Scientific Papers. Series D. Animal Science. Vol. LVI
ISSN 2285-5750; ISSN CD-ROM 2285-5769; ISSN-L 2285-5750

RESEARCHES CONCERNING TOTAL WATER CONTENT OF BROILER

Maria Antoaneta POPA

University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Animal Science, Mărăşti Street, no. 59, zip code 011464, Bucharest, Romania

Corresponding author email: antoanetapopa@yahoo.com

Abstract

In the new vision of the EU, quality and quality control require monitoring food products from the stage of obtaining the raw materials to the final consumer. According to the own research undertaken in this work which had aimed the study of quality indicators of poultry meat, absolutely required at EU level, as a result of the existence of a free trade of food products within the European Union. Thus, in assessing the quality of carcasses from the point of view expressed above, the specific parameters were taken and analyzed for two genetic types, in two consecutive years and different seasons.

The water content of the carcass has different values at the two genetic types analyzed. In season 1, the year I was determined a value of 64.5316 ± 0.4106 percent at ROSS 308 and 65.1820 ± 0.3724 percent at COBB 500, the differences observed between the two hybrids are statistically nonsignificant. In season 2, it was determined a value of 64.4656 ± 0.3989 percent at ROSS 308 and 65.5412 ± 0.3442 percent at COBB 500, the differences are significant from the statistical point of view. In season 1 of the second year of the experiment, at the ROSS 308 hybrids of the average water content was 64.4264 ± 0.3807 percent, while COBB 500 66.3212 ± 0.3051 percent, statistically significant. Season 2 reveals the existence of close values of the average content of water in the two seasons, those two hybrids being taken into question.

Key words: *water, protein, carcasses, broiler.*

INTRODUCTION

Food quality is a very complex notion; It is increasingly obvious tendency approach to quality in terms of consumer safety, became the competitive element for these products. Moreover, the consumer is widely recognized as the most important element in carrying out economic activities whose essence lies precisely in the satisfaction to an extent as possible the needs, desires, preferences and requirements (Ciobanu, 1999; Georgescu et al., 2000; Popa, 2012). In poultry production, quality and quality control require a good management on the entire production chain, aimed, on the one hand, to improve performance and increase profitability, and so on the other hand, the development of appropriate standard products (Vacaru-Opris et al., 2000; Vacaru-Opris et al., 2004). Having regard to the own research undertaken in this work had aimed at the study of quality indicators of poultry meat, absolutely required at EU level, as a result of the existence of a free trade of food products within the European Union (www.thepoultrysh).

MATERIALS AND METHODS

Own research were held over the course of two years. The material studied was represented by groups belonging of two genetic types: ROSS 308 and COBB 500. In accordance with the purpose, were made three series of experiences:

- The A series of experiences who fallow the influence the genetic type (hybrid) on quality indicators track the technology of slaughtering and processing of poultry in accordance with the standards of the European Union;
- The B series of experiences watching the effect of season on quality indicators track the technology of slaughtering and processing of poultry meat in accordance with European Union standards.
- C series of experiences that sought to establish the extent to which quality indicators are maintained in the production unit. Thus, for repeatability testing of results, has resumed the whole experiment and in the following year.

For the *A series* of experiences, research has been carried out on the basis of the results obtained from 100 individuals, commercial hybrids, belonging to the two genetic types mentioned (50-50) for a period of 1 year.
Given the multitude of factors that may influence the quality of the meat and the carcass, raising chickens has been carried out in uniform, on permanent bedding (large captivity), in accordance with standard technologies of the two hybrids, food and water provided 'ad libitum' chickens are slaughtered at the age of 42 days. Also, it was desirable to ensure uniformity in terms of body weight and gender composition.
The birds feed taken into study was represented by the combined feed that have been carried out in accordance with the requirements of the nutritional research hybrids. These have included several types of raw material: cereals, vegetable protein, animal protein, minerals, premixtures and feedingstuffs.
After slaughter, have been appreciated the quality indicators and the differences observed between the two genetic types have been tested as of significance statistically.
In *B series*, the experiment had aims to establish the influence of season on quality indicators. Thus, research has been carried out on the basis of the results obtained from 100 individuals, belonging to the two genetic types. The conditions under which it was made are similar to those of the A series. After the slaughter, the results obtained as a result of quality indicators analyzed were compared between the two seasons (season 1-hot: April-September, and season 2-cold: October-March), the differences observed between averages being tested as statistically significance.
Obviously, the two experimental series have been made together, the separation of the two making it only for the iconography reasons.
In the *C series* of experiments it study the extent to which the quality indicators are maintained in the production unit, in the next year. Thus, in order to ensure repeatability of the results, the entire experiment (series A series B) was resumed in the next year, while maintaining the same environmental conditions as in the previous year. The results obtained as a result of the quality indicators have been analyzed comparatively, between genetic types and between seasons.

RESULTS AND DISCUSSIONS

Protecting consumers′ interest is an open concern of the European Union. For this reason binding to established limits about water composition and water/protein proportion is now mandatory in poultry industry and poultry product trade. However meat freshness indicators are important in this question and sticking to them is a guarantee for the delivery of most trustworthy products. We are emphasizing the average values of each analyzed character and the statistical significance of differences noticed between means in the two studied groups (the two hybrids) to emphasize any influence of genetic type of slaughtered chickens on water share of carcasses. Table 1 and figure 1 are showing values for "carcass moisture" for the two groups in the experiment.

Table 1. Influence of genetic type on carcass moisture, first year, first season

Genetic type	n	(%)	s	c.v.%
ROSS 308	25	64.5316 ± 0.4106	2.0531	3.1816
COBB 500	25	65.1820 ± 0.3724	1.8623	2.8570
Differences significance	$t = 1.1732^{NS}$ $t_{48;0,05} = 2.01$; $t_{48;0,01} = 2.68$; $t_{48;0,001} = 3.51$			

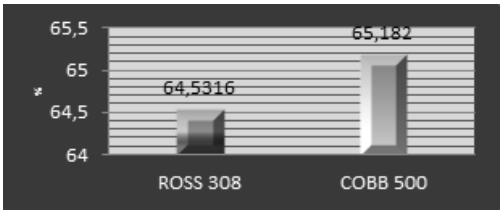

Figure 1. Average carcass moisture at both hybrids, first year, first season

Average carcass moisture was 64.5316 % ± 0.4106 and 65.1820 % ± 0.3724 or almost 1% higher in hybrids ROSS 308 and COBB 500 respectively. Superiority of hybrids COBB 500 has been noticed but it is not statistically significant as Student Test value ($t = 1,1732^{NS}$) has been emphasizing. So differences between the two hybrids would be most probable a consequence of sampling errors. The two

genetic types are actually having an equal carcass moisture and registered are being regarded as very good in analyzed groups.
Table 2 and figure 2 are showing values for average moisture of carcasses of chickens of both genetic types slaughtered during the experiment in first year and second season.

Table 2. Influence of genetic type on carcass moisture, first year, second season

Genetic type	n	(%)	s	c.v.%
ROSS 308	25	64.4656 ± 0.3989	1.9943	3.0936
COBB 500	25	65.5412 ± 0.3442	1.7212	2.6261
Differences significance	$t = 2.0414^{*}$ $t_{48;0,05} = 2.01$; $t_{48;0,01} = 2.68$; $t_{48;0,001} = 3.51$			

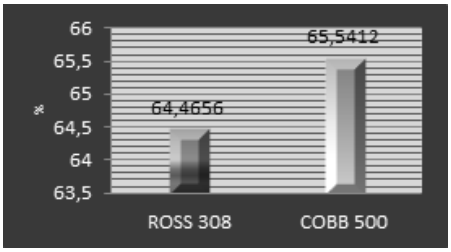

Figure 2. Average carcass moisture at both hybrids, first year, second season

Data presented in table 2 are revealing values close to average carcass moisture of analyzed carcasses from both hybrids taken into account. Like in season 1 hybrid COBB 500 (65.5412 ± 0.3442 %) has carcass moisture 1.64% higher than ROSS 308 (64.4656 ± 0.3989 %). Calculated value of Student Test (t = 2.0414) has been higher than in tables which support some significant differences between the two hybrids most probable due to sampling errors.
Data presented in table 3 are showing that in first season of the second year of the experiment registered average moisture of controlled carcasses was 64.4264 ± 0.3807 % and 66.3212 ± 0.3051 % or 2.86 higher in hybrids cobb 500 and respectively ross 308. Variability of character between the two analyzed groups was small which are suggesting that feeding and housing conditions are identical. In second year we noticed a statistically significant superiority in favor of hybrid Cobb 500 as the value of the student test ($t = 3.8838^{***}$) is emphasizing.

Table 3. Influence of genetic type on carcass moisture, second year, first season

Genetic type	n	(%)	s	c.v.%
ROSS 308	25	64.4264 ± 0.3807	1.9035	2.9546
COBB 500	25	66.3212 ± 0.3051	1.5255	2.3001
Differences significance	$t = 3.8838^{***}$ $t_{48;0,05} = 2.01$; $t_{48;0,01} = 2.68$; $t_{48;0,001} = 3.51$			

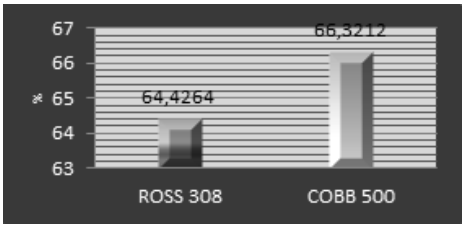

Figure 3. Average carcass moisture at both hybrids, second year, first season

Table 4 and figure 4 are showing values of average carcass moisture of chickens from both genetic types slaughtered during the experiment and second year and second season.

Table 4. Influence of genetic type on carcass moisture, second year, second season

Genetic type	n	(%)	s	c.v.%
ROSS 308	25	64,4768 ± 0,3787	1,8935	2,9368
COBB 500	25	66,7896 ± 0,3072	1,5361	2,2999
Differences significance	$t = 4,7427^{***}$ $t_{48;0,05} = 2,01$; $t_{48;0,01} = 2,68$; $t_{48;0,001} = 3,51$			

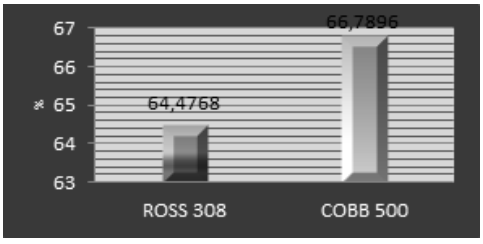

Figure 4. Average carcass moisture at both hybrids, second year, second season

Data presented in table 4 are revealing values close to average moisture of analyzed carcasses from the two hybrids taken into account in both seasons. Similar to first season se hybrid COBB 500 (66.7896 ± 0.3072 %) is 3.46% higher than hybrid ROSS 308 (64.4768 ±

0.3787 %). Calculated value of Student Test (t = 4.7427**) has been higher than in tables which support some significant differences between the two hybrids.

The two hybrids might be considered as appropriate from the point of view of the analyzed character as average carcass moisture is a very important character in the assessment of meat quality and how appropriate for processing the meat is.

CONCLUSIONS

Researches described in this paper are leading to following conclusions:

- Compliance with quality standards has no connection with the hybrid. The differences that arise between the genetic types examined in this paper, are caused by genetically controlled aspects (weight, water physiological linked, protein content, etc.).
- The season has an influence on the quality of the meat, as it emerged from the study in this paper. Both the research cited in the study, and on the basis of the results obtained in own research showed that, in most situations, the hot season has had a negative influence on the quality of the meat.

REFERENCES

Ciobanu E., Ciobanu M., 1999. Certificarea produselor conform reglementărilor Uniunii Europene; Rev. Tribuna Calităţii nr. 4-5.

Georgescu Gh. (coord.) et al., 2000. Tratat de producerea, procesarea şi valorificarea cărnii; Ed. Ceres, Bucureşti

Popa M. A., 2012. Controlul calităţii cărnii de pasăre; Revista Avicultorul, nr., p. 42-45, Editura Ceres, Bucureşti, ISSN 1582-1714

Roibu C., 2002. Calitatea cărnii şi a carcasei conform normelor europene; Ed. Conphys, Bucureşti

Văcaru-Opriş I. et al.., 2000. Tratat de avicultură, vol. I; Ed. Ceres, Bucureşti.

Văcaru-Opriş I. et al., 2004. Tratat de avicultură, vol. III; Ed. Ceres, Bucureşti

*** Directiva CE 543/2008

*** www.thepoultrysh. com, Farmes Weekly Interactive