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ORGANIC ANIMAL BREEDING AND PRODUCTION, QUALITY ASSESSMENT OF RAW MATERIALS AND PRODUCTS

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Abstract - Organic animal breeding and production; quality assessment of raw materials and products
There is an increased need for the products of ecological/organic animal breeding origin (products from agro-units with ecological qualification or units to go organic). I present the analysing processes and the quality preferences concerning human nutrition. They are dealing with the protection of origin, prevention of adulteration and food safety questions. Furthermore they present examples for the advantages of indigenous, traditional breeds used in the organic production.

Keywords: organic animal breeding, traditional animal races, eco products, direct marketing, human nutrition

INTRODUCTION

The statistical data of organic animal breeding shows an increased consumer need for safe and healthy food of animal original. In EU countries this is a general tendency; we will deal with the situation of Central-European countries. We will talk about the qualified farms and those which are under changing conditions, because their eco-production is also very important.
Claim for plant production, environment protection, sustainable agriculture, rural developing and ecological animal keeping are increasing in Hungary (PONGRÁCZNÉ AND MEZEI, 2008; PONGRÁCZNÉ 2008, PONGRÁCZNÉ ET AL., 2009, (PONGRÁCZNÉ AND CSURGÓ, 2010)), and National Park Directors show special ecological model picture for the members of green agriculture in Hungary. Generally national parks have native the standing animals. Generally animals in general national parks are keeping because of model for pasture feeding (ÁNGYÁN ET AL., 2002; ARADI, 1992; VERESS ET AL, 2000; VERESS, 1987).

MATERIALS AND METHODS

The controlled eco production in Hungary has a past of more than ten years. *Table 1.* shows the data of animal farms considering the data of two control units. There are 134 farms under changing conditions (changing into eco production), with a number of 16.430 standard animals. The animal species involved in eco production are also presented in *Table 1.*
The present situation is not so hopeful; this can be seen from the data of BIOFACH 2008 exposition, Nürnberg, Germany where 2.740 exhibitors were present; 7% more than in 2007, but only 27 from Hungary. One of them presented organic honey, and the Hortobágy Non-profit Company for Nature Conservation and Gene Preservation (shortly: Hortobágy

Co.) presented several different raw materials and products with eco qualification. This company has a leading role on the Hungarian organic market (see: *table 2.*). The Hortobágy Co. has an adequate stock of products for a continuous market supply, too.

Table 1. Number of standard animals of Hungarian farms in (2007)

Animal species	Nr. of standard animals
Poultry	188,5
Buffalo	539,2
Sheep	1.256
Goat	304,3
Horse	229,9
Pig	830,5
Donkey	35,2
Cattle	13.046
Total	**16.430**

Source: Biokontroll Hungaria Kht.

Table 2. Hortobágy Company's organic raw materials and products

Animal species	Raw materials	Products
Gray cattle	Meat, pluck (liver, triple 12 different packaging)	Eco salami
Buffalo	Meat (in 8 different packages)	Spicy/Hot Buffalo salami
Mangalitza pig	Meat, pluck (lungs, heart, fat in 14 different packages)	Organic sausage, smoked bacon, salted bacon
Racka sheep	Meat	Eco salami
Guinea fowl	Meat, eggs	-

The animal farms under changing conditions are also very important from ecological point of view. The two main farms from Hungary are: 1) Family Farm of Csöde, Western-Hungary and 2) Tiszaug Farm, Middle-Hungary. The first one has a territory of 220 hectares and the second one 15 hectares with a number of 18 standard animals (poultry: more than 3.000 hens, ducks, geese and mangalitza pigs). The farms under changing conditions can also increase the contribution to the total national eco animal breeding. *Table 3.* shows the data regarding the organic animal breeding in some Central-European countries (Hungary, Romania, Austria, Germany).

The authors are in a good cooperation, regarding the production with some eco producer companies from the above mentioned countries: SANFER, LA DORNA and GORDON PROD companies from Romania; Cattle Breeding Federation from Southern-Austria; Agrobiogen Ltd. and Animal Breeding Authority from Germany.

RESULTS AND DISCUSSIONS

From *Table 3.* can be seen, that the data from Germany and Austria are examples to be followed by us. In Germany the direct ("ab Hof") marketing data are also good examples to follow. The 21% directly marketed products might be a pulling force for our farms, too – if they would get some governmental support (see *table 4.*).

Table 3. Some data of eco animal breeding in Central-Europe (Hungary, Romania, Austria and Germany)

Country	Eco territory *ha*	Nr. of eco farms	Nr. of animal species	Nr. of animals ×1000	Nr. of control units	Products	Quantities
Hungary	160000	1600	5	na	2	meat, milk, egg, honey	na
Romania	200000	na	4	na	1	meat, milk, egg, honey	62000 (export 2006)
Austria	362000	20500	5	840 hen 45 cow 44 pig	1	meat, milk, egg, honey, chocolates	110mil. eggs 398mil.kg butter
Germany	800000	16500	5	na	8	meat, milk, egg, cheese, butter	40%-of the products

Source: no available data

Table 4. The animal breeding capacity in Hungary

Pasture methods	National ratio, %	Territory, *1000 ha*	Animal breeding capacity*	Output, meat equivalent	Employee *persons*	Degree of self subsistence %
Only pasture	15	216	75 600	321,7	3 340	40
Pasture + mechanical maintenance, care	80	960	768 000	3268,1	27 650	60
Only mechanical cultivation (forage: hay)	5	96	144 000	612,8	1 890	85

Source:* standard animal/total territory (own data collection, 2007)

The organic performances of the Hortobágy Co. (see *table 2.*) are well known also on an international level. Their restaurant situated on the Hortobágy region (called "Hídi Csárda" – restaurant) gives the whole range of eco products in their menu, the foods and drinks, too. They also plan to supply the capital's restaurant: the Hotel Benczúr.
Some of the most important quality parameters of the Hungarian eco raw materials are shown in *Table 5.*, compared with some data originated from non organic production.
The organoleptic characteristics of the eco products are also very talkative. The sensory properties of almost every tested eco product were of higher quality than those of non eco products.

The human nutritional value of eco products is also superior. As an example their omega-3 fatty acid and CLA content can be shown, which are 15-20% higher in the extensively reared traditional cattle species.
The chemical composition of raw materials and products was analysed at the Hungarian Meat Research institute and at the University of Kaposvár, where also CT examination were performed using also standard methods.
For the protection of origin the Typi-Fix method was used (Agrobiogen Ltd., Germany).
The protection of origin is usually assured by the food safety and quality control processes. We believe that the protection of origin is highly important for the indigenous species that are traditional in our countries. Central European countries possess a large scale of indigenous animals; their special qualities can be confirmed with DNA analyses. With DNA marker analyses special qualities of some indigenous (as grey cattle, mangalitza pig and racka sheep) animals were proven.

Table 5. Comparison of chemical composition and some physical properties of Longissimus dorsi muscles of Holstein and grey cattle, and extensively and intensively reared mangalitza pigs

Characteristics	Grey cattle (extensively)	Holstein (intensively)	Mangalitza (extensively)	Mangalitza (intensively)
Protein content (%)	22,5	22,25	23,9	23,6
Fat content (%)	1,2	1,9	5,67	5,45
Connective tissue (%)	0,7	1,3	0,52	0,49
Pigment content (mg/g)	6,2	4,5	1,46	1,43
Fatty acid composition (%)				
SFA	43,8	45,8	38,9	43,4
MUFA	56,2	54,2	52,1	53,9
PUFA	20,8	13,4	8,11	5,39
n-3	5,1	1,3	0,5	0,14
n-6	14,4	11,3	7,35	4,98
n-6/n-3	2,9	9,3	17,2	35,57
pH	5,53	5,78	5,72	5,76
Colour characteristics				
Intensity	17,8	13,7	10,03	9,13
Hue	10,1	8,1	20,20	17,47
Dripping loss (%)	0,8	1,8	1,92	1,79
Cooking loss (%)	25,6	18,1	26,32	20,24
Hardness (N)	27,3	38,5	15,4	14,3

CONCLUSIONS

Summing up, we can state that the organic animal breeding and the products manufactured under organic conditions can promote the development of the whole animal breeding in a given region. Organic products can also contribute to the increase of healthy human nutrition. *Table 6.* shows some approach of the past and present conceptions about meats, with special regard to organic products.
The meat covers less than 20% of the calories from food, contains easily digestible proteins and high amounts of vitamins B_{1-12} and iron. For all these reasons the production

of traditional animals is beneficial. The increase of their production can contribute to the regional development, self subsistence and direct marketing, to the increase of the employee number in the agriculture and to the rural development. A more emphasized international collaboration in this field is also needed. We are ready to contribute to such of collaborations.

Table 6. Preconception and truth about meat

Preconception	Truth
The meat contains saturated fatty acids only.	The meat fat contains 55-65% unsaturated fatty acids.
Saturated fatty acids are unhealthy.	In heart attack LDL/HDL ratio is determinant
Consumption of fat meats increases the cholesterol level and loads the fat metabolism.	Saturated fatty acids from meat have slight cholesterol decreasing effect.
Meat consumption increases the risk of CVD.	The optimal n-6/n-3 ratio (2-3:1) decreases the risk of cardiovascular diseases (CVD).
Mediterranean nutrition with low meat content decreases the incidence of CVD.	At moderate meat consumption the vegetable consumption is high. The meat CLA content is anticarcinogenic.

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