

Romanian high nature value farming areas and conservation of farm animals and natural biodiversity

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“If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be rather sudden and uncontrollable decline in both population and industrial capacity
The Limits to Growth 1972 itself.

The food necessity of the population and the world economic competition impose in Romania, as all over the world, an increase in food production. Even not all predicament of Mankind portended by the First Report for the Club of Rome (1972) are accepted, even they are the result of a mathematical modelling, the attention given for the environment, including biodiversity protection are considered. As a result the farming must maintain a balance between social-economic necessity and environment- biodiversity conservation. It must be sustainable.

The climate, the high proportion of mountain to plains, and the socio-economic-historical conditions were favourable in Romania during the centuries to the development of low-intensive farmland, named (EFNCP) since 1990 years High Nature Value farming areas (HNV FA) . These agricultural systems, also named cultural landscapes, found in the less favoured agricultural areas (LFA), sustain in the same time agriculture production and the nature conservation. In them the farm animals and the cultivated plants, are associated in the some ecosystem with the wildlife plant and animals.

However such HVN farming does not maintain now a social efficient balance between needed food production, environment and biodiversity conservation. For solving such multiple and contradictory demand, Romania will be forced, as a vision for 21st century, not forgiving the warning of Meadows report, to follow a three-track strategy on the agricultural production systems (Draganescu 1992, 2003):

1. Vitalization in plain area the development of sustainable intensive commercial farms with innovation and high productivity of medium and high-payoff input;
2. Revitalization, in mountainous and marginal area, the conservation and sustainable development of low intensive farmland, especially the pastoral systems;
3. Development especially in marginal are, of organic, and niche products small size commercial farming systems, maintain on short and medium term the part-time and subsistence production systems.

Future policies will need to divide financial support structure towards all tree directions.

We note that HNV concept tends to be one of criteria for EU subvention in the National Rural Development Programme 2007-2013, along with LFA scheme, in place since 1975 include some foresights for HNV-FA identification. More the European Forum on Nature Conservation and Paternalism (EFNCP) stimulated between 2006 and 2009 by a WWF Danube-Carpathian Programme (WWFDPC) a project aiming to identify the HVN farmland in six location, three in Bulgaria (Strandzha, Rusenski Lom and Western Stara Planina) and Romania (Sibiu, Mehedinti and Galati).

However, in our opinions these entire documents don't pay enough attention to some historical experience in farming planning, to some aspects of spontaneous environmental conservation of farm animal genetic resources, to the problem of traditional pastoral technologies conservation as criteria of identification of HVN area in some countries. Utilizing some of these indicators, our paper intends to have a modest contribution to the HVN FS identification in our country and to the conservation biodiversity, including the endangered farm animals' breeds.

The methods for HVN-FA identification

For our study and even for our country is important the methods to a correct identification of normal HNV farmland, the less favoured area where a sustainable intensification of farming is not profitable and must not to be encouraged. Baldok (1994) analysed the problem, and after presentation the main potential criteria for identifying low intensive agricultural systems (land use and vegetation type, agricultural input/output indicator wildlife indicator, stocking density) he concluded that "at present, data from one country often is not compatible with that from another". Gwyn Jones (2007) stated that the requirement to identify and address the management of HNV farmland is now firmly fixed in the EU rural development policy. Brunce (1999) identified 48 Global Ecosystems classes occurring in Europe. In Romania Vădineanu (1992), consider 22 ecoregions of first degree. From them 4 are mountain landscapes and 7 are foothills.

Without reconsidering the methodology used by some project and EU documents (Rural Development program 2007-2013) we will pay attention to a more pragmatically aspect, more or

less specific to Romania- the structure of land utilization during the dramatic tendency of agricultural "modernisation" of years 1950/1990: on undeclared "modernizable" and "non-modernizable" area.

1. Historical aspect of farm animal breeds conservation in Romania and some of his connection to the HVN area

The genetic diversity of Romanian farm animal's breeds was very large, because ecological niche are very diverse and have been important to many breeds. The rapid civilization evolution in the last two centuries leded Romania agriculture to an intensive development, and tendency to replace the native breeds and plants to exotic one, sometimes under the influence of commercial publicity, an erosion of native animal genetic resources. This erosion started in the 19th century in horses, continued in cattle, pigs, and poultry practically up to 1970. The erosion less affected the sheep and goats, extensively managed, buffaloes and Asses, neglected. It was however a tendency of native breeds conservations, sometimes connected with the natural biodiversity conservation. When we speak of Animal Genetic Conservation in Romania we notice three different aspects: a deliberately conservation, involuntary conservation, protected area.

Deliberately, in Romania, it was by tradition a hobby tendency of breed conservation, especially in poultry and sheep. The Animal Genetic Resources conservation was accepted as a scientifically problem and applied in Romania in 1960' by some scientist and practical workers, but it did not become enough a systematic state or a NGO policy. It has not a clear legislative and systematic stat financial support A cryogenic storage of some 4000 doses from the last elite farm of the Grey Steppe cattle was made in 1963, but lost by misconduct in 1970 years'. The Poultry State Company established a "gene bank" of 94 stable endangered poultry population (breeds and "varieties" in 1967, but it was closed in 1990 year (!). Two endangered pig breeds, Romanian Saddleback (Bazna) and Red Mangalitsa were put in conservation in 1970 and 1974 in an Experimental Station and a very small herd of Grey Steppe cattle has been organized in Cooperative farm (now it is in an Experimental station).

Involuntary conservation was made by some improvement programs and by “nature”, under the environment pressure in less favored, marginal areas, especially in mountains. For biodiversity conservation, but not for cultivated plants and farm animals has been organized protected area.

The old improvement farm programs were really also conservation programs. In Romania, before 1950 the old state elite breeding farms used to be small (40-100 mares, 40-50 cattle, 100-300 sheep, 20-50 sows) and the populations, usually distinct breeds, were relatively closed. The fear of inbreeding depression determined that the apparition of an empirical breeding strategy. The main characteristic of it was intra 4-5 family (“blood line”) selections of males and interfamily females crossing.

The “natural” conservation of native breeds or of genes, as well as of natural biodiversity is connected with the low intensity farming in less favored areas, where the environment rejected the not adapted exotic breeds or genes. Now, in the present conjuncture, as a result of input reduction produced by break/down of state-controlled farming and increase of subsistence farming, at least 80% of cattle, sheep, goat, buffalo’s production, the horses and the asses are in low input production systems (subsistence, smallholder, small-scale commercial farms, less and more than 50% of production marketed). With the exception of cattle the breeds are native, synchronized with the production systems. Even many of Romanian’s agricultural systems could be described now as “low intensity”, the real HVN farmland of the country can be grouped into 4 groups: a. Mountainous area; b. Plain specific areas; c. Danube Delta, and; d. Protected area. We will have a look at these cases.

2. Mountainous area as high nature value farming area.

Mountainous areas represent some one third of Romania, the mountain and parts of foothills regions, where it is not possible to make farming using modern machinery and it requires hard physical work. There for here was not possible to organize agricultural cooperative farms in the years 1950-1990, but for economical reasons the transhumance shepherds received some economical facilities in the years 1960-1990. Beside professional shepherds in this area persisted a sort of individual craft agriculture. We

note that an individual craft is often farmed only part-time, and crofters usually need to have other means of financial income.

It is one of the oldest cultural agricultural regions, a marginal land used as retirement security place by indigenous population face to mid-century immigrations. The history of local peoples a “historical miracle and enigma” as the French historian Ferdinand Lot (1937) said, has some connection with the pastoral life and the indigenous animal breeds from this part of Europe (Draganescu, 1994..2003). Thus:

- The nickname given by the Goths to all Latin people – Walch, Walach (Weisberger 1953)¹, conserved practically after 641 year by their neighbors just for Romanians and Aromanians (Vlach=Balkan Romanian), had, sometimes, in some languages, also the meaning of “shepherd”. Many breeds from this part of Europe keep or use to keep this name or the name of some Vlach tribe.

- Transhumance (Muller 1938, Braudel 1966, Grigg 1974, Draganescu 1997-) is the spectacular sheep production system, presented by Varron (50 b.H), considered by White (1970) to be the only possible in the Mediterranean lands, where the “high proportion of mountains to plain discourages nomadic pasturing”; sometimes it is however confused with migration or nomadic life. Transhumance played a great role in the incredible unity of the Romanian language, and in the dissemination of Romanian breeds.

- The Romanian mountain peasants and their sheep were named by Transylvanian Germans “Zackel”. The 1000 - 1400 m altitude mountain agricultural terraces from the Middle Ages, photogrammetrically identified, and the forest have been the hiding place of local population. Even now, there are some 250 villages placed between 800 and 1620 m altitude; some of them are isolated, without even access cart roads.

- The pastoral systems had a great role in creating semi-natural ecosystems, cultural landscape and the formation, use, dispersion and preservation of indigenous knowledge and practices in this area

The traditional low-intensity (low input, self-sustaining, using more native, locally adapted

¹ “Walach, Wallach, Volock, Wollack...A former name for a member of a Romanic speaking race, widely disseminated in South-eastern Europe, principally in Romania and now normally known as Romanian”-(Oxford Dictionary)

breeds) farming systems, most of them of crafting agriculture type, played a historical role in supporting the population up to 19th century and in creating a semi-natural vegetation, landscape biotopes of high nature conservation value, and even in conservation of some breeds.

We note that Tsurcana (Valachian) breed, the most extended breed in the old Romania, was considered in the last century, especially for his coarse wool as economically undesirable. Was recommended or planned his replacement by Merino in most plain area and by Tsigai in most mountain area. The effect of "scientific" recommendations and State Plane was minimal. The Tsurcana was conserved by environment, my by also by peasants tradition and still is perhaps the most extended sheep breed in Romania, even in plain marginal lands. Together with Tsigai breed tend now to replace introduced Merino. A hundred years attempt to introduce Ostfriesian sheep or some genes of it Tsurcana or Tsigai area was also rejected by natural environment, we supposed by pastoral parasitosis.

In Romania mountainous area, with no agricultural cooperatives during the communist time, but also in plain area, with agricultural cooperatives use to be and there are some 5 HVN farm animal production systems. Some have a great weight (39-100%) in country animal production especially as a result of propriety evolution on the last 20 years, but sure having a complicate future. We note again that they may be considered low-input in terms of energy, food and productivity but they are usually high-intensity in terms of human labor. We note that an individual craft is often farmed only part-time, and crofters usually need to have others means of financial income.

(a) Pendulation (Transterminance in Spanish nomenclature)

It is the swing of animal's herds, especially sheep, between owner's village and mountain pasture. The sheep of small holders (up to 20 sheep, an average about 4.9/owner, some 40-50% of country sheep, but also some cattle, goats, pigs, horses, as), which are dwellers of mountains or foothills villages, are organized at the beginning of summer in big flock (300-500 sheep). The flocks are directed by professional shepherds (1 to 100 sheep) and are moved short distances (10-50 km)

for summer grazing on the alpine areas, for milk production.

Sheep are kept at owner's home only during the winter and through lambing (2-4 months), when they are fed hay. During the autumn and spring, sheep are organised in small flocks (up to 100) and grazed around the villages. A professional shepherd ("baci") processes the milk on the special place ("stâna"). The owners receive some milk products for their consumption (2-4 kg cheese-"brânza" per sheep) and the rest is sold by the organizer.

The system is very important for the conservation of mountainous cultural area, but its future seem to be complicated. Besides the sheep milk product, for which there is a big demand on the Romanian market, and the Eastern lamb meat, with a constant demand, the income of owners depends also on wool price, which was supported by the state. Now the wool price dropped and the owners realized that sheep are not profitable any more.

(b) Transhumance

It is the swing of sheep flocks, with some donkeys, horses, possible goats and cattle, between mountains pasture in summer and plain pasture in winter at hundreds kilometers now, at thousands kilometers in the past (up to Caucasus, Ural mountains, Czech Republic, Istria, Bosnia, North of Bulgaria). The dweller villages are, in Romania, in the mountains (about 40 villages from 4 centers - fig. 1), but even the mountain pasture is not necessarily in their region.

This is the large-scale commercial production system of big sheep masters (some 500-2000 indigenous breeds sheep (Tsurcana or Tsigai) now, up to 40,000 in the past). They use to be the only officially known millionaires during the communist time. The secret of their economic efficiency was that they always relied on marginal resources, alpine summer pasture, en route in autumn and spring, the fallow of arable agriculture or marginal pasture in winter.

Their transhumance routes, correctly marked on the Muller - Braudel - Grigg map (1938, 1966, 1974 - fig. 1. 3), with a small correction made by Draganescu (1997), are reduced at present within the Romanian borders but in the same direction.

Transhumance was in continuous decline faced with the 20th century agricultural and social development. Only some villages, especially from the Sibiu centre, now use it. The conservation of

transhumance system is for Romania, and at least for Spain (Carta Europea de la transhumancia - Cuenca Espana, 1997) of a historical, cultural, environmental, AnGR conservation and even economical importance. For the last reason, the

transhumance system of private owners was accepted even during the communism time.

Table 1. Average farm size and average number of cows per farm (data AGCTR 2001)

Type of farm Number of cows	Farms		Cows		Number of cows per farm
	Number	%	Number	%	
1-2	1 127 189	94.66	1 416 584	80.86	1.24
3-5	56 034	4.71	201 217	11.68	3.57
6-10	4 827	0.40	34 922	2.03	7.23
11-15	1 139	0.10	14 953	0.87	13.13
16-20	611	0.05	10 254	0.60	16.78
21-30	442	0.04	8 344	0.48	28.88
31-50	243	0.02	9 488	0.55	39.05
51-100	170	0.01	11 586	0.67	68.15
> 100	165	0.01	38 924	2.26	235.90
Total	1 190 820	100.00	1 746 272	100.00	1.45

(c) Local animal grazing around the village

This is practiced for the most (80-90 %) cattle and goats of the country and for about 35-50 % of sheep. The peasants' "house" cattle and goats (1-2 cows or goats per family), are on the pasture only during the day. They are milked at home in the morning and evening and receive some feed. The system is not efficient (hard work, low productivity), but for socio-economical reasons it has been conserved even during communist time and has a chance to be conserved on short and even medium time.

The management of local grazing system of the sheep is more or less the same as in the mountains (utilization of marginal pasture, associative flocks of some 100-300 animals, milking and, generally, processing of milk on pasture). The used breeds are locally adapted, indigenous, but also old imported one (Karakul, even Merino). The future of the system is important for the environment conservation and national economy but it poses problems in terms of owners' profitability of. The question is if the customers will be able to pay higher prices for sheep milk products and for Easter lamb meat.

Table 2. Breakdown of Romanian sheep flocks on a business scale (September 1997)

Type of owners	No. of owners	No of sheep		
		Total	Per owner	% of sheep
Peasants (1-20 ewes, not professional shepherds)	1,075,392	5,270,500	4.9	67.1
Professional shepherds (20-200 ewes)	40,545	1,813,449	44.7	23.09
Medium-size enterprises (200-500 ewes)	1,120	302,722	270	3.85
Large enterprises (over 500 ewes)	369	467,407	1,266	5.9

(d) "House" pigs and poultry that are fed by-products of peasants farms

Generally, in Romania about 50-70% of rural population feed a pig for Christmas and 80-90 % has some poultry. The efficiency of the system is disputable, but for the same socio-economical reasons it survived and will survive on short term. The poultry hobby breeders are very

important for the conservation of endangered breeds, replacing the former Gene Bank, 90 state population collections of chickens closed in 1990.

3. Free range husbandry of cattle and pigs in the Danube Delta

Danube Delta, a Romanian's premier nature conservation site, now a Biosphere Reserve and

a World Heritage Site, has an “Economic Zone” (3061 km², 52.8 %) with some 7 villages and one town, where domestic animals are permitted. Except for some house cows and domestic poultry, which are kept by peasants around the house, particularly the cattle and pigs are managed in free-ranging system. The stocks are born, grow and live free in the Delta. For centuries they have been a component of the Delta’s terrestrial ecosystems. The owners of swineherds, each having a few tens, keep their animals adapted with them maize feeding his swineherd about once every two weeks. Cattle herds of some hundred are marketed with an owner’s mark. In autumn the “crop” is harvested and the rest of the animals winter free on the Delta (Draganescu 2001, 2007).

We must note that the state program, designate a little to late Delta for the conservation of Delta Grey cattle breed and Mangalitsa pig breed. A state farm some cooperative and private owners introduced however others different cattle and swine breeds. As a result of free meeting in free ranging husbandry and local pasture grazing around the village, in Delta there are now practically just crossbreeds. The genetically interesting spectacle is that natural environment select and promote just an animal type adapted to it, a pork more or less similar to former Stocky breed, now extinct, an a cattle similar to Grey Stepp.

4. Plain specific area as high nature value farming area

About 2/3 of the agricultural land from the Romanian plain is top quality land, and Romania used to be considered, during 19th and even 20th century, as a great cereal exporter, having practically a cultural landscape in his plain. Animal production was known by its 4 transhumance centres (some 40 villages), which used to winter their some 2.4 million sheep, as well as horses and cattle, generally in the neighbouring countries, especially before 1918 in Southern Russia. Its plain, as well as its mountains used to be a cultural landscape, which was not too much disturbed during this period by 4 agricultural reforms (1864 to 1947) that increased the weight of subsistence farming at the expense of the landlords and big commercial farms. The attempt of farming modernisation by somehow dictatorial cooperativisation between

1950-1989, had just some half ecological and economic effect as the farm modernisation in Western Europe and USA, because the traditional farming system partially persisted in plain area and the state had no possibility to use the chemical treatments on the entire area.

The persistence of subsistence and smallholder small family farms, a low-input production system, in the plain during the communist time resulted from the existence beside of non-cooperative mountain area, from a sort of co-operator’s ”part-time private farms”, individual craft. The result was the persistence along with the big estate of cooperative and state farms of a mosaic of small scale arable plots, orchards, combined with semi-natural vegetation. We note again that an individual craft is often farmed only part-time, and crofters usually need to have other means of financial income.

The last one are the result of the fact that the co-operators were paid also in kind (cereals, etc), received some agricultural by-products (marginal grazing areas, straws etc), about 500-1000 sq. m of arable land and had the right to rear livestock. In 1986, their contribution to the national output was 60% of the market milk (the co-operators and mountain peasants being forced to sell part of their production through state-owned enterprises!), 48.4% of the meat, 52.8% of the wool and 57.5% of the eggs. As a result in this HVN area, the local animal grazing around the village saved some Tsurcana sheep and the Romanian Ruda breed in South Romania. As in mountain area the “household pigs and poultry“ and the local animal grazing around the village saved the native goats, buffaloes, which was not in the attention of state, but didn’t save the native cattle, because the private peasants had to use the exotic bulls presented by the state organs, and the native pigs and poultry breeds, because the remote animals were even in their condition more profitable

5. Protected landscapes a potential mechanism for conserving agro biodiversity

From early times (1533, 1621, 1822, 1885, 1894) in Romania there were some state laws for the protection of nature (wild animals, water, unsanitary industry, etc.). The first modern law for nature protection have been promulgated in 1930. A commission for nature monuments was established and the first National Parks and

Reservations have been founded. The law was improved in 1950, 1975, 1990. The protected area was in 1935 of 15,000 ha (34 Reservations, 1 National Park), in 1965 of 75,000 ha (130 reservations), 1975 (11 National Parks and 450 Reservations). In 1999 there were some 373 Reservations for Nature, 180 National Monuments, in which 3 Biosphere Reservations (583,600 ha), 14 National Parks (376,423 ha, 40 Scientific Reservations (52,951 ha)

For biodiversity protection IUCN (1994) established 8 categories of protected areas: 1. Strict Nature Reserve/Scientific Reserve; 2. National Park; 3. National Monument/Natural Landmark; 4. Managed Nature Reserve, Wildlife Sanctuary; 5. Protected Landscape and Seascapes; 6. Resources Reserve; 7. Anthropological Reserve/Natural Biotic Area; 8. Multiple Use Management Resources Area. IUCN has so far focused mainly on the conservation of wild biodiversity. But it has nevertheless recognized the importance of conserving agricultural genetic resources for at least 25 years, since the publication of World Conservation Strategy in 1980. There are however different views among IUCN members about the inclusion of agro-biodiversity within the Union's aims. In practice IUCN has not challenged the CBD definition of biodiversity and therefore that it recognizes agro-biodiversity as a constituent of biodiversity. It seems however that (a). Agro-biodiversity is not included in all categories of protected areas; (b) the Romanian biologists don't recognize the agro-biodiversity as component of biodiversity, as the biologists from other countries (Hungary, France). For a people with a nickname confounded sometimes with the profession of shepherd, and with sheep breeds candidates to be cultural heritage, the absence of domestic animals conserved in national parks and reservations is not normal.

There is no outline of the influence of agriculture on the extinct, endangered or vulnerable status of floristic biodiversity. An inventory of the floristic biodiversity made in 1994 by CMN (Boscaru et al) established the following Red Book of Romanian flora:

- (Ex) Extinct 14 species (= 0.4%) probable, certain 4 species (= 0.1%)
- (E) Endangered 42 species (1.2%)
- (V) Vulnerable 61 species (1.8%)
- (R) Rare 334 species (9.7%)

- (I) Uncertain 157-86 = 76 (2.2%).

It is a study of changes of weight of different plant agricultural weeds and species in Danube Delta, some penetration of species from other countries and loss of others was noticed (Ciocârleu).

It is just a supposition that the grazing of livestock affects 10 times more the flora than the cut of natural grass.

We don't have a Red Book of Romanian Fauna. In literature there are mentioned just the following extinct species on the last 500 years: *Bos primigenius*, *Bison priscus*, *Equus Cabalus Gmelini*, *Marmota bobac*, *Saiga tatarica*, *Capra ibex*, *Arctomys marmota*, *Castor fiber* (19th Century). As endangered species are mentioned: *Rupicapra*, *Linx linx*, *Gypaetus barbatus*, *Gyps fulvus*, *Aegypius monachus*, *Otis tarda*, *Lyrurus tetricus*, etc. Only *Otis tarda* is mentioned as an indicator species of negative influence of extension of cereal production on SE plains of Romania.

Conclusions

The Romanian agriculture has played in the past a high and vital value natural role in the creation and conservation of species rich environment and habits. This HVN role is plenty conserved in mountainous area, in Danube Delta were exist a real cultural land shaft. In plain area the intensive farming tended especially in 1950-1990 years, to simplified ecosystems, to reduce the presence of wild flora and fauna. This tendency was not fully achieved because the individual craft co-operators persisted, as well as a mosaic of small scale arable plots, orchards, combined with semi-natural vegetation and the big state and cooperative farms had not the possibility of a total modern intensification.

Now looking at national and world's short and long-term problems, it is necessary to maintain a social efficient balance between needed food production, environment and biodiversity conservation by: 1. Vitalization the development of sustainable intensive commercial farms in the plain area with innovation and high productivity of medium and high-payoff input; 2. Revitalization, in mountainous and marginal area, conservation and sustainable development of low intensive farmland, especially of the pastoral systems; 3. Development, especially in

the marginal areas, of organic, and niche products small size commercial farming systems to maintain on short and medium term the part-time and subsistence production systems.

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