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Photo by *László Migend*



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# Traditional Hungarian Poultry Breeds – Their use in Sustainable Agriculture

## 1. Traditional poultry breeds and poultry production

Poultry breeding is one of the most important branches of Hungarian animal production. Hungarian poultry products were highly appreciated by the European market for their special quality. Based on old poultry breeds and breeding traditions, intensive poultry production started in Hungary in 1960s and made the country one of the most important exporters of poultry products in the world. By the end of the 1980s Hungary was on the top in chicken meat exporters/capita, as well as, in the export of goose liver and goose feather. At present, the domestic poultry sector is almost exclusively characterised by intensive, high input production, especially in chicken, turkey and duck meat and table egg production. Parallel with the development of intensive poultry production, however, traditional Hungarian poultry stock breeding has gradually disappeared, while maintenance and conservation of old breeds – under the supervision of the National Institute for Agricultural Quality Control and breeding NGOs – became the task of national parks, researchers and fancy breeders mainly, in order to save the unique, domestic varieties.

Expansion of intensive farming threatens traditional poultry breeds the world over much more than other domestic species, as it is shown by a recent FAO survey (Table 1., source: FAO, 2000).

Gene conservation of traditional Hungarian poultry, as well as

other domestic animal breeds, however, cannot be complete without their utilisation in practice. In accordance with the Agri-environment Protection Programme of the country, accepted by the Hungarian Government in 1999 (FVM, 1999), the following three levels of the use of traditional poultry breeds ensuring sustainable agrarian development and production can be proposed:

1. *Natural or organic poultry production* is product oriented, where the primary goal is to produce high quality and safe poultry products under specially controlled conditions and regulations.

2. *Complete ecological farming* is a system where ecological plant and animal production is equally important. Poultry can be kept here not only for production but to complete and enhance ecological farming and production of different, high quality agricultural products.

3. *Environment protection by traditional farming* of sensitive or highly sensitive territories (e.g. national parks), to maintain original landscapes, in which traditional animal production – including poultry – should take place. In this system, local varieties of indigenous animal breeds are preferred, while effectiveness of production have no real importance.

Natural or organic poultry production can be effective if the balance of quality and quantity of products is optimal. This means that neither intensive high production capacity poultry breeds and in some respect of poor quality, nor indigenous breeds of low production and high quality should be used. The proposed solution is to find crosses of these two types, which produce well under natural conditions.

Complete ecological farming needs mainly the use of traditional poultry breeds, though some kind of crossing with intensive breeds can also be useful, depending on the type of utilisation and plant production. Environment or landscape protection programmes (the third level) can be completed by traditional farming only, which needs the use of the local variants of exclusively native (indigenous), traditional domestic animal and poultry breeds.

In the next sections characteristics of the traditional Hungarian poultry breeds are briefly discussed, followed by some summarised results of chicken experiments, where alternative rearing was studied.

## 2. Characteristics of the traditional Hungarian poultry breeds

(after Báldy, 1958, Biskup, 1986, Szalay, 1999 and 2002)

### *Hungarian chicken*

It is presumed that progenitors of Hungarian and Transylvanian Naked Neck chicken breeds were brought into the Carpathian basin from Asia by the Hungarian con-

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**Table 1.**

BREEDS	No of breeds with known population size	No of breeds at risk (%)
Mammalian (total)	2047	487 (23.8)
Poultry (total)	676	411 (60.8)

querors at the end of the ninth century. This „ancient Hungarian” chicken later must have mixed with other breeds (mostly Oriental and Mediterranean types), which created the various Hungarian chicken breeds as they are known today. During the centuries of their formation these breeds adapted to the special climatic conditions and farming systems of the country, which made them very precious in this part of Europe.

Transylvanian Naked Neck chicken breed was first mentioned as Szeremley chicken after the name of its first known breeder in Transylvania. It became well known all over Europe after a poultry exhibition in Vienna, in 1875.

Until the beginning of commercial chicken breeding in Hungary these breeds of chickens of different colours (white and partridge in the Great Hungarian

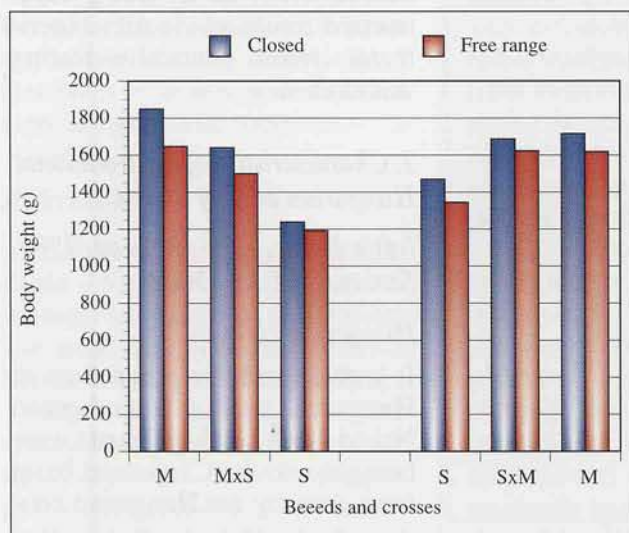
**Table 2.** Daily feed intake and mortality (6–14 weeks) of dual purpose chickens among closed and free range conditions (summarised data)

Rearing conditions	Feed intake g/chicken/day	Mortality %
Closed	108	11.6
Free range	95	0.9

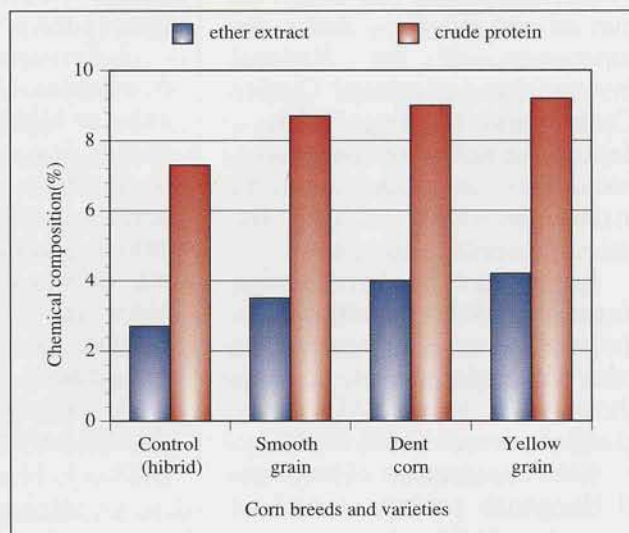
Plain, yellow and speckled in Transdanubia, mostly white, black and speckled naked neck breeds in Transylvania) were bred. They were preferred here not only for their relatively good egg production but mostly for their excellent meat quality coming from the „foraging habit” of



Yellow Hungarian chicken (Photo by: József Hudetz)



**Figure 1.** 12 week body weight of chicken breeds of medium (M) and slow (S) growing capacity and their crosses among closed and free range conditions



**Figure 2.** Ether extract and crude protein content of different corn breeds and varieties studied for nutritional value in natural poultry production



*Transylvanian Naked Neck chicken (white variety) (Photo by: József Hudetz)*

these birds, scratching for food regardless of hot or cold weather. Beginning in the early 1960s, together with the expansion of commercial poultry breeding, Hungarian breeds were replaced by foreign hybrids of both laying and meat type chickens even on small-scale farms. Since then Hungarian and Transylvanian

breeds have been maintained as gene reserves.

#### *Hungarian turkey*

There are different opinions about the time of introduction of turkey to Hungary. Some authors accept the opinion that turkeys had been introduced to Hungary before Columbus brought this very pre-

cious poultry species to Europe as the Vikings might have done it some 1000 years ago. It is a fact however that turkey breeding has existed in the Carpathian basin for many centuries. In Hungary, two colour variants of turkey were known and bred in the 1800s: white and black Hungarian turkey. They were popular mostly in the



*Frizzled Hungarian Goose (colour varieties) (Photo by: József Hudetz)*



*Hungarian duck (colour varieties)*  
(Photo by: István Szalay)

middle part of the Great Hungarian Plain. Later the black variety almost 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 those crossings, however, the Bronze turkey became adapted to the local conditions and it is considered now as a traditional Hungarian poultry breed.

Copper turkey, also known as Bosnian 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, disease resistant and well adapted local breed.

#### *Guinea fowl*

Guinea fowl is an adapted Hungarian poultry species. Landrace varieties include bluish-grey (the most popular colour variety), white, grey and spotted. First reports about its breeding in Hungary were published at the beginning of the 20<sup>th</sup> century, however, Guinea fowl must have been introduced into this country much earlier and kept as a game bird or a semi-domesticated one around the houses. Its excellent meat quality, very good ability to adapt to different conditions, 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*

The origin of the Hungarian goose is dated back to the Roman era, when domestication of the greylag goose took place in the wet marshes of the Hungarian Great Plain in the Carpathian basin. Over the centuries the breed became well adapted to the special climatic conditions and farming systems of the country, which made it very precious in this part of Europe. Local goose breeds of different

colours (white, greyish or spotted) were preferred here not only for their excellent liver and feather quality, approved by all markets, but for their meat quality as well.

A unique variety of Hungarian goose – the Frizzled Hungarian goose – used to be frequent in the valley of the Danube river and around the coastline of the Black Sea. This variety is considered now as a typical poultry breed for the Carpathian basin, just like the Transylvanian Naked Neck chicken.

The Frizzled Hungarian Goose does not show any difference from the normal-feathered one, except the structure of the feather. Frizzling (F) is a mutant gene which causes the contour feathers to curve outward away from the body. Colour variants: 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, the Hungarian duck gradually disappeared as the result



*Guinea fowl (colour varieties)* (Photo by: István Szalay)

of crossing with imported duck breeds.

Until recently, Hungarian duck was considered extinct. Based on the individuals of white and wild colour variety collected in Transylvania, conservation programme of Hungarian duck varieties started some years ago.

### 3. Experiments for the utilisation of traditional poultry breeds in natural production

*Comparisons of closed (intensive) and free range conditions in chicken rearing (data of 4 dual purpose breeds and crosses)*

In order to study selected production traits of dual purpose chicken breeds among closed (intensive) and free range conditions, a series of experiments were completed, where 2 medium body weight (M – a Plymouth type and a New Hampshire type) and 2 slow growing (S) local chicken breeds of the gene bank of KÁTKI and their crosses (MxS and SxM) were tested for the adaptation of rearing conditions. Frames of this article allows only to introduce some interesting results of those experiments (Szalay *et al.*, unpublished).

Results of *body weight* after 12 weeks of rearing are shown in *Figure 1*. There were major differences among different breeds and crosses, however, summarised data of all breeds and crosses showed no significant effect of rearing conditions for body weight. For both crosses of M and S breeds intermediate inheritance of 12 week body weight was recorded among intensive conditions, while some kind of positive heterosis was detected in the case of SxM cross among free range conditions. (It should be mentioned that this effect was even more emphasised at the age of 10 weeks of age).

Summarised data of *feed intake* showed no effect of total feed/kg body weight in closed or free range conditions. Nevertheless, calculated feed intake/chicken/day was significantly different and

showed the advantage of free range conditions for the breeds and crosses studied.

The advantage of free range conditions was most obvious in the survival of dual purpose chickens during the 14 week rearing period among different rearing conditions. Summarised data for all breeds showed a much lower mortality as compared with closed rearing (see *Table 2.*).

Based on the results discussed above, it can be concluded, that certain dual purpose chicken breeds and their crosses may be affected positively by natural or semi-natural conditions of rearing

breeds and varieties maintained as a gene reserve by the *Institute for Agrobotany, Tápíószele*. A popular corn hybrid was used as the control. Results (*Figure 2.*, Holly and Szalay, 2000, unpublished) suggest that on the basis of higher ether extract (fat) and crude protein content, some traditional corn breeds should be excellent in nutrition of low input, natural chicken production.

### Selected references

**Báldy B.** (1958) Házimadarak (Domestic birds). In: Magyarország állatvilága, XXI. kötet, Akadémiai Kiadó, Budapest



*Copper turkey (male) (Photo by: István Szalay)*

and therefore crossing can be a tool for elaborating the best varieties for natural or organic production, by the use of slow growing, local breeds.

### *Preliminary study for alternative nutrition in natural chicken rearing: nutritional value of traditional corn breeds*

Natural, high quality chicken production needs alternative nutritional regimes to be looked for, especially in the case of ecological production with local breeds. For that purpose, preliminary experiments were conducted to study nutritional value of several corn

**Biszkup F.** (1986) Háziszárnyasaink eredete, domesztikációja és elterjedése. (Origin, domestication and diffusion of domestic birds.) Kézirat, KÁTKI, Gödöllő

FAO (2000) World Watch List – for domestic animal diversity. 3rd edition. FAO, Rome

FVM (1999) Nemzeti Agrár-környezetvédelmi Program (National Agri-Environment protection Programme). FVM, Budapest

Szalay I. (1999) Gene Conservation in Poultry – A Hungarian Waterfowl Experience. Proc. 1st World Waterfowl Conference, Taiwan, pp. 128–134.

Szalay I. (2002) Régi magyar baromfifajták (Old Hungarian Poultry). Mezőgazda Kiadó, Budapest