OPERATIONAL BEHAVIOR OF SOME TYPES OF ROOFS FROM HOUSES TO INCREASE BREEDING HENS HEAVY BREEDS

Leonte C. [*], Doina Leonte [**]

* University of Agricultural Sciences and Veterinary Medicine
Animal Science Faculty, 3 Aleea M.Sadoveanu St., 700489 Iaşi; Romania,
e-mail: *famleonte@yahoo.com
[**]doinaleonte@yahoo.com

Abstract

Shelters for laying hens must be equipped with heat and a good ventilation system to ensure dimensional microclimate corespondig. În a paper presented how they influenced the roofs of two warehouses for the operation of breeding hens breed of heavy interior temperature increase which resulted in decreased performance productive.

*Between July 17 -18 month of August , outside temperature varied between 23 and 39 ° C, which has overcome the technological limits of temperature in the two hale.Increase temperature in inside the two halls was affected differently depending on thermal capacity of roof. Decreased most productive performance was recorded at Hall **A**, where the layer of thermo-mineral wool has been almost totally destroyed.*

Key words: birds, roofs, halls, productive performance, thermal insulation

INTRODUCTION

Roof hall „**A”** is the small space of air ventilated, two plates azbestocement which is a vapor barrier of polyethylene film and a layer of thermo mineral. This wool layer has been destroyed over time by rodents, leading to loss of thermal capacity (fig. 2).

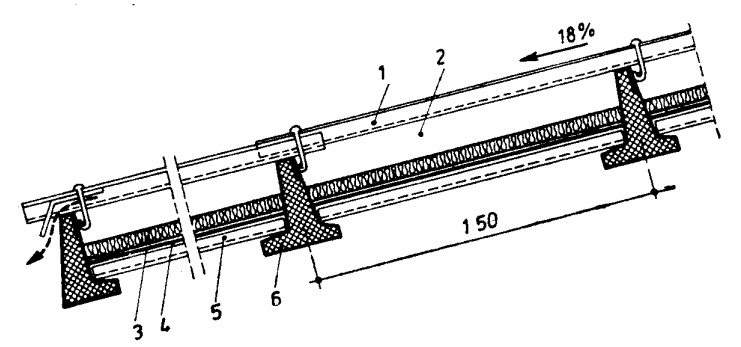

Fig.1. Roof with ventilated air space than:
1 - cement corrugated casing, 2 - ventilated air space, 3 - insulation, 4 - vapor barrier, 5 - substrate of insulation (corrugated asbestos-cement), 6 - prefabricated wedge.

„**B**" Hall has a roof terrace type consists of a support plate of reinforced concrete layer equalization of mixture of sand, cement and water, a vapor barrier layer of expanded polystyrene thermo surface and a warm damp-proof (fig. 2).

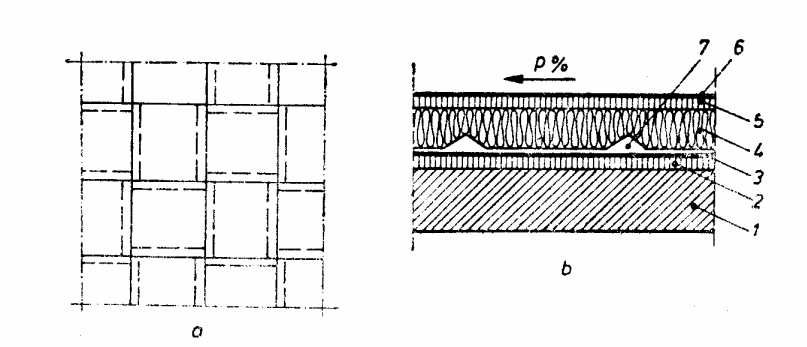

Fig.2 Compact roof (terrace):
a- the distribution of scheme to broadcasters in autoclaved aerated concrete insulation, b-section with a flat roof, fitted with diffusion channels, 1 - Reinforced concrete slab (layer resistance), 2-layer of mortar equalization mixture of sand, cement and water, 3 - vapor barrier, 4 - insulation, 5 - substrate of waterproofing, 6 - waterproofing, 7 - diffusion channels.

The aim of this study was to identify how or behaved in certain operating and closing at the same time to find constructive solutions for improvement, leading to reduction of heat loss in winter and reduce the intake of that summer heat to a positive heat balance in birds halls.

MATERIAL AND METHODS

The study was conducted within the breeding farm in halls **A** and **B** of which are ground and are designed to increase the bedding ground permanent of breeding hens.

Halls races are in the size (100.0 x 12.0) m and a Surface de1200m ². The closure taken in the study were the walls and roofs with small air spaces ventilated hall at **A** and the compact type or terrace at hall**B**.

During the period of observation were recorded temperature outside and inside temperatures in the two production halls, losses through mortality and egg production.

RESULTS AND DISCUSSION

The closure elements have acted as factors in the hall and the external environment and in particular temperature and humidity, to which was added to the destructive rodents, destroying first insulating layer, which was passed on the negative heat capacity of the hall roof **A**.

This situation has required and still requires finding constructive solutions to improve the functionality of the types of roof that is in use, either by repairing their partial or total and to be performed with both lower costs for materials and labor.

To highlight the behavior of the two types of roofs in the fluctuations in temperature outside the environment, to follow the evolution of this parameter of microclimate in the two halls **A** and **B** during the summer. Table 1 are presented to the outside temperature, and temperatures in halls **A** and **B** during 17 July-18 August 2000, and in Table 2 except the temperature was recorded and losses through mortality and egg production.

Table 1

Evolution of temperature and environmental temperature outside the hall **A** (with roof multilayered) and Hall **B** (with compact or roof terrace) between 17.07-18.08.

DATE	Temperature outside	Temperature inside the Hall A	Temperature inside the hall B
17.07.	23 °C	25.0 °C	23.7 °C
18.07	31°C	28.5 °C	25.6 °C
19.07	33°C	32.7 °C	29.9 °C
20.07	33°C	32.9 °C	30.5 °C
21.07	35 °C	34.7 °C	31.9 °C
22.07	36 °C	35.1 °C	33.6 °C
23.07	37 °C	35.3 °C	34.4 °C
24.07	36 °C	35.3 °C	34.0 °C
25.07	36 °C	34.2 °C	34.0 °C
26.07	35 °C	33.2 °C	31.5 °C
27.07	35 °C	33.0 °C	31.4 °C
28.07	36 °C	34.0 °C	31.8 °C
29.07	32 °C	31.2 °C	30.3 °C
30.07	33 °C	32.1 °C	30.9 °C
31.07.	33 °C	32.1 °C	30.6 °C
1.08.	36 °C	33.9 °C	32.5 °C
2.08	38 °C	36.1 °C	34.2 °C
3.08	39 °C	37.1 °C	35.0 °C
4.08	39 °C	37.0 °C	36.2 °C
5.08	35 °C	32.8 °C	31.6 °C

6.09	30 °C	29.8°C	28.4 °C
7.08	30 °C	29.8°C	28.0 °C
8.08	34 °C	31.5 °C	30.0 °C
9.08	34 °C	33.0 °C	31.5 °C
10.08	29 °C	28.4 °C	26.1 °C
11.08	29 °C	29.3 °C	27.3 °C
12.08	30 °C	29.3 °C	27.5 °C
13.08	30 °C	30.4 °C	28.7 °C
14.08	30 °C	30.5 °C	28.6 °C
15.08	32 °C	31.0 °C	29.1 °C
16.08	30 °C	28.9 °C	28.2 °C
17.08	31 °C	29.3 °C	28.8 °C
18.08.	30 °C	28.9 °C	27.9 °C

* Record temperatures have been made at 18.ºº

Table 2

Evolution mortality losses and production of eggs at **A** hala hala **B** respectively in the period 17.07-18.08.

DATE	**Losses through death (head / day.)**		**Production of eggs (pcs / day.)**	
	Hall **A**	Hall **B**	Hall **A**	Hall **B**
17.07.	3	1	3420	3450
18	4	3	3390	3450
19	5	7	3360	3480
20	8	3	3360	3480
21	8	3	3300	3480
22	12	8	3270	3450
23	26	16	3270	3390
24	58-1.27%	20-0.40%	3210-70.5%	3300-71.7%
25	4	2	3150	3270
26	5	3	3150	3270
27	1	4	3030-66.6%	3150-68.4%
28	3	2	3030	3150
29	4	4	3060	3120
30	1	3	3060	3120
31.07.	5	2	3060	3120
1.08.	7	2	3060	3150
2	8	6	3030	3120
3	33	8	3030	3120
4	90-1.98%	16-0.34%	2940	3060
5	13	9	2820	3030
6	7	2	2610-57.4%	2970-64.6%
7	3	2	2610	2970
8	3	6	2700	3000
9	6	4	2700	3000

10	3	1	2850	3000
11	3	7	2880	3000
12	4	3	2880	2970
13	10	4	2880	2880
14	12	2	2790	2880
15	2	5	2700	2880
16	1	3	2610	2910
17	4	-	2610	2880
18.08.	4	1	2670	2910

* The number of hens on average hall **A** - 4550 head
* The number of hens on average hall **B** - 4600 head

Evolution of of temperature inside the two halls depending on the temperature outside is shown in fig. 3, and losses through mortality and egg production in fig. 4 and fig.5.

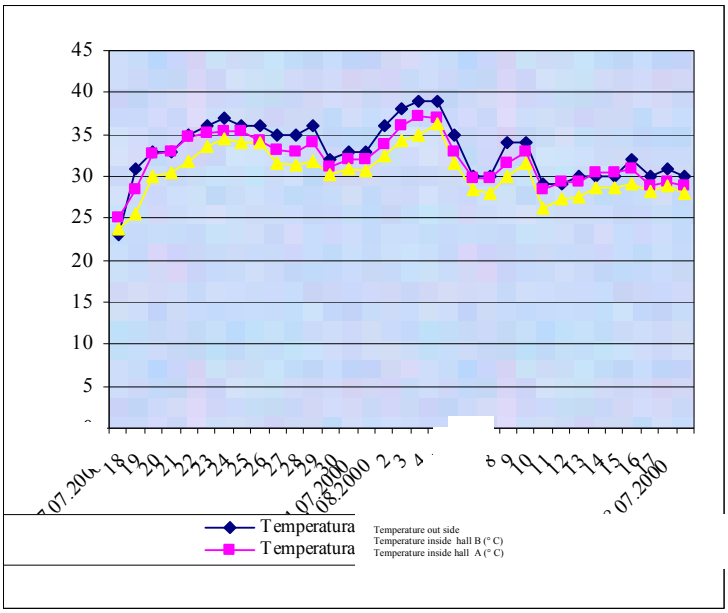

Fig. 3 Evolution of temperature inside the hall **A** and Hall **B** depending on the temperature outside

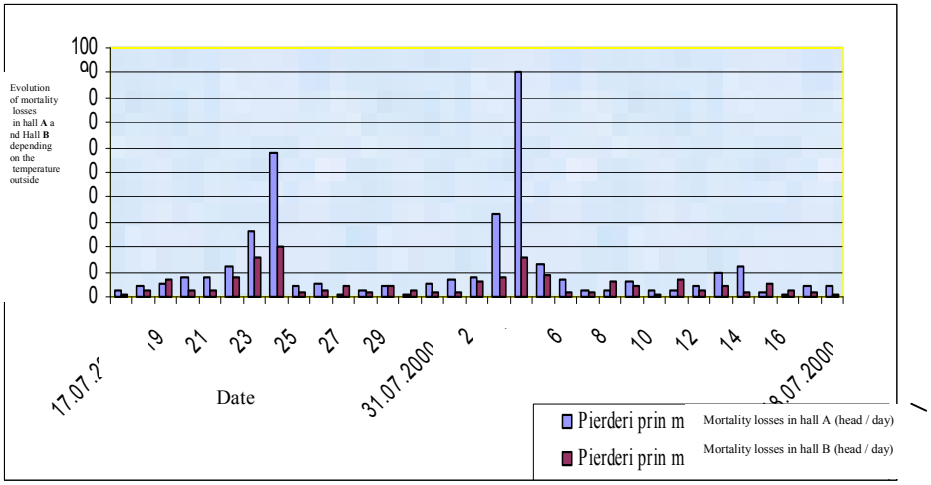

Fig. 4 Evolution of mortality losses in hall **A** and Hall **B** depending on the temperature outside

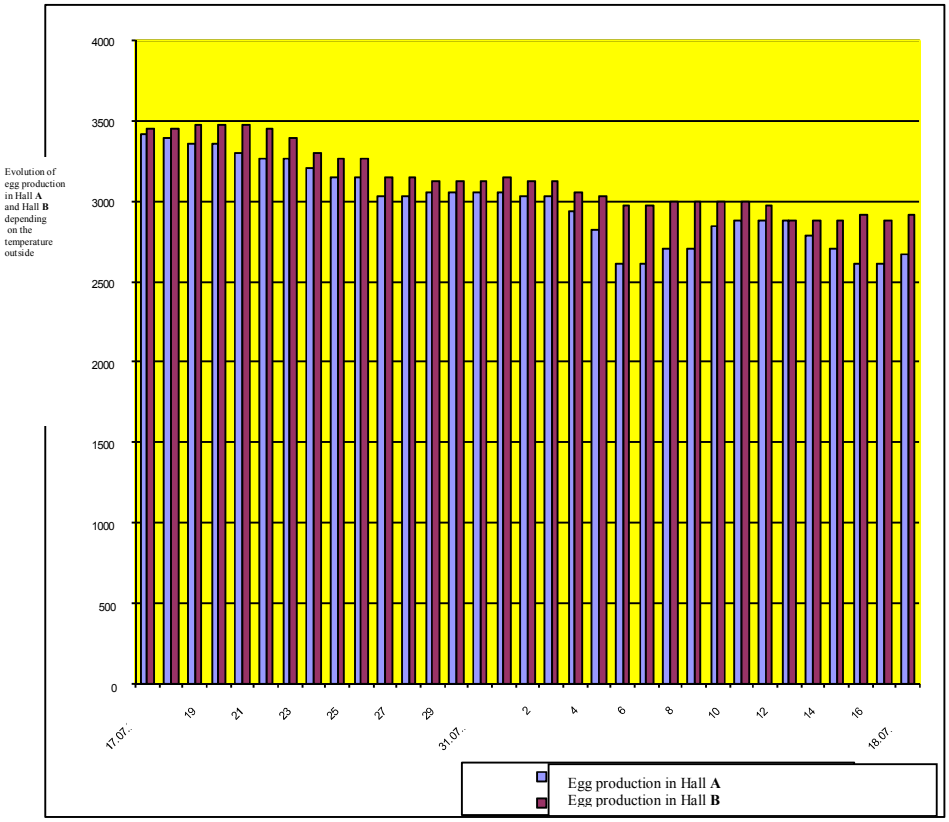

Fig. 5 Evolution of egg production in Hall **A** and Hall **B** depending on the temperature outside

CONCLUSIONS

This work was a part of a research project supported by a grant from CNCSIS, Idei II. România. We thank:

1. During the summer when the outside temperature had high values, used in the roofs of the halls breeding farm breeds heavy have behaved differently depending on their structure.
2. **"A"** hall to a long period of use due to many factors which have acted on them (humidity, temperature, rodents, microorganisms) layers some components were damaged affecting heat capacity of the roof.
3. On the roof with small air spaces ventilated, the layer most affected was termoizolația plates of mineral wool, and the roof of the terrace was so degraded and waterproofing, favors infiltrations in the halls, the occurrence of condensation on the surface and internal roof structure and the heat loss during winter, adversely affecting the heat balance, and for contributing to increasing summer heat intake in halls.
4. During the period 23-24 July when the outside temperature reached 37 ° C in Hall **A** of the roof plate azbestocement recorded a mortality of

1.27%, while in hall 8 with roof terrace, there was a percentage of only 0.40%. The percentage of lay decreased by 3.9% in hall **A** and 3.3% in hall **B**.

5. During August 3-4 when the outside temperature reached 39 ° C in Hall **A** of the roof plate azbestocement recorded a mortality of 1.98%, while in hall **B** with roof terrace, was a percentage only 0.34%. The percentage of lay decreased by 9.2% in hall **A** and by 3.8% in hall **B**.

REFERENCES

1. Casandra Elena 1978 - Microclimate, important factor in increasing egg production. Rev. for breeding, no. 7.
2. Călin L. et al. 1970 – Agro- zootechnical production unities of industrial type. Tehnica Publishing House Bucharest.
3. Gligor V., et al. 1957 - Principles of hygiene in livestock buildings. Ceres Publishing House, Bucharest.
2. Leonte C. 2006 - Elements of Construction, Alfa Publishing House, Iaşi.
4. Şerban Al. Et al. 1981 - Construction livestock, Didactic and Pedagogic Publishing House Bucharest.
5. Ştefănescu M. et al. 1980 - Concerns in order to save energy in the halls of intensive bird. Rev. of breeding, No.12.
6. Usturoi M. G., Paduraru G., 2005. - Growth Technologies bird, Alfa Publishing House, Iaşi.
7.Doina Leonte, 2009- Noțiuni de zooigienă, Ed. Ion Ionescu de la Brad, Iaşi, pag.146-164.
8.Drăghici,C. 1979 - Microclimatul adăposturilor pentru animale, Ed. Ceres, Bucureşti, pag.198-210.
9.***- Ordin nr.75 din 15.08.2005 pentru aprobarea normei sanitary-vgeterinare privind protecția animalelor de fermă
10.*** - Ordin nr.15.08.2005 pentru8 aprobarea normei sanitary-veterinare privind cerințe minime pentru inspecția exploatațiilor în care animalele sunt ținute îm scopuri de fermă.