

## HU-BA PRODUCTION SYSTEM FOR SPECIAL POULTRY PRODUCTS IN HUNGARY

*Bodi, L. – Dong Xuan, K. D. T. – Szalay, I.T.*

Research Institute for Animal Breeding and Nutrition, Herceghalom, Division for Small Animal Research (ATK-KATKI) H-2100 Godollo, Isaszegi u. 200, Hungary  
Association of Hungarian Small Animal Breeders for Gene Conservation  
H-2100 Isaszegi ut 208. Godollo, Hungary

[bodi@mgegodollo.hu](mailto:bodi@mgegodollo.hu); [bodi@katki.hu](mailto:bodi@katki.hu)

### Summary

There is a remarkable demand for poultry products coming from free-range keeping. Label Rouge and other systems are elaborated for free-range production. In Hungary Research Institute for Animal Breeding and Nutrition (ATK) cooperating with the Association of Hungarian Small Animal Breeders for Gene Conservation (MGE) started a project in 2005 to work out the genetic bases, management and control of production of the Hungarikum quality poultry meat.

The HU-BA system (abbreviation of Hungarikum Baromfi = Hungaricum poultry) is based on the trio of gene conservation – breeding – controlling and production. In this system old Hungarian poultry breeds and some of their crosses can only be used. Gene conservation and larger scale breeding of these breeds are in control of MGE. The breeds are: Hungarian chicken breeds, Transylvanian Naked Neck chicken breeds, Copper turkey, ”Hungarian” Bronze turkey, Hungarian guinea fowl, Hungarian duck, Hungarian goose and its frizzled variant, Hungarian Upgraded goose (only as female partner for producing HU-BA goslings). Regulations of HU-BA production are quite similar to certified ecological production, and even stricter in some respect. If ecological system is combined with HU-BA it will mean double control. The scheme of controlling system is tabulated in the text. There are nine products, proposed for HU-BA production, including 4 chicken meat, 1-1 turkey, guinea fowl, duck and goose meat and the ninth is HU-BA egg.

The system can be adaptable to Vietnamese conditions, first of all with old Hungarian poultry breeds, or usable for the production of animal products on a gene conservation basis of traditional, local breeds, after the elaboration of controlled production.

### Introduction

As a result of spreading the industrial animal production a huge number of rear farm animal (among others poultry) breeds are in danger or have become extinct. On the other hand, there is a demand for special quality, traditional, free-range products of special quality. One of the best known systems is Label Rouge, which was the first program for free-range poultry keeping and its regulations (*Synalaf, 2004*).

Research Institute for Animal Breeding and Nutrition cooperating with MGE started a project in 2005 to elaborate genetic bases, management and control of production of the *Hungarikum* quality poultry meat. The GAK-OKO-TERM project is financed by the Agency for Research Fund Management and Research Exploitation (KPI) (*Szalay et al. 2007*).

## **General description of HU-BA system**

HU-BA is a trade mark and a complex system. Its base is the trio of gene conservation – breeding – controlling and production system. As part of the conservation programme, MGE and its institutional partners have been working on the elaboration of the genetic bases, management and quality control of production of the *Hungarikum* type quality poultry products. Special poultry production needs old Hungarian type poultry breeds, natural or ecological production and a comprehensive controlling system, by which typical Hungarian product, called *HU-BA* will be produced. Further important aspects of HU-BA production are conservation of old Hungarian poultry breeds and breeding traditions, as well as rural family farming. Making HU-BA products more marketable, inclusion of ecological type mixed farming in production is very promising, if incorporation of poultry production into ecological plant cultures or horticultures can be solved. This type of production can provide a model for development of ecological type mixed farming systems including poultry, for other countries too.

In the above mentioned project (GAK-OKO-TERM) production of some breed crosses of old Hungarian poultry were studied. For chicken meat the cross of White Transylvanian Naked Neck and Partridge colour Hungarian chicken; for turkey meat: Copper turkey and ”Hungarian” Bronze turkey and for goose meat Frizzled Hungarian goose male and Hungarian Upgraded goose female. These crosses are proposed to be used for HU-BA production beside the pure breeds.

Controlling and production regulations of HU-BA production are quite similar to certified ecological (organic) production, and even stricter in some respect. It has been elaborated for every species and products. Some important regulations for HU-BA turkey production are shown in *Table 2*.

## **Breeds used for production of HU-BA products**

Following the expansion of poultry industry, old breeds gradually disappeared from the countryside, and were saved under preservation and conservation programmes in gene banks. The biggest gene bank of old Hungarian poultry belongs to ATK-KATKI, and its conservation program is supervised by MGE. Old Hungarian poultry breeds are briefly shown below (*after Szalay, 2002; Szalay and Dong Xuan, 2007*).

### *Hungarian chicken breeds*

Until the beginning of commercial chicken breeding Hungarian chicken breeds of different colours (white, speckled, yellow and partridge and naked neck variants) were wide-spread in the country. They were preferred here not only for their relatively good egg production under harsh conditions, but for their excellent meat quality coming from the ”seeking habit” of these birds, scratching for food regardless of hot or cold weather. Beginning in the 1960s, breeding programmes and production of local breeds were replaced by commercial chicken hybrids, resulting in fast decrease of the population number of old Hungarian chicken breeds. All breeds and colour variants have been maintained as official gene reserves since 1973.

### *Hungarian turkey*

Turkey breeding has been existing in the Carpathian basin for many centuries. In Hungary, white and black colour variants of turkey were known. Later the black variety practically disappeared after crossing with Bronze and other imported black turkey breeds at the

beginning of the 20<sup>th</sup> century. As the result of crossings, however, Bronze turkey became adapted to the local conditions and it is considered now as an old Hungarian poultry breed. Copper turkey used to be popular in the southern part of Hungary. Body weight of the breed is somewhat lower than that of other turkey breeds, however, it is a very strong, resistant to diseases and well adapted local breed.

### *Guinea-fowl*

Landrace varieties of guinea-fowl include bluish-grey (the most popular colour variety), white, grey, bronze or black and spotted. First reports about guinea-fowl breeding in Hungary were published at the beginning of the 20<sup>th</sup> century, though it must have been introduced into the Carpathian basin much earlier and kept as a game bird or a semi-domesticated animal around the houses. Its excellent meat quality, very good adaptability to different conditions, disease resistance, wild and seeking habit and low costs of keeping make guinea-fowl an excellent poultry species for natural production.

### *Hungarian goose and its frizzled variant*

Hungarian goose is indigenous in the Carpathian basin. During the centuries it got accustomed to the special climatic conditions and farming systems of the region, which made it very precious in this part of Europe. Local goose breeds of different colours (white, greyish or spotted) produced high quality fatty liver, meat and feather approved by all markets. A unique variety of Hungarian goose – the Frizzled Hungarian goose – is considered now as a typical poultry breed for the Carpathian basin. Frizzling (F) is a mutant gene which causes the contour feathers to curve outward away from the body. Colour variants are white, grey or white-grey spotted.

### *Hungarian duck*

The original Hungarian duck considered as an indigenous breed in the Carpathian basin used to be found mostly in white and wild, rarely in spotted, brown or black colour varieties. Because of its juicy, delicious meat, Hungarian duck was bred all over the country and was much more important for domestic consumption than goose. Nevertheless, starting with the early 1960s, Hungarian duck gradually disappeared as the result of crossing with imported duck breeds. Conservation programme of local duck varieties started in the late 1990s.

## **HU-BA products**

*Spring chicken:* Traditional product, when chickens are reared till 1 kg live weight – old Hungarian chicken breeds realise that weight at 10-12 weeks of age. Chicken meat covered with egg and breadcrumbs is suitable for quick frying in fat. Breed and free range keeping together ensure the special flavour and quality of the meat.

*Table chicken:* Chickens can be marketed as traditional farm **table chickens** reared until 12-18 weeks of age. They realise 1,6-2 kg live weight depending on the breed and sex. The meat is mature, has special flavour, can be marketed in gross or chopped.

*Soup hen:* Soup hen is marketed after the bird had finished egg production, with 2-2,5 kg live weight. Most excellent soup meat for traditional cuisine.

*Capon:* Roosters castrated at young age (capons) are marketed about 6 months of age with 3 kg live weight. Their special, **soft and friable** meat is the favourite product of traditional restaurants and gourmands.

**Table turkey:** Meat of turkey kept until 20-24 weeks of age under natural conditions (4-5 kg live weight) is a special quality product, its marketing generally is in connection with feasts around Christmas. It can be marketed both in gross and chopped.

**Table guinea fowl:** Guinea fowl has one of the most delicious poultry meats. It can be marketed as table guinea fowl with 1-1,4 kg live weight, or later as soup meat.

**Table goose:** Hungarian goose realises 3-4 kg live weight at 10-12 weeks of age. It obtains its special quality meat from the frizzled feathered stocks and grazing.

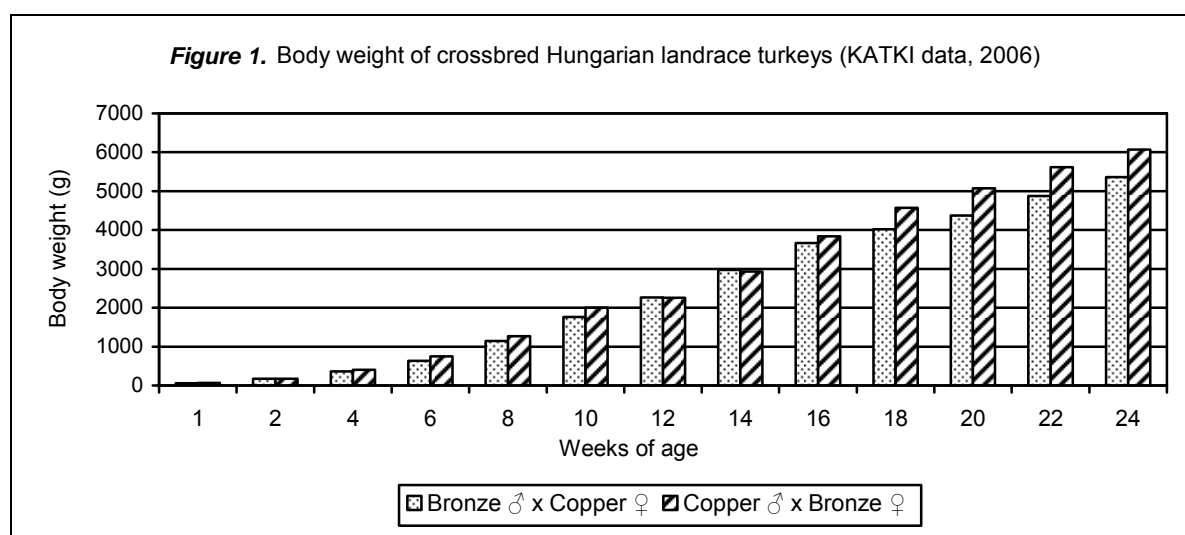
**Table duck:** Hungarian duck is a breed with special meat quality. It has been preserving its character reminiscent of proud flesh until now. They can be marketed with 2-2,5 kg live weight.

**HU-BA egg:** Eggs of the chicken and guinea fowl breeds those are the bases of HU-BA products are marketed under this trade-name. Natural keeping conditions and genetic traits of the breeds are the bases of production of eggs with specific flavour and special nutritive value.

### The results of the project for elaborating HU-BA production system – turkey example

Our examinations (*Szalay et al., 2007*) showed that body weight of Hungarian Bronze turkey significantly exceeds the body weight of Copper turkey as it was expected. In body weight we could observe heterosis by crossing the two breeds. Crossing of Copper ♂ and Bronze ♀ the body weight gain of offspring was higher than of Bronze ♂ and Copper ♀ (*Figure 1*). In feed conversion ratio no significant difference was found. Egg production of Bronze layers is higher by 5-10% than that of Copper layers throughout the laying cycle, while Copper breed shows better hatchability. Total number of chicks and egg weight are still in favour of Bronze, therefore Copper ♂ x Bronze ♀ crossing is recommended for turkey meat production in HU-BA system.

Regulations for rearing HU-BA turkey have been elaborated, based on Label Rouge and organic regulations, however, certain regulations (breed, pasture area and max. live weight) differ from those, according to the *Table 2* (highlighted in bold).



For optimisation of the recommended pasture area we carried out an examination on the effect of area (limited to 30 m<sup>2</sup> and the model of unlimited: 90 m<sup>2</sup>) per turkey on body weight (*Table 1*). We can conclude that bigger pasture area worsen body weight and feed conversion of males. On the other hand the lower (30 m<sup>2</sup>/turkey) area is sufficient for turkeys by our ethological observations but necessary for high quality production and to preserve the pasture.

<b>Table 1.</b> 12-24 week live body weight of landrace Hungarian turkeys kept on pasture of 90 m <sup>2</sup> /bird and 30 m <sup>2</sup> /bird (KATKI data, 2006)							
Pasture area	Weeks of age						
	12	14	16	18	20	22	24
Males							
90 m <sup>2</sup> /bird	2411	2735	3284	3749	5059	5431	6209
30 m <sup>2</sup> /bird	2515	3058	3622	4132	5478	5902	6573
Females							
90 m <sup>2</sup> /bird	1981	2336	2719	3026	3621	3729	4139
30 m <sup>2</sup> /bird	1990	2338	2744	3038	3650	3716	3969

<b>Table 2.</b> Some important regulations for HU-BA turkey rearing	
Density of birds in houses:	Till 7 weeks of age: max. 10/m <sup>2</sup> After 7 weeks of age: max 6/m <sup>2</sup> , but max. 25kg/m <sup>2</sup> .
Number of birds in a house:	Max. 2500
Number of birds in a farm:	Max. 5000
Birds have access to open air daily from at least 9.00h to sunset:	Not later than 7 weeks of age
Range is covered with green with an area:	<b>Min. 30m<sup>2</sup>/bird</b>
Breed of birds	Old Hungarian turkey breeds or they crosses
Earliest slaughter age	Min. 140 days of age
Live weight	<b>Min. 3 – 5 kg, max. 5 – 7 kg</b>

### Possibilities of the implementation of HU-BA system in Vietnam

In Vietnam we can still find many local poultry – and other farm animal – breeds. Most of them may get in danger with the change of rural life. On the other hand a strong consumer's demand exists for special quality products both in Vietnam and in other countries in the Far-East (e.g. China, Japan). The HU-BA system can be a sample how to meet this demand by ecological type and controlled production of traditional products.

The system can be adaptable to Vietnamese conditions, first of all with old Hungarian poultry breeds, or usable for the production of animal products on a gene conservation basis of traditional, local breeds, after the elaboration of controlled production.

### References

- Synalaf (2004) Synalaf.com
- Szalay, I. (2002) Régi magyar baromfifajták. Old Hungarian Poultry (in Hungarian and English) Mezőgazda kiadó, Budapest, 111.p.
- Szalay, I., Bódi, L., Dong Xuan, K.D.T., Szentes, K.A., Barta, I., Stompné, Molnár I., Kustos, K., Horel, K. (2007) Elaboration of the production system for special quality hungaricum poultry products – summarised results of the project obtained in Godollo in 2006. (A hungaricum baromfihús termelési rendszerének kidolgozása – a projekt 2006. évi gödöllői eredményeinek összefoglalása) (In Hungarian, with English Summary) A Baromfi 10(1) 34-47.
- Szalay, I., Do thi Dong Xuan, Kisne (2007) Old Hungarian poultry breeds and their use in high-quality production. Proc. 1<sup>st</sup> MGE-NEFE Workshop, NIAH Poultry Research Centre, 23 March, 2007, Thuy Phuong, Thuy Phuong, Hanoi Vietnam. 6-9. p.