ANALYSIS OF FACTORS OF EFFECTS ON VENISON AS FOOD RAW MATERIAL (A PLERIMINARY STUDY)

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ABSTRACT
In Hungary, approximately 200-250 thousand big game animals are hunted annually. Animals are not only hunted for valuable trophies, but also for thousands of tons of venison for consumption. A major part of this is sold abroad, bypassing the Hungarian market. It can be said in general that venison is low in fat and carbohydrate and rich in protein, micro- and macro elements, as well as vitamins. Currently in Hungary, venison is produced in free ranging areas, game preserves and game farms. There are significant differences between them in terms of environmental conditions and the employed keeping and feeding technologies. Impacts of these factors on the meat quality are well-known in domestic animals, but they are only partially understood in game species. The quality of red deer venison, the influential factors and risks have been examined in the current project. Red deer venison has been acquired from free ranging areas, game preserves and game farms. Changes in the volume of venison in Hungary and its distribution between game species were estimated, as well as the tendency in the number of game preserves and game farms was shown in this study. In Hungary, the quantity of hunted game species was approximately 10.000 tons in 2010, from which wild boar and red deer were the most abundant. We expect it to be the same in the future.

Keywords: wild boar, red deer, game management and farming, game meat

INTRODUCTION

Wildlife management in Hungary is based on one of the best-organized hunting-systems in Europe, which considers the interests of the landowners (the law 1996/LV), the game (hunting area is at least 3000 ha), and other sectors managing natural resources (agricultural and sylviculture. Due to appropriate game density and excellent trophies (more world records belong to Hungary) more than 50000 Hungarian people are hunting, in addition to the 20000-30000 foreign hunters visiting Hungary annually. The annual hunting bag includes about 240 000 individual big game (roe deer, red deer, fallow-deer, mouflon, wild boar), and more than 500 000 small game (CSÁNYI ET AL. 2011). Passing about 10 thousand ton of available venison (CSÁNYI ET AL. 2011) to Hungarian customers has not been successful in the last decades (HERNÁDI, 2011). However, the demand for healthy, affordable and available venison could be important (ANONYMOUS, 2003). It may slightly increase the revenues of wildlife management, and it might contribute to the development of quality of life of rural populations and attractiveness of the country. Venison, which is a low environmental load healthy food, used primarily locally or delivered not too far away can be a part of local business through local restaurants, hotels and rural tourism, and it can directly improve the livelihoods of families living there. The size of the potential home-market is about 2.5 million people, or 34 percent of the adult population in Hungary. They rate venison as a beloved food. However, the majority of consumers do not know the beneficial nutritional properties of venison. The fat-content of roe-deer is almost one-tenth that of beef, while roe-deer meat contains 450 times more B1 vitamin than beef (VÖRÖS, 2009). Therefore, venison can and should be promoted as an excellent component of almost any healthy nutrition plan (LUGASI, 2006).

It is widely known that venison is not produced under standard conditions like in animal breeding. Accordingly, it is particularly important to reveal the effects of the different keeping and feeding technologies on venison quality, as well as the variability of the most relevant venison quality parameters that depend on the feeding technology. Furthermore, it is necessary to gather information about the venison distribution in EU member states and about rules for the utilization of venison. The current study is a subprogram („Manufacture of animal products") of a larger project (code: TÁMOP-4.2.1.B-11/2/KMR, title: Level up the education and research at Szent István University) supported by Social Renewal Operational Programme. In this paper, the main steps/actions of the total research activity are presented, as well as the background information and antecedents considered during the planning and development. There is a brief overview about the provisions of the Hungarian and EU legislation concerning venison, since the legal framework for production and distribution are determined by them.
Field-work has been divided into three different subjects/issues:

- Study the potential risks of venison production.
- Reveal the difference of the venison quality produced in game preserves and farms, especially the effects of feeding technologies.
- Study new feeding opportunities.

MATERIAL AND METHOD

Characterization of the volume of domestic venison production, its distribution of game species and temporal changes, as well as changes the number of game preserves and game farms were analyzed based on data from the Hungarian Game Management Database (HGMD). Quantity of venison after processing was calculated as follows: body mass of the hunted game was reduced by losses during processing. The used "correction numbers" of wild boar and red deer were determined by VÖRÖS (2009), while other correction numbers for other game species were estimated by us. The correction numbers were: red deer 0.5, fallow-deer 0.5, roe deer 0.5, mouflon 0.5 and wild boar 0.35. It means that the net weight of venison was obtained by eviscerated body mass corrected by these correction numbers.

RESULTS

Rules on venison utilization and distribution

The issues of wildlife management, game keeping and venison distribution are regulated in Act LV of 1996 on game protection, game management and hunting. Certain issues related to the implementation of the Act are contained in Decree No.79/2004. (V. 4.) of the Minister of Agriculture and Rural Development, as well as in Decree No. 43/2011. (V. 4.) of the Minister of Rural Development (food hygiene conditions of handling and distribution of hunted animals).
It is obligatory to apply the relevant provisions of the European Parliament in case of Decree No. 43/2011 (178/2002/EC, 2075/2005/EC, 1069/2009/EC), and Act XLVI of 2008 on the Food Supply Chain and on Control and Supervision of the Food Supply Chain, as well. This regulation establishes the Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs, and the Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food and animal origin.

Volume of hunting bags and processed venison rose sharply between 1997 and 2002 *(Fig.1-2.)*. It declined slightly until 2006, but increased again between 2007 and 2010 and quantity of the hunting bag was close to 10000 tons *(Fig. 1)*, and venison was more than 4000 tons *(Fig. 2)*. The significance of each game species shows considerable differences; 80 percent of the total volume is the wild boar and red deer. The rate of wild boar within the total amount steadily increased between 1994 and 1999, and then it fluctuated about 50 percent, while the ratio of red deer was 30-35 percent. The rate of roe deer was around 10-12%, fallow-deer only 5% and mouflon approximately 1% during the whole period.

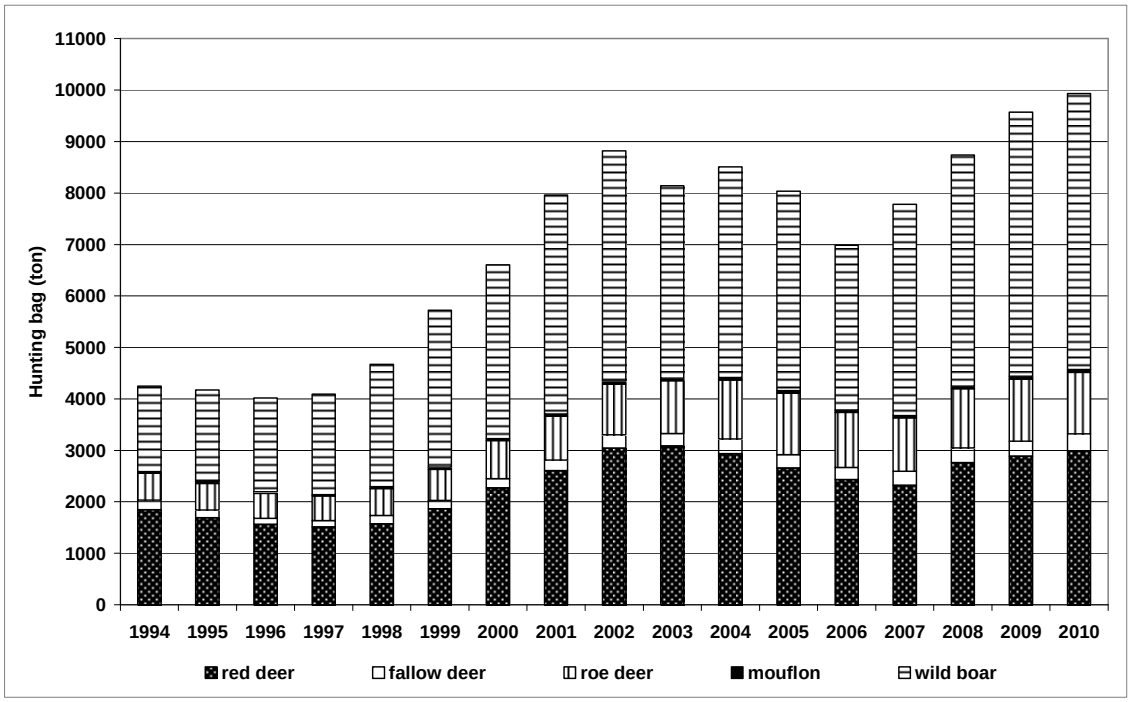

Fig. 1. Changing of the hunting bag in Hungary (based on HGMD)

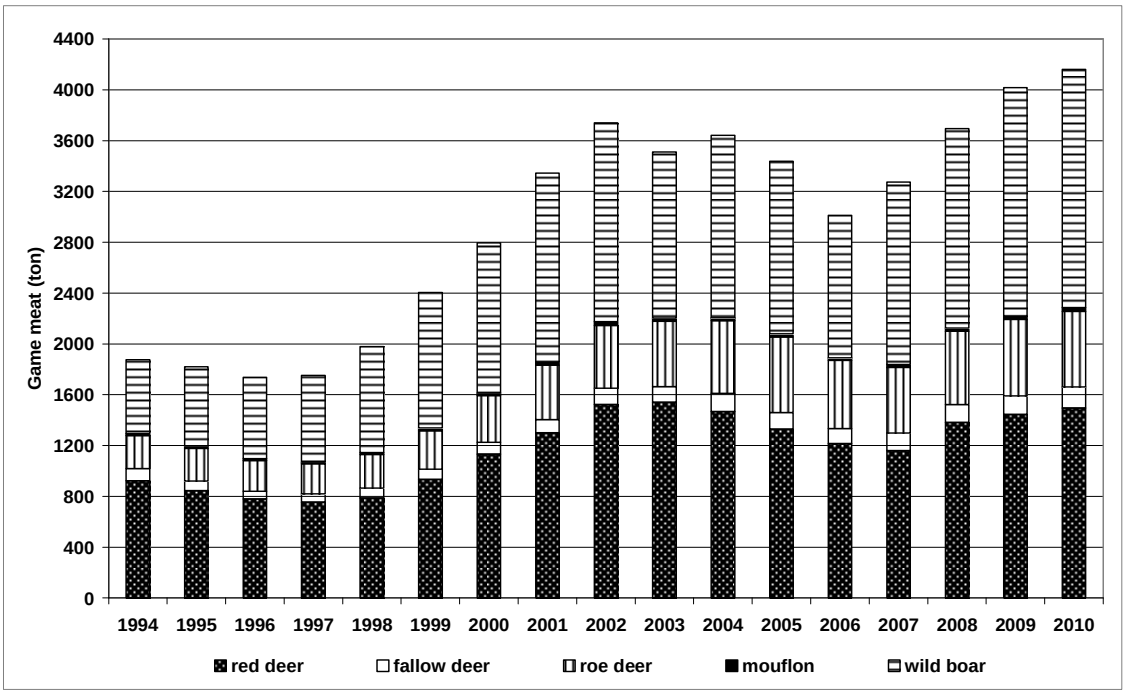

Fig. 2. Changing of the processed venison in Hungary (own calculation based on the data of the HGMD)

Changing of the game preserves and game farms

Game preserves are registered by the hunting authority. Data have been certified by the HGMD since 1997 *(Fig.3.)*. The establishment of game farms has been allowed by the Hunting Law (25/A. § (1)) since 2009, so data are available since 2009, as well. The number of game preserves nearly doubled during the studied period. However, establishment of a significant number of new game preserves is not expected in the future. Nevertheless, a sudden change can be seen in the case of farms, which is largely due to the fact that most of these facilities already existed, but there was no information about them.

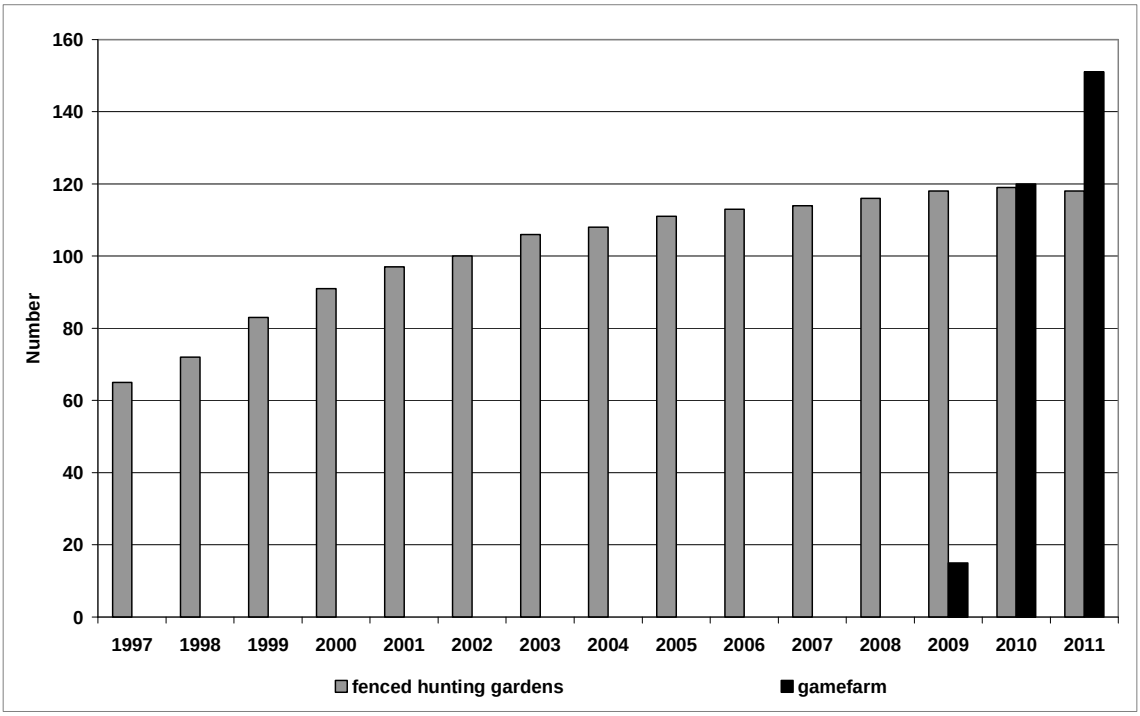

Fig. 3. The number of game preserves and the number of game farms in Hungary (based on HGMD)

CONCLUSIONS

The dominance of wild boar and red deer can be clearly seen examining the volume of the hunting bag. Regarding the proportions, significant change cannot be expected. However, increasing of the hunting bag of the wild boar and red deer can be predicted considering the European tendencies (APOLLONIO ET AL. 2010) and the expected effects of the Hungarian afforestation program (SOLYMOS, 2000).

Based on the tendency of the number of game preserves, any further significant increase cannot be expected. The future of game farms is difficult to predict, but further growth is likely to occur if the law does not eliminate this possibility.

The significance of any further study is confirmed by above-mentioned facts and factors, which try to reveal the qualitative differences in venison and factors influencing venison production.

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