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## V -Summary

During the eighties of the 20<sup>th</sup> century, Egypt witnessed an increasing trend towards establishing broiler farms in order to meet the growing demand for poultry, which can be attributed to the increasing population, and the improved economic conditions compared to the pre-eighties period. It is worth noting that the poultry industry is based on a number of axes represented in the infrastructure available for the industry, which can be summarized in the farms where the production process takes place, poultry feed mills, slaughterhouses, and hatcheries.

The research problem is represented in answering several questions including: What is the current situation of poultry production in Egypt and South Africa? What is the actual capacity and geographical distribution of poultry production in Egypt? What are the economic impacts of circulating chicken parts in Egypt? What are the environmental impacts of circulating chicken parts in Egypt? What are the technical parameters for producing chicken parts? What are the appropriate qualities of producing chicken parts for consumers? What are the negative characteristics of poultry products after slaughtering? How to benefit from slaughterhouse wastes? What are the factors affecting the production of chicken parts in Egypt? To what extent Egyptian families prefer to buy chicken in parts? What are the favorite chicken parts for Egyptian families?

Therefore, the study adopted both the descriptive and quantitative methods, in addition to charts in order to draw conclusions related to the studied subject. The study consists of three chapters, an Arabic summary, an English summary, references, and the questionnaire. The main findings are listed as follows:

- In 2005, broiler farms amounted to 16.289 thousand, and the number of broiler houses amounted to 26435. In addition, the total capacity of *Badara* Broiler farms amounted to 976.7 million birds, whilst the actual *Badara* broilers production capacity amounted to 479.2 million birds.
- Sharquiya Governorate ranked first in terms of the number of *Badara* broiler farms that amounted to 2387 representing 17.22% of the country's average, and ranked first also in terms of the number of houses that amounted to 3414 representing 15.03% of the country's average. Dakahliya ranked first in terms of the number of houses rearing *Badara* broilers, which amounted to 2782 representing about 14.89% of the country's average. Moreover, Sharquiya Governorate ranked first in terms of the total production capacity of *Badara* broiler farms amounting to 115 million birds, and in terms of the average actual capacity estimated at 64.70 million birds for the period 1998-2005.
- The value added for the whole chicken grading process for the five cycles in 2009/2007 reached about L.E. 11 thousand, i.e., L.E 0.85/kg.
- The value added for producing drumstick amounted to L.E - 67.60, which is economically unprofitable.
- The value added for producing chicken wings amounted to L.E - 2589, which is economically unprofitable.
- The value added for producing chicken breast fillet amounted to L.E 14 thousand, which is economically profitable.
- The value added for producing chicken leg fillet amounted to L.E 5.30 thousand, which is economically profitable.
- The average of the total value added for dividing chicken into four parts amounted to L.E -11 thousand, which is economically unprofitable.

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- Findings show that chicken directed for dividing into parts are second grade chicken, and that they represent about 10 to 40% of the slaughtered chicken. These are chicken with negative characteristics that can not be offered for sale in whole in the market because of defects in their outside appearance after slaughtering.
  - In 2006/2007, the total number of chicken supplied for slaughterhouses reached 49.70 million birds weighting 78.30 million tons. Out of this total, about 44.20 million birds weighting 69.60 million tons have been slaughtered, whilst 5.5 million birds representing 11.10% of the total number were dead and disposed of due to medical problems.
  - In 2006/2007, the total amount of chicken wastes, either full birds or bird parts, reached about 22.60 million tons, whilst bird parts reached about 13.90 million tons distributed as follows: 2.1, 2.8, 4.9, and 4.2 thousand tons of blood, feet, and viscera, respectively. On the other hand, dead and medically executed birds amounted to 8.7 million tons of which 5.7 million tons were dead birds, and 3 million tons were medically executed birds.
  - Educated women's propensity to purchase chicken parts is higher than that of illiterate women.
  - Educated women's propensity to purchase chicken parts almost equals their propensity to purchase whole chicken.
  - The main reason behind working women's purchase of chicken parts is their families' preferences, and the fact that it is fast and easy for them to use due to their limited time.
  - Price is not the main determinant for buying chicken parts or whole chicken, rather, it is the family's taste and preference.
  - The propensity to buy whole chickens is mainly to ensure their safety, and preferring to divide them at home to benefit from each part.

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- The main reason for purchasing chicken from wholesale shops is that wholesale prices are lower than the price of prepared chicken. This way, more chicken can be bought and divided into parts at home.
  - The main reason for purchasing chicken parts from poultry shops is to ensure the safety of prepared chicken parts.
  - The economic impacts of selling chicken parts on the basis of working woman is only limited to the types of chicken purchased by the family and the parts preferred by that woman's family. Woman's work is the second reason for purchasing chicken parts. However, the rate of buying chicken parts to whole chicken is almost 1:1, i.e., family's taste is the basis on which working women buy whole chicken and chicken parts, while price is the main determinant for buying chicken from wholesale shops.
  - The environmental impact of selling chicken based on working women is represented in the high percent that tend to purchase chicken from live poultry shops. Such behavior leads to increased environmental pollution resulting from the wastes produced by these shops that lack both the environmental and hygienic safety means for disposing of poultry wastes, and the experience to deal with such wastes. However, with the emergence of human cases of bird flu, demand for purchasing live poultry started to decline, and it is expected to stop buying live birds from shops. The growing purchase of frozen and chilled whole chicken and chicken parts from wholesale stores shall help reduce the pollution resulting from poultry shop wastes.
  - South Africa's production of *Badara* broilers has been increasing at a rate estimated at 7.6 million birds in 1990 to reach 13.80 million birds in 2007. South Africa's poultry industry contributes to the total value of agricultural production by 16%. In 2006, domestic demand for chicken

in South Africa increased at an annual rate of 7%, whilst imports increased by 293 thousand tons.

A total of 93 samples of poultry and its products were collected from local market and also from imported sources to detect *Salmonella* spp., *Salmonella typhimurium*, *Listeria monocytogenes*, *Campylobacter jejuni*, *Staphylococcus aureus*, *Yersinia enterocolitica* and *Bacillus cereus*.

*Salmonella* species was detected in 80%, 60%, 40%, 60%, 90% and 40 of slaughterhouse wastes, chilled breast meat, chilled hind limbs, chilled raw liver, gizzard samples, raw whole chicken and imported frozen whole chicken respectively, with a total percentage of isolation of 53.7%.

*Salmonella typhimurium* was detected in 35%, 20%, 20%, 45% and 10% of slaughterhouse wastes; chilled breast meat chilled raw liver, gizzard samples, raw whole chicken and imported frozen whole chicken respectively, with a total percentage of isolation of 21.5%.

*Listeria monocytogenes* was detected in 5%, 20%, 20%, 20%, 15%, 20%, 50%, 33.3%, 25% and 20% of slaughterhouse wastes, chilled breast meat, chilled hind limbs, chilled raw liver, gizzard samples, raw whole chicken, imported frozen whole chicken, frozen wings, frozen deboned hind limbs, local frozen whole chicken and frozen breast meat respectively, with a total percentage of isolation of 16%.

*Bacillus cereus* was detected in 5%, 10%, 20%, 50% and 20% of slaughterhouse wastes, imported frozen whole chicken, frozen wings, local frozen whole chicken and frozen breast meat respectively, with a total percentage of isolation of 9.9%.

*Staphylococcus aureus* was detected in 15%, 15%, 35%, 50%, 33.3%, 25% and 20% of slaughterhouse wastes, raw whole chicken, imported frozen whole chicken, frozen wings, frozen hind limbs, frozen deboned hind limbs and frozen breast meat respectively, with a total percentage of isolation of 18.3%.



*Yersinia enterocolitica* was detected only in 5% of imported frozen whole chicken with a total percentage of isolation of 1.08%

*Campylobacter jejuni* was detected in 20%, 10% and 5% of slaughterhouse wastes, raw whole chicken and imported frozen whole chicken, respectively, with a total percentage of isolation of 7.5%.

Three samples of slaughterhouse by-products were collected from retail poultry sellers, put in sterile plastic bags and stored at room temperature for 72 hours to estimate: Total Bacterial Count, Total and Faecal Coliform Count, *Staphylococcus* Count, *Bacillus cereus* Count and *Salmonella* Count.

Obtained data revealed that, Total Bacterial Count increased at the end of the storage experiment by 2 logs compared to the value estimated at zero time. Also, Total and Faecal coliform bacteria increased by 3 logs compared to the value estimated at zero time. *Staphylococcus aureus* count was increased by one log at the end of the experiment.

Eight raw whole chickens were collected from retail market to study the effect of different handling and processing techniques on the microbial load.

Obtained data showed that, washing the chicken after removal of the neck has reduced the initial counts of TPC and *Staphylococcus* by one log while TCC and FCC have been reduced by 2 logs. Washing the whole chicken with its neck has only reduced FCC by one log but has not affect TPC, TCC and *Staphylococcal* count. Washing the whole chicken with salt and water has reduced TPC by one log, *Staphylococcal* count by 2 log and TCC and FCC by 3 log.

Neither *Salmonella* nor *Bacillus cereus* have been detected in these raw samples.

## **VI – Recommendations**

1 - we recommend the use of poultry slaughtered in the massacres in order to be safe and healthy and the presence of veterinary supervision, as well as all poultry slaughtered in the massacre lest slaughter unless they are free of avian flu.

2 - we recommend the use of waste resulting from the slaughter in the production of fodder and the provision of an important supplier of cheap protein indispensable, which reduces the production costs of feed and thus reduce the price of production.

3 - The study recommends a good money-chicken, salt and water because it leads to a reduction of the number of bacterial sacrifice.

4 - The study recommends removing the neck before offering money.

5 - The study recommends using the glove hand in the process of division and even less of Flanging microbes circulation.

6 - Expansion in the establishment of a mechanism and that the massacres and the remnants of the manufacturing units.

7 - massacres mechanism available units and the division of poultry and poultry and the division of shish and increase consumption and to meet the desire of the consumer and satisfy the taste of a large segment of society and the slaughter of poultry throughout the year and storage of

poultry in the refrigerator to ensure price stability in the market of poultry throughout the year.