EFFECT OF TWO ENVIRONMENTAL CONDITIONS (HOT AND FRESH) ON THE BIOMETRIC VARIABLES IN CHICKENS OF PUTS ON WEIGHT SEPARATED BY SEX AND CORPORAL CONDITION.

Rivero, A., Farfán, Ch., Oliveros, Y., Tony, CH., De Basilio, V.

Universidad Central de Venezuela. Facultad de Agronomía.
Departamento de Producción Animal. Apdo. Postal 4579, Maracay, Venezuela.
Correo electrónico:vascodebasilio@hotmail.com

ABSCTRACT

There measured of the effect of two environmental conditions (hot and fresh) on the biometric variables in chickens broilers separated by sex and corporal condition (CC). The treatments followed a design factorial of 2x2x2 two artificial conditions of environment, hot (C=TA $\geq$ 30 °C) and fresh air (F=TA prom, 25 °C) with two corporal conditions lewd (L) and weighed (W), separated by sex (M=male, H=female). There took 1 chicken of every cage to realize measures of life weight (LW) of legs, head, total entrails, heart, bursa, liver, kidney, lung, carcass; with a scale Ohaus of precision 0,01g. the chickens in hot climate had minor LW and consumption of food and major consumption of water that the chickens in fresh condition The proportion of the organs decided with regard to the LW. There were significant differences in the measurements later to the differentiation of environment in only five variables; the heart presented irregular proportion, where CMP and FMP, were possessing major proportion with 0,45 % ± 0,16; the hot environment presented minor proportion of bursa with an average of 0,096 % ; with regard to the chickens of the fresh environment. There are important changes in the organs heart, bursa, spleen and legs concerning the age, which guard relation with the caloric stress, though the environment, the sex and the CC, they are not determinant factors in the proportions of the organs.

Key words: chickens of fatten, caloric stress, sex, CC and environment, biometric.

INTRODUTION: The production of birds is the first one in importance in the contribution of proteins to the Venezuelans, contributing 62 % of the protein of animal origin for 2007 (FENAVI 2008). This industry possesses big perspectives of growth, but it has high dependence of the foreigner, with 100 % of the genetics and more than 60 % of the raw materials for the food they are acquired out of the country. In the commercial farms there are generated diverse problems of the caloric but most important stress it is the death for heat blow, which can reach up to 20 % of the population, which causes big economic problems to the producers. (De Basilio, (2002)). Already it has been reported that the sex; (Prieto, 2007), and the corporal condition of the bird if it is heavier or lewd than his similar they affect the resistance to the heat, Correa (2007).
In these works the male is less resistant to the heat that the female and the birds With major weight they tend to be more capable. For it in this work the question arises from if this effect of sex or alive weight of the chickens is related to the unequal growth of the organs, and if birds that are raised in hot conditions resist then in one more heat blow to the death he owes to some adjustment in the proportion of the organs.

MATERIALS AND METHODS: it was realized in the Unit of Semi-controlled Environment (UASC) of the laboratory section of Birds of the Faculty of Agronomy of the UCV. In a shed with 24 experimental corrals drinking-troughs of bell and feeding-places type plate. Of the 0-th 16 days of age all chickens They are lodged in joint form - The 16th-23 d habit-forming corrals and diets. On the 24-th 37 thermal treatment, from the 16th, the chickens were separated by sex and corporal condition. An average was obtained to separate for corporal condition, taking the lewd = L: as the

chickens which weight was minor to 10 % of the average, and the heavy =(P) 10 % over the average. From this day, there were placed 11 chickens separated by sex and corporal condition, for corral of 1m2. They were vaccinated, on the 7th and 14th in the water of drink against New Castle and Gumboro. The animals fed ad libitum on commercial formula, an initiator supplied from the 1st until the 21st, and the finishing one from the 22nd until the 37th. The thermal treatment was named a fresh environment = F: TA below 26 °C, in the Rooms To and the hot environment = C with TA over 30°C. Following an experimental Design completely randomized with an arrangement factorial 2x2x2 with 8 treatments, which correspond to two environmental conditions Hotly (C) and Fresh air(Fresco) (F) then two sexes macho (M) and female (H) and two conditions corporal lewd (L) and weighed (P) with 3 repetitions every treatment, Trat 1 CHL: Hot, lewd, Female, Trat 2 CHP: Hot, heavy, female, Trat 3 CML: Hot, lewd, male, Trat 4 CMP: Hot, heavy, male, Trat 5 FHL: Fresh, lewd, female, Trat 6 FHP: Fresh heavy, female, Trat 7 FML: Fresh, lewd, male, Trat 8 FMP: Fresh heavy male, Variables to measuring; Food consumption (cons.): it decided weekly. life weight (PV): it was realized in hours of the morning of the 1st, 9, 16, 23 and 30 of age, biometric variables, the weight measured up of: legs, head, total entrails, muscular stomach, liver, lungs, spleen, heart, kidneys, bursa and Carcass. Stat View used the statistical package for the analysis of variance (ANOVA) and test(proof) of averages (Fisher) to compare between treatments..

		Hot				Fresh				Anova						
		Female		Male		Female		Male		t.amb	t.sex	t.cc	amb.*sex	amb.*cc	sex*cc	amb.*sex*cc
		L	P	L	P	L	P	L	P							
Órgans	Day															
Head	37	2,24	2,42	2,23	2,01	2,07	2,26	2,47	2,06	ns	ns	ns	ns	ns	ns	ns
Legs	37	3,29	3,82	3,62	3,62	3,65	3,29	3,22	3,67	ns	ns	ns	ns	ns	ns	0,036
Heart	37	0,29	0,31	0,39	0,33	0,37	0,42	0,4	0,45	0,010	ns	ns	ns	ns	ns	ns
Lung	37	0,76	0,49	0,42	0,4	0,46	0,45	0,43	0,42	ns	ns	ns	ns	ns	ns	ns
Viscus	37	10,36	9,72	9,18	10,4	10,5	10,2	9,65	10,11	ns	ns	ns	ns	Ns	ns	ns
Liver and gallbladder	37	2,43	2,62	2,37	2,47	2,7	2,41	2,15	2,17	Ns	ns	ns	ns	ns	ns	ns
Empty gizzard	37	1,55	1,21	1,36	1,33	1,48	1,4	1,48	1,47	ns	ns	ns	ns	ns	ns	ns
Spleen	37	0,08	0,16	0,07	0,1	0,08	0,12	0,08	0,11	0,0001	ns	ns	ns	ns	ns	ns
Bursa of Fabricius	37	0,094	0,17	0,1	0,1	0,09	0,16	0,09	0,13	0,0121	ns	ns	ns	ns	ns	ns
Kidney	37	0,73	0,81	0,64	0,68	0,88	0,87	0,75	0,77	ns	ns	ns	ns	ns	ns	ns
Carcass with skin	37	75,4	72,3	74	73	72,7	72,8	74,3	74,08	ns	ns	ns	ns	ns	ns	ns
Grease	37	0,59	0,69	0,96	1,32	0,17	1,82	0,73	1,39	ns	ns	ns	ns	ns	ns	ns

Table 1. Summary of biometric data for day 37, in proportion to body weight

RESULTS:

Productive Variables: The chickens in the fresh environment reached major PV (1890±401 g/pollo), that the located ones in the hot environment (1801±326gr/pollo) so much in chronic stress up to 37d as like in the Sharp stress 38d of age, owed possibly to the significant differences (p <0,05) between the consumption, which was major (1264 g/pollo) in the fresh environment and that

in the hot one (1202 g/pollo); In general for both environmental conditions the major consumption the heavy males reached it, and the minor I consume the lewd females, with a difference of 470 g between the FMP and CHL. The difference of consumption between the heavy males of both conditions was of 22 g. while the water consumption is major (22 %) in the chickens raised in hot rooms. lewd females weigh 368 g more than the rest than the chickens.

Anatomical variables, There is an important reduction in the proportion of organs as head (10-2 %) and total entrails (30-10 %) during the phase of growth of the chickens Figure 1. Only statistical differences were observed for the 37th of life of the chickens (table 1). In the later days there was not obtained statistical difference (p> 0,05). In the hot environment the chickens have minor proportion (0,12 to 0,08 % less) of heart that in the fresh environment indistinctly of the sex and of the corporal condition. The organs related to the immunological system like the Bursa de Fabricio (p=0,012) and spleen (p=0,001), are organs that possess statistical differences what can have relation with problems of pathologies during the experience. The proportion of fat presented statistical differences (p=0,04) possibly because the samples took last days of development of the bird, which implies that it is the stage of major development of corporal fat. 77 % of survival was reached, for the whole essay, where the mortality contributed a few values not described in previous works, since there was major mortality in the hot environment with 25 %, with regard to 23 % of mortality obtained in the fresh environment. For both determine there was females' major mortality, for hot environment 68 % of the total of the dead chickens. For the fresh air the females reached 73,9 % of the mortality. And the males for both cases, obtained 32 % and 26,1 %, respectively.

CONCLUSIONS:

The chickens located in the fresh rooms obtained major corporal weight that the located ones in the hot rooms, the corporal heavy conditions obtained major PV. There is an important reduction in the proportion of organs as head (10-2 %) and total entrails (30-10 %) during the phase of growth of the chickens. Other organs present a gradual growth with regard to the increase of the PV. There are important changes in the organs heart, bursa, spleen and legs concerning of the age, which guard relation with the caloric stress, though the environment, the sex and the CC, they are not determinant factors in the proportions of the organs.

REFERENCES:

CORREA, F. 2007. Efecto del peso vivo sobre las variables del proceso de hiperventilación en pollos de engorde en etapa de finalización. Tesis de pre grado. Facultad de Agronomía. Universidad Central de Venezuela. 63p.

DE BASILIO, V., 2002. Acclimatation précoce des poulets de chair au climat tropical. Thèses Doctoral en sciences mention Biologie Agronomie. De L'Ecole National Supérieur Agronomique de Rennes. 20-06-2002De Basilio V, 2002. Thèse de Doctorat de l'Ecole Nationale Supérieure Agronomique de Rennes.

DE BASILIO, V., PICARD, M. 2002. La capacité de survie des poulets à un coup de chaleur est augmentée à une température élevée. INRA. Producción Animal. 15(4):235-245.

DE BASILIO, V., REQUENA, F., LEON, A., VELAZCO, Z., PICARD, M., **2002.** Does early thermal conditioning sometimes fail to improve resistance of broilers to heat stress?. Animal Research. 51: 407-420.

DE BASILIO, V., REQUENA F., LEON A.,VILARIñO M., PICARD M., 2003 . Early-age thermal conditioning immediately reduces body temperature of broiler chicks under a tropical environment. Poultry Sci 82 (8):1235-1242.

DE BASILIO, V., .LOVERA M., TEPPER, E., BECERRA, A.,BASTIANELLI, D, .ROJAS, J., 2010. Restricción de alimento diurno reduce muerte por calor en granjas avícolas comerciales (Diurnal feed restriction reduces death by heat in commercial poultry farms). Revista Científica, FCV-LUZ / vol. xx, (1) 42 – 52

FENAVI. 2008. X Congreso Nacional de Avicultura. Venezuela.

PRIETO, C. 2006. Descripción de las variables asociadas al proceso de hiperventilación en pollos de engorde sexados, durante las última semana de producción. Tesis de pregrado. Facultad

de agronomía, Universidad central de Venezuela. P 60.

ROSS, 2007. Broilers performances objetives. Aviagen Limited Newbridge, Midlothian EH28 8SZ, Scotland, United Kingdom. 23p.