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THE INFLUENCE DENSITY OF POPULATION AND SEX OF FATTENED CHICKENS ON THE KALO IN THE TRANSPORT AND RANDMAN OF SLOUGHTERED

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ABSTRACT: The primary objective of this study was to investigate the influence of population density and sex of chickens on transport kalo and slaughter yield chicken hybrids Cobb 500. The study was carried out on 225 day-old chicks Cobb 500, which were placed in 3-square-foot boxed cubicles with five different population density. The control group (K_0) was populated in a density of 15 chickens / m² which is a technological standard, and the experimental groups K_1 , K_2 , K_3 and K_4 were populated with density of 13 chickens / m², 14 chickens / m², 16 chickens / m² and 17 chickens / m² of floor pads. When choosing chickens, it was considered that the chickens of the experimental groups were approximately the same mass. Selected chicken specimens of the same sex ratio 50:50 (ten male and ten female) were scattered with rings, with the number of records attached to their legs. The rings are made of modified plastic resistant to water and high temperature, avoiding the possibility of damage to the numbers and the determination of the number of sample chickens. Before slaughter, chickens were rehearsed for the purpose of determining the kalo in the carriage, after which they were chained to, a chain conveyor, thus commencing the slaughter process. After slaughtering, we tested the slaughter of slaughtered chickens for the purpose of establishing the randman slaughter. Nutrition and environmental conditions were the same for all chickens. For the purpose of questioning the production parameters after a completed 42-day fattening period, 10 male and 10 female chicks of each sample group were selected by the random sample method. The data were analyzed by statistical program SPSS 15.0 (SPSS Inc., Chicago, IL, USA).

Keywords: fattening chickens, population density, kalo in transport, randman slaughter

INTRODUCTION

The production and consumption of poultry meat in most developed countries, as well as in us, has been following the trend of growth for the last ten years. The high percentage of poultry meat in general, especially chicken, is based on the nutritional properties of this meat in human nutrition. The fact that chicken meat is high protein content, and that fat content is very low in chicken meat in dietetic products. This explains the growing rise in consumption of chicken meat in all populations.

The success of chicken meat production is based on the selection of best commercial hybrids, the implementation of appropriate technological solutions for accommodation and nutrition, and the application of non-specific and specific health care measures. In order to improve production results and to preserve good health and welfare of chickens, various modifications in the technological processes of chicken production are used.

Residual density has recently been the subject of many studies in chicken life. Many authors who carried out these studies, in their experiments, made great differences in the density of chickens per m². Imports were made with a density variation of 5, 10, 15 and 20 units per m², and there were statistically significant differences between this

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range of density on production and slaughter parameters. For this reason, all efforts of researchers in this area are aimed at finding adequate population density i.e. optimum number of chickens per m², so that the welfare of chicks as well as the economy of production are not endangered.

Population density is considered to be one of the most important factors of the environment due to the determined impact on the growth rate of broiler chickens. In addition to this direct impact of population density indirectly influences the formation of microclimates in the building and the formation of other environmental factors. Also, the breadth of the feeding space is in function of population density. A large number of researches were carried out in order to determine the optimum population density both from the point of view of economic results and from the point of view of the market or consumers (Z. Škrbić et al., 2008).

Z. Škrbić et al. (2008) investigated the possibility of improving certain clown parameters of broiler chickens using a lower population density of 12 chickens per square meter of floor pad compared to a control group of chickens populated with a density of 16 chickens per square meter. In the study, the authors found that body weight before slaughter was higher in broiler counts in the sample population, with a population density of 12 chickens per square meter compared to the control population of 16 chickens per square meter. As a result of larger body mass before slaughter, broths of the experimental group were found to have a significantly higher mass of treated carcasses. Differences in relative yields of treated carcasses between the examined groups were not significant. The shares of valuable hull parts in broilers of both sexes were somewhat higher in the control group than in the control group. On the carcasses of investigated male chickens using less density of population, the highest share of breast was increased, while the proportion of thigh was increased on carcasses of examined female chicks.

Thus S.Mitrovica et al. (2005) obtained the most favorable results with population density of 15-17 chickens per m² in their population density research and found that the density of population has a statistically significant effect on the daily growth and the value of the production index. The same authors found that there was no statistically significant influence on the length of the rat or the weight of one-day chickens on the production parameters.

Also, Z. Škrbić et al. (2009) examined the definition of broiler welfare in different population density assessment capabilities of movement (gait score), feathering, incidence and degree of hock burns, foot pad lesions and identifying the biochemical blood parameters (glucose concentration, concentration of total cholesterol) as indicators of stress. One-day chickens of the Hubbard genotype were spread in the box of underfloor heating systems in 3 population density and 5 repetitions of each treatment.

Treatment A was a population density of 10 chickens per square meter; treatment B, 13 chickens / m² and treatment C, 16 chickens / m². The results of the experiments indicate the inefficiency of the difference between broiler groups' probability of movement, the condition of the skin and the leg, the stress indicator. Generally, the welfare of broilers in all sample groups was satisfactory. However, the established tendencies of deterioration of the quality of the mat, the increase in the frequency of poorer ratings of the ability to move, the inflammation of the wrist and the lesion on the foot pad with the increase in population density, indicate the importance of this breeding factor and the need to define limiting population density from the aspect of welfare of broilers but also the economy of production.

H. B. Tong et al. (2012) evaluated the impact of population density on growth performance, hull yield and immune status of fattening chickens. Chicken population density in this experiment was 25, 35, and 45 chickens / m² from the 1st to the 28th day and 12.5, 17.5 and 22.5 chickens / m² from the 29th to the 42nd day, low, medium and high population density, respectively. The body weight of chickens after 28 and 42 days of age was statistically significantly reduced by increasing the density of chicken's population.

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Significant research by the author I. Estevez (2007), which included the examination of the impact of population density on the poultry industry, primarily on the management of cost benefit analyzes and economic gains in production, as well as on cloning parameters and welfare of chickens in turkey. The author of the study shows that by increasing the density of population there are negative consequences for the well-being and health of chickens in the worm, which directly affects the growth, mortality and other production and slaughter parameters and thus the economic justification of production. This research has shown that the health and welfare of chickens will be compromised if the density of population is less than 0.0625 to 0.07 m² per one chicken.

The highest number of studies conducted so far is related to the influence of population density on production and slaughter parameters of fattening chicks (Z. Škrbić and Saras 2011, 2009, 2008, A. Sekeroglu, 2011, Pavlovski et al 2009, S. Bogosavljević- Bošković et al 2005, J. Moriera et al 2006, D. Nembilwi, 2002, HHM Hassaninen, 2011, W. Molee et al, 2011, MS Barcho et al 2006, P. Sørensen et al.

MATERIALS AND METHODS

The survey was conducted on 225 day-old Cobb 500 chickens, which were placed in 3-square-foot boxed squares with five different population density. The control group (K_0) was populated in a density of 15 chickens / m² which is a technological standard, and the experimental groups K_1, K_2, K_3 and K_4 were populated with density of 13 chickens / m², 14 chickens / m², 16 chickens / m² and 17 chickens / m² of floor pads. Nutrition and environmental conditions were the same for all chickens.

When choosing chickens, it was considered that the chickens of the experimental groups were approximately the same mass. Selected chicken specimens of the same sex ratio 50:50 (ten male and ten female) were scattered with rings, with the number of records attached to their legs. The rings are made of modified plastic resistant to water and high temperature, avoiding the possibility of damage to the numbers and the determination of the number of sample chickens. Before slaughter, chickens were rehearsed for the purpose of determining the kalo in the transport, after which they were chained to a chain conveyor, thus commencing the slaughter process described in the previous chapter.

After the slaughter was carried out, the cooling and weighing of the carcasses was carried out to determine the slaughter standard. All the data are recorded in the mirror book. Control of the temperature and relative humidity of the air, the ventilation of the object, the health of the chickens, the consumption of food and the control of chickens of chickens every week at the same time and in the same order.

Immediately in the selection of one-day chickens in the incubator station, individual chicken blood samples (random sample method) were taken, followed by maternal breast immunity and a designated vaccine program for chicken vaccination after 10, 15 and 26 days of age. After each vaccination, vitaminization was performed over a period of three days (AD_3 E vitamin) according to instructions.

Prior to slaughter, the competent veterinarian has found that the chickens are healthy, and accordingly issued a certificate on the health status of the chickens.

The transport of chickens from farm to slaughterhouse was carried out in plastic wrappers with a leak proof bottom, so that the secretions would not fall on the chickens in the lower ranks. Plastic casings are arranged in a vehicle so as

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to allow maximum air access. After transport and unloading, the wreckage and transport equipment are disinfected in a dirty part of the slaughterhouse. The unloading of poultry was done manually.

It is important to note that 12 hours before the slaughter was completed, chicken feeding was stopped. The task of the post is to empty the volcano, the stomach and the intestine to reduce the possibility of contamination of hulls during processing. Longer starvation from the above is also negatively reflected because in that case the chickens begin to consume the stalk and faeces.

There were no chicken deaths in any of the experimental groups during the experimental period, and an overview of mortality and chickens were given in Table 1. Data on body mass of chickens, i.e. chickens with a lower body mass of 1200 g, are given in Table 1.

Table. 1. Overview of dead and culled chickens in the experimental groups for the total period of fattening

Experimental groups	Deaths	Write-offs	Total
K_0	0	2	2
K_1	0	3	3
K_2	0	1	1
K_3	0	1	1
K_4	0	0	0
Total	0	7	7

Table. 2. Examination of body mass of chickens in experimental groups, body mass less than 1200 g at the end of the test

Experimental groups	Number of chickens	Body mass (g)	Total
K_0	2	930 i 1150	2080
K_1	3	1150; 1160 i 1160	3470
K_2	1	1040	1040
K_3	1	890	890
K_4	0	0	0
Total	7	7480	7480

In the experimental phase of the experiment, standard concentrate mixtures for intensive fattening chickens were prepared with three combinations. Each combination of concentrate mixtures consisted of starter, grower and finisher, which for all five sample groups had the same raw material composition and nutritional properties in all components.

When designing the nutrient composition of concentrate mixtures, starter, grower and finisher, raw material frames have been set according to previously selected raw materials, and the nutrient composition of the concentrates is shown in Table 3.

ISSN: 2348-1358
Impact Factor: 6.057
NAAS Rating: 3.77

Table 3. Nutritional value of programmed food for fattening chickens

Components	Units Measures	Starter	Grover	Finisher
Dry matter	%	88,12	87,95	87,89
Metabolic energy	MJ/kg	12,70	12,91	13,01
Digestible protein	%	22,06	20,15	19,70
Usable proteins	%	19,83	17,94	17,70
Crude fat	%	4,30	4,67	5,29
Crude fiber	%	3,44	3,40	2,82
Potassium (K)	%	0,84	0,74	0,82
Natrium (Na)	%	0,14	0,14	0,15
Chlor (Cl)	%	0,17	0,17	0,21
Calcijum (Ca)	%	1,13	1,12	1,03
Phosphor (P)	%	0,60	0,61	0,56
Usable phosphorus	%	0,43	0,44	0,36
Lysine	%	1,34	1,20	1,14
Methionine	%	0,58	0,54	0,48
Methionine + Cystine	%	0,95	0,85	0,82
Arginine	%	1,53	1,35	1,39
Threonine	%	0,90	0,83	0,81
Tryptophan	%	0,29	0,27	0,26
Linoleic acid	%	1,63	1,80	2,27
Vitamin „A“	IJ/g	10,00	10,00	5,00
Vitamin „D_3 “	IJ/g	3,30	3,30	0,75
Vitamin „E“	ppm/kg	30,00	30,00	7,50

Choline chloride	ppm/kg	400,00	400,00	210,00
Virginimicyn	ppm/kg	20,00	20,00	20,00
Maduranicyn	ppm/kg	5,00	5,00	-

RESULTS AND DISCUSSION

In order to investigate the impact of chickens population density (number of birds / m²) and chicken sex in chunky kalo in transport, table 4 shows the individual values of kalo in chickens transport.

Table 4. Individual values of slaughter parameters per groups of kalo in transport (g)

Experimental groups					
Ordinal number	K_0	K_1	K_2	K_3	K_4
1	5	25	30	20	20
2	5	80	0	60	10
3	40	25	35	75	30
4	5	20	15	15	20
5	20	15	30	40	25
6	15	15	25	0	10
7	50	10	25	50	5
8	20	15	25	20	30
9	10	15	50	40	20
10	30	15	10	5	80
11	10	5	5	65	50
12	40	5	20	0	10
13	55	10	55	10	25
14	15	5	10	50	20
15	30	20	30	50	15
16	30	10	25	40	20
17	5	5	0	15	30
18	5	15	115	5	15
19	10	10	5	25	30
20	20	10	5	10	25
∑	420,00	330,00	515,00	595,00	490,00
X	21,00	16,50	25,75	29,75	24,50

In order to investigate the impact of chickens population density (number of animals / m²) and chicken gender in chickpea for transport in chickens, Table 5. shows average chickens in chickens transport.

Table 5. Average values of kalo in transport of chickens depending on sex and population density

Population density	Sex chickens	μ ± σ
Control group (15 units / m^2)	Male sex - Cockerel	20,00 ± 15,63
	Female sex - Coconut	22,00 ± 16,53
	Total	21,00 ± 15,69
13 units/ m^2	Male sex - Cockerel	23,50 ± 20,42
	Female sex - Coconut	17,50 ± 25,95
	Total	20,50 ± 22,94
14 units/ m^2	Male sex - Cockerel	23,00 ± 15,67
	Female sex - Coconut	27,00 ± 35,06
	Total	25,00 ± 26,51
16 units / m^2	Male sex - Cockerel	18,00 ± 12,74
	Female sex - Coconut	18,00 ± 16,87
	Total	18,00 ± 14,55
17 units / m^2	Male sex - Cockerel	22,50 ± 34,58
	Female sex - Coconut	20,50 ± 15,71
	Total	21,50 ± 26,16
Total	Male sex - Cockerel	21,40 ± 20,50
	Female sex - Coconut	21,00 ± 22,57
	Total	21,20 ± 21,45

*μ (gained value) ± σ (standard deviation)

From the research results (table 5) it is noteworthy that, in the sample groups formed by the density of population, the mean value of the average transport kalo in male gender chickens has a sample group K_3 (16 units / m²). For female gender chickens, the average value of the transport fish was obtained in the sample group K_1 (13 units / m²). Observing chickens of male and female sex together, the lowest average value of the transport fish was recorded in the K_3 group (16 units / m²).

Table 6. shows the results of a variance homogeneity analysis, and given that p> 0.05, this analysis shows that variation varies with variable variance in all chicken groups, and does not contradict the assumption of homogeneous variance.

Table 6. Dependent variables: Transport kalo (kalo in transport) significance level 0.05 / F-test (homogeneity test of variance)

F	df1	df2	P - value
0,910	9	90	0,520

Table 7. presents the results of the two factor analysis of the influence of chicken sex and population density on the transport kalo at the level of significance of 0.05.

Table 7. Results of two-factor analysis-dependent variable: Transport kalo (kalo in transport) level of significance 0.05.

Source of variability	Sum of squared deviations	Degrees of freedom	Center of the square deviations	F	P -value	Partial Eta Squared
Corrected Model	806.000[a]	9	89,556	0,180	0,996	,018
Intercept	44944,000	1	44944,000	90,390	0,000	,501
Population density	506,000	4	126,500	0,254	0,906	,011
Sex chickens	4,000	1	4,000	0,008	0,929	,000
Density * Sex	296,000	4	74,000	0,149	0,963	,007
Error	44750,000	90	497,222	-	-	-
Total	90500,000	100	-	-	-	-
Corrected Total	45556,000	99	-	-	-	-

According to the two factor analysis (Table 7.) values, p> 0.05 was found in factor "Population density" and factor "Sex of chickens", meaning that both factors did not have a statistically significant separate impact on the kalo in transport. Also, with interaction "Density * Gender", the p-value is greater than 0.05 so it can be said that the effect of interaction was not statistically significant, i.e., population density does not affect the average value of the transport wastage of male chicks (cockerel), nor female chicks (coconut). Thus, there is no statistically significant influence on the interaction between these two factors as well as their statistically significant separate influence.

In order to investigate the impact of chicken population density (number of animals / m²) and sex on the slaughter point, Table 8. shows the average values of slaughter yield according to population density and sex of chickens.

Table 8. Body mass of chickens after slaughter and cooling (slaughter yield)

Experimental groups						
Ordinal number	Sex	K_0	K_1	K_2	K_3	K_4
1	p	552	648	590	648	556
2	p	544	664	618	648	890
3	p	598	546	652	710	532
4	p	540	562	600	558	622
5	p	702	576	650	634	646
6	p	600	534	572	616	610
7	p	630	542	588	654	494
8	p	628	610	548	574	520
9	p	556	540	608	674	498

10	p	660	524	602	562	596
11	k	492	532	526	512	496
12	k	608	538	608	556	1004
13	k	544	602	484	570	484
14	k	488	578	554	588	412
15	k	596	532	532	482	522
16	k	554	562	580	484	510
17	k	516	528	556	496	492
18	k	522	556	534	492	518
19	k	440	590	504	548	522
20	k	434	496	564	482	524
Σ		11.204	11.260	11.470	11.488	11.448
X		560,20	563,00	573,50	574,40	572,40

Table 9. Average values of chicken slaughter yield depending on sex and population density

Population density	Sex Chickens	μ ± σ
Control group (15 units / m²)	Male sex - Cockerel	601,00 ± 54,42
	Female sex - Coconut	519,40 ± 58,57
	Total	560,20 ± 69,14
13 units/ m²	Male sex - Cockerel	574,60 ± 49,53
	Female sex - Coconut	551,40 ± 32,39
	Total	563,00 ± 42,43
14 units / m²	Male sex - Cockerel	602,80 ± 32,06
	Female sex - Coconut	544,20 ± 36,21
	Total	573,50 ± 44,85
16 units / m²	Male sex - Cockerel	627,80 ± 50,19
	Female sex - Coconut	521,00 ± 40,55
	Total	574,40 ± 70,52
17 units / m²	Male sex - Cockerel	596,40 ± 116,09
	Female sex - Coconut	548,40 ± 163,52
	Total	572,40 ± 140,20
Total	Male sex - Cockerel	600,52 ± 66,44
	Female sex - Coconut	536,88 ± 80,45
	Total	568,70 ± 80,07

μ (obtained value) ± σ (standard deviation)

Observing the results of the research (Table 9.) it can be seen that the intent is the average value of the slaughter yield of male sex chickens recorded in group K_1 (13 units / m²). For female chicks (popcorn), the average slaughter score is the smallest in the control group K_0 (15 units / m²). Observing the cockles and popcorn, the lowest mean value of the slaughter mark was also recorded in the control group K_0 (15 units / m²).

The test of the homogeneity of the variance (F-test) of the dependency of the slaughter slave variable, in relation to the significance level of 0.05 is shown in Table 10., and since p> 0.05 shows that the variation varies with varying

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degrees in all chicken groups, the assumption of the homogeneity of the variance is not distorted. The results of the two factor analysis of the impact of chicken sex and population density on slaughter slaughter are given in Table 11.

Table 10. Dependent variables: slaughter yield, significance level 0.05 / F-test (homogeneity test of variance)

F	df1	df2	P – value
0,910	9	90	0,520

Since the statistical analysis (F-test of homogeneity of variance) has a value p> 0.05 (Table 10), it means that there is no statistically significant gender and population density impact on the average values of slaughter score in the sample groups.

Table 11. Results of two-factor analysis-dependency variable: slaughter yield / significance level 0.05

Source of variability	Sum of squared deviations	Degrees of freedom	Center of the square deviations	F	p- value	Partial Eta Squared
Corrected Model	125184.200[a]	9	13.909,356	2,457	0,015	0,197
Intercept	32.341.969,000	1	32.341.969,000	5.713,021	0,000	0,984
Population density	3.479,200	4	869,800	0,154	0,961	0,007
Sex chickens	101.251,240	1	101.251,240	17,885	0,000	0,166
Density * Sex	20.453,760	4	5.113,440	0,903	0,466	0,039
Error	509.498,800	90	5.661,098	-	-	-
Total	32.976.652,000	100	-	-	-	-
Corrected Total	634.683,000	99	-	-	-	-

Two factorial analyzes of the impact of chicken sex and population density on chickweed before slaughter at the level of significance of 0.05 (Table 11) were also made, from which it is seen that the interaction of factor "Density * Gender" also has a p-value greater than 0.05 so it can be said that the influence of this interaction is not statistically significant, that is, the density of population does not affect the average value of the slaughter yield of male or female chickens in female chicks.

As the results of the two factor analysis showed that in the factor 'sex chickens' p <0.05, i.e. that the mentioned factor had a statistically significant effect on the value of the slaughter score, table 12 gives the results of the two factor analysis to show in which experimental there are differences in the average age of slaughter among male-female and female-female populations.

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Impact Factor: 6.057
NAAS Rating: 3.77

Table 12. Results of the analysis of the effect of the sex of the chickens on slaughter

Population density	Sex chickens			P -value
	Male sex - Cockerel	Female sex - Coconut	Total	
Control group (15 chickens /m²)	601,00 ± 54,42	519,40 ± 58,57	560,20 ± 69,14	0,005
Density 13 chickens /m²	574,60 ± 49,53	551,40 ± 32,39	563,00 ± 42,43	0,231
Density 14 chickens /m²	602,80 ± 32,06	544,20 ± 36,21	573,50 ± 44,85	0,001
Density 16 chickens /m²	627,80 ± 50,19	521,00 ± 40,55	574,40 ± 70,52	0,000
Density 17 chickens /m²	596,40 ± 116,09	548,40 ± 163,52	572,40 ± 140,20	0,459

In order to determine the impact of chickens' population density (number of units / m²) on the mass of the chicken hull after cooling, Table 13 shows the average values of chicken hull mass after cooling depending on the density of the population. The homogeneous variance test at the significance level of 0.05 is shown in Table 14, and when the value p> 0.05 is obtained, Table 15 shows the results of the test of the density of body mass density after cooling after the cooling at a level of significance of 0.05 (ANOVA).

Table 13. Results of the average values of chicken hull mass after cooling

Population density	μ ± σ	95 % Confidence interval	
		Lower limit	Upper limit
Control group (15 units / m²)	1.589,29 ± 277,00	1.506,07	1.672,51
13 units / m²	1.541,13 ± 176,27	1.483,99	1.598,27
14 units / m²	1.678,62 ± 248,39	1.601,22	1.756,02
16 units / m²	1.609,17 ± 237,30	1.540,26	1.678,07
17 units / m²	1.482,16 ± 238,70	1.415,02	1.549,29
Total	1.577,57 ± 246,23	1.545,23	1.609,92

μ (obtained value) ± σ (standard deviation)

Tabela14. Dependent variables: Body weight after cooling level of significance 0.05 / F-test (homogeneity test of variance)

F	df1	df2	p
0,768	4	220	0,547

Amir Zenunović *et al*, International Journal of Advances in Agricultural Science and Technology,
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Table 15. Results of the impact of the density of the body mass after cooling at the significance level of 0.05 (ANOVA).

Source of variability	Sum of squared deviations	Df	Medium of squares	F	Relevance
Between the groups	999.038,12	4	249.759,53	4,367	0,002
Within the group	12.581.712,92	220	57.189,60		-
Total	13.580.751,04	224	-	-	-

Considering the calculated F value and p <0.05 (Table 15), it is concluded that there is a statistically significant difference in average body weight after cooling between chickens group formed by population density. For this reason, the duplicate test performed a two factor analysis to determine among which groups there are statistically significant differences in average body mass after cooling. The results of the two factor analysis are shown in Table 16.

Table 16. Results of two-factor analysis (Tukey HSD), dependent variables - Chicken hull mass after cooling.

(I) Population density	(J) Population density	Difference between the middle (I-J)	Standard error	Significance	95 % Reliability interval	
					Lower limit	Upper limit
Control group (15 jedinki / m^2)	13 units/ m^2	48,161	52,319	0,889	-95,74	192,07
	14 units / m^2	-89,330	51,308	0,411	-230,46	51,80
	16 units / m^2	-19,878	49,622	0,995	-156,36	116,61
	17 jedinki / m^2	107,132	48,911	0,187	-27,40	241,66
13 units/ m^2	Control group (15 units / m^2)	-48,161	52,319	0,889	-192,07	95,74
	14 units / m^2	-137,491	53,179	0,077	-283,76	8,78
	16 units / m^2	-68,038	51,554	0,679	-209,84	73,76
	17 units / m^2	58,971	50,870	0,774	-80,95	198,89
14 units / m^2	Control group (15 units / m^2)	89,330	51,308	0,411	-51,80	230,46
	13 units / m^2	137,491	53,179	0,077	-8,78	283,76
	16 units / m^2	69,452	50,528	0,645	-69,53	208,43
	17 units / m^2	196.462*	49,830	0,001	59,40	333,52

16 units / m^2	Control group (15 units / m^2)	19,878	49,622	0,995	-116,61	156,36
	13 units / m^2	68,038	51,554	0,679	-73,76	209,84
	14 units / m^2	-69,452	50,528	0,645	-208,43	69,53
	17 units / m^2	127,010	48,092	0,067	-5,27	259,29
17 units / m^2	Control group (15 units / m^2)	-107,132	48,911	0,187	-241,66	27,40
	13 units / m^2	-58,971	50,870	0,774	-198,89	80,95
	14 units / m^2	-196.462*	49,830	0,001	-333,52	-59,40
	16 units / m^2	-127,010	48,092	0,067	-259,29	5,27

* where: the first factor (I) - population density, second factor (J) - sex of chickens, and the difference of these factors (I-J) represents the value of chicken weight after cooling.

Further statistical analysis (Table 16.) showed a statistically significant difference ($p < 0.05$) between the experimental group K_2 (14 units / m^2) and the experimental group K_4 (17 units / m^2). Consequently, there is a statistically significant difference in the average body weight after cooling only between the two groups of chickens.

CONCLUSION

- Population density does not affect the average values of the transport fish in chickens of male sex (cockerel) or in female chicks (coconut).
- Population density does not affect the average value of the slaughter rate of male or female chickens in female sex chickens.
- A statistically significant difference ($p < 0.05$) was established between the experimental group K_2 (14 units / m^2) and the experimental group K_4 (17 units / m^2). Consequently, there is a statistically significant difference in the average body weight after cooling only between the two groups of chickens.

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