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EFFECT OF STRAINS, DENSITIES AND SEASONS ON FEED AND WATER AND CONVERSION IN BROILERS

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ABSTRACT: ***The present study and field measurements were carried out at broiler farms in Menoufia Governorate (Tala City) during the period in 2017 and 2018. The great object of this study was to determine the effect of genotype (strains) and some environmental factors (such as densities and seasons effects) on production and water conversion (WCR) in Menoufia Government. The places of these farms (Meet ElKeram, Kafer El Alawy, Bemam, and Kafer Rabea.)***

The studied traits were as follow: 1. Feed and water consumption (FC, kg/bird/cycle); 2. Water consumption (cm^3/bird/cycle); 3. Feed conversion ratio (FCR). Results indicated that feed consumptions /kg meat were 1600.00, 1629.47, 1599.29 and 1579.90 g feed/kg meat in Hubbard, Cobb, IR and Ross strains, respectively. The corresponding feed conversion values were 1.63, 1.67, 1.63 and 1.61 for Hubbard, Cobb, IR and Ross strains, respectively. The water consumption /kg meat were 3497.33, 3476.47, 3491.14 and 3430.36 cm^3 for Hubbard, Cobb, IR and Ross strains, respectively. The corresponding values of water conversion were 3.86, 3.62, 3.57 and 3.50 for previous strains, respectively.

***Key words**: feed, water and meat production.*

INTRODUCTION

The world population is growing at a frightening level of 220,000 persons per day or 80 million per year. Asia and Africa are the regions likely to exprience the fastest growth, therefore, poultry demand are increase from year to anther year. (Fanout and Boekholt, 2018).

The review of the Egyptian broiler industry by the Food and Agriculture Organization of the United Nations (EAO), Under Tcp/Egy AB003 TT501 (2017) aims to inform policy makers and investors both about challenges and opportunities and promote a more efficient and inclusive poultry industry development.

The present statics of the poultry industry in Egypt are as follow:

Production of poultry meat is about 1.0 – 1.2 billion chickens per year. All poultry cycles are currently location in Egypt, except for broiler grand parents, which are imported from abroad (340000) broiler grandparents. The other cycles are produced locally.

Broiler mothers: 10,000,000- 12,000,000 (10-12 million).

Broiler chicks: 1,200,000,000 (1.2 billion).

In Menoufia Governorate, the full capacity of the worked farms are 20,355,700 birds. Farms from 5000 to less than 25000 birds are actually 403,500 farms and from 25000 to less than 100,000 birds are actually 6,869,000 farms (Statistic of Poultry Production, 2015).

So, it indicated that Menoufia Governorate could increase production rate of broiler. Also, water is a key ingredient in poultry production as a drink for our birds. Forever is checked the quality of water they give their birds. Also, the water consumption and conversion rate of water was estimated in

order to use the suitable amount of water without more water loss.

Therefore, the present study investigate the broiler production in Tala region under different densities, seasons and strains. In addition, the cost of producing one kilogram of meat according to the prevent prices to evaluate the suitable price for both producer and consumers.

MATERIALS AND METHODS

The present study and field measurements were carried out at broiler farms in Menoufia Governorate (Tala) during the period in 2017 and 2018. (Fig. 1).

The great object of this study was to determine the effect of some environmental factors (such as type of strains, densities and in additions seasons effects) on production and economical efficiency of broiler production in Menoufia Government.

This study deals with the economic geography of the Menoufia broiler chicken industry, Fig. (1) show the places of these farms (Meet ElKeram, Kafer El Alawy, Bemam, and Kafer Rabea.)

Densities (birds/m^2):

Four densities were applied in open system, the first was 9 birds/ m^2, the second was 10 birds / m^2, the third was 11 birds / m^2 and the fourth 12 birds / m^2. All birds were reared on land with expansive floors.

Experimental broiler strains and numbers:

The total No. of birds were 242750 which were presented in farms, in 4 strains; Hubbard (11200 birds), Cobb (81250 birds), IR (100500 birds) and Ross (49800 birds).

All birds were fed the basal starter diet, (1-14 days of age, 23% crude protein and 3050 kcal / kg diet), grower (14-28 days of age, 21% crude protein and 3100 kcal / kg), and finisher (28 days until sales, 19% crude protein and 3180 kcal / kg), according to NRC (1994), as given Table (1)

The studied traits:

Feed consumption (FC, kg / bird / cycle):

The amount of feed consumption / bird / cycle were calculated by dividing the total feed intake during the cycle on the receiving brid numbers in each dormitories.

Water consumption:

Each dormitories was provided with 1 tank or more according to the capacity of each one. The tanks capacity was 500 Liter or 1000 according to the full capacity of dormitories.

The amount of water consumption / bird / cycle were calculated by dividing the total water intake during the cycle on the receiving brid numbers in each dormitories.

Also feed and water consumption / kg meat and / m^2 were calculated. Feed conversion ratio (FCR) and water conversion ratio.

The feed conversion ratio was calculated as follow:

$$FCR = \frac{The \quad feed \quad intake \quad (kg)/bird/cycle}{Body \quad weight \quad gain \quad /brid/cycle \quad (kg)}$$

while body weight gain was measured as deviation between the body weights (in gram) at that at selling ages.

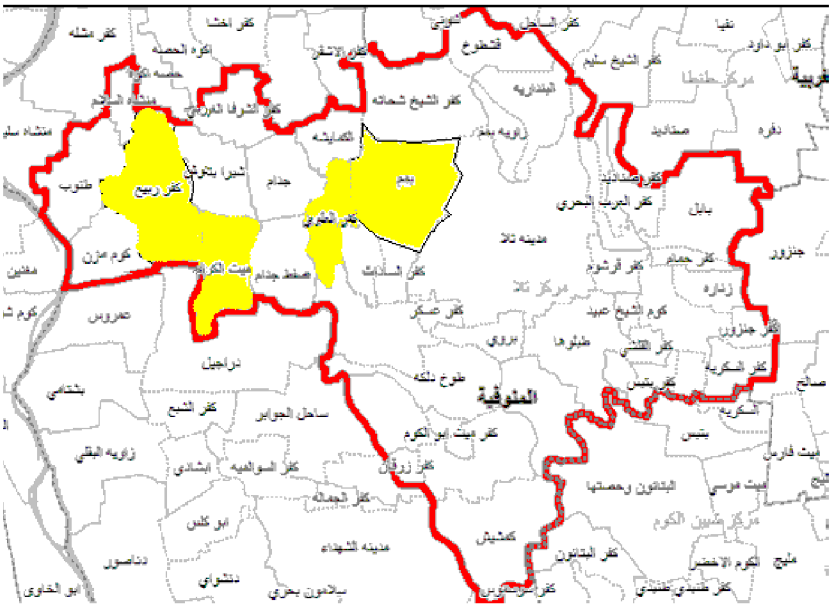

Figure (1) : Menoufia Government (Tala Center: Meet ElKeram, Kafer El Alawy, Bemam, and Kafer Rabea.)

Table (1): Composition and calculated analysis of the experimental diets.

Diets	Starter Period (1-14 day)	Grower Period (14-28 day	Finisher Period (28 until sale)
Ground yellow corn (8.5%).	541	592.0	656.7
Soybean meal,44%.	320	260	190
Full fat soya.	29	29	30
Glutein, 60%.	71.5	78.0	84.9
Mono calcium phosphate.	16.6	17.5	15.3
Limestone.	13	13.4	11.8
L-lysine.	1	2	3
DL-methionine.	1.2	1.4	1.6
Salt (NaCl).	3.7	3.7	3.7
Premix (Minerals and Vitamins).	3	3	3
Total mixture.	1000	1000	1000
Crude protein, %.	23	21	19
ME (kcal/kg).	3030	3100	3200
Crude fiber, %.	3.77	3.41	3.06
Raw fat is not less than, %.	5.56	5.7	5.96

[*] Premix. at 0.30 % of the diet supplies the following/ kg of the diet: Vit. A, 12000 IU;Vit.E, 10 mg; Vit.K_3, 3 mg; Vit B_1, 1 mg; Vit. B_2, 4 mg; Pantothenic acid, 10 mg ;Vit. D_3, 2500 IU; Nicotinic acid, 20 mg; Folic acid, 1 mg; Biotin, 0.05 mg; Niacin, 40 mg; Vit.B_6, 3 mg; Vit B_{12}, 0.02 mg; Choline chloride, 400 mg; Mn, 62 mg; Fe, 44 mg; Zn, 56 mg; I, 1 mg; Cu, 5 mg and Se, 0.01 mg. Calculated according to NRC (1994).

The water conversion ratio was calculated as follow:

$$WCR = \frac{The \quad water \quad \text{int}ake \quad (lit)/bird/cycle}{Body \quad weight \quad gain \quad /brid/cycle \quad (kg)}$$

Statistical analysis :

Data were computerized and analyzed according to SPSS Program (1999). Also significant differences among means were detected by Duncan (1955).

RESULTS AND DISCUSSIONS

Effect of strains, densities and seasons on feed (f.c.) and water (w.c.) consumption:

Analysis of variance of weekly feed and water consumption as affected by strains, densities and seasons were presented in Tables (2 a and b). Strains, densities and seasons have a highly significant effect on both weekly feed and water consumption in addition to the total feed and water consumption / bird from 1 day till 28 days.

Most of interaction effects (strain × density, strain × season, density × season and strain × density × season) were highly significant and these significant effects of interactions indicated that feed and water consumptions were depended on the strain genotype, densities and the season of production.

Tables (3 a and b) showed average of weekly feed and water consumption and total feed and water consumption per bird till marketing. Hubbard strain consumed 147.37, 309.65, 347.67 and 724.90 gram / bird / week in the 1^{st}, 2^{nd}, 3^{rd} and 4^{th} weeks, respectively. The total feed consumption was 3343.99 g / bird at marketing age and this means that each bird consumed 83.5 g / bird / day. Similar trend was noticed for Ross strain. But for Cobb strain the total consumption at marketing age was 3148.26 g / bird at marketing age and it means that average daily consumption equal to 79.6 g / bird / day. For IR strain the total feed consumption was 3292.80 g / bird for at marketing age and it was equal to 78.7 g / bird / day during marketing. Ross strain consumed 3333.98 g/bird at marketing age being means 83.3 g / bird / day at selling age. The differences between Cobb, IR and Ross strains were not significant. Rokonuzzaman *et al.,* (2015) reported that there different feed intake for Hubbard, Arbor Acress, Cobb strains form week to other week. Tshililo *et al.,* (2016) found that feed consumption was 119 g / bird / day and this was in agreement with presented study.

Weekly water consumption / bird / week was ranged from 309.65 cm^3 / bird / week in the first week to 1713.38 cm^3 / bird / week in the fourth week. These means it ranged from 44.23 cm^3 / bird / day in the first week to 244.78 cm^3 / bird / day in the fourth week for Hubbard strain. The total water consumption (1 day – selling age) were 6781.71, 7194.70 and 7235.51 cm^3 / bird at marketing age in Cobb, IR and Ross strains, respectively. These means that chick consumed about 169.54, 179.85 and 180.88 cm^3 / bird / day and its approximately as ratio of 2:1; water: feed. Similar trend was reported by Pesti *et al.,* (1985) and Michael (2013).

Tables (3 a and b) illustrates the total feed consumption and total water consumption per bird at marketing age in summer, autumn, winter and spring seasons. It is clear that more feed were consumed in winter (3452.38 g / bird) than those in summer (3075.52 g / bird) at marketing age. Similar trend was noticed for water consumption which was 6821.77 cm^3 in summer, 7370.21 cm^3 in winter, 7481.32 cm^3 in autumn and 6912.94 cm^3 in spring. This may be according to feed consumption. Elsheikha (2018) came to similar results.

Table (2a): Analysis of variance of feed (f.c.) and water (w.c.) consumption at different ages as affected by strains, densities and seasons.

	Mean squares				
	F.C. 1st week / bird, gm	W.C. 1st week / bird, cm^3	F.C. 2nd week / bird, gm	W.C. 2nd week / bird, cm^3	F.C. 3rd week / bird, gm
Strains	69.86	1936.04**	4969.851	53665.292**	5303.058
Density	1096.49**	1168.80*	1896.679	16909.757**	27793.534**
Season	242.24*	2144.67**	4525.401	35822.531**	54379.835**
Strains*density	218.83*	4032.05**	3025.508	27407.294**	10793.757*
Strain*season	196.54*	2604.49**	2587.788	46384.420**	9191.793
Density*season	916.15**	5343.09**	7620.357	54130.361**	32084.455**
Strain*density*season	368.17**	3195.69**	11121.965	22803.083**	7479.306
Error	79.68	397.29	3919.652	3204.102	4628.055

** significant differences at $P \leq 0.01$

* significant differences at $P \leq 0.05$

Table (2b): Analysis of variance of feed (f.c.) and water (w.c.) consumption at different ages as affected by strains, densities and seasons.

	Mean squares				
	W.C. 3rd week / bird, cm^3	F.C. 4th week / bird, gm	W.C. 4th week / bird, cm^3	total F.C. 1-28 gm	total W.C. 1-28 cm^3
Strains	115382.900**	99196.35**	1017662.3**	89055.72*	1704524.97**
Density	87948.621	85154.63**	119847.16**	311023.97**	477642.59
Season	170761.028*	34766.21**	1000050.7**	713430.89**	1862255.70**
Strains*density	77836.889	95648.89**	251718.09*	45790.03	907574.16**
Strain*season	93189.758*	16368.01	309657.11**	174304.51**	1489116.03**
Density*season	182384.312**	23425.29*	1053616.9**	331579.80**	2205097.39**
Strain*density*season	196887.994**	23638.09*	1739023**	243596.80**	1142561.06**
Error	44862.605	8555.558	86899.204	26754.31	218494.26

** significant differences at $P \leq 0.01$

* significant differences at $P \leq 0.05$

Table (3 a): Average feed (f.c.) and water (w.c.) consumption at different ages as affected by strains, densities and seasons.

		Mean ± standard error				
		F.C. 1st week / bird, (g)	W.C. 1st week / bird, (cm^3)	F.C. 2nd week / bird, (g)	W.C. 2nd week / bird, (cm^3)	F.C. 3rd week / bird, (g)
Strains	Hubbard	147.37±2.98	309.65±6.64^{A}	347.67±20.87	724.90±18.87^{A}	540.90±22.68^{A}
	Cobb	142.25±1.34	287.27±3.00^{B}	345.13±9.42	684.55±8.52^{B}	553.07±10.23^{A}
	IR	145.89±1.26	282.40±2.81^{B}	316.81±8.79	635.29±7.95^{B}	540.43±9.55^{B}
	Ross	147.10±1.70	290.64±3.80^{B}	325.51±11.93	684.94±10.78^{AB}	553.74±12.96^{A}
Density	9	151.32±2.98^{A}	295.11±6.64^{a}	329.10±20.87	648.94±18.87^{AB}	493.39±22.68^{B}
	10	152.25±1.38^{A}	288.54±3.09^{b}	324.55±9.68	663.02±8.75^{AB}	570.32±10.51^{A}
	11	142.63±1.17^{AB}	292.92±2.61^{a}	330.61±8.19	696.69±7.40^{A}	540.41±8.89^{A}
	12	136.33±1.92^{B}	273.57±4.29^{c}	335.93±13.47	625.84±12.18^{B}	548.88±14.64^{A}
Season	Summer	142.79±1.59^{b}	277.39±3.55^{B}	327.20±11.15	629.42±10.09^{B}	543.66±12.12^{B}
	Autumn	147.85±1.47^{a}	298.85±3.28^{A}	334.69±10.30	684.64±9.32^{A}	505.90±11.20^{C}
	Winter	146.36±1.63^{a}	294.94±3.63^{AB}	306.86±11.35	685.04±10.26^{A}	580.92±12.34^{A}
	Spring	143.78±1.59^{b}	280.46±3.56^{B}	343.96±11.18	669.56±10.11^{AB}	564.10±12.15^{AB}

A,B,C, Differences between values having the same high script in each column are not significant at $P \leq 0.05$

Table (3 b): Average feed and water consumption at different ages as affected by strains, densities and seasons.

		Mean ± standard error				
		W.C. 3rd week / bird, (cm^3)	F.C. 4th week per bird, (g)	W.C. 4th week per bird, (cm^3)	Total F.C. (g) at marketing age	Total W.C. (cm^3) at marketing age
Strains	Hubbard	1216.00±70.60^{AB}	875.58±30.83^{A}	1713.38±98.26^{A}	3343.99±54.52^{A}	7892.38±155.81^{A}
	Cobb	1233.38±31.87^{A}	761.69±13.92^{B}	1200.79±44.35^{B}	3148.26±24.61^{B}	6781.71±70.32^{C}
	IR	1092.52±29.75^{B}	728.07±12.99^{B}	1508.54±41.40^{B}	3295.80±23.02^{B}	7194.70±65.78^{BC}
	Ross	1117.06±40.34^{AB}	731.01±17.62^{B}	1490.18±56.15^{B}	3333.98±31.16^{B}	7235.51±89.03^{B}
Density	9	1071.16±70.60	618.78±30.83^{B}	1454.76±98.26^{AB}	3114.29±54.52^{B}	6925.53±155.81
	10	1116.53±32.74	783.21±14.30^{A}	1269.20±45.56^{B}	3380.60±25.35^{A}	7285.52±72.46
	11	1216.97±27.69	752.48±12.09^{A}	1539.24±38.54^{A}	3196.31±21.39^{B}	7083.88±61.11
	12	1095.21±45.57	765.53±19.90^{A}	1487.17±63.43^{AB}	3308.12±35.19^{A}	7195.02±100.58
Season	Summer	1217.68±37.74^{A}	712.85±16.48^{B}	1403.89±52.52^{AB}	3075.52±29.14^{C}	6821.77±83.28^{B}
	Autumn	1109.54±34.86^{B}	748.63±15.22^{A}	1264.07±48.52^{B}	3286.14±26.92^{B}	7481.32±76.94^{A}
	Winter	1120.56±38.41^{AB}	773.95±16.77^{A}	1590.59±53.45^{A}	3452.38±29.79^{A}	7370.21±85.12^{A}
	Spring	1157.45±37.83^{AB}	768.74±16.52^{A}	1516.84±52.64^{A}	3253.22±29.21^{B}	6912.94±83.48^{B}

A,B,C, Differences between values having the same high script in each column are not significant at $P \leq 0.05$

Figure (2) illustrate the effect of interaction between strain and density on feed and water consumption till selling age. Density 10 birds/m^2 was consumed more feed and water in all strains. Figure (3) indicated that summer season have negative effect on feed and water consumption in all strains.

Effect of strains, densities and seasons on feed and water consumption / kg meat, - m^2, feed, water, conversion and livability percentages:

Analysis of variance of effect of strains, densities and seasons on feed and water / kg meat, / m^2, feed and water conversion and livability percentages were obtained in Table (4).

No significant differences were found for water consumption per kg meat and water conversions. Significant differences between strains were noticed for feed consumption per kg meat, feed conversion and livability. Similar effect of strains were found by Dozier *et al.,* (2006), Timmerman *et al.,* (2006), Benyi et *al.,* (2015). But Tshililo *et al.,* (2016) reported insignificant differences.

Table (5) and Figs. (4 and 5) presented feed consumptions / kg meat was 1600.0, 1629.47, 1599.29 and 1579.90 g feed/kg meat in Hubbard, Cobb, IR and Ross strains, respectively. The corresponding feed conversion values were 1.63, 1.67, 1.63 and 1.61 for Hubbard, Cobb, IR and Ross strains, respectively.

The water consumption / kg meat was 3497.33, 3476.47, 3491.14 and 3430.36 cm^3 for Hubbard, Cobb, IR and Ross strains, respectively. The corresponding values of water conversion was 3.86, 3.62, 3.57 and 3.50 for previous strains, respectively.

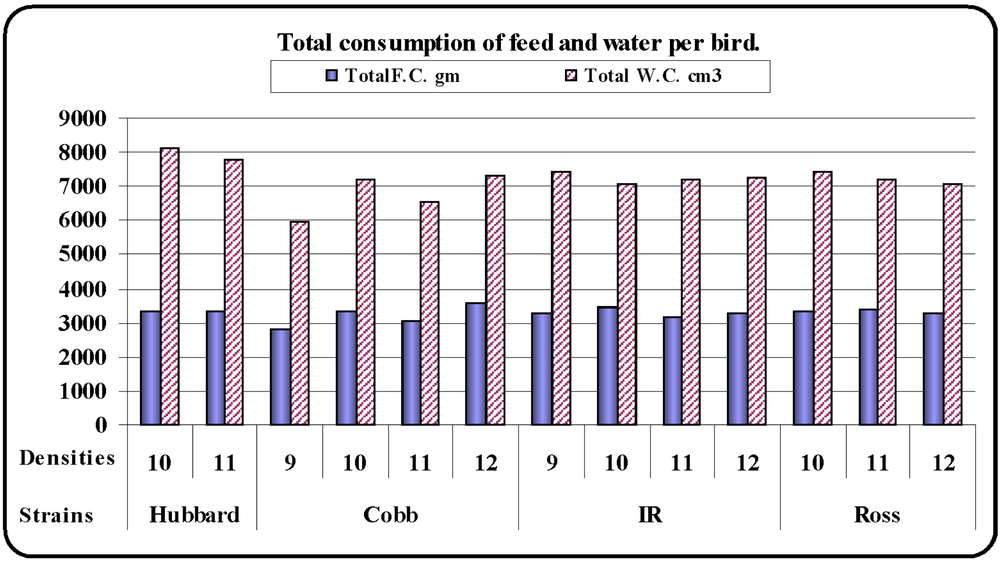

Figure (2): Effect of interaction between strain and density on feed and water consumption till marketing age.

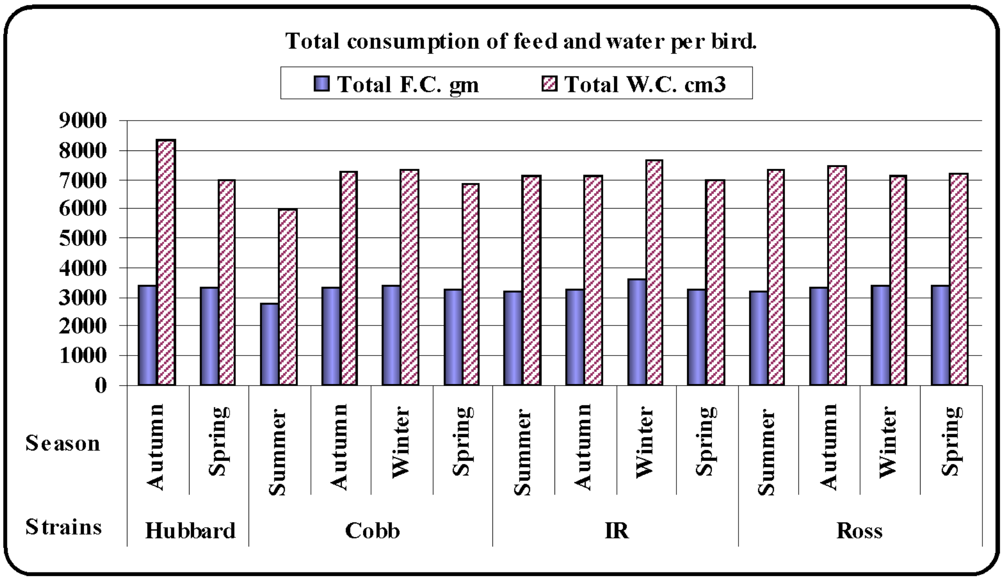

Figure (3): Effect of interaction between strain and season on feed and water consumption till marketing age.

Table (4): Analysis of variance of meat production traits (feed and water / kg meat, feed and water / m^2 and feed and water conversion) as affected by strains, densities and seasons.

	Mean squares						
	Feed/kg meat	Water/kg meat	Feed /m^2	Water /m^2	Feed conversion rate	Water conversion	Livability %
Strains	4126.71*	23608.00	10500125.20**	1.47E+08**	0.0067*	0.1116	50.42*
Density	6180.05*	375212.87**	162162709.18**	7.5E+08**	0.0073**	0.1198*	327.54**
Season	15827.37**	271347.13*	92717695.48**	2.62E+08**	0.0158**	0.3697**	404.44**
Strains*density	2899.35	269674.35**	2829152.82	83454109**	0.0032	0.1812**	100.08**
Strain*season	4837.77*	95123.77*	16900329.94**	1.57E+08**	0.0050**	0.0890	94.66**
Density*season	5021.46*	115991.02*	36814684.34**	2.02E+08**	0.0048*	0.0893	240.24**
Strain*density* season	4417.40	30520.68	28605322.68**	1.22E+08**	0.0058*	0.0791	176.44**
Error	1787.92	41361.10	2410050.42	25619259**	0.0018	0.0437	15.80

** significant differences at P ≤ 0.01
* significant differences at P ≤ 0.05

Table (5): Average meat production traits (feed and water / kg meat, feed and water / m^2 and feed and water conversion) as affected by strains, densities and seasons.

		Mean ± standard error						
		Feed/kg meat	Water/kg meat	Feed /m^2	Water /m^2	Feed conversion rate	Water conversion	Livability %
Strains	Hubbard	1600.00± 14.09^{ab}	3497.33± 67.79	32764.67 ±517.48^{B}	77291.7± 1687.182^{A}	1.63± 0.014^{B}	3.86± 0.069^{A}	88.43± 1.32^{B}
	Cobb	1629.47± 6.36^{a}	3476.47± 30.60	30713.97± 233.56^{C}	66398.83± 749.8588^{C}	1.67± 0.006^{A}	3.62± 0.031^{B}	87.69± 0.60^{B}
	IR	1599.29± 5.95^{ab}	3491.14± 28.62	32922.76± 218.48^{AB}	71971.52± 710.8522^{B}	1.63± 0.006^{B}	3.57± 0.029^{B}	90.06± 0.56^{AB}
	Ross	1579.90± 8.05^{b}	3430.36± 38.74	34075.45± 295.70^{A}	73891.43± 964.1042^{B}	1.61± 0.008^{B}	3.50± 0.040^{B}	92.01± 0.76^{A}
Density	9	1651.67± 14.09^{a}	3667.00± 67.79^{A}	26812.67 ±517.48^{C}	59673.17± 1687.182^{D}	1.69± 0.014^{A}	3.751± 0.070^{A}	88.47± 1.32^{B}
	10	1606.65± 6.55^{ab}	3344.55± 31.52^{B}	31630.20 ±240.64^{B}	68150.12± 782.3143^{C}	1.64± 0.006^{B}	3.54± 0.032^{B}	91.93± 0.62^{A}
	11	1603.49± 5.53^{ab}	3551.43± 26.59^{A}	32600.94 ±202.97^{B}	72463.22± 655.3733^{B}	1.64± 0.005^{B}	3.64± 0.027^{A}	87.32± 0.52^{B}
	12	1574.75± 9.10^{b}	3427.08± 43.76^{B}	36781.92 ±334.03^{A}	79965.3± 1089.072^{A}	1.61± 0.009^{C}	3.50± 0.044^{B}	91.57± 0.86^{A}
Season	Summer	1571.26± 7.53^{B}	3480.24± 36.24^{b}	30698.64 ±276.60^{D}	68235.31± 901.8369^{D}	1.61± 0.007^{B}	3.57± 0.037^{B}	85.07± 0.71^{C}
	Autumn	1632.54± 6.96^{A}	3582.83± 33.47^{a}	31563.05 ±255.52^{C}	71930.17± 833.1114^{B}	1.67± 0.006^{A}	3.80± 0.034^{A}	91.05± 0.65^{AB}
	Winter	1582.64± 7.70^{B}	3375.16± 37.04^{b}	35481.98 ±282.71^{A}	76040.4± 901.8369^{A}	1.62± 0.007^{B}	3.46± 0.037^{B}	92.75± 0.72^{A}
	Spring	1616.14± 7.55^{A}	3438.25± 36.32^{b}	32656.89 ±277.24^{B}	69448.1± 903.9221^{C}	1.65± 0.007^{A}	3.51± 0.037^{B}	89.46± 0.71^{B}

A,B,C, Differences between values having the same high script in each column are not significant at $P \leq 0.05$

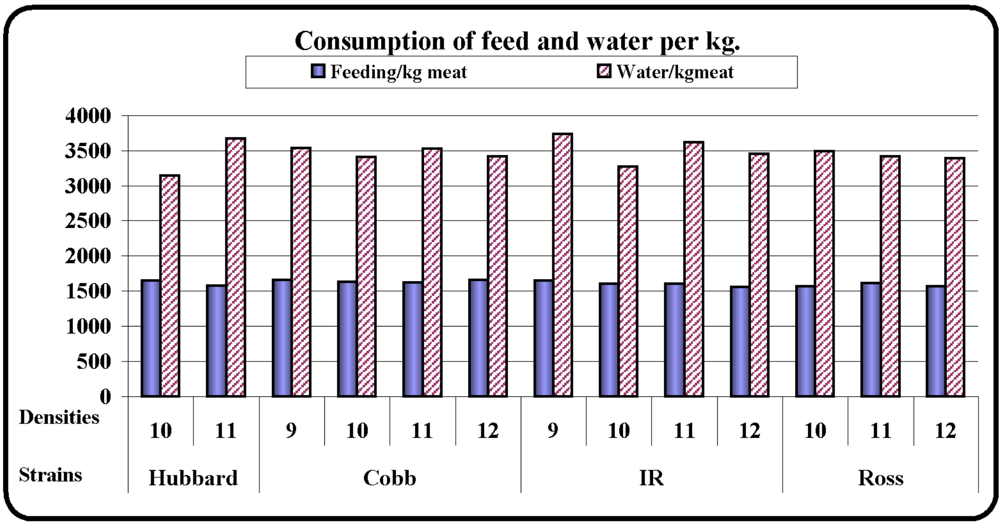

Figure (4): Effect of interaction between strain and density on feed and water consumption per kg meat.

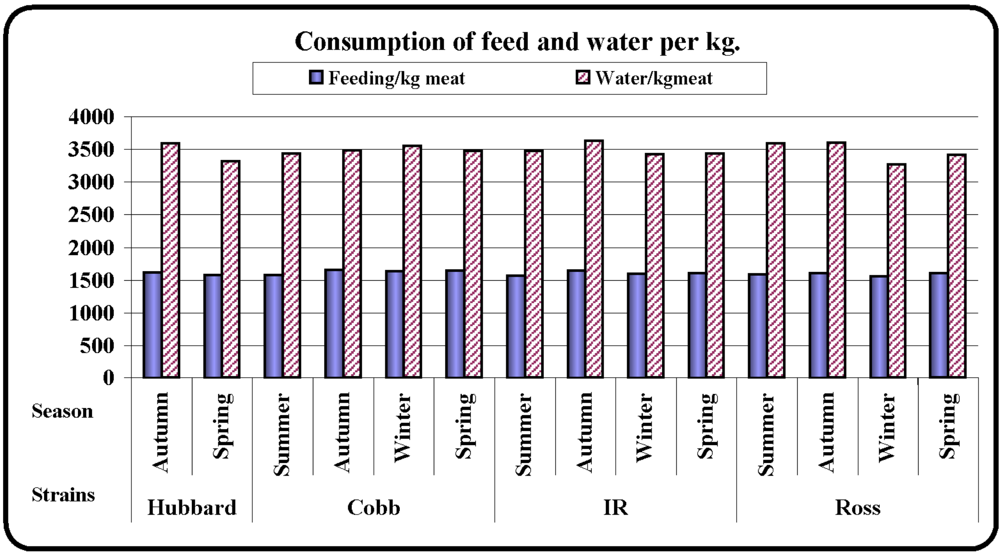

Figure (5): Effect of interaction between strain and season on feed and water consumption per kg meat.

REFERENCES

Benyi, K., J. N. Avhafunani, T.M. Kgabo and T.G. Eastonce (2015). Effect of genotype and stocking density on broiler performance during two subtropical seasons. Trop Anim Health Prod 47: 969–974.

Dozier, W. A., J. P. Thaxton, J. L. Purswell, H. A. Olanremaji, S. L. Branton and W. B. Roush (2006). Stocking density effects on male broilers grown to 1.8 Kilograms of body weight. Poultry Science. 85: 344-351.

Duncan, D. B. (1955). Multiple ranges and multiple F test. Biometrics (11): 1-42.

Elsheikha, M. E. A. (2018). Effect of some environmental factors on production and economical efficiency of broiler in Menufia governorate. M.Sc. Faculty of Agric., Menoufia University.

Fanout, F., P. and Van Boekholf (2018). The challenging world of primary breeding matching genetic to market requirements. Zootecnica. Vol 4: 36-38.

Michael, K., (2013). Delivering the right amount of water for todays broiler, chickens. International Poultry Production, Vol (2): No. 2: 25-26.

NRC (1994). Nutrients Requirements of Poultry (7th rev.) Washington : Natl. Acad. Press. Washington. D.C.

Pesti G.M., S. V.Amato, and L.R.Minear,(1985). Water consumption of broiler chickens under commercial conditions. Poultry science, volume 64, Issue 5,1 may 1985, pages 803-808.

Rokonuzzaman, M., S. S. Jahan, M. S. Ali, M. A. Islam and M. S. Islam (2015). Growth performance of three broiler strains in winter seasons in Bangladesh. International Journal of Agricultural Policy and Research 3(7):308-313.

SPSS Program (1999). User's guide statistic. Release 10.01, Copyright SPSS Inc., USA.

Statistic of Poultries Production (2015). Affairs Sector. Ministry of Agricultural, Egypt.

Timmerman, H.M., A. Veldman, E. V. Elsen, F.M. Rombouts and A.C. Gegnen (2006). Mortality and growth performance of broilers given drinking water supplemented with chicken specific probiotics. Poultry Science. Vol. 85: 1383-1388.

Tshililo Joyce Ligaraba, K. Benyi and J.J. Balog (2016). Effects of genotype and stocking density on broiler performance under three feeding regimes. Trop. Anim. Health Prod., 48:1227-1234.

تأثير السلالات، الكثافات وفصول السنة علي معامل تحويل الغذاء والماء في الدواجن

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الملخص العربي

الدراسة الميدانية الحالية والتقديرات الميدانية تم تقديرها وجمع البيانات من مزارع دجاج اللحم بمحافظة المنوفية (مركز تلا) وذلك في الفترة من بداية عام 2017 إلي نهاية 2018. وذلك بهدف تقدير أثر التراكيب الوراثية (سلالات) وبعض العوامل البيئية مثل كثافة التربية وتأثير فصول السنة علي الكفاءة الإنتاجية والاقتصادية لدجاج اللحم في محافظة المنوفية. أماكن تواجد المزارع (ميت الكرام – كفر العلوي – بمم – كفر ربيع)، وتم تطبيق 4 كثافات في المزارع وهي كما يلي: 9/م^2، 10/م^2، 11/م^2 و 12/م^2.

والصفات التي تم دراستها كالآتي:

1- كمية الغذاء المستهلكة (كجم لكل طائر لكل دورة)
2- كمية المياه المستهلكة (سم^3 لكل طائر لكل دورة)
3- الكفاءة الغذائية – كفاءة استهلاك المياه

كانت أهم النتائج المتحصل عليها كالتالي:

- بلغت كمية العلف المستهلكة لكل كجم لحم 1600,00، 1629,47، 1599,29، 1575,90 كجم علف لكل كجم لحم في سلالة هبرد وكب وإنديان ريفير وروص علي الترتيب وكان معامل التحويل الغذائي المقابل 1,63، 1,67، 1,63، 1,61 لكل من سلالة هبرد وكب وإنديان ريفير وروص علي الترتيب.
- بلغت كمية المياه المستهلكة لكل كجم لحم 3497,33، 3476,47، 3492,14، 3430,36 سم^3 لكل من سلالة هبرد وكب وإنديان ريفير وروص علي الترتيب، وكانت القيم المقابلة لها لكفاءة استخدام المياه كالآتي 3,86، 3,62، 3,57، 3,50 للسلالات السابقة علي الترتيب. وأتضح أن سلالة روص كانت أكثر السلالات كفاءة في استخدام المياه 3,50 وهذا يبين كفاءة هذه السلالة وصلاحيتها للمناطق ذات مصادر المياه القليلة.

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