ABSTRACT

Poultry husbandry is one of the most ancient occupations of humankind, knowing that eggs, meat and fat served as main aliments for humans.

Domestic fowl were primarily raised in small flocks, around people farms for their own needs then the flock increased across the time, in our country or worldwide.

Thus, in 1938 in Romania there were 27 millions domestic birds, just 1% being of improved breeds. After the 2nd world war, when the state and cooperative poultry platforms have been setup and improved breeds have been imported (Leghorn and Rhode Island), the scientific and technological basis were founded for this husbandry area, and poultry flocks and their production were increased. Therefore, in 1959, poultry flocks in our country comprised 35 millions capitis. The flocks continuously increased leading to the industrial poultry production in 1960 - 1964, through the establishment and launching of certain aviculture platforms. However, the true onset of the industrial poultry husbandry was in 1967, when the poultry enterprises were launched and well equipped technologically and biologically. The basis of poultry artificial selection and hybridization were set up, certain reproduction nucleus being established (after long term cooperation with international companies) and several technologies were designed for integrated aviculture farms. All these fact led to 127.5 millions fowl capitis in 1989. after 1990, several factors produced to certain decreasing in fowl flock and looses of valuable biological material (pure bloodlines, hybrids, reproduction nucleus), as it follows: system crisis, lack of interest, incompetent or bad intended decisional factors, inflation and high interest rates, lack of feed, financial difficulties and massive import of poultry meat and eggs

After 1991, the free marked economy and the privatization process lead to intense development of private poultry units, which actually comprise 98 – 99% from whole poultrz national flock and provides 98% of total eggs and meat production (ASR - 2002) (ASR-2006, 2007, 2008).

Within the free market environment, poultry technological performances, production costs, revenues and markets are regulated and controlled by the largest and most efficient producers in the field, worldwide, at the European and at nationally levels. Knowing these

conditions, it imposes that the biological material used in aviculture, the husbandry technologies, the veterinarian inspection and the nutritional-hygienic and dietetic quality of fowl products (eggs, meat, fat liver, fats) should be at their highest potential. The poultry products demand and consumption constantly increased worldwide, in Europe and in our area.

Thus, the average poultry meat intake, worldwide, reached 6.3 kg/inhabitant in 1987; it increased to 9.7 kg/inhabitant in 1996; to 10.9 kg/inhabitant in 2000; to 11.99 kg/inhabitant in 2003; to 16.5-17.6 kg/inhabitant, in 2004, respectively to 19.90 kg/inhabitant, during 2005 (ASR-2003-2004; FAO-2004-2005). An ascendant trend was also recorded for eggs consumption. In our country, poultry products consumption has been revitalized after its accentuated decrease between 1991-2000 (eg., in 1997 meat consumption decreased from 17.7 kg/inhabitant in 1989 till 9.22 kg/inhabitant).

Poultry meat (especially that produced by *Gallus domesticus* commercial hybrids) is well known for its physical, chemical, technological, sensorial and dietetic traits. It is easily processed, with high efficiency, due to its low content in connective tissues (fibrous, skeletal, tendinous and adipose) and to its high tenderness and low fiber thickness. High variety of products could be obtained from poultry meat (salami; pastrami; soups; pate; etc.). Meantime, poultry meat presents multiple nutritional and dietetic features.

All these issues contribute to the status gained by poultry meat and eggs as indispensable foods in human nutrition. Poultry science follows specific goals, in order to qualitatively and quantitatively increase fowl productions.

Several conclusions issued from the literature study related to the possibilities of poultry meat processing and production.

Fowl are especially valuable animals, which reach great spreading across the world, the flocks being continuously increased (+ 19 - 20%).

Certain hybrids for meat and eggs production are raised in Romnaina. Among the meat type hybrids, we specify: “Ross – 208”; “Lohmann – Meat”; “Cobb – 500”; “Starbro-Shaver”; “Arbor – Acres” etc. In these hybrids, certain elements are known, such as: hybridization schematics, morpho-productive traits, microclimate, nutritional and sanitization requirements. Moreover, there are some lacks in the knowledge of meat quality.

Related to slaughtering technological flow, we consider that it should to be analyzed and re-investigated, eventually modified and adjusted with some chains of final processing (trenching, calibration, packaging), in order to better valorize certain characteristics of the resulted products (high participation of breast in whole carcass; specific stratification of breast muscles etc.).

Related to the superior and diversified valorization of poultry meat and especially of that issued from “COBB-500” and ”SHAVER-STARBRO” (the most used in our country), it could be stated that there are still unknown elements in the field and there is an opportunity to bring

new contributions to the modalities used in meat production and processing, knowing that the poultry meat market is continuously changing in Romania and Europe.

Besides these facts, the PhD thematic imposed to bring contribution to a better knowledge of quantitative and qualitative meat production, issued from ”Cobb-500” and ”Shaver-Starbro” commercial chicken hybrids, in order to use the new findings in establish best and most diversified technologies of meat processing to produce high quality products, in accordance with the ISO 9001 and HACCP regulations and customers demands, under high economic efficacy conditions.

The experimental design included 2 (two) research series:

- series I: “Achieved results related to quantitative and qualitative meat production, at the “COBB-500” hybrid and possibilities for its superior and diversified valorisation ”;

- series II: “Achieved results related to quantitative and qualitative meat production, at the “SHAVER-STARBRO” hybrid and possibilities for its superior and diversified valorisation”.

There were studied several features: body weight dynamics, feed conversion ratio (I.C. – kg feed/kg gain), flock casualties, meat yield and its quality. Main quality parameters have been studied for the fabricated products.

The researches have been organized within the “KOSAROM” Paşcani Companies Group.

According to the achieved, processed and debated experimental data certain pertinent conclusions have been formulated, as it follows:

- body weight at slaughter moment – 42 days – varied in accordance with gender and hybrid type, reaching 1487.96±9.13 g – 2283.24±12.66 g at the first studied hybrid (“COBB-500”) and 2359.70±26.76 g, at the second one (“SHAVER-STARBRO”). At the same age (42 days), the “SHAVER-STARBRO” chickens were 21.91% heavier than the “COBB-500” ones;

- dressed weight (on fresh carcasses) reached 77.41% in “COBB-500” hybrid and 76.69% in ”SHAVER-STARBRO” chickens (0.72 percentage point less);

- the hybrids were also different for trenching parts (wings, breast, thighs and shanks, remnants) weight and proportion. Thus, in ”SHAVER-STARBRO” hybrid, the carcass remnants were 34.90% less than in “COBB-500” hybrid. Carcass fat was also 68.29% less in the same hybrid, while thighs and shanks were 18.87% heavier and the breast weighed 26.16% more;

- meat:bones ratio for certain carcass trenching parts indicated also differences between both analyzed hybrids. Therefore, in wings, the ratio was better (+ 0.66%) in ”SHAVER-STARBRO” hybrid, compared to the “COBB-500”. Similar situation occurred in breast (+1.25%); conversely, for thighs and drumsticks, the meat:bones ratio was poorer (-9.67%) in ”SHAVER-STARBRO” hybrid, compared to the “COBB-500” one;

- chemical composition analyses revealed that the ”SHAVER-STARBRO” breast meat, was poorer in water (-2.0 pp), fat (-3.88 pp) and proteins (-2.52 pp), compared to the “COBB-500” meat samples;

- very high looses (recoups) were recorded in meat processing for both hybrids and all carcass trenched parts;

- boiling recoups were higher in ”SHAVER-STARBRO” hybrid, compared to the “COBB-500” one, as it follows: 9.05 pp for wings; 16.57 pp for breast (bones included); 10.72 pp for thighs and shanks with bones and 4.67 pp for deboned thighs and drumsticks;

- frying recoups were higher than those measured during boiling, in both studied hybrids;

- frying generated higher looses in ”SHAVER-STARBRO”, comparing with “COBB-500”, meaning: 3.91 pp for wings (bones included); 10.20 pp for breast (bones and skin included); 11.59 pp for thighs and shanks (bones and skin included) and 4.94 pp for deboned thighs and drumsticks;

- the products issued from the meat provided by both hybrids presented sensorial, chemical, physical and microbiological parameters which complied with the European Union standards. Proteins content varied between 11.87% and 21.50%, in accordance with product type; chloride concentrations oscillated between 2.43% and 3.83%, while lipids content was found within the 2.77% and 21.43% limits, as influenced by sort;

- no qualitative differences occurred for the products when meat from different hybrids was used (“COBB-500” vs. ”SHAVER STARBRO”). Slaughtering ages of “COBB-500” chickens (35, 42 and 49 days) did not also influence products quality;

- economic efficacy has been increased through the higher processing of poultry meat in order to produce specific aliments, according to certain original recipes and technologies. Consequently, the average revenue rate reached 23-24%;

The achieved results led to certain advisory for the integrate poultry farms:

- both studied hybrids (“COBB-500” and ”SHAVER-STARBRO”) are able to provide high meat yields, of high quality, which could be valorized through a very large amount of specific products, highly appreciated by consumers;

- the “COBB-500” hybrid could be slaughtered at certain different ages (35 or 49 days), compared to the usual one (42 days), while the meat and products quality is not significantly influenced;

- the ”SHAVER-STARBRO” hybrid, raised till 42 days old, provides good meat yield which could be marketed as whole carcasses or as trenched parts (breast, thighs and drumsticks, wings, remnants);

- the economic efficacy of poultry units could be increased through the superior valorization of meat. Therefore, the poultry meat production should be developed into an integrated, complete technological flow.