STUDIES ON THE INFLUENCE OF ENVIRONMENTAL TEMPERATURES IN LAYING CHICKEN HALLS ON PRODUCTIVE PERFORMANCE

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Abstract

Research has focused on how the ambient temperatures ensured during the breeding of laying hens influence their productive performance.. To this end, two batches of birds of equal size (17280 Lohmann Brown hens / batch) were set up in two breeding halls, one of which had no additional thermal insulation (batch A) and a barn with an external heating system (batch B). At the end of the 51 weeks of operation, the birds in group B (thermally insulated hall) had a body weight 0.28% higher, an individual egg production better 1.46% and an average egg intensity higher 1.97% compared to hens accommodated in the hall without additional thermal insulation (batch A). Also in the chickens from batch B (thermally insulated hall) there were lower levels for the rate of exits from the herd (with 0.51%), the average daily consumption of compound feeds (by 0.73%) and the feed conversion index (with 2.23%). In conclusion, it can be stated that the application of additional construction elements on the walls of the halls used for growing laying hybrids (thermosystem) allows the achievement of adequate and constant ambient temperatures, which translates into an improvement in productive performance.

Key words: microclimate, chickens, productive performance, survival rate

INTRODUCTION

Bird productivity is influenced by a number of factors, including the microclimate provided to them. [8].

Heat stress has become a serious problem in the poultry industry, amplified by rising temperatures globally [9, 10].

Seasonal temperature fluctuations in poultry houses are due to their low thermal inertia [5], the technical solutions adopted for cooling / heating the rooms [12] and the amplitude of external atmospheric variations, in accordance with the growth system applied and implicitly the poultry load per unit. surface [11].

Thermal stress compromises the performance of birds by lowering immunity [7] and altering the normal physiology of basic functions [4].

In laying hens, high ambient temperatures have negative effects on the rate of recovery of food [6], blood biochemistry and mineral balance [7], with direct repercussions on productivity [5].

The effects of thermal discomfort are found in reducing the weight of birds, the number of eggs laid and especially the quality of eggs by reducing the share of mineral shell and yolk in the structure of eggs [2, 5].

The extent of these effects depends on the severity and time of exposure of birds to heat stress [1], but they can be mitigated and even annihilated by implementing technical measures [11, 12], some of which are legislated at European level in a package of laws on ensuring the welfare condition [3, 10].

MATERIAL AND METHOD

The biological material was 34560 laying hens belonging to the commercial hybrid "Lohmann Brown", divided into two batches equal in size (batch A = 17280 heads and batch B = 17280 heads) Corresponding to two breeding halls.

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The accommodation of the birds was made in Specht type batteries, ensuring a load of 40 heads. on the cage of 26400 cm^2 (660 cm^2 / bird).

The difference between the two lots was that the hall where the birds from lot B were housed was thermally insulated on the outside with 5 cm expanded polystyrene and cement plaster.

During the 51 weeks of the study (from the age of 20 weeks of the birds until the 70th week, inclusive) the following parameters were recorded:

- ambient temperature dynamics - based on the average daily temperatures (3 determinations / day were performed) the average weekly temperatures were calculated;
- body weight dynamics-individual weighing of specimens from control cages, every 2 weeks;
- dynamics of numerical egg production - by recording the total number of eggs obtained in each egg week.
- egg-laying intensity was calculated with the relations:
  I=Q x 100 / N x K, in which:
  Q= the total number of eggs produced, in "K" days;
  N= the number of birds to which the total egg production was reported (Q).
- food consumption - the total feed consumption (kg n.c./period), the average daily consumption (g n.c./had/day) and the food conversion index (g n.c./egs) were established.
- departures from the herd - the daily number of birds out of the herd was cumulated for each week of life and was related to the average herd in that week.

Where applicable, the data obtained were statistically processed, calculating the arithmetic mean, the standard error of the mean and the coefficient of variation.

RESULTS AND DISCUSSIONS

The dynamic analysis of the ambient temperatures in the two halls indicated the existence of fluctuations, whose size was correlated with the season, but especially with the type of hall used (uninsulated vs. thermally insulated).

For example, in the first week of the investigations when the birds were 20 weeks old (early September), the average temperatures were 24.62 ± 1.42ºC in the hall of batch A and only 21.27 ± 0.98ºC in the hall batch B.

The following control weeks were characterized by a progressive decrease in ambient temperatures in the experimental halls, in parallel with the installation of the cold season, to levels of 17.14 ± 1.72ºC (hall of batch A) and 18.21 ± 1.42ºC (hall of batch B), recorded in the 45th week of life of the birds, respectively, at the end of February.

Further, the temperatures in the two halls started to increase gradually (spring season and then summer), the highest values being recorded in the 70th week of the birds' life (end of August), of 25.81 ± 1.11ºC in the non-thermally insulated hall (batch A), compared to only 21.99 ± 0.89ºC in the hall with thermal system (batch B).

The calculation of the coefficients of variation for the average weekly temperatures in the two halls indicated a medium to very high variability in batch A (V% = 12.37-27.06) and low in batch B (V% = 2.22-9.92) (tab. 1).

Body weight dynamics. Body weight dynamics. At the beginning of the study, respectively when the birds were 20 weeks old, their body weight was substantially equal, being 1668.7 g for those in batch A and 1669.4 g for those in batch B.

The weight of the hens in the two groups followed a slightly ascending line in the following weeks of life, recording values of 1955.7 g (batch A) and 1976.8 g (batch B) at the age of 30 weeks, of 1998.3 g (batch A) and 2010.5 g (batch B) at the age of 40 weeks, 2031.7 g (batch A) and 2040.1 g (batch B) at the age of 50 weeks and 2059 respectively, 3 g (batch A) and 2070.7 g (batch B) at the age of 60 weeks.

Table 1 Ambient temperature dynamics

Month	The age of the birds (weeks).	Batch A		Batch B	
		$\bar{x} \pm s_{\bar{x}}$ (°C)	V%	$\bar{x} \pm s_{\bar{x}}$ (°C)	V%
IX	20	24.62±1.42	15.91	21.27±0.98	7.13
	21	24.15±0.94	14.74	21.21±0.99	7.49
	22	24.77±1.14	13.85	21.17±0.97	8.06
	23	24.25±1.29	16.80	21.01±0.93	8.22
X	24	23.06±0.99	13.13	20.46±0.94	9.74
	25	23.81±1.07	14.22	20.41±0.86	9.65
	26	23.62±1.25	16.90	20.38±0.89	9.13
	27	23.54±0.79	15.74	20.12±0.94	8.98
	28	22.50±1.07	14.44	20.03±0.95	8.13
XI	29	19.25±0.82	15.21	19.88±0.99	8.84
	30	19.11±1.19	16.48	19.74±1.02	8.51
	31	18.74±1.13	15.91	19.71±1.02	9.65
	32	18.63±1.26	17.89	19.70±1.03	9.89
XII	33	18.44±1.28	18.35	19.52±1.01	9.92
	34	18.16±1.64	23.85	19.49±1.01	9.04
	35	17.94±1.84	27.06	19.45±1.05	8.85
	36	17.90±1.77	26.15	19.41±1.06	8.21
I	37	17.85±1.51	22.28	18.94±1.09	8.03
	38	17.84±1.75	25.94	18.81±1.17	8.44
	39	17.73±1.64	24.44	18.72±1.22	9.29
	40	17.78±1.74	25.81	18.65±1.37	9.75
	41	17.65±1.75	26.19	18.58±1.45	9.13
II	42	17.82±1.84	27.21	18.44±1.43	8.74
	43	17.90±1.53	22.71	18.39±1.44	8.58
	44	17.97±1.63	24.03	18.24±1.43	8.41
	45	17.14±1.72	25.15	18.21±1.42	7.02
III	46	18.26±1.80	26.02	19.32±1.41	6.75
	47	18.18±1.63	23.74	19.39±1.26	7.38
	48	18.22±1.39	20.11	19.42±1.25	7.25
	49	18.25±1.33	19.31	19.54±1.27	6.11
IV	50	18.31±1.26	18.25	19.77±1.27	8.88
	51	19.36±1.25	17.96	19.19±1.26	8.56
	52	20.44±1.09	15.72	19.99±1.24	8.19
	53	20.84±1.20	17.21	19.02±1.23	9.08
V	54	21.53±1.18	16.84	20.09±1.22	7.77
	55	21.50±1.13	16.13	20.12±1.18	7.13
	56	21.58±1.12	15.98	20.17±1.15	6.74
	57	21.66±1.11	15.74	20.22±1.14	6.52
VI	58	22.75±1.12	15.79	20.29±1.10	5.89
	59	22.81±1.11	15.62	20.34±1.05	6.13
	60	22.86±1.07	15.03	20.36±1.03	4.85
	61	22.89±1.06	14.77	20.38±1.01	4.45
VII	62	23.93±1.08	14.29	21.42±1.03	4.05
	63	23.66±1.15	14.68	21.54±1.02	3.68
	64	23.95±1.18	14.22	21.69±1.06	3.38
	65	24.28±1.24	14.01	21.73±1.14	3.10
VIII	66	24.59±1.23	13.20	21.82±1.13	2.84
	67	24.74±1.22	13.11	21.86±1.08	2.22
	68	25.11±1.21	12.98	21.90±1.05	3.67
	69	25.37±1.12	12.68	21.95±0.91	3.03
	70	25.81±1.11	12.37	21.99±0.89	3.71

At the end of the study (70th week of life of the birds), body weight stood at 2097.5 g in batch A and 2103.4 g in batch B.

The value of the coefficients of variation (V% = 10.4-23.64 in the case of birds in batch A and, respectively, V% = 10.15-22.89 in the case of birds in batch B) indicates a medium to high variability of character studied; this phenomenon was more pronounced in the second part of the exploitation cycle, due to the different rhythm of laying which required lower or higher nutrient consumption (tab. 2).

Table 2 Weight dynamics of the studied birds

Age of the birds (weeks).	Standard weight (g)	Achieved weight (g):			
		Batch A		Batch B	
		$\bar{X} \pm s_{\bar{x}}$ (g)	V%	$\bar{X} \pm s_{\bar{x}}$ (g)	V%
20	1583-1697	1668.7±15.60	10.40	1669.4±14.17	10.15
22	1709-1871	1753.8±18.13	10.46	1754.1±17.47	10.62
24	1777-1964	1852.8±22.30	12.48	1856.6±21.49	10.98
26	1805-1995	1912.4±25.29	13.95	1916.8±23.11	12.74
28	1815-2007	1936.8±25.11	13.73	1952.2±23.93	13.15
30	1824-2016	1955.7±29.17	15.85	1976.8±26.98	14.72
32	1829-2021	1962.2±29.61	16.23	1988.2±28.65	15.64
34	1834-2028	1976.7±30.19	16.49	1990.5±29.27	15.91
36	1838-2032	1983.2±30.36	16.58	1998.6±29.77	16.12
38	1843-2037	1992.3±30.48	16.60	2006.5±30.95	16.72
40	1848-2042	1998.3±30.79	17.77	2010.5±31.73	17.11
42	1853-2049	2004.3±31.43	17.92	2015.5±32.53	17.49
44	1857-2053	2011.0±34.00	18.29	2021.6±33.35	17.90
46	1862-2058	2016.5±37.47	20.13	2027.5±35.76	19.14
48	1867-2063	2025.9±39.60	21.37	2032.9±38.16	20.38
50	1872-2070	2031.7±40.44	21.51	2040.1±39.25	20.88
52	1876-2074	2038.2±41.00	21.83	2046.8±39.82	21.16
54	1881-2079	2044.7±41.23	21.95	2051.6±40.13	21.28
56	1886-2084	2049.7±42.19	21.28	2058.0±41.12	21.75
58	1891-2091	2051.5±42.37	21.31	2063.7±41.48	21.98
60	1895-2095	2059.3±43.11	21.55	2070.7±42.13	22.09
62	1900-2100	2064.7±43.20	22.61	2076.3±42.55	22.34
64	1905-2105	2070.9±43.25	22.27	2082.5±42.69	22.38
66	1910-2112	2076.2±44.32	23.38	2090.6±43.27	22.59
68	1914-2116	2082.4±45.28	23.52	2098.9±43.33	22.61
70	1919-2121	2097.5±45.37	23.66	2103.4±43.97	22.89

The mortality. In the age period 20-30 weeks, cumulative mortality was 0.93% in group A and 0.80% in group B, in the period 31-40 weeks of 0.93% in group A and 0.68 % in group B, in the period 41-50 weeks of 0.75% in group A and of 0.80% in group B, in the period 51-60 weeks of 0.44% in group A and of 0.62% in group B, and in the period 61-70 weeks of 1.10 in batch A and 0.74% in batch B.

It should be mentioned that, in the cold season (December-February), the outflows totaled 221 heads. (1.29%) in batch A and only 160 heads (0.93%) in batch B; in the warm season (June-August) in batch A 205 birds were removed from the herd (1.22%), and in batch B only 162 heads (0.96%).

Over the entire study period (20-70 weeks), the mortality rate was 4.15% in birds in batch A and only 3.64% in those in batch B (table 3).

Eggs production. In the 51 weeks of exploitation (period 20-70 weeks), in batch A of hens there was an average herd of 16,928.5 heads, which laid a total number of 4,756,570 eggs, returning an individual production of 280, 98 eggs / bird.

In the case of birds from batch B, the average number was 16,970.0 heads, the total egg production of 4,838,656 eggs, and the individual production of 285.13 eggs / bird.

Table 3 Mortality of the studied birds

Age of the birds (weeks).	Batch A			Batch B		
	Weekly effective (heds)		Cumulative mortality (%)	Weekly effective (heds)		Cumulative mortality (%)
	at the beginning	the end		at the beginning	the end	
20	17280	17271	0.05	17280	17268	0.07
21	17271	17253	0.15	17268	17255	0.14
22	17253	17235	0.25	17255	17240	0.23
23	17235	17216	0.36	17240	17231	0.28
24	17216	17205	0.42	17231	17222	0.33
25	17205	17194	0.48	17222	17207	0.42
26	17194	17180	0.56	17207	17181	0.57
27	17180	17165	0.65	17181	17175	0.60
28	17165	17147	0.75	17175	17162	0.68
29	17147	17125	0.88	17162	17150	0.75
30	17125	17116	0.93	17150	17141	0.80
31	17116	17104	1.00	17141	17133	0.85
32	17104	17091	1.08	17133	17120	0.93
33	17091	17073	1.19	17120	17106	1.01
34	17073	17060	1.27	17106	17095	1.07
35	17060	17048	1.34	17095	17090	1.10
36	17048	17033	1.43	17090	17081	1.15
37	17033	17018	1.52	17081	17074	1.19
38	17018	17001	1.62	17074	17062	1.26
39	17001	16985	1.71	17062	17050	1.33
40	16985	16960	1.86	17050	17025	1.48
41	16960	16937	2.00	17025	17011	1.56
42	16937	16918	2.11	17011	17002	1.61
43	16918	16902	2.20	17002	16990	1.68
44	16902	16885	2.30	16990	16975	1.77
45	16885	16870	2.39	16975	16960	1.86
46	16870	16860	2.45	16960	16945	1.95
47	16860	16851	2.50	16945	16923	2.08
48	16851	16847	2.52	16923	16912	2.15
49	16847	16839	2.57	16912	16897	2.24
50	16839	16832	2.61	16897	16890	2.28
51	16832	16827	2.64	16890	16888	2.29
52	16827	16820	2.68	16888	16873	2.38
53	16820	16815	2.71	16873	16864	2.43
54	16815	16808	2.75	16864	16852	2.50
55	16808	16798	2.81	16852	16847	2.53
56	16798	16790	2.86	16847	16831	2.62
57	16790	16782	2.91	16831	16822	2.67
58	16782	16774	2.96	16822	16805	2.77
59	16774	16768	3.00	16805	16792	2.85
60	16768	16760	3.05	16792	16784	2.90
61	16760	16752	3.10	16784	16767	3.00
62	16752	16741	3.17	16767	16751	3.10
63	16741	16735	3.21	16751	16745	3.14
64	16735	16722	3.29	16745	16736	3.19
65	16722	16703	3.40	16736	16728	3.24
66	16703	16683	3.52	16728	16715	3.32
67	16683	16661	3.65	16715	16701	3.40
68	16661	16636	3.80	16701	16687	3.48
69	16636	16609	3.96	16687	16672	3.57
70	16609	16577	4.15	16672	16660	3.64

The average weekly production was 1.38-6.38 eggs / bird / week for the specimens from batch A and respectively 1.33-6.52 eggs / bird / week for those from batch B (tab. 4).

Table 4 Eggs production and laying intensity of the studied birds

Age of the birds (weeks)	Standard egg intensity (%)	Batch A				Batch B			
		Average effective (hed)	Total production (pieces)	Cumulative production (egg/hen)	Egg intensity (%)	Average effective (hed)	Total production (pieces)	Cumulative production (egg/hen)	Egg intensity (%)
20	45.0	17275.5	23920	1.38	19.78	17274.0	22950	1.33	18.98
21	65.1	17262.0	56417	4.65	45.69	17261.5	42075	3.77	48.75
22	80.2	17244.0	86946	9.69	72.03	17247.5	93024	9.16	77.05
23	88.3	17225.5	102685	15.65	85.16	17235.5	106955	15.37	88.65
24	91.9	17210.5	106294	21.83	88.23	17226.5	109456	21.72	90.77
25	93.0	17199.5	106900	28.05	88.79	17214.5	109753	28.10	91.08
26	93.7	17187.0	107725	34.32	89.54	17194.0	111500	34.58	92.64
27	94.1	17172.5	108980	40.67	90.66	17178.0	111805	41.09	92.98
28	94.4	17156.0	109536	47.05	91.21	17168.5	112019	47.61	93.21
29	94.7	17136.0	109180	53.42	91.02	17156.0	111770	54.12	93.07
30	94.8	17120.5	108746	59.77	90.74	17145.5	111605	60.63	92.99
31	94.9	17110.0	107997	66.08	90.17	17137.0	110902	67.10	92.45
32	94.8	17097.5	106936	72.33	89.35	17126.5	110187	73.53	91.91
33	94.7	17082.0	106660	78.57	89.20	17113.0	109465	79.93	91.38
34	94.6	17066.5	106468	84.81	89.12	17100.5	109062	86.31	91.11
35	94.4	17054.0	104897	90.96	87.87	17092.5	108329	92.65	90.54
36	94.2	17040.5	104516	97.09	87.62	17085.5	107938	98.97	90.25
37	93.9	17025.5	104281	103.21	87.50	17077.5	107744	105.28	90.13
38	93.7	17009.5	104076	109.33	87.41	17068.0	107540	111.58	90.01
39	93.5	16993.0	103392	115.41	86.92	17056.0	107142	117.86	89.74
40	93.3	16972.5	102959	121.48	86.66	17037.5	106251	124.10	89.09
41	93.0	16948.5	101722	127.48	85.74	17018.0	105879	130.32	88.88
42	92.7	16927.5	101370	133.47	85.55	17006.5	105558	136.53	88.67
43	92.4	16910.0	101135	139.45	85.44	16996.0	102804	142.68	86.41
44	92.1	16893.5	100836	145.42	85.27	16982.5	102651	148.72	86.35
45	91.7	16877.5	99476	151.31	84.20	16967.5	102465	154.76	86.27
46	91.4	16865.0	99331	157.20	84.14	16952.5	101746	160.76	85.74
47	91.1	16855.5	99181	163.08	84.06	16934.0	100900	166.72	85.12
48	90.7	16849.0	97904	168.89	83.01	16917.5	99854	172.62	84.32
49	90.3	16843.0	97587	174.68	82.77	16904.5	99505	178.51	84.09
50	89.8	16835.5	97272	180.46	82.54	16893.5	98979	184.37	83.70
51	89.4	16829.5	96413	186.19	81.84	16889.0	98255	190.19	83.11
52	89.0	16823.5	95684	191.88	81.25	16880.5	97615	195.97	82.61
53	88.6	16817.5	95402	197.55	81.04	16868.5	97463	201.75	82.54
54	88.1	16811.5	94921	203.20	80.66	16858.0	96966	207.50	82.17
55	87.6	16803.0	94626	208.83	80.45	16849.5	96421	213.22	81.75
56	87.1	16794.0	94070	214.43	80.02	16839.0	95760	218.91	81.24
57	86.7	16786.0	93872	220.02	79.89	16826.5	94688	224.54	80.39
58	86.1	16776.0	91750	225.49	78.13	16813.5	93908	230.12	79.79
59	85.6	16771.0	90572	230.89	77.15	16798.5	92755	235.64	78.88
60	85.1	16784.0	90125	236.26	76.71	16788.0	92297	241.14	78.54
61	84.5	16756.0	88497	241.54	75.45	16775.5	91160	246.57	77.63
62	84.0	16746.5	88025	246.81	75.09	16759.0	89850	251.93	76.59
63	83.4	16738.0	87687	252.05	74.84	16748.0	88853	257.24	75.79
64	82.9	16728.5	86443	257.22	73.82	16740.5	88157	262.51	75.23
65	82.4	16712.5	86079	262.37	73.58	16732.0	87808	267.76	74.97
66	81.8	16693.0	84881	267.45	72.64	16721.5	86418	272.93	73.83
67	81.2	16672.0	83700	270.47	71.72	16708.0	85928	275.07	73.47
68	80.6	16648.5	82055	273.40	70.41	16694.0	84734	278.15	72.51
69	80.0	16622.5	81404	277.29	69.96	16679.5	83831	282.18	71.80
70	79.4	16593.0	77879	280.98	67.05	16666.0	82433	285.13	70.66

Egg intensity. At the beginning of laying (the 20th week of life of the birds) the laying intensity was only 19.78% for the birds from batch A and 18.98% for those from batch B, because in the 28th week to register the highest intensities of laying, of 91.21% for the specimens from batch A and 93.21% for those from batch B.

In the following weeks, the laying intensity of birds gradually decreased, to levels of 86.66% (batch A) and 89.09% (batch B) in the 40th week, of 82.54% (batch A) and 83.70% (batch B) in the 50th week, 76.71% (batch A) and 78.54% (batch B) in the 60th week and 67.05% respectively (batch A) and 70.66% (batch B) in the 70th week.

Throughout the studied period (20-70 weeks), the average egg intensity was 80.37% for hens distributed in batch A and 82.34% for those spread in batch B (Table 4).

Feed consumption. In the birds of batch A, the average daily consumption was 123.26 g nc / head / day in the first stage of feeding (period 20-40 weeks) and 135.27 g nc / head / day in the second stage of feeding feed (41-70 weeks), while the feed conversion index was at levels of 149.89 g nc / egg and 177.27 g nc / egg, respectively.

In the case of birds in group B, the average daily consumption of compound feed was 122.49 g nc / head / day in the first feeding stage (20-40 weeks) and 133.96 g nc / head / day in the second feed stage (41-70 weeks), and the feed conversion index of 145.86 g nc / egg (feed stage I) and 174.12 g nc / egg (feed stage II).

The analysis of combined feed consumption for the entire period studied (20-70 weeks) showed values of 130.15 g nc / head / day (hens in batch A) and 129.19 g nc / head / day (hens in batch B) for the average daily consumption and respectively of 165.36 g nc / egg (batch A) and of 161.75 g nc / egg (batch B) for the feed conversion index (table 5).

Table 5 Consumption of compound feeds in the studied birds

The period of age	Specification	Batch	
		A	B
20-40 weeks (147 days)	Average number (heads)	17120,0	17152,5
	Feed consumed (kg / batch / period)	310200	308850
	Average daily consumption (g / head / day)	123,26	122,49
	Egg production (pieces / lot / period)	2.069.511	2.117.472
	Feed conversion rate (g / egg)	149,89	145,86
41-70 weeks (210 days)	Average number (heads)	16768,5	16842,5
	Feed consumed (kg / batch / period)	476350	473800
	Average daily consumption (g / head / day)	135,27	133,96
	Egg production (pieces / lot / period)	2.687.059	2.721.184
	Feed conversion rate (g / egg)	177,27	174,12
20-70 weeks (357 days)	Average number (heads)	16928,5	16970,0
	Feed consumed (kg / batch / period)	786550	782650
	Average daily consumption (g / head / day)	130,15	129,19
	Egg production (pieces / lot / period)	4.756.570	4.838.656
	Feed conversion rate (g / egg)	165,36	161,75

CONCLUSIONS

The results concerning the productive performance of the laying hen hybrid "Lohmann Brown" housed in halls with improved microclimate (thermally insulated hall) led to the following conclusions:

- **the ambient temperatures** showed low oscillation limits in the hall corresponding to batch B (18.21-21.99ºC) and much higher in the one where the birds from batch A were housed (17.14-25.81ºC);
- **the body weight** of the birds from the two batches was in the standard curve of the hybrid used, with the mention that it was higher by 0.02-1.31% for the specimens from batch B;
- **the mortality** were lower by 0.51% for birds in batch B (3.64% vs. 4.15%); the mortality rate for the two groups of birds was below that specified in the growth guide of the hybrid used (4.8%);
- **egg production** was 1.46% higher in hens from batch B (285.13 eggs / bird vs. 280.98 eggs / bird), but both groups

of birds were below the potential of the Lohmann Brown hybrid (306.9 egg/bird), being lower by 8.45% (batch A) and respectively by 7.09% (batch B);

- **combined feed consumption** was more convenient for batch B chickens (average consumption = 129.19 g nc / head / day; conversion rate = 161.75 g nc / egg), being lower by 0.74% and respectively, by 2.23% than the consumptions made by the birds of batch A.

The conclusion of this study was that the performance of laying hens is influenced, among others, by the temperature level in the halls used, and the application of appropriate constructive measures would allow an improvement of the main production indicators and implicitly the economic ones.

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