REZUMAT
SYNOPSIS

Making a scientific study regarding the poultry quality answers the current exigencies of creating an integration information system related to quality and biosafety assurance within the food chain.

A scientific system allowing the generalization of applying the quality concept in the whole food chain with the implementation of international standards in the field answers the need of protecting the consumer. Nowadays, we found ourselves in the situation in which the consumer is demanding to the various offer of the market and wishes to increase his/her degree of information in order to make decisions on an informed basis.

In the general setting of monitoring and assuring the factors influencing quality, it is necessary to work out and implement some scientific based documents such as those related to quality assurance, Guideline of good practices, Quality Certification System for the ISO and HACCP standards.

Observing the provisions of the strictest European and international laws in the field of food safety and consumer protection represents the desideratum that all producers must analyze and introduce in current practice.

Due to the importance of poultry meat, making an analysis of the production of this product becomes a very important element in the economy of assuring animal protein resources for the consumer. Within the setting in which the current technologies of breeding turkey hen broilers allow us to obtain fantastic performances related to breeding speed and the conversion of fodder in the weight gain, in efficient and economical conditions of using the available material resources, monitoring the technological course for obtaining poultry represents a permanent concern of the specialists in the field.

The connection between the elements characterizing the general process flow of obtaining poultry and the many factors influencing the quality during the entire flow leads to the identification of elements that may adversely influence its running and to the definition of corrective measures that maintain the system within the designed parameters. A quality management system must predict the influence of all factors involved in the breeding and industrialization technologies of turkey hens.

The topic of this paperwork is as expedient as possible both by its novelty and by the theoretical and practical importance for the specialists in the field of turkey hen breeding and for the technicians working in the industrialization sector of poultry.

The PhD thesis is divided in two parts which are proportional and comprises 11 sections plus the bibliography. The first part of the paperwork deals

in 3 sections with the synthesis of the specialty literature related to elements of poultry meat quality from farms up until the consumer in order to assure the food safety guarantee by quality products obtained following the observance of breeding technologies, pre-slaughtering stages and national and international slaughtering technology.

The second part of the paperwork is about the presentation of our own research and has 8 sections within which the general objectives were set out for the evaluation of effects related to age influence, application of breeding technology of the technical guide of breeding the Big BUT 6 turkey hen hybrid, the pre-slaughtering procedures, the stages of the process flow influencing the technological, physical-chemical, microbiological and sensorial indexes plus the conclusions.

The aim of the paperwork was to study some issues regarding the identification of factors characterizing the technology of turkey hen breeding within the unit and of factors characterizing the slaughtering process flow influencing the physical-chemical, sensorial and microbiological quality of the turkey hen meat.

The main objective is to identify the relationships between the technical conditions in the expression of somatic development for the BUT 6 turkey hen hybrid.

The ways of achieving the objectives and their related activities were based on the principles stated in the fundamental research by using some well-known working methods and the organization of studies according to some established schedules with concrete responsibilities that were set out in time and space. The research observed the scientific principles of the research methodology and lead to the description of the studied phenomena. The starting point of the research was based on drafting an accurate experimental protocol and we consider that the title **Research regarding the evaluation of technological factors involved in the improvement of turkey hen meat quality** summarizes the proposed issues.

Section I presents the trophic-biological importance of turkey hen meat. The meat, due to its rich content of protein substances in the muscles (17-22%) and in the internal organs (15-20%), represents the main source of nitrogen material with a high biological value. The latter depends on the nutritional, hygienic, organoleptic qualities but also on the calorie percentage of the meat. Except methionine and phenylalanine, the meat covers the minimum daily need of essential amino acids for an adult (at a consumption of 100 g meat/day). The essential amino acids also increase the nutritional value of proteins from other sources of human consumption.

Section II presents the morphological characteristics of the muscle tissue. The skeletal muscle comprises the muscle fibers of the conjunctive tissue, blood vessels, nerve fibers and adipocytes. The entire musculature is covered by a

conjunctive tissue cover called epimysium. In this layer, the muscle fibers are located in clusters that are separated one from another by the perimysium. This package of conjunctive tissue includes blood vessels irrigating the muscle. The inside of every fascicle and each muscle fiber is surrounded by another layer of friable conjunctive tissue called endomysium.

Section III describes the factors influencing the quality of the turkey hen meat starting from the general radiography of the specialty literature, showing the importance and the observance of the pre-slaughtering stages with a major impact on meat quality, the description of slaughtering stages and their importance as all are reflected in the sensorial and physical features of the meat.

Structured as an important section in explaining and arguing the objectives of the paperwork, the material analyzes the current status of knowledge related to the relationships between the pre-slaughtering and slaughtering stages which are analyzed in detail and interpreted through the influence of the value limits of the parameters in expressing the sensorial, physical-chemical and microbiological properties of the obtained meat.

This first part presents data from the specialty literature that was used afterwards in order to interpret the results obtained in our own research.

The 2nd part of the thesis "Own Research" comprises the sections IV-XI describing the organizational and institutional framework in which the research was carried out and in which the results obtained were showed and interpreted at the analysis level of each link of turkey hen industrialization and breeding.

Section IV deals with the essence of this paperwork describing the intended purpose and objectives, explaining the principles that were the basis of drafting the experimental protocol and setting out their related activities in the production unit in which the research was made. The information regarding the applied working methods and materials is detailed by making a broad description from the biological material that was used to the statistical processing of obtained data, explaining the research approach by selecting the well-known ways of studying.

The research was made on turkey hen hybrids of the Big BUT 6 type, differentiated depending on the age at slaughtering (16 and 18 weeks) within a farm owned by S.C. Galli Gallo, Codlea. Since some indexes (those involved in the sensorial, microbiological and physical-chemical characterization) could not be determined for the entire group of birds, some randomized analysis groups were formed that were not divided by gender, one for each experience lot, totaling to 15 heads/lot.

Section V presents the results regarding the influence of technological and hygiene conditions on the growth technological indexes. The farm uses 12 kw heaters for the heating of shelters which are supplied with methane gas. In each shelter, 10 heaters are located on two rows and the starting enclosures are usually

made at the base of the heater. The heaters are hanged by fixing on the ceiling or by the structural ridge. The bird population has a temperature of 32-33°C at the edge of the enclosure and under the heater there is a temperature of 37-39°C. When the birds gain weight, the temperature is reduced due to the increase of the biological heat and, at the same time, the ventilation rate also increases. The lighting is provided by LED lights of about 1055 lumens each as they are arranged on three lighting lines with several steps so that to provide about 80-100 lux needed for the population which consequently are decreased to 30-40 lux in the 8th day of life and then to 20 lux in the 12th day and stays this way until the end of the series.

The evaluation of the breeding results was based on the existing relationship between the application of technological interventions (sanitation, population, density, microclimate factors) and the values for the body development indexes (dynamics of body weight, biometry) within the context of estimating the efficiency through specific consumption.

Section VI showed the slaughtering flow and the interpretation of the slaughtering results. The performance values of 72.91% recorded for the studied birds are within the limits provided by the specialty literature for the average live weight of 7.9 kg for the BUT 6 turkey hen hybrid. The same can be said about the values for the analyzed organs (liver 1.35% of the live weight, gizzards 0.73%, heart 0.47%).

Section VII presents the risk management regarding the slaughtering of turkey hen broilers at S.C. GALLI GALLO S.R.L. The HACCP system is a scientific and systematic approach in order to have control and to prevent the occurrence of some issues or dangerous or critical situations that may endanger the safety of the obtained products. Such issues are defined as biological (pathological and microbiological), chemical or physical risks which lead to the contamination of food stuffs.

In section VIII the research results are showed related to the microbiological evaluation of turkey hen meat for *Salmonella spp*, *Campylobacter spp*, *Escherichia coli*; the obtained values allowed us to estimate the fulfillment degree of the hygiene and technological conditions for carcasses according to the microbiological level of the legal standards.

Section IX presents the sensorial assessment of the turkey hen meat regarding its texture. Therefore, the meat coming from birds slaughtered at 16 weeks was the tenderest with the highest averages of scores for the indexes of juiciness and adhesiveness and the lowest average values for fibrosity and granularity. The meat of birds slaughtered at 18 weeks showed the lowest tenderness with average values for the scores related to fibrosity and granularity and the lowest values for juiciness, adhesiveness and smoothness.

Section X. In order to define the role of the pineal gland in the somatic development of birds, these were subject to a continuous light schedule of 17-20

weeks while monitoring the dynamics of the body weight. The obtained data were permanently compared with those specified in the breeding guidelines of the hybrid. At 20 weeks, the pineal gland is increased, however, the number of follicles varies between 100 and 120. The thickness of the conjunctive tissue septa is also significantly increased. From some septa, thin branches are detached which protrude in the follicle wall and partially separate small portions of the follicle. The penetration of the lumen of the pineal gland by the conjunctive tissue septa was also noticed. Three types of cells were identified in the parenchyma of the pineal gland: pinealocytes, support cells (stroma) and nerve cells.