe et al. (2018) detected that shank length could be the best predictor of body weight of Nigerian local chickens.

Moreover, Table (9) shows the multiple regression equations between linear body measurements and carcass weight in four broiler strains. The determination coefficients were ranged between 0.696 up to 0.841 when used two body measurements to predict carcass weight, while ranged between 0.797 up to 0.859 when used three body measurements. Meanwhile, using more than three body measurements did not improve the value of the determination coefficients. Carcass weight would be predicted using linear body dimensions (breast circumference, breast width and body length), whose R^2 have the higher values. These findings were in line with Udeh et al. (2011), Ojedapo et al. (2012), Ukwu et al. (2014) and Dzungwe et al. (2018) who reported that body weight of birds could easily be predicted from body measurements.

IN CONCLUSION,

these results demonstrate that there were insignificant variations in body weights and different carcass traits as well as body measurements among the different four broiler strains. Body measurements are good predictors for body weight and different carcass traits. Breast circumference, breast width and body length could be used for predicting carcass weights in different strains of broiler as well as body weights.

Table (1): Least square mean ± S.E. of absolute weight of different slaughter parameters in broiler strains.

Traits	AA	HU	HY	LO	General
No. of birds	**91**	**99**	**86**	**78**	
BWt (g)	1227.5±31.5	1209.6±28.3	1222.5±35.1	1251.7±27.3	1226.6±15.4
SW(g)	1186.1±30.8	1161.0±27.2	1173.4±34.0	1200.2±26.1	1179.1±14.8
NYDW(g)	1105.2±28.4	1096.2±25.8	1100.0±31.6	1126.2±24.4	1106.1±13.9
EPW(g)	973.7±24.2	953.0±22.2	969.4±29.4	984.0±23.4	969.1±12.4
CWW(g)	917.6±22.7	891.4±20.8	900.7±25.9	912.9±23.1	904.4±11.5
CWWN(g)	864.1±21.6	832.0±19.6	845.4±24.3	858.1±18.7	849.3±10.6
MW(g)	714.3±18.1	684.8±16.0	685.9±19.7	711.4±15.5	698.5± 8.7

BWt= live body weight, SW= slaughter weight, NYDW = New York dressed weight, EPW= total edible weight, CWN= carcass weight with neck, CWWN= carcass weight without neck and MW= Meat weight

Table (2): Least square mean ± S.E. of some body measurements (cm) in broiler strains.

Traits	AA	HU	HY	LO	General mean
SL	8.28±0.09	8.23±0.09	8.18±0.09	8.19±0.08	8.22±0.04
KL	12.59±0.14	12.84±0.12	12.59±0.15	12.76±0.15	12.70±0.07
BL	19.62±0.19	19.58±0.17	19.57±0.19	19.55±0.17	19.58±0.09
BW	6.56±0.29	6.66±0.10	6.72±0.11	6.73±0.10	6.66±0.05
BC	24.37±0.24	24.38±0.25	24.19±0.26	24.42±0.21	24.34±0.12

SL=shank length, KL= keel length, BL= body length, BW=breast width and BC= breast circumference.

Table (3): Correlation coefficients among body weights, slaughter parameters and some body measurements in broilers.

	CWN	**CWWN**	**MW**	**SL**	**KL**	**BL**	**BW**	**BC**
BWt	0.975**	0.997**	0.994**	0.615**	0.675**	0.725**	0.701**	0.795**
SW	0.968**	0.990**	0.988**	0.607**	0.670**	0.721**	0.699**	0.785**
NYDW	0.874**	0.995**	0.992**	0.615**	0.674**	0.724**	0.699**	0.794**
EPW	0.982**	0.980**	0.977**	0.601**	0.649**	0.701**	0.688**	0.780**
CWN		0.976**	0.973**	0.601**	0.656**	0.706**	0.693**	0.782**
CWWN			0.977**	0.617**	0.647**	0.723**	0.697**	0.797**
MW				0.612**	0.668**	0.717**	0.694**	0.792**
SL					0.729**	0.588**	0.411**	0.638**
KL						0.627**	0.467**	0.701**
BL							0.577**	0.717**
BW								0.618**

**= highly significant P< 0.01
BWt= live body weight, SW= slaughter weight, NYDW= New York dressed weight, EPW= total edible weight, CWN= carcass weight with neck, CWWN= carcass weight without neck, MW= Meat weight, SL=shank length, KL= keel length, BL= body length, BW=breast width and BC= breast circumference.

Table (4): Correlation coefficients among body weights, slaughter parameters and some body measurements in Arbor Acres.

	CWN	**CWWN**	**MW**	**SL**	**KL**	**BL**	**BW**	**BC**
BWt	** 0.991	** 0.993	** 0.987	** 0.500	** 0.663	** 0.601	** 0.753	** 0.731
SW	** 0.964	** 0.969	** 0.965	** 0.470	** 0.642	** 0.588	** 0.745	** 0.697
NYDW	** 0.991	** 0.993	** 0.987	** 0.500	** 0.663	** 0.601	** 0.753	** 0.731
EPW	** 0.995	** 0.998	** 0.992	** 0.504	** 0.671	** 0.592	** 0.746	** 0.738
CWN		** 0.995	** 0.990	** 0.510	** 0.674	** 0.596	** 0.745	** 0.761
CWWN			** 0.994	** 0.505	** 0.668	** 0.594	** 0.754	** 0.740
MW				** 0.495	** 0.657	** 0.586	** 0.748	** 0.729
SL					** 0.696	** 0.444	** 0.26	** 0.624
KL						** 0.571	** 0.497	** 0.813
BL							** 0.555	** 0.623
BW								** 0.610

**= highly significant P< 0.01

BWt= live body weight, SW= slaughter weight, NYDW= New York dressed weight, EPW= total edible weight, CWN= carcass weight with neck, CWWN= carcass weight without neck, MW= Meat weight, SL=shank length, KL= keel length, BL= body length, BW=breast width and BC= breast circumference.

Table (5): Correlation coefficients among body weights, slaughter parameters and some body measurements in Hubbard.

	CWN	**CWWN**	**MW**	**SL**	**KL**	**BL**	**BW**	**BC**
BWt	** 0.998	** 0.999	** 0.999	** 0.667	** 0.737	** 0.785	** 0.650	** 0.797
SW	** 0.998	** 0.999	** 0.999	** 0.667	** 0.727	** 0.785	** 0.650	** 0.798
NYDW	** 0.995	** 0.996	** 0.996	** 0.659	** 0.728	** 0.781	** 0.640	** 0.792
EPW	** 0.999	** 1.000	** 1.000	** 0.665	** 0.739	** 0.785	** 0.647	** 0.799
CWN		** 0.999	** 0.999	** 0.662	** 0.740	** 0.784	** 0.651	** 0.801
CWWN			** 1.000	** 0.666	** 0.739	** 0.786	** 0.646	** 0.799
MW				** 0.664	** 0.738	** 0.786	** 0.647	** 0.798
SL					** 0.789	** 0.620	** 0.403	** 0.606
KL						** 0.710	** 0.447	** 0.667
BL							** 0.522	** 0.759
BW								** 0.565

**= highly significant P< 0.01

BWt= live body weight, SW= slaughter weight, NYDW= New York dressed weight, EPW= total edible weight, CWN= carcass weight with neck, CWWN= carcass weight without neck, MW= Meat weight, SL=shank length, KL= keel length, BL= body length, BW=breast width and BC= breast circumference.

Table (6): Correlation coefficients among body weights, slaughter parameters and some body measurements in Hybro.

	CWN	CWWN	MW	SL	KL	BL	BW	BC
BWt	0.969**	1.000**	0.998**	0.681**	0.764**	0.838**	0.780**	0.855**
SW	0.968**	1.000**	0.998**	0.684**	0.769**	0.836**	0.782**	0.855**
NYDW	0.969**	1.000**	0.998**	0.683**	0.776**	0.836**	0.781**	0.857**
EPW	0.969**	1.000**	0.998**	0.684**	0.766**	0.836**	0.781**	0.857**
CWN		0.969**	0.967**	0.654**	0.750**	0.818**	0.777**	0.824**
CWWN			0.998**	0.684**	0.766**	0.836**	0.781**	0.857**
MW				0.680**	0.758**	0.832**	0.782**	0.850**
SL					0.845**	0.722**	0.564**	0.716**
KL						0.781**	0.642**	0.781**
BL							0.705**	0.830**
BW								0.756**

**= highly significant P< 0.01

BWt= live body weight, SW= slaughter weight, NYDW= New York dressed weight, EPW= total edible weight, CWN= carcass weight with neck, CWWN= carcass weight without neck, MW= Meat weight, SL=shank length, KL= keel length, BL= body length, BW=breast width and BC= breast circumference.

Table (7): Correlation coefficient among body weights, slaughter parameters and some body measurements in Lohmann

	CWN	CWWN	MW	SL	KL	BL	BW	BC
BWt	** 0.932	** 0.999	** 0.999	** 0.620	** 0.515	** 0.668	** 0.608	** 0.809
SW	** 0.932	** 0.999	** 0.999	** 0.620	** 0.515	** 0.668	** 0.608	** 0.809
NYDW	** 0.930	** 0.998	** 0.998	** 0.628	** 0.514	** 0.669	** 0.610	** 0.808
EPW	** 0.968	** 0.895	** 0.895	** 0.525	** 0.393	** 0.554	** 0.566	** 0.708
CWN		** 0.932	** 0.932	** 0.568	** 0.431	** 0.597	** 0.578	** 0.739
CWWN			** 1.000	** 0.615	** 0.512	** 0.666	** 0.607	** 0.806
MW				** 0.615	** 0.511	** 0.665	** 0.607	** 0.806
SL					** 0.572	** 0.571	** 0.328	** 0.596
KL						** 0.422	** 0.249	** 0.514
BL							** 0.540	** 0.635
BW								** 0.533

**= highly significant $P < 0.01$

BWt= live body weight, SW= slaughter weight, NYDW= New York dressed weight, EPW= total edible weight, CWN= carcass weight with neck, CWWN= carcass weight without neck, MW= Meat weight, SL=shank length, KL= keel length, BL= body length, BW=breast width and BC= breast circumference.

Table (8): The simple regression equations for predicting the carcass weight (Y) from body measurements (X) in broilers at 6 weeks of age.

Item	R^2 %	Predicted equation
SL	60	Y= - 384.42 + 149.96 X
KL	60	Y= - 475.64 + 104.39 X
BL	70	Y= - 989.64 + 93.92 X
BW	70	Y= - 184.57 + 155.06 X
BC	80	Y= - 959.21 + 74.26 X

R^2 = Coefficient of determination

SL=shank length, KL= keel length, BL= body length, BW=breast width and BC= breast circumference.

Table (9): The multiple regression equations of linear body measurements (Xs) for predicting the carcass weight (Y) in broilers at 6 weeks of age.

Items	Multiple "r"	Multiple linear regression equation
Two body measurements	0.696	$Y= - 621.66+66.94X_1+72.51X_2$
	0.788	$Y= -1104.73+56.75\ X_1+75.95\ X_3$
	0.792	$Y= -724.71+95.09\ X_1+118.76\ X_4$
	0.814	$Y= -1038.69+38.35\ X_1+64.57\ X_5$
	0.792	$Y= -1081.40+42.84\ X_2+70.83\ X_3$
	0.800	$Y= -726.69+66.70\ X_2+109.42\ X_4$
	0.816	$Y= -1026.51+29.39\ X_2+61.71\ X_5$
	0.820	$Y= -975.96+65.26\ X_3+82.09\ X_4$
	0.838	$Y= -1203.70+44.32\ X_3+48.67\ X_5$
	0.841	$Y= -964.04+70.01\ X_4+55.17\ X_5$
Three body measurements	0.797	$Y= -1121.12+32.62\ X_1+30.50\ X_2+67.16\ X_3$
	0.813	$Y= -829.85+51.23\ X_1+43.59\ X_2+105.67\ X_4$
	0.818	$Y= -1055.62+22.96\ X_1+21.31\ X_2+59.36\ X_5$
	0.838	$Y= -1082.54+52.35\ X_1+49.53\ X_3+79.69\ X_4$
	0.840	$Y= -1231.36+21.58\ X_1+41.22\ X_3+45.01\ X_5$
	0.838	$Y= -1055.74+36.86\ X_2+47.14\ X_3+77.13\ X_4$
	0.840	$Y= -1217.55+15.33\ X_2+4.46\ X_3+44.35\ X_5$
	0.859	$Y= -1024.08+27.51\ X_2+68.77\ X_4+43.76\ X_5$
Four body measurements	0.843	$Y= -1096.24+33.30\ X_1+24.25\ X_2+43.33\ X_3+77.30\ X_4$
	0.841	$Y= -1231.99+14.69\ X_1+10.47\ X_2+39.57\ X_3+43.23\ X_5$
	0.863	$Y= -1184.12+26.96\ X_1+30.35\ X_3+58.43\ X_4+34.00\ X_5$
	0.862	$Y= -1166.20+17.39\ X_2+30.01\ X_3+57.42\ X_4+33.85\ X_5$
Five body measurements	0.864	$Y= -1184068+19.81\ X_1+10.88\ X_2+28.62\ X_3+58.53\ X_4+32.13\ X_5$

Y= Carcass weight (gm); X_1= Shank length (cm); X_2= Keel length (cm); X_3= Body length (cm); X_4= Breast width (cm) and X_5= Breast circumference (cm)

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الملخص العربى

إستخدام بعض مقاييس الجسم للتنبؤ بوزن الجسم والذبيحة فى أربعة سلالات من بدارى اللحم

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إستخدم فى هذا البحث 354 كتكوت من أربعة سلالات من بدارى اللحم هى الأربر أيكرز (91 كتكوت)، الهبارد (99 كتكوت)، الهيبرو (86 كتكوت) واللوهمان (78 كتكوت) عند عمر التسويق (6أسابيع) وذلك لدراسة تأثير نوع السلالة على وزن الجسم الحى وكذلك مقاييس الذبح المختلفة مع الأخذ فى الأعتبار مقاييس الجسم. كذلك تم تقدير معاملات الارتباط بين بعض صفات مقاييس الجسم وبعض مقاييس الذبيحة وإجراء تنبؤ لوزن الجسم والذبيحة من خلال بعض مقاييس الجسم المختلفة.

وجد أن سلالة بدارى اللحم ليس لها تأثير معنوى على أى من الصفات تحت الدراسة ولكن أوضحت الدراسة أنه يوجد ارتباط موجب وقوى بين وزن الجسم الحى ووزن الذبيحة ومقاييس الجسم المختلفة فى مختلف السلالات.

كذلك وجد أن محيط الصدر وعمق الصدر وطول الجسم هى أفضل المقاييس للتنبؤ بوزن الذبيحة ووزن الجسم فى مختلف السلالات.