

THE CURRENT STATUS AND THE PERSPECTIVES OF DUCK HUSBANDRY AT GLOBAL LEVEL AND IN OUR COUNTRY

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Abstract

In the context of the global demographic boom, we notice a more and more obvious interest of livestock farmers' both in streamlining animal farming and in the biodiversity of domestic species from which we may obtain a series of food products with high nutritive and organoleptic value. This phenomenon is supported, as far as duck husbandry is concerned, by the numerical evolution of the livestock for these species at global level in the interval 2009-2013. Thus, the latest data available at present (for the year 2013, FAOSTAT 2015) indicate that the livestock being reared in the world exceed 1,335 million ducks. They gain a more and more significant ratio among the domestic poultry livestock reared on a large scale, filling the third position in Europe after chicken and turkey and the second position in Asia. On the Asian continent, which has the longest tradition of consuming food products obtained from ducks, we notice a 13% increase, in Europe the increase is of 4%, in Africa of 5%, in North and South America of 7%, while Oceania is the only region where the livestock decreased by 20%, which is not insignificant at all due to the small livestock that are reared there. In this context, an international level, there is an average increase of 9%. Romania, too, follows this upward trend, the duck livestock increasing by 5% in the above-mentioned interval.

An important aspect of duck husbandry is represented by the diversity, quantity and quality of the productions it provides: meat, foie gras (considered a delicacy), eggs, feathers and down of very high quality. The global production of duck meat is about 4.341 million tons, 11.5% of which is produced in European countries. The trade in this poultry totals imports of over 11.3 million ducks, 11.7% of which is performed in Europe. The main problem encountered by livestock farmers in farming certain species of duck is represented by the relatively low performances recorded in the reproduction activity, which decreases the farm's profitability and makes it difficult to improve the poultry populations.

Key words: ducks, foie gras, livestock, meat productions, trade.

INTRODUCTION

Ducks are poultry that love water, they are reared in large flocks in people's households, as well as in farms with various levels of intensification. They are highly variable in terms of breeds, which is why farming them may have several purposes such as: meat, foie gras, feathers, down or eggs. These fowls' consumption of concentrate feed is low, as they make very good use of green mass. Thus, in the first part of their life, their feed includes a mixture of concentrated fodder, then juicy fodder is gradually introduced in feeding. Legumes such as clover and lucerne, as well as poaceae can be consumed by ducks directly through grazing. In order to obtain larger carcass, or to obtain foie gras, the ducks are force-fed. This may be done using corn grains

boiled with 2% extra fat, or corn mash which includes 1.5-2% fat, 0.8% salt and 1% premix. The force-feeding interval ranges between 20-25 days. In order to obtain a foie gras weighing 350-400 g approximately 15-17 kg of corn are consumed (Vacaru Opreș, 2002). Rearing this species contributes to diversifying poultry production, in order to increase the assortments that the consumers can choose from. This is very important in the context in which classic poultry species such as chicken or broiler turkey have already achieved outstanding performances, which renders necessary the development of research in this field.

MATERIALS AND METHODS

The paper was elaborated upon a thorough bibliographic study, based on the scientific

results obtained to date in the field of duck husbandry. Various bibliographic sources were referred to, such as: books, textbooks, scientific articles, other internet data about the numeric evolution of the duck livestock, the quantitative aspect of yields and the economic balance. In the statistical processing of the data, we used the Excel MS software, which decreased the time required for this activity and allowed us to avoid calculation errors.

RESULTS AND DISCUSSIONS

At global level, a wide variety of breeds is reared, even different species of ducks, as well as hybrids, which may be ranked according to the specialised direction of their production into: meat breeds, egg-producing breeds and decorative breeds. Another classification criterion is body weight, according to it there are heavy and light breeds. Hybrids are the products obtained by interspecific or intraspecific crossbreeding, breeds or lines, in order to obtain an added yield due to the heterosis phenomenon.

The Pekin breed. It originated in China, wherefrom, in the 16th century it was imported to the UK, and then it spread throughout Europe. The body weight is 3.5 kg in males and 3.0 kg in females, and the egg production varies between 160-220 eggs. In extensive and semi-intensive farming, the egg-laying season opens in February and lasts until August, extending even until October. The plumage is white, and incubation takes 28-30 days. In our country, the breed was imported several times, the latest import being made in the 1980s, when the pure lines 001 and 005 were brought from Cherry Valley in the UK, which were used in producing intraspecific and interspecific hybrids with the Muscovy breed. (Popescu-Micloşanu 1990)

The Muscovy breed. It originated in South America, it appeared naturally by taming the *Cairinia moscata* breed. It was brought to Europe by Christopher Columbus in the 16th century. The breed exhibits a significant gender dysmorphia, mainly the male weighs between 4.5-6 kg and the female between 2.5-3.5 kg. The egg production ranges between 70-80 eggs, and in controlled microclimate 120-150 eggs may be obtained. In terms of colour

varieties, this breed displays the following colours: black, white and pied. Incubation takes 34-36 days, at the age of 11-12 weeks the males weigh 3-3.5 kg, and the females 2-2.15 kg.

The Rouen breed originates from North-West France, the Rouen town region, it is a heavy duck breed, with a slightly elongated body shape, the chest is wide, it has good features for meat production, the males achieve weights ranging between 3.5-4 kg, and the females 3-3.5 kg. The female lays 80-90 eggs of cream or greenish colour. The plumage is wild. (Bunaciu, 2009)

The Aylesbury breed was obtained in Aylesbury county town in the UK. In this region, the breed was obtained through the selection of individuals with high body weight, whose offspring grow fast, the breed fattens easily and produces high quality meat. It is highly appreciated in Germany, where it has been reared for 150 years. The body weight is 3.5 kg for ducks, and 4 kg for drakes; the fattened fowl may reach 5 kg. Ducklings are fattened easily and yield fine meat. Ducklings also have a fast growth rate, so that at the age of 8-11 weeks they weigh 2-2.5 kg. The egg production is of 80-180 eggs with an average weight of 90-115 g/egg, and a white-yellowish or greenish colour. Egg-laying begins in December – January and continues until July. The egg fecundity ratio is satisfactory. The plumage is white. (Vacaru-Oprîş, 2000)

The Campbell breed. It was created at the end of the 19th century. There are many colour varieties, such as: khaki, white and pied. At the age of 8-10 weeks, ducklings weigh between 1.5-1.9 kg, and at adult age, males weigh 2.2-2.5 kg, and females 1.8-2 kg. The breed is very good egg-layer, with a high yield ranging between 250-300 eggs, in 1929 a record number of 357 eggs was recorded. The breed is used in obtaining egg-laying or meat producing hybrids. (Popescu-Micloşanu, 2009)

The Indian Runner breed. It originated in India, wherefrom it was brought to Europe in mid-20th century, its body weight is of 2 kg in males and 1.8 kg in females. It is a good egg-layer, yields range between 180-200 eggs, weighing 65 g and having a white or cream shell colour. In terms of colour varieties, the breed displays: the wild variety, pied, white, brown and trout colour. (Usturoi, 2008)

Ducklings at the age of 8-10 weeks weigh between 1.5-1.8 kg.

Ornamental breeds. Recently, both at global level and in our country, these breeds have expanded rapidly and they include: the Carolina, Mandarin, Dwarf, Crested, Labrador or Cayuga breeds. They are appreciated for their plumage beauty, structure and colour as such, but also for embellishing parks and yards. To obtain foie gras, as well as meat, the Pekin and Muscovy breeds are reared globally and their crossbreeding yields interspecific hybrids. The intraspecific hybrids based on the Pekin breed are those that achieve the highest performances in terms of broiler production, and they are the most widely spread at global level. Thus, the hybrids produced by Cherry Valley Farms in the UK may reach a delivery weight of over 3 kg, on a low specific consumption, over an interval 10-15 days shorter than the local duck breeds in various countries, thus they are in demand due to these performances.

The Star 53 hybrid of a French company, has as father the GL 50 strain, with sexual maturity at the age of 25 weeks, and as mother the GL 30 strain, with maturity at the age of 24 weeks and a production of 230 eggs per egg-laying season of 44 weeks, ducklings reaching a weight of 3 kg at the age of 42 days, with a specific consumption of 2.4 kg. 49 days from hatching, ducklings weigh 3.4 kg, with a specific consumption of 2.6, which is why they are also in high demand due to the increased performances they achieve.

Among the Muscovy duck hybrids reared for meat ducklings with very high yield characteristics, we may quote those produced by the company Grimaud Frères in France. When Muscovy ducks and common ducks mate naturally, the fertility ratio is usually very low. At present, the artificial insemination method is used to increase fertility. (Usturoi, 2005)

The R.32 black hybrid. It is a Muscovy duck hybrid obtained by crossbreeding males from the "Dominant" line with females from the "Typical" line, it has black plumage, dark grey skin colour, male slaughter age of 80 days, and female 70 days, the slaughter weight of 3.8 kg in males and 2.1 kg in females, the specific consumption is of 2.85 kg.

The R.51 hybrid. Muscovy duck hybrid created by crossbreeding males from the "Cabreur" line with females from the "Casablanca" line, it has white plumage and yellow skin. The slaughter age is the same as in the case of R.32, the male eviscerated carcass weighs 3 kg, and the female one 1.7 kg. The specific consumption is of 2.8kg. (Popescu-Micloşanu 1990)

The 31 barred hybrid. Muscovy duck hybrid obtained by crossbreeding males from the "Dominant" line with females from the "Dynamic" line, plumage upon hatching is barred, and at slaughter age it is grey with black spots. The male eviscerated carcass weighs 3.7-4.0kg and the female one 1.8-2.0kg. the slaughter age and specific consumption are the same as in the case of the other hybrids. (Popescu-Micloşanu 1990)

The Romanian meat and foie gras hybrid, Mulard. It was obtained by crossbreeding Muscovy males with Pekin females, the hybrids have a fast growth rate, with good force-feeding features, they may reach 3.5-4kg, after force-feeding, foie gras weighing 350-400g may be obtained, with a consumption of 16-18 kg corn. (Usturoi, 2005)

Ducks are valued for their diverse productions, as they yield: meat, eggs, foie gras, feathers and down. The meat production is influenced by breed, age, gender, hybrid, feed maintenance or administration, using force-feeding or not. Duck meat is consumed due to its organoleptic features, as well as to its low intramuscular fat content, being leaner than chicken meat, having 2% lipids content in the muscles and being rich in polyunsaturated fatty acids. The colour is redder due to the high red muscle fibre ratio ranging between 70-90%.

A 100g serving of skinned duck breast meat contains 140 calories and 11.2 g of fat.

A great advantage of moderate consumption of duck meat is given by duck fat. The melting point for duck fat is only 14 degrees Celsius, much lower than the human body temperature, and for this reason it is easy to eliminate, as compared to the high melting points of beef, pork and chicken fat which are 45, 38 and 37 degrees Celsius. The low melting point allows the meat to be very delicious even when it is served cold.

The egg production is also important. According to M. Bălăşescu (1980) the chemical

structure of a duck egg is the following: 70.1% water, 13% protein, 14.5% lipids, 1.4% glucose and 1% mineral salts. The caloric value of a duck egg is of 131 calories/egg or of 190-230/100g egg.

The duck egg contains iron, zinc, potassium, retinol, vitamin K and can help people suffering from insomnia, digestive problems or hypertension. The disadvantage is that the duck egg contains a high level of cholesterol, so it will be consumed more rarely and only very well cooked. The eggs laid by these species must be consumed after proper thermal treatment was applied (boiling/frying), or they are consumed as liquid eggs (pasteurised), thus lowering the possibility of becoming infested with certain diseases such as Salmonella. (Popescu-Micloşanu, 2007)

Eggs for human consumption are obtained from light breeds, considered good egg-layers (Campbell, Indian Runner).

Feathers and down are used in the animal flour industry, as well as in manufacturing quilted clothing, pillows or duvets, for which white down is preferred.

The foie gras production is generally obtained from hybrids after force-feeding, a procedure which leads to liver becoming even 10 times heavier than normal. The phenomenon is due to the accumulation of lipids in the hepatic tissue. The global production of foie gras in 1998 was of 16,800 tons and has increased rapidly and constantly in the past 20 years. Almost 80% of the global foie gras production is obtained by France and Hungary. Bulgaria and Spain are also large producers.

Romania, as well as its neighbours, can also produce and market foie gras efficiently, both for domestic consumption and for export, where the demand is continually increasing.

A statistical situation related to the global foie gras production in 2005 shows that the overall production was of 23,500 tons, the main producer being France, with 18,450 tons, followed by Hungary with 1,920 tons and Bulgaria with a production of 1,500 tons.

Table 1. The global foie gras production in 2005

Country	Foie gras production (tons)	Ratio to the total
France	18,450	78.5%
Hungary	1,920	8.2%
Bulgaria	1,500	6.4%
USA	340	1.4%
Canada	200	0.9%
China	150	0.6%
Other countries	940	4%
Total	23,500	100%

Force-feeding may be done manually and industrially. Manual force-feeding is a method that takes more time, between 5-10 minutes, the advantage being that the behaviour and state of each individual can be observed, obtaining satisfactory average yields. Among the disadvantages there are the high corn consumption and the workforce. (Usturoi, 2005)

Industrial force-feeding is of three types: force-feeding on corn grains, on corn mash and the auto-force-feeding method, the amount of labour being smaller and yields being higher.

The current status of duck husbandry, both at global level and in our country, is good, the data from the past 13 years and the analyses performed indicate that livestock is constantly growing, reaching 22.27% at global level.

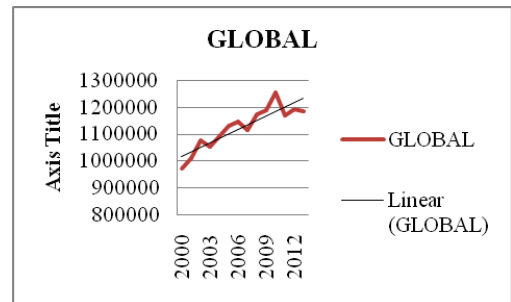


Fig. 1. The status of duck husbandry at global level (thou heads)

In Romania, the livestock is small due to the fact that duck consumption in our country is quite low.

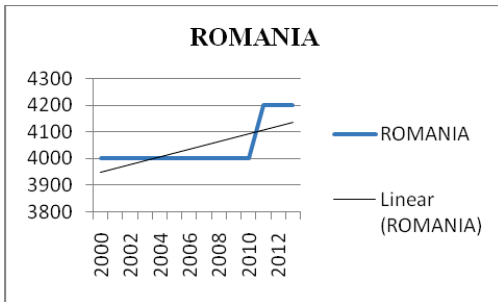


Fig. 2. The status of duck husbandry in Romania (UM)

At continent level, Asia yields the best results, its livestock increasing from 860,857,000 heads in 2000, to 1,045,055,000 in 2013, the increase being of 21.40%.

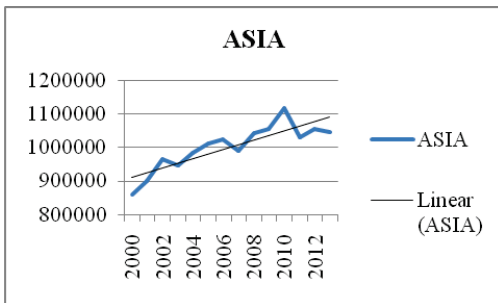


Fig. 3. The status of duck husbandry in Asia (thou heads)

The Asian continent is followed by the European one, in 2000 in Europe there were approximately 67,728,000, increasing by 28.43% and reaching 86,983,300 heads in 2013.

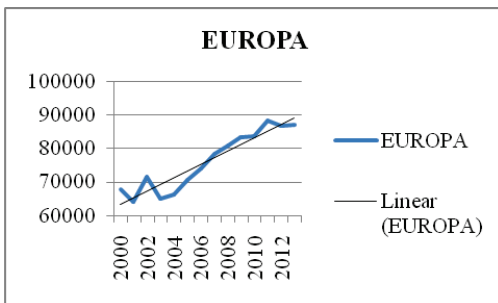


Fig. 4. The status of duck husbandry in Europe (thou heads)

Africa is the third continent globally with a livestock of 25,514,000 in 2013, the increase being quite high, of almost 50% since 2000, when 17,095,000 heads were reared in Africa.

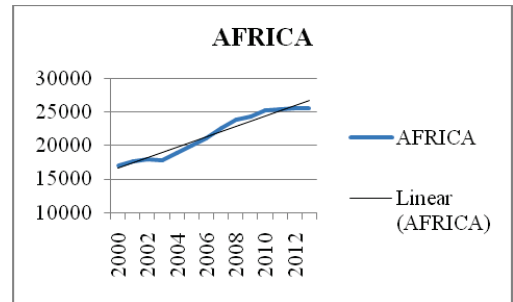


Fig. 5. The status of duck husbandry in Africa (thou heads)

In South America the status is also good, Fig.6 showing that there is a 31.21% increase since 2000, when the livestock amounted to 7,118,000 heads, until 2013, when it reached almost 9,400,000 heads.

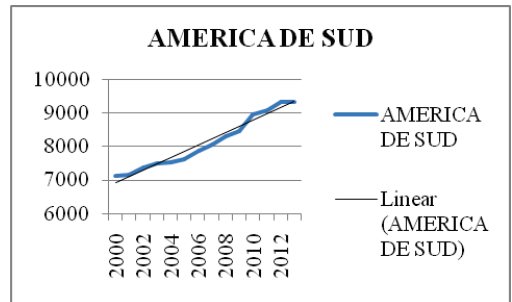


Fig. 6. The status in South America (thou heads)

In North America, in 2013, there were approximately 8,751,000 ducks, the livestock increasing by 13% since 2000, when 7,751,000 heads were reared.

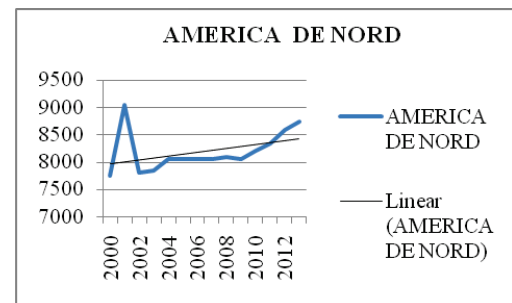


Fig. 7. The status of duck husbandry in North America (thou heads)

In Oceania, we encounter the highest increase of approximately 75%, but the livestock reared here is much smaller that it is on the other continents, thus the increase is insignificant at global level.

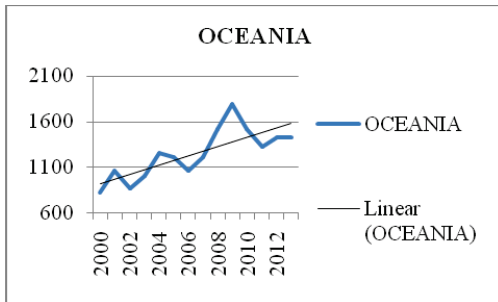


Fig. 8. The status of duck husbandry in Oceania

The livestock recorded in Oceania have evolved from 818,000 heads in 2000, to 1,428,000 in 2013.

CONCLUSIONS

From the analysis we performed, we notice a global increase in duck livestock in the past 13 years. Among the continents, the largest livestock are found in Asia, the Asian peoples having a long tradition of rearing and consuming duck meat and eggs. Asia is also the largest duck exporter in the world, and there are countries that process the duck eggs incubation on board ships, reaching the destination during the ducklings hatching.

Europe also has an important duck livestock, which has increased more than the global one, by over 28 % in the interval 2000-2012.

We notice that the first two foie gras exporters are France and Hungary.

In Romania, the increase in livestock amounts to 5%, from 4,000,000 to 4,200,000. In time, the livestock tends to develop, which is also

due to the ever higher demand for duck meat, as well as to the outstanding characteristics of duck meat.

Decorative breeds will also develop due to the fact that they are liked more and more globally, and the demand is higher and higher. The livestock tend to keep increasing due to the fact that ducks meet the requirements of poultry products diversification and have a low feed consumption, they can be reared very well in extensive system, on lakes and pastures, thus making very good use of feed sources that are not used by other animal species and do not compete with human food.

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