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EVOLUTION OF BOVINE FARMING IN THE NORTH-WEST OF
TRANSYLVANIA FROM ANCIENT TIMES TILL THE BEGINNING OF THE
EIGHTEENTH CENTURY.

(SUMMARY OF Ph.D THESIS)

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SUMMARY

The doctoral thesis was prepared under the scientific supervision of Ph.D. Professor ROMAN MORAR to whom I express warm thanks and my entire gratitude for the high scientific level coordination, for the practical and moral support in making the decision to go together through this superior form of training.

In our work we tried to put the importance of cattle farming on the proper place in the regional, national and international economy. The outcome of our research gives us the right to confirm that it can contribute both to improving knowledge on the cattle farming evolution stages and to opening new research directions adapted to the current and future social economical needs. We used an integrated multi-disciplinary approach and resources in accordance with the subject chosen.

A significant contribution to addressing this scientific approach was my personal desire to deepen the field of cattle farming in the area where I was born and which I want to help develop. This argument is supplemented by the passion I inherited for the study of archival documents and ethnography. The skills I acquired at the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca are the base support for my professional work and are also the seeds for a continuous improvement.

Research was conducted during 2004 - 2010 within the Doctoral School of Veterinary Medicine Cluj-Napoca, but the preparation of this thesis actually began with my debut in practicing the beautiful trade of veterinarian.

I considered as optimum the following structure of the doctoral thesis:

*Part I – Bibliographic Study*

divided in four chapter, as follows:
Chapter 1- presents the economical and social importance of cattle farming since ancient times until the early eighteenth century in the North-West of Transylvania

Chapter 2- presents the natural framework and social economic development in the North-West of Transylvania

Chapter 3- includes the zoological systematics and domestication of cattle as presented in the specialized literature;

Chapter 4- includes bibliographical data on the cattle origin and details on their classification;

Part II- Own Research

where The purpose and objectives of the research and the research methodology are presented on the four directions of research; it is structured in four chapters, as follows:

Chapter 5 - includes historical and archaeological evidence of cattle farming from ancient times until the beginning of the eighteenth-century in the North-West of Transylvania;

Chapter 6 - includes data regarding the history of the veterinarian medicine and cattle diseases since ancient times;

Chapter 7 - includes ethnological evidence on cattle farming in the North-West of Transylvania and especially in Maramures county;

Chapter 8 – details the cattle farming, care and exploitation techniques in Maramures county since ancient times

The doctoral thesis also includes partial conclusions for the four research chapters and general conclusions, ending with the bibliography. The document includes 295 pages, 4 tables, 76 figures and 6 photo layouts.
PART I – BIBLIOGRAPHIC STUDY

CHAPTER 1
THE ECONOMIC AND SOCIAL IMPORTANCE
OF CATTLE FARMING in the North-West of Transylvania

As it is widely recognized, cattle farming is the main branch of the agriculture. The entire agriculture recovery and development strategy should be based on this concept due to the fact that cattle provide 96% of the milk production, 33% of the meat production, 90% of the animal skins and approximately 70% of the manure production worldwide. Statistical data from countries with outstanding performances in agricultural production, both in Europe and other continents, indicate that animal production is 65-75% of the total agricultural production compared to only 35-40% in Romania, although the natural conditions and traditional practices in our country are favorable for this activity.

Regarding the cattle, in Romania they represent one of the most important species within the national livestock. Their importance is underlined by the fact that they are a main source of milk (96% of total milk production) which is a basic food necessary for the health of the population in any country.

At the same time, cattle provide a variety of meat with special dietary quality. The specialized literature indicates data according to which the cattle meat represents between 19.3% and 25.0% of the total meat production (Marchis et al., 2008).

The importance of cattle farming is given by the variety of products they provide. The main ones are milk and meat, the sub-products resulted from slaughter are: nails, horns, blood, hair, hides and the by-product is the manure.
CHAPTER 2
THE NATURAL FRAMEWORK AND SOCIAL AND ECONOMIC DEVELOPMENT in the North-West of Transylvania

Maramures County is located in the north-west of the country, being adjacent to Satu Mare, Salaj, Cluj, Bistrita-Nasaud and Suceava counties. It is bounded to the north by the Romanian-Ukrainian border, with the Tisza river forming the natural boundary over a length of 62 km. Within the geographical limits, Maramures County covers an area of 630,436 hectares (2.6% of the surface of Romania); Valea Viseului locality is located approximately 7 km south-west of the geographical center of Europe. (figure no.1).

![Map of Maramures County](http://www.hartamaramures.ro)

The relief of Maramures county is extremely various, with heights up to 2305m (Pietrosu Peak) but also with 154 m altitude depression plains. The mountainous area covers 43%, the hills and piedmonts - 30% and the depressions - 27% of the county area.
CHAPTER 3

ZOOLOGICAL SYSTEMATICS AND
CATTLE DOMESTICATION

Taxonomically, cattle belong to the Animal Kingdom, sub-kingdom Metazoa, Phylum Chordate, Subphylum Vertebrates (animals with body supported by the vertebral column), Class Mammal or Mammalia (females give birth to live calves fed with milk), Subclass Eutheria (the offspring develops through the placenta), Order Artiodactyla or Paricopitatae (limbs end with two nails or hooves, separated by an interdigital ditch), or Suborder Ruminantia (polygastric ruminant animals). They belong to the Family Bovidae or Cavicorne (animals showing strong bony horns, wrapped in corny sheaths), Subfamily Bovinae. The scientists’ opinions regarding the classification within the subfamily vary. Most of the scientists accept the classification of bovines in two genera: Bubalus and Bos. The scheme of the classification is shown below:

\[
\begin{array}{lll}
     & B.\text{Asiaticus} & B.\text{Arni} & B.\text{macroceros} \\
   \text{Genul} & & & B.\text{microceros} \\
   \text{Bubalus} & & B.\text{minodorensis} \text{(bivolulde Minodora)} & \\
   & & B.\text{depressicornis} \text{(bivolulde Anoua)} & \\
   & B.\text{caffer} \text{(bivolul negru de Cafia)} & \\
   B.\text{Africanus} & B.\text{caffer nanus} \text{(bivolul roşu de Congo)} & \\
   & B.\text{echinoctialis} \text{(bivolulde Abisinia)} & \\
   & B.\text{bonassus} \text{(zimbrul)} & \\
   \text{subgenul Bison} & B.\text{bison} \text{(bizonul american)} & \\
   & B.\text{sondaicus} \text{(banteg)} & \\
   \text{subgenul Bibos} & B.\text{frontalis} \text{(gayal)} & B.\text{gaurus} \text{(gaur)} & \\
   \text{Genul} & & & \\
   \text{Bos} & \text{subgenul Poephagus} & P.\text{gruniens} \text{(Yak)} & \\
\end{array}
\]
CHAPTER 4

ORIGIN AND CLASSIFICATION OF CATTLE

In terms of cattle classification by origin, there are different criteria for Bos Genus. Thus, Düerst categorizes the cattle in three basic groups from phylogenetic point of view:

1. *Bos taurus macroceros primigenius* (with long horns);
2. *Bos taurus brachyceros* (with short horns);

Several theories have been issued for determining the cattle origin:

The cattle have diversified so much that a systematization of the existing breeds is required, by classifying them based on various criteria.

In this research work, the following criteria are used to classify the cattle breeds raised in our country:

1. Degree of improvement: unimproved (primitive) or improved;
2. Their source: local or imported;
3. The nature of production: milk, meat, mixed.

Due to the special interest shown by the farmers and the favourable environment conditions, the *Brown* breed cattle farming has spread significantly, both as pure breed and crossed with local cattle breed, Maramures County becoming the most important center where this breed is raised in our country.
The Romanian Brown Breed

In terms of importance, this is the second improved breed in our country. The population of Brown Breed cattle was formed by crossing the unimproved indigenous cattle - Romanian Grey Steppe and Mountain (Mocanita) Breed - with Schwyz Breed bulls.

The Brown Breed cradle in Romania is the Maramures county, where the name of Maramures Brown originates. The breed forming process started in 1881 when forest workers from Vorarlberg (Austria) came in the area, some of whom settled here bringing with them Brown breed cattle from Montafon, Allgau and Innthal varieties. As these animals have adapted very well to the natural environment conditions of our country which are mostly similar with the ones in the origin country, their production is much higher than the one of the indigenous ones and they are highly appreciated by the local farmers. This fact has determined the authorities to organize imports of Brown breed calves, cows and bulls (figure no. 2).

![Figure 2. The Maramures Brown Breed (Source:http://www.agroinfo.ro)](http://www.agroinfo.ro)
PART II OWN RESEARCH

PURPOSE AND OBJECTIVES OF THE RESEARCH

PURPOSE OF THE THESIS

Thesis for certification consists of the direct and indirect evidence the presence and growth of cattle in the north-west area of Transylvania influence until the beginning of this century occupations of the areas economic and social development.

From these facts:

• animal farming in the studied area, especially cattle farming, is an ancient occupation;
• there are few studies on this subject in the specialized literature;
• the author of the first Romanian book about veterinary medicine written in Romanian with Latin fonts – Basiliu Cornea (Viseu de Sus)– was from Maramures County;
• the first academician in this profession, Vasile Gheție, was born in Berința (Maramureș County), who was Professor at the Faculty of Veterinary Medicine in Bucharest and who was followed by several teachers, University professors and researchers;
• depopulation of villages in recent decades and the associated effects,

I considered necessary and opportune to address this theme.

We are witnessing the increase of the traditional products consumption worldwide, therefore it is required both to stimulate the cattle farming in a traditional, ecological manner, and to know the methods of preparing traditional products resulted from breeding and exploiting the
cattle. At the same time, we need to preserve the genetic background of the traditional breeds which could be used for correcting some deficiencies of the improved cattle breeds.

OBJECTIVES OF THE RESEARCH

In order to accomplish the goal of our research, we set the following four research directions:

1. Historical and archaeological – in which the research methodology was to collect data on historical stages and to research the various archaeological materials;
2. History of veterinary medicine and diseases developed by this species, in which the research methodology was the specialized bibliographic study in country and abroad, as well as research work in the field for discussions with old people from villages;
3. Ethnological – where the research methodology consisted in the consultation of numerous documents and ethnological studies and field investigations, in permanent collaboration with museum curators;
4. Methods of cattle farming, care and exploitation in three localities of Maramures County, selected based on tradition and geomorphological criteria.

Under these circumstances, we have treated the goals of our research from the perspective of the veterinary medicine specialist, following therefore a specific methodology for each research direction.

CHAPTER 5

HISTORICAL AND ARCHAEOLOGICAL EVIDENCE REGARDING CATTLE FARMING SINCE ANCIENT TIMES UNTIL THE BEGINNING OF THE EIGHTEENTH CENTURY IN THE NORTH-WEST OF TRANSYLVANIA

The research methodology used in this direction was the thorough documentation for each historical stage, analysis and comparison of various archaeological data and materials. The documents proving that the population of North-Western Transylvania bred animals or many centuries ago are relevant.
Traces of human settlements, stone tools, clay pottery and a rich and varied inventory were found in the Oas Depression and surroundings, dating from the carved Stone Age (Paleolithic) and including the Middle Ages.

The Neolithic (polished stone) –85.62% of the total bone material examined comes from domestic animal species. Among these species, cattle (*Bos taurus*) are on the first place, followed by ovicaprines (*Ovis Aries* and *Capra hircus*). Domestic pig is very poorly represented.

Bronze Age – Maramures area, rich in copper ore and other non-ferrous metals, was an important center during this era, therefore the archaeological material is well represented.

![Photo I. Zoomorphic vessel from a barrow necropolis of Lăpuș group](Source: Kacsó, C., 2003)

Iron Age - by analogy with the other periods, it can be assumed that the bones discovered in the settlements and graves come from this age. Relevant for this period is the iron helmet with a bronze falcon.

Feudal system - characteristic to this period is that as a result of observations and testimonies, the origin of cattle can be determined; thus bovines are considered to belong to two breeds: *Bos taurus primigenius*, brought by the Roman colonists and including a smaller
number of bovines, and *Bos taurus brachyceros*, more numerous within the studied paleo-fauna and represented by the indigenous cow.

Developed Feudalism – the archaeological research and paleozoology studies from Cuhea (Bogdan Voda) reveal that domestic cattle bones represent 40% of all the archaeological material discovered.

**CHAPTER 6**

**HISTORY OF VETERINARY MEDICINE AND BOVINE DISEASES SINCE ANCIENT TIMES**

The research methodology used was the specialized bibliographic study in country and abroad, and especially research work in the field, among the village elders.

The first observations regarding diseases, the first remedies and treatment techniques and protocols have their origin in the popular knowledge developed during the evolution of civilization, and deeper research and experience led to the "rational" scientific medicine of today. In terms of the empirical side of popular medicine, some remedies used in the outskirts of Chioar County, particularly in the villages on Fisculaş river (Şişeşti, Unguras, Rus, Grosi, Dumbrăviţa, Carbunari, Sindresti, Bontaeni, Cărpiniş, Şurdeşti, Danesti, brownies, Cetatele) are presented below.

Given the fact that these villages are located in the neighbourhood of old industrial centers (Baia Mare, Baia Sprie, Cavnic), some of the industrial products were gradually included in the empirical methods used for treating the animals. This category includes: petrol, gasoline, used engine oil, dynamite, pyrites, carbide, gunpowder from fuse, saltpeter (potassium nitrate).
1. Petrol and gasoline were used in the treatment of ectoparasitosis (lice, scabies, mites) in cows, sheep, pigs, horses and in chasing flies during hot summers.

2. Used engine oil – was utilized by oral administration in the treatment of gassy indigestion, bloat in cattle.

3. Well mixed dynamite is used in ethno-medicine, being most widely used in treating limping sheep. The affected foot and nails are thoroughly washed and cleaned up to the blood, then washed with water in which purple stone was dissolved, are greased with soaked dynamite and then tied with a clean cloth. It is also used in case of fluke in cattle and sheep.

4. Pyrite from the deposits around Baia Mare and Cavnic was given to pigs to fatten and was also used in bovine tongue cancer.

5. Gunpowder from fuse was widely used in Șișești and Unguras in treating tongue cancer (tongue hole) in cattle. The tongue was taken out, held with a piece of cloth to prevent slipping and thoroughly rubbed with another piece of rough hemp cloth till the tongue bled, after which gunpowder was spread on it.

6. Saltpeter (potassium nitrate) supplied from the ore flotation plants was widely used especially in Șișești to treat indigestion in cattle but also to thin the blood of cows, thus avoiding “blood loss” (Bîle,G.1993).

CHAPTER 7
ETHNOLOGICAL EVIDENCE ON CATTLE FARMING IN THE NORTH-WEST OF TRANSYLVANIA

The research methodology consisted in the consultation of numerous documents and ethnological studies and field investigations, in permanent collaboration with museum curators;
Maramures County includes the Maramures ethnographic area, alongside the Lapus area, Oas area and part of the Oas area, forming the current Maramures County.

Livestock farming, predominantly cattle, is a considerably old occupation in the North – West of Transylvania and especially in Maramures county. This statement is supported by ethnological materials and expertise which represent valuable ancillary documents confirming this ancient occupation developed in close interdependence with agriculture.

The age of livestock farming in Maramures area is confirmed by the farming and harvesting tools found on the settlements location starting with the Neolithic and in particular during the Bronze Age.

![Cattle bell](http://www.bozantamare.files.wordpress.com)

Figure no.3  Cattle bell (Source:http://www.bozantamare.files wordpres.com)

Customs related to this occupation and numerous beliefs and magic practices that have survived (the ritual lighting of “live fire” at the sheepfold, incantations for the health of animals, the organization of “Tânja” - *an ancient ritual - the first man to work the fields this season is celebrated; the name of the festival comes from the Romanian word "tânja", which represents the pole that connects the animals to the carriage.*) are arguments that prove the old age of sheep and cattle farming in the area.
The ancient agro-pastoral customs have in their center the ox, which is the evidence of tradition continuity in the studied area. The custom is nowhere so alive and practiced with so much pomp as in the Maramures area.

In summer livestock animals are gathered in herds, and during winter they are taken care of by their owners. The herds of cows or horses are guarded by shepherds employed and paid by the animal owners. The alpine pastures where the summer sheepfolds were organized are mentioned in documents as “loci estivales” or descensus în alpibus (locations for spending the summer) (Mihalyi, I.1900).

According to the typology established by Romulus Vuia, shepherding in the ethnographical area of Maramureș can be included in the category of agricultural shepherding at mountain and shepherding in the grassland area (Dancus, M., 1986).

CHAPTER 8
CATTLE FARMING, CARE AND EXPLOITATION IN MARAMURES COUNTY IN ANCIENT TIMES

The research was conducted based on questionnaire sheets in which information was requested on technologies used in raising cattle by people in 30 households having cattle, located in three different geographical areas: plains, hills, mountains. I studied two historical periods: the distant past and recent past.

As a result of the research carried out regarding the cattle farming, care and exploitation, the following conclusions can be drawn:

1. The demarcations (cadastral plans) of the 14th – 15th centuries indicate that there was grazing land which was far from the village center;
2. Starting with the 15th century, fixed demarcations between properties, called *mejde* (boundaries), are indicated by the Austrian cartographic materials;

3. Documents regarding livestock registration during the studied period show the preoccupation for keeping track of number and evolution of animals over time;

4. In terms of ways of livestock farming, three procedures are to be mentioned:
   - allowing them loose (in certain times of the year);
   - gathering them in herds guarded in shifts or by paid shepherds;
   - guarding own herds (i.e. individual growth of all animals).

10. The main fodder used for feeding the livestock animals was the natural hay resulted from grass mowing, and during winters concentrates prepared in household;

11. Grazing (bovine summer grazing) is differentiated depending on the way they are exploited, physiological condition and age, i.e. dairy cows, traction oxen, barren cows and young cattle;

12. The productive lifetime of cows was long, frequently up to 12-15 years and even up to 18 years, the amount of milk per cow ranging between 8 and 20 liters, with 3.5 – 3.8% fat.

13. The primary production, namely the milk, was used both as raw material - milk, and for preparing dairy products (cheese, sour cream, sour milk)

14. The secondary products, namely hides, were processed in order to manufacture clothes (fur coats, fur vests, etc.), shoes and objects required in households (harnesses, leather bands, belts).

8.5. GENERAL CONCLUSIONS

The research conducted led us to the following conclusions:

*In terms of historical and archaeological evidence on cattle farming since ancient times until the beginning of the eighteenth century in the North-West of Transylvania*
1. In the studied area cattle farming is considerably old, its origins being found in the Carved Stone Age. In the archaeological sites on Somos hills, near Remetea-Oas, Boinesti coast (Boinesti commune), on the area of Ciumesti and Beres, as well as of Foeni and Sanislau, beside the wild animal bones, the presence of domestic animal bones was also revealed (sheep, goat, ox). These data prove that in addition to hunting, people started to grow animals firstly to provide food and secondly - clothing.

2. For the Neolithic, we found fewer bones in the studied area, but in the adjacent areas (the settlement from Zauan, Salaj County) livestock farming evidence was found, materialized in domestic animal bones. 85.62% of the total bones examined come from domestic animal species. Among these species, cattle (*Bos taurus*) are on the first place, followed by ovicaprines (*Ovis Aries* and *Capra hircus*).

3. Animal and fish bones dating from the Bronze Age were found in the Ghiile Boții archaeological spot, in the vicinity of Oarța de Sus. The domestic animals were represented by bovines, sheep and pigs. Characteristic for this period is the clay pottery with various hypertrophied protuberances on the outside, having zoomorphic aspect (ram, dog, hawk) discovered in the Lapus necropolis. These artistic representations with ornamental nature, but related to the day-to-day life, prove once again the continuity of livestock breeding in the studied area.

4. A human settlement and an urn cremation cemetery on the Solovan hill, near Sighetu Marmatiei, date from the Iron Age.

5. For the Geto-Dacian period, archeological excavations during 1964-1965 in the village of Berea (near Carei) revealed fragments of domestic animal bones (sheep, cattle). These findings confirm once again the continuity of indigenous population on these territories and their occupations.

6. Evidence of cattle farming in the early feudal period are more numerous and more relevant, particularly in terms of bovine farming. Thus, in Alba Iulia (Romans’ Plateau) bone remains and whole cattle bones were found. Characteristic for this period is that as a result of
observations and testimonies, the origin of cattle can be determined; thus bovines are considered to belong to two breeds: *Bos taurus primigenius*, brought by the Roman colonists, with a smaller number of bovines, and *Bos taurus brachyceros*, more numerous within the studied paleo-fauna and represented by the indigenous cow. Therefore the Roman colonists of those times were preoccupied to improve the local breed.

7. Regarding the developed feudalism period, documents of those times indicate the existence of a large number of animals in the studied area. As movables, cattle were often subject of dispute, reflected in documents. The archaeological research and paleozoology studies from Cuhea (Bogdan Voda) reveal that domestic cattle bones represent 40% of all the archaeological material discovered. This evidence is also a starting point for further archaeological research.

**In terms of the veterinary medicine history and cattle diseases in ancient times**

1. The veterinary, scientific medicine has its roots in old empirical practices for treating animals;

2. Given the pedo-climatic features of Maramures County, which are favourable for livestock farming, the popular tradition has preserved a rich therapeutic arsenal aimed at treating diseases in livestock animals.

3. There are two sides of the popular medicine on livestock animals:

   a. mystical - magic

   b. empirical

   a. In terms of the mystical-magic side of treating diseases, there are numerous chants and precepts firstly regarding the prevention of animal diseases caused by evil forces, but also for eliminating the consequences of certain spells or charms which were considered in the Maramures villages as the main cause of animal diseases.
b. In terms of empirical treatment of diseases, the Miscelaneu Manuscript is to be mentioned, dated 1797-1799 by Mihai Dâncuș, which includes a rich content of treatments and advice on animal care and health.

4. In terms of written testimonies about animal diseases, an important source is the notes on old religious books;

5. The archives include documentary references on animal plagues, such as: praetor reports and documents on research conducted during epizooty periods in the Maramures area;

6. In 1876 Cornea Basiliu from Viseu de Sus wrote a paper on animal diseases entitled “The house veterinarian”. This document, along with other ones, are the first veterinary textbooks used in veterinary schools and were the basis for training famous practitioners.

In terms of ethnological evidence on cattle farming in Maramures County

Livestock farming habits and numerous beliefs and magical practices that have survived (the ritual lighting of the "live fire" at the sheepfold, incantations for livestock health, organizing the “Tanjaua” ritual, collection and inclusion of plants in food) prove the pastoral age and livestock farming in the area.

1. Indigenous words related to animals such as aurochs, ox, cow, horse, and a number of terms that refer to tools or techniques used in agriculture (fork, hoe, to plough, to harvest, etc.) of Latin origin, as well as those of Slavic origin that entered in the main words fund (plow, scythe, rake, apiary) are also arguments indicating the old age and continuity of this occupation of the population in the area.

2. Maramureș toponymy is a rich source of data on livestock farming. Toponymy analysis contained in historical documents and folklore reveal that animals are commonly used in the denomination of places and localities, such as the villages of Boureni, Bouțul Mic, Bouțul Mare (currently in Ukraine), Fântâna Boului (Ox’s Well), Izvorul Boilor (Oxen’s Spring), Temeteu Vitelor (Cattle Cemetery).
3. Animals are particularly loved by the Romanian people, being therefore well represented in popular art. Thus, they can be seen on the old church wall paintings (Budești-Susani, Ieud, Rogoz) on various embroidery or towels with animal motifs, in sculpture and Maramures gates.

4. Regarding livestock breeding, there are many beliefs and magical practices aimed at actually getting better products, increasing the number of animals, protecting them from natural disasters or diseases.

5. All tools used in the preparation of dairy products are meant to underline the importance given by peasants to this occupation. We mention here: cheese container, milk pail, barrel, shepherd’s spoon, bowl.

In terms of cattle farming, care and exploitation in Maramures County since ancient times

1. In our area of investigation, cattle shelters are built of wood, clay, burnt and unburnt bricks and more rarely limestone.

2. Shelter flooring is in all cases made of various timber, predominantly oak, alder, chestnut and sometimes beech.

3. In the past, shelter ventilation and lighting were exclusively done through door and shutters and purine was draining through the floor.

4. Grazing was either individual or in herds on the local pasture; in some areas cows were held overnight on pasture in enclosed areas.

5. In order to protect hay during winters, oboroace (hay sheds) were built of wood, which cannot be found in other parts of the country.

6. The productive lifetime of cows was long, frequently up to 12-15 years and even up to 18 years, the amount of milk per cow ranging between 8 and 20 liters, with 3.5 – 3.8% fat.

7. Calves were fed with milk from bucket or bottles and/or were allowed to suck milk from the cow.
8. 45% of the households sell the production through contracts with state, and the balance of 55% was consumed within the household.

8. Regarding the cattle breeds in the studied area, we found that in the higher areas Mocanita and Pinzgau breeds were predominant, which resulted in Transylvania Pinzgau breed; Grey Steppe breed and later Maramures Brown breed were predominant in the hilly area, and Romanian Spotted breed was predominant in the Somes plain area.

9. Cattle were kept in stables for 6-7 months a year, and during the summer approx. 30-35% were kept on pasture, while dairy cows were mostly retained in the household to provide milk for consumption.