

Evaluation of Animal Performance in Broiler Farming in the Central Region of Algeria

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Abstract: The present study is conducted throughout four traditional farms in central Algeria. The research revealed a series of failures on the management of the pipe. Thus, some of these deficiency are due to a sub watering equipment (1.8 cm vs 2.5 cm / animal), a static ventilation, added to its difficulty to control, and finally its overcrowding phase (12 Vs 10 sujets/m²), the conversion ratios exceeding standards required is (2.5 vs. 1.8) and, especially mortality rates that range between 3.5 and 7% (norm <3%), are among the most notable causes. Finally, the production index, which is the resultant of all the zoo technical parameters, varies in a wide range (142 to 290) compared to the minimum allowable value of appreciatively (> 220).

Keywords: Broiler chicken - Livestock - Performance - Centre Algeria.

INTRODUCTION

The first line of defense is to protect poultry from pathogens is through isolation. We must adopt a system of single band by complete renewal (birds, all having the same age, same strain, and all who enter and leave at the same time all at the same time in order to comply with the "All full, all out ") (Babak et al 2005.Vaillancourt, 2002; Helm, 2006). Health protection requires the practice of fallowing. Indeed, between the departure of a band and the establishment of a band following the building and equipment must be washed and disinfected using a specific protocol. The choice of the farm sitting and building design will aim to preserve as much livestock from any source of contamination. The atmosphere in a barn is characterized by various parameters such as temperature, humidity, ventilation, air velocity, the content of ammonia (NH₃) and CO₂, lighting, and the state of litter. The balance between these different factors must be permanently maintained to ensure comfort and well being allowing to keep animals healthy, able to express their genetic potential(Drouin, 2000 ; Helem, 2006 ; Guelph, 2005). Equipment standards, building quality and climatic factors are the primary criteria for determining the density of livestock. It should also be noted that excessive densities result in reduced performance due to reduced growth, uniformity and quality of litter and an increase in feed efficiency, mortality, seizures and downgrades at slaughter. Finally, the food represents 70% of the total production cost of broiler (Rudeaux and Bastianelli, 1999). The presence of clean water is essential for the absorption of nutrients and elimination of toxic materials, especially (Van Eekeren et al., 2006). When temperatures are farmed in accordance with the recommendations, the consumption of water is generally between 1.7 and 1.8 times the consumption of food. The objective of our work is to assess local conditions, different factors that affect livestock directly on performance of broilers

and to propose solutions to act quickly and correct faults encountered.

MATERIAL AND METHODS

The work was conducted on 4 buildings spread over the departments of Tipaza (Hadjout) for Buildings 1 and 2 and Blida (Boufarik) for Buildings 3 and 4. Our study was conducted over a culture period (49 days), during 2010. The buildings are mostly old, non-fenced with wire netting to prevent contact with wild animals. However, a foot bath is installed at the entrances to buildings. They are equipped with a data sheet, which records all information relating to the date of implementation, the parameters of atmosphere, at the age of birds, the number of daily mortality, the quantity of food consumed, the vaccination protocol and the different treatments performed.

1.1 - Work performed prior to receipt of chicks: Before receipt of the chicks, a final protocol for cleaning and disinfection are applied. Installation of litter and straw, the radiating gas is conducted 24 hours before arrival of animals. As for material feeding and watering, it is installed on the same day of receipt of the chicks.

1.2 - Driving after receipt of chicks: In the 04 buildings, upon receipt of the subjects, he proceeded to weigh a sample of 10% of the workforce. This operation is repeated at the end of each phase, to calculate body weights and average daily gain of (ADG). Daily mortality is mentioned throughout the rearing period. Finally, the amount of food consumed by batch and rearing phase is recorded.

1.3 - Statistical analysis : The results of the different parameters have been processed by the Excel software, for calculating the mean, central tendency, and the establishment of graphs.

RESULTS AND DISCUSSION

Conduct of farms: All parameters of herd management are recorded in summary form in Table 1, 2 and 3. Traditional farms visited, set up small numbers (1800-3800), but with densities in adulthood, often above normal (> 12 vs. 10 animals / m²). Although the buildings are under-equipped and that ventilation is static, the environmental parameters seem maintained within the required limits. It is important to note that all poultry farmers visited, meet the control programs, especially against the most threatening viruses, including newcastle disease and Gumboro. Often treatment protocols (Table 2) are applied, usually under the supervision of a veterinarian. They are preventive Administration (anticoccidial, vitamins, selenium and Enrofloxacin) or curative purposes, in the case of respiratory colibacillosis (Amoxicillin, vitamins). This condition is most often due to poor microbial control in hatcheries (8, 15, 16, 17, 31, 33, 44, 50, c, g, h). A way to say that: "A cure is a failure! The food if it is identical in composition shows some significant quantitative differences. Thus, the incorporation of corn is much higher in the food of Building 4 in the Building 3 (respectively 67.1% and 58%). It is the same for soybean meal (respectively 36.3% and 29%). These differences are evidence of the lack of harmonization in the formulation of mixtures by private manufacturers with respect to the state sector (ONAB). The influence of diet on production on the quality and quantity of chicken can not be clearly evident (7, 10, 20, 23, 38, 43, 44, a, d, f). In the starting phase, the amount of food ingested chicken varies from 165 g (Bt 1) to 263g (Bt 4). During the growing period feed intake ranged from 839g

(Bt1) to 3833g (BT4). The amount of food consumed per bird varied from 4.8 to 5 kg, which are practically required standards (5 kg).

Fattening performance: We observed that the average live weight of chicks at D0 is highly variable from one building to another. It does not exceed 39g. At the end of starting period, chicks reached body weights ranging from 126g (Bt 4) to 200g (BT3). However during the last period, there is a significant increase in the average live weight in buildings-1, 2 and 4 (respectively 1.250g, 2.110g, and 1911 g). Similarly, the average daily weight gain (ADG) increased during the 3 phases. However, start-ups, is the building-2, which recorded the growth rate is higher. Meanwhile, the building-1 achieved a better average daily gain (705g) compared to other barns in the final phase. Cumulative average daily gain ranged from 1.918g (BT4) to 2761 g (Bt 2). In start-up period, it feeds conversion ranged from 1.78 (Bt1) and 2.95 (Bt 4). By contrast in the growth phase and finishing feed conversion is the highest recorded in the first building (respectively 3.41 and 2.57) while the lowest is marked in the 4th building (respectively 1.57 and 1.93). The mortality in boxes are ridiculous and vary between 3-8 topics per building. In start-up period the mortality rate varies between 1.31% (Bt 3) and 2.28% (Bt 1).

Tab. 1

Livestock management

Building	1	2	3	4
Staff	3.200	1.800	3.200	3.800
hatchery	Tizi-Ouzou	Algiers	Djelfa	Blida
Strain	ISA-15	ISA-15	ISA-15	ISA-15
place	Hadjout	Hadjout	Boufarik	Boufarik
Superficy	300 m2	145 m2	360 m2	320 m2
M.E.P	22 – 02 - 2010	03 – 04 - 2010	09 – 04 - 2010	06 – 04 - 2010
Density	10,7	12,4	8,9	11,9
Ventilation	Static	Static	Static	Static
Temperature	S = 30°C G = 29°C F = 21°C	S = 24°C G = 24°C F = 21°C	S = 30°C G = 29°C F = 25°C	S = 30°C G = 29°C F = 25°C
Lighting (Lamp75 W)	S = 03 G = 10 F = 15	S = 02 G = 07 F = 09	S = 03 G = 15 F = 18	S = 02 G = 12 F = 16
Drinkers	S = 12 G = 9 m F = 12 m	S = 19 G = 10,5 m F = 15 m	S = 32 G = 67,5 m F = 67,5 m	S = 34 G = 50 m F = 50 m
Feeders	S = 19 G = 25 F = 25	S = 19 G = 19 F = 19	S = 32 G = 40 F = 60	S = 16 acinètes G = 45 trémies F = 65 trémies
Vaccination	D-3 = N D-14 = Gu D-32 = N	D-5 = N + B.I D-15 = Gu D-21 = N	D-3 = N D-15 = Gu	D-6 = N D-14 = Gu

S= Start, G=Growth, F=Finishing, D: Day, Gu=Gumburo, N= Newcastle, B.I=Infectious bronchitis

However, during this growth rate increased mortality in the 1st building (3.77), and becomes the lowest in the 3rd building (0.91). In the finishing phase the mortality rate is highest in the 1st building (0.90) compared to other livestock buildings (respectively 0, 17, 0.75 and 0.35).

Our results reveal poor animal performance compared with standards set by the guides to farms in the strain used (4, 6, 16, 17, 34, 39, 43, 50). Under these conditions it is imperative to analyze all parameters of broiler breeding, both upstream and downstream production chain. The upstream analysis can highlight a number of shortcomings, primarily the biological material. This is the avian strain ISA-15. It is a semi heavy strain whose average body weights of chicks is between 40 - 45g. In the farms visited, there is great variability tends to lower average body weights recorded in the various barns. This is explained by the age of the chicken production and the wrong sort of chicks at hatcheries. Then, the environmental conditions in buildings are poor (temperature and light intensity below the required standards). Litters have neither the thickness nor the required renewal. For material feeding and watering used, access to each animal is insufficient. The nutritional formulas in particular content in raw materials, namely corn and soybeans, are not always observed (2, 3, 12, 13, 20, 22, 23, 26, 28, 35, 36, 38, 40, 41, 42, 43, 46, 51). Noting that most farmers do not know what the CMV used in food formulations. Downstream, the zootechnical parameters recorded are unreliable compared to the required standards: the average live weight at D-49 must be 3.156g and feed intake by chickens is 6.000g or less. With the same strain and rearing conditions of ITELV Ali Baba, the average body weights of chickens are low (2.494.3g), feed intake per chick is 5.713.5g, feed conversion is 2.29 and the mortality rate is 2.97%. The moraliyu rate observed in the farms visited ranged between 3.5 and 7%, very far from acceptable standards (<3%) (3, 10, 34, 39, 43, 44, 50).

Tab. 2

Thérapeutic Protocols applied in Livestock Buildings.

	1	2	3
D3 – D6	Enrofloxacin (P)	Vit E + Enrofloxacin (P).	Enrofloxacin (P)
D6 – D8		Vit E et AD3E	
D12 – D16	Nutrival		
D17 – D21	Cocciopropan (P)		
D23 – D28	Clamoxyl + Vit.AD3E (C) (Colibacillose respiratory)	Cocciopropan (P)	Vit E + Sélénium (P)
D29 – D31		Neoxyvital (P)	Enrofloxacin
D32 – D38	Amprolium (P).		
D48 – D49		Oxytetracycline Neoxyvital	+

(C)= Curative/ (P)= Préventive/ Antibiotics (ATB) = Enrofloxacin, Oxytétracycline/ Clamoxyl® (Amoxicillin)

Anticoccidial (ATC) = Cocciopropan®, Amprolium®, Néoxyvital® / Vitamins = AD3E, E, Nutrival®, D =Day

Tab 3

Composition of feed used in buildings means farmed

Buildings	1	&	2	3	&	4
Raw material %	S	G	F	S	G	F
Corn	58	60	65	57.9	62.5	67.1
Soybean meal	29	26	21	33.9	30.6	36.3
Bran of wheat	2	3	2	04	03	03
CMV	2	2	2	01	01	01
Dicalcium phosphate	1.2	1.3	1.5	2.20	2.1	1.9
Salt	0.1	0.1	0.1	01	0.85	0.7

S= Start, G=Growth, F=Finishing, D= Day, CMV= vitamin mineral concentrate

Tab. 4

Zootechnical Performances

Building	N°1	N°2	N°3	N°4
Live weight (g)				
Start (D0 - D10)	37	39	35	37
Growth (D11 - D42)	130	200	161,8	126
Finishing (D43 - D49)	1.250	2.110	1.686,7	1.911
Cumulative (J0 - J49)	1.955	2.800	2.367	2.545
Weight Gain (g)				
Start (D0 - D10)	93	161	126,8	88,95
Growth (D11 - D42)	1.120	1.910	1.524,9	1.785,1
Finishing (D43 - D49)	705	690	680	634
Cumulative (D0 - D49)	1.918	2.761	2.332	2.508
Average Weight Gain Daily (G.M.Q)				
Start (D0 - D10)	9,3	16,1	12,7	8,9
Growth (D11 - D42)	35	59,7	47,6	55,8
Finishing (D43 - D49)	141	138	136	126,8
Cumulative (D0 - D49)	38,4	55,2	46,7	50,2
Food ingested by the subject (g)				
Start (D0 - D10)	165,62	192,22	257	263,2
Growth (D11 - D42)	3.827,95	3.833,6	3.387,4	2817,7
Finishing (D43 - D49)	839,48	863,55	1.371	1.760,5
Cumulative (D0 - D49)	4.830,05	4.889,37	5.015,4	4.841,3
Conversion signs (g/g)				
Start DJ0 - D10)	1,78	1,93	2,02	2,95
Growth (D11 - D42)	3,41	2	2,22	1,57
Finishing (D43 - D49)	1,19	1,25	2,01	2,77
Cumulative (D0 - D49)	2,51	1,77	2,15	1,93
Cumulative deaths (%)				
Start (D0 - D10)	2.28	2.61	1.31	2,08
Growth (D11 - D42)	3.77	0.91	1.62	1,02
Finishing (D43 - D49)	0.90	0.17	0.75	0,35
Cumulative (D0 - D49)	6.95	3.69	3.68	3,45
Production signs(I.P)	142,3	290	209	251

I.P = $\frac{\text{Viability} \times \text{G.M.Q.}}{\text{I.C} \times 10}$, S= Start, G=Growth, F=Finishing, D= Day, C= Cumulative.

CONCLUSIONS

All the failures are recorded and affect the average body weights and growth rates throughout the rearing period. Our work has helped highlight the mismanagement of the rearing period, in particular the starting phase, which is a milestone in the successful production of a chicken quality and cost. Thus, the production index is derived from all the zootechnical parameters; it is average when compared to the required(44,50,51).

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