

CURRENT ANALYSIS OF THE "ȚARA DORNELOR" GEOGRAPHICAL AREA AND THE DEVELOPMENT OF TRADITIONAL AGRICULTURAL POTENTIAL

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Abstract

The Dornelor Depression occupies a mountainous geographical area with subalpine specifics, known as "Țara Dornelor". The geological, pedo-climatic, and floristic structure of this area represents the basis of the traditional agriculture development, which is mainly centered on the growth of some autochthonous cattle breeds (Transylvanian Pinzgau, Black Pinzgau/ Dorna Cow and Brown cow of Maramureș). This study aimed to analyse the current level of geological, pedological, climatic, and biodiversity conditions, as well as the need to preserve Pinzgau cow herds and the procedures for preparing traditional dairy products. The obtained results confirmed the location of Suceava county among the leading areas in domestic cattle breeding, Romanian Spotted Cattle being predominant. The analysis of the specific climate has revealed that it is directly influenced by the relief which is structured in altitude steps, the Dornelor land being a representative geographic area for the national and community heritage, through the protected natural areas of the "NATURA 2000" European Ecological Network.

Key words: mountain area, pedo-climatic factors, traditional foods.

INTRODUCTION

The Carpathian Mountains rarely exceed an altitude of 2500 m and are characterized by a temperate-continental climate, rich in forests and natural meadows, which cover almost 74.000 km². This climate confers shorter periods of vegetation and lower temperatures, compared to those specific to similar areas in the Alps or the Pyrenees (Rey, 1997). More precisely, according to the latest criteria for the delimitation of mountain areas (HG no. 949 of 2002; https://www.cdep.ro/pls/legis/legis_pck.htp_act?ida=39247), the mountainous area of Romania represents 32.7% of the national territory, and the Carpathian Mountains outline one of the largest European mountain ranges located in a single country (Rey, 1997). The

provisions of the MADR (Ministry of Agriculture and Rural Development) (Order 97/1332/2019; https://www.cdep.ro/pls/legis/legis_pck.htp_act?ida=156772) are also worth noting, showing that in this area, the climatic and biological conditions are less favorable and limit the level of agricultural production.

However, the research on the evolution of anthropology in the mountainous area of Bucovina records the existence of man on the territory of the Dornea Basin since ancient times, dating back to the Paleolithic and Neolithic eras (Andronic, 2009). As a geographical unit, the Dornelor Depression is located in the northwest of the Bistrița basin, being located entirely in the mountainous area, on the border between the Nordic Group and the Central Group of the Eastern Carpathians.

The altitude reaches 750 m in the depression area, gradually increasing to 1900 m, on the crests of the Călimani Mountains, at significant heights, where the Bârgău Mountains are located in the northern and northwestern areas. This area has a rich hydrographic network, circumscribed by several rivers with medium or low flows (Dorna, Dornișoara, Teșna, Neagra, Coșna). In the Romanian geographical literature, the depression is also called "Țara Dornelor", suggesting that it includes the depression hearth and the surrounding mountain range, along the entire economic domain (Mihalca, 2014).

The practice of traditional household-type agriculture, based on grazing, the use of traditional hay, and natural fertilizers contributed to the preservation of this area and the maintenance of its biodiversity. As mentioned by many researchers in the field, traditional agriculture has a decisive role in the conservation of mountain biodiversity in general, which was also noted in the case of this area (Plieninger, 2007, Senf et al., 2015). The practice of intensive agriculture in mountain areas is limited by pedo-climatic conditions and other specific factors. In this context, the basic agricultural culture in the Dornelor area is limited to the exploitation of potatoes. An important share also belongs to the natural meadows, which are mostly forested and provide special conditions for grazing during the summer and the utilization of hay for obtaining dry fodder. The conservation of these meadows in natural conditions is a priority for supporting the botanical and faunal diversity, necessary to ensure the biological and nutritional value of the traditional food products specific to these areas (Boesi, 2014). It should also be remembered that forests, which occupy the largest part of the surface (53.72%), pastures, hayfields, and reserves of ferrous and non-ferrous minerals, peat, as well as mineral waters, participate in the creation of the local resources. Comparatively, the share of arable areas is very low (10-12%), most of the agricultural land being intended to support livestock production.

Regarding the valorization of traditional dairy products and mineral water resources, tourism in the area, including balneal tourism, has a particular economic impact (Pop, 2000). Over

the centuries, the population in the mountainous areas has adapted to the conditions and possibilities offered by these secular areas, learning to protect nature and live healthily in harmony with it, which explains why the households in these areas are a true "archive of resources and knowledge", which can be a guarantee for supporting future projects regarding the development of sustainable agriculture (Knowles, 2011).

The purpose of this research was to analyze the current knowledge in the spirit of the sustainable development of mountain agriculture in "Țara Dornelor", mainly focused on the support of biodiversity, breeding of domestic cows, and valorization of traditional dairy products.

MATERIALS AND METHODS

The research was carried out in the period 2019-2022 and consisted of the collection and analysis of some data, which were later used in the geographical, geological, pedo-climatic, and socio-economic characterization of the Dornelor area and implicitly in the evaluation of its biodiversity and productive potential. The geographical identification and delimitation began with the research of this area from a bibliographic point of view, consisting of the collection of data, their processing, and interpretation. Thus, for the identification and characterization of the geographical area, the available bibliographic documentation was first analyzed, and later completed with the field evaluation of the territorial surfaces and the main cow-breeding households, and some milk processing units, respectively.

The visits that were made later allowed the direct evaluation of the surfaces necessary for the contouring of the pedological and biodiversity studies. The investigated and analyzed variables were focused on the geological structure, the morphological and physicochemical profiles of the soil, the composition of the flora and fauna, as well as the specifics of the agro-zootechnical activity in the Dornelor area. The present study also resorted to the processing of some data provided by the Faculty of Geography of the "Alexandru Ioan Cuza" University in Iași, which mainly included the vector data used in

the creation of cartographic and raster materials (used as background/support of geological and pedological data). Also, files from the ESRI (Esri: GIS Mapping Software) geodatabase (ArcGIS; <https://www.arcgis.com/index.html>) were used in making the maps.

In order to evaluate the land use, the mapping method based on the classification system proposed in the Corine Land Cover (CLC) project was used. According to this project, the land use classes were established by the classical method, keeping the inventory direction of the project (CLC 2006 Technical Guidelines). The software used to complete the cartographic materials was ArcMap 10.8, a component of the ArcGIS program, provided by ESRI. The data relating to the evolution of livestock, during the period 2018-2022, were verified by the county services ANSVSA (The National Veterinary Sanitary and Food Safety Authority), after being collected from current official sources (Statistical Report of Suceava Sanitary Veterinary and Food Safety Directorate). The data that were used to characterize the evolution of climatic factors had been collected from two meteorological stations in the Dornelor region (Poiana Stampei and Călimani), which monitor the evolution of standardized climatic parameters in our country daily. In addition, some data for the year 2022 were collected and processed from the Bucharest National Meteorological Administration (ANM) (<https://www.meteoromania.ro/>). In the statistical analysis of the data, the application of the XL STAT program, version 2022, was used, in which $p < 0.05$ values were considered statistically significant.

RESULTS AND DISCUSSIONS

In order to present and analyze the obtained results coherently, it is opportune to correlate them with the set of current data related to the Dorna depression, addressing the geographical layout, the pedological dominants, the evolution of biodiversity, the climatic conditions, the trends of agritourism and traditional agriculture, mainly focused on obtaining and utilization of dairy products.

Geographical layout. Geographically, this lowland area is surrounded by mountainous massifs of different altitudes, such as Suhard

with the Oușorul peak (1369 m) to the north; Giumalau (1857 m) to the northeast; The Bistriței Mountains with Budacu peak (1864 m) to the east and southeast; The Călimani Mountains with Pietrosul peak (2100 m), Tămădău peak (1863 m) and Gura Haitii (1620 m) to the south; The Bârgău Mountains with Heniul Mare Peak (1611 m) to the northwest. Moreover, this area also presents the following natural communications: Mestecăniș Pass (to the northeast, 1100 m), Bistrița Aurie valley with Prislop Pass (to the northwest, 1413 m), Zugrenilor Gorge (to the east, 740 m), Tihuța Pass (to east, 1413 m), Pălteniș Pass (to the southeast, 1327 m) (Figure 1). The subdivision of the lands in the area was marked by the multitude of relief forms, the gradual increase in altitude generating a specific layering, correlated with the topoclimatic aspect. Thus, the easy transition from swamps and wet meadows to hayfields was favored, and on the upper floors to meadows and mountain hayfields to subalpine meadows (Achim, 2015).

The Dornelor basin is rich in flowing surface waters, such as the Bistrița Aurie river, with the Dorna and Neagra rivers as its main tributaries; their confluence downstream continues the Bistrița river, which is one of the most important fluvial systems in the Eastern Carpathians, crossing various geological forms that contribute to the accumulation of different sediments (Onescu, 1965).

Geopedological aspects. From a geological perspective, the dominance of Proterozoic rocks is reflected in the northeastern compartment of the depression. On the southwestern side, igneous, eruptive rocks predominate (Neogene volcanic forms). In the north of the area, Triassic limestones are found. The depression area is dominated by the disaggregation rocks (alluvium) of the Quaternary age, built on an older foundation, of metamorphic rocks. The geological substratum of the territory, from which the Dorna gathers its waters, is particularly complex, being represented by a great petrographic variety. It is the result of the fact that the Dornelor Basin overlaps the boundary zone of three large geological formations: eruptive (Călimani Mountains), Transcarpathian flysch (Bârgăului Mountains), and crystalline (Suhardului Mountains) (Figure 2a) (Roșu, 1980). There are geostructural

arguments, which confirm the crystalline-Mesozoic nature of this depression. The Dornelor area is a mineralogical complex (Cu-Pb, Cu-Mo, Bi-As, Zr-Ti, Zi-Rb, Cu-Zr, Ti-Cu, Cu-Rb, Zi-Bi, Zn-As, Pb-Zr, Pb-Rb Sr-Ti, Mo-Rb, Ag-Ca, Ti-Rb), in which manganese deposits predominate, usually combined with Fe and Cu (Leniuc, 2015).

The influence of geological and geo-chemical factors on the migration of many elements in the soil has led to the formation of landscape features that reflect the variability of the concentrations of existing elements in the soil, with effects in the enrichment of plant biodiversity (Makhinova et al., 2014). Regarding the valorization of pyrite and chalcopryrite manganese deposits, the Dornelor area represented an important national supplier, which is currently maintained only in three localities: Ulm (Dorna Arini), Oița (Ciocănești) and Arșița (Iacobeni). Another major wealth of the Dornelor region is represented by mineral and carbonated waters, which are associated with the post-volcanic activity of the eastern area of the Călimani Mountains.

The volcanic rocks date back over 10 million years, and at great depth, there is a mixture of

meteoric water with CO₂, followed by a long-term natural filtration that takes place deep in the Eastern Carpathians (Băncilă, 1958).

The distribution and potential of soils were studied for a long time and several types of soils were identified that correspond to 9 classes, with different degrees of fertility that had a significant role in agricultural practices as well as in the way of exploitation and capitalization of the lands.

The most important and most predominant for the Dornelor area is the "Cambisols" class (44.70%), followed by the "Spodosols" class (43.98%), classes that fall into the category of those with low fertility, corresponding to mixed forest vegetation and conifers as well as pastures and hayfields. They are followed by the classes: "Andosols/Umbrisols" (4.37%), "Protisols/Antrisol" (3.59%), "Luvisols" (1.18%), "Cernisols" (0.78%), "Hidrisols" (0.76%), "Histosols" (0.42%) and "Salsodisols" (0.22%) (personal calculation according to the database provided by ArcGIS Online <https://www.arcgis.com/index.html>) (Figures 2b and 3).

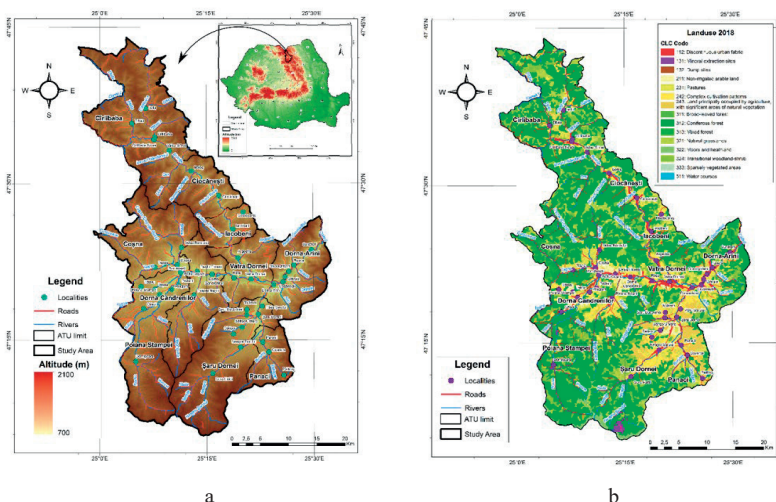


Figure 1. Detailed geographical map of the Dornelor area (a) and land use (b)
(Data source: ArcGIS Online/CLC 2018-<https://land.copernicus.eu/pan-european/corine-land-cover/clc2018/> /
<https://www.arcgis.com/index.html>- personal processing)

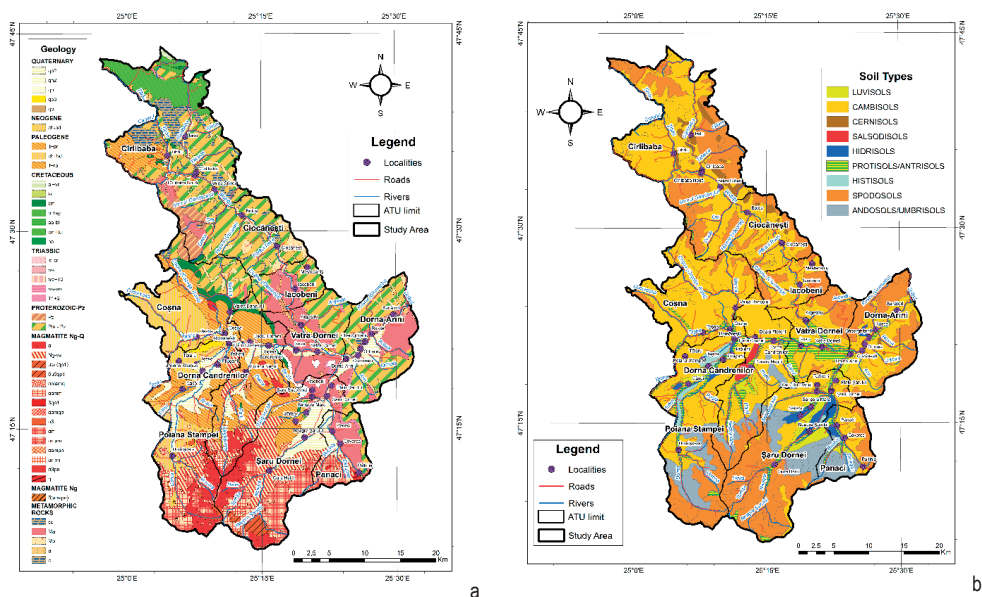


Figure. 2. Geological (a) and pedological cartographic representation of the Dorna Basin (b) (Data source ArcGIS Online; <https://www.arcgis.com/index.html>- personal processing)

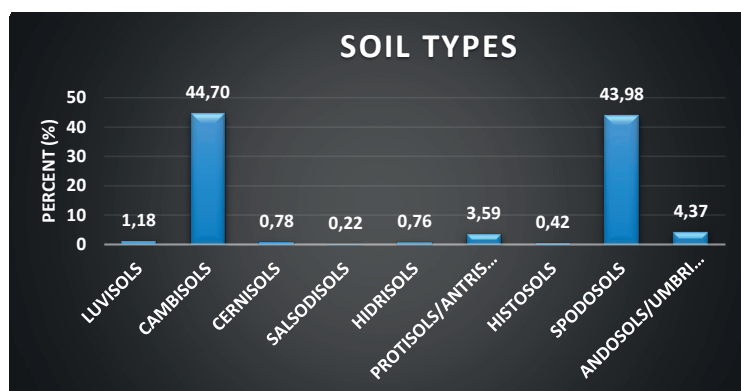


Figure 3. The share of pedological classes in the Dornel area (Data source: ArcGIS Online - <https://www.arcgis.com/index.html> - processing in Microsoft Office Excel)

The evolution of climatic factors. In the Dornel Depression, the temperate-continent climate prevails. In this regard, the obtained results highlighted some differences between the values that were recorded at the two meteorological stations during the year 2022 (Figure 4). In this regard, it appears that the trend of seasonal dynamics is manifested by emphasizing the differences between the evolution of the average values of the climatic parameters in the depression and alpine areas. These revealed important variations in the average values of temperature (6.3°C and

1.1°C, respectively) (Figure 4a), air humidity (85.08% and 84.58%, respectively) (Figure 4b), average monthly precipitation (64.63 mm and 103.38 mm, respectively) (Figure 4c), air pressure (909.32 and 796.73, respectively) (Figure 4d).

The evolution of the average monthly values revealed the highest temperature values during July and August, both for the depression area (17.3°C) and for the alpine area (11.7°C), and the lowest temperatures during January for both areas (-5.7 and -9.6°C, respectively) (Figure 4a).

Regarding air humidity, higher average values were noted in January, both in the depression area (94%) and in the alpine area (93%), respectively lower average values of humidity in March (78%) and October (74%) (Fig.4b). The evolution of the precipitation regime was characterized, as expected, by the recording of higher monthly averages in the July-September period (September: 152.2 - 245.2 mm) compared to the cold period (March: 11.5 mm for Poiana Stampei station; February: 39.6 mm for the Călimani station) (Figure 4c).

It is important to mention that the total amount of precipitation was 775 mm in the case of the Poiana Stampei station and 1240 mm in the Călimani station. The atmospheric pressure showed important oscillations related to the differences in altitude, with higher average values recorded in August for both areas (912.5 mb and 801.6 mb, respectively, with a maximum of 803.7 mb in June and 914.3 mb in September), and lower average values in January, respectively (902.5-790.5 mb) (Figure 4d).

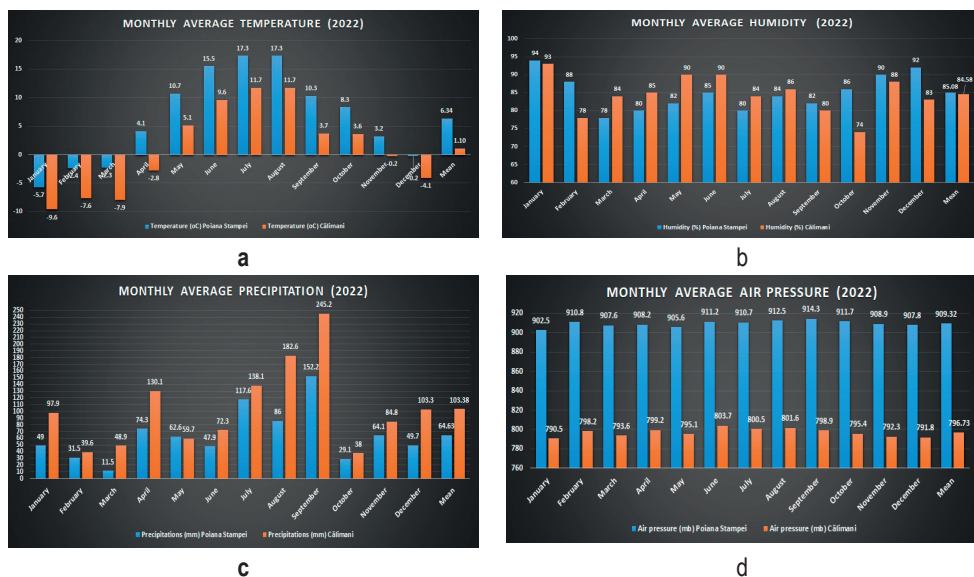


Figure 4. The evolution of the average monthly values of temperature (a), humidity (b), precipitation (c), and air pressure (d)

Biodiversity characterization. The vegetation in the Dornelor land is mostly forest, occupying more than half of the total area (71%). The rest (29%) belongs to pastures, hayfields, and a small percentage of crops (especially potatoes), small vegetable gardens, and anthropogenic land (<https://land.copernicus.eu/paneuropean/corine-land-cover>; CLC 2018) (Figure 5); of the entire agricultural area, pastures represent only 15% (26650 ha) and hayfields, 8.8% (15630 ha) (Negrea et al., 2022) (Figure 5); the remaining 6.6% (11020 ha) include arable land and land with natural meadows (Figure 5). As evidenced by the data presented in Figure 5, natural meadows and hayfields hold the largest share. They provide grazing for the animals during the summer and fibrous fodder for the winter

season, respectively. Within the area under study, the forests have a relatively well-defined stratification depending on the altitudinal level. Thus, in the depression area and up to approximately 950 m, resinous trees mixed with deciduous trees (beech and mountain ash rowan tree, and fir and spruce, respectively) predominate, and above the altitude of 1000 m, almost pure spruce trees predominate. The predominant species are represented by spruce and fir (65% and 25%, respectively), followed by beech, sycamore, birch, gray alder, black alder, and willow trees (Negrea et al., 2022). As for the specific flora, in this area, there is a diversity of plant taxa, which includes approximately 970 species and subspecies, with an allochthonous character, representing approximately 27% of the total species present

in the national flora of Romania (approx. 3700 taxa and subtaxa) (Mititelu et al., 1988). Among these, the most representative are the following families: *Asteraceae*, *Fabaceae*, *Ranunculaceae*, *Apiaceae*, *Brassicaceae*, *Cyperaceae*, *Caryophyllaceae*, *Scrophulariaceae*, *Orchidaceae*, and *Polygonaceae* (Popovici et al., 1996). Analyzing the phytogeographic origin of the species, the following spectrum has been obtained: Circumpolar (13%), Eurasian (36%), European (14%), Central European (10%), Alpine-Carpathian (4%), Endemic (3%), Carpatho-Balkan (3%), Pontic (1%), Ponto-

Mediterranean (3%), Continental (5%), Adventive (3%) and Cosmopolitan (5%). Therefore, due to the geographical position (about 48° lat. N) and the mountainous relief, the northern and mountain-alpine species make up the majority (Eurasian + European + European-central + Alpine-Carpathian = 77%), while species of southern Eastern origin (Carpathian-Balkan + Pontic + Pontic-Mediterranean + Continental) constitutes 12%; only 9% are cosmopolitan and adventive species, and 2% are Dacian endemics (Pricop et al., 2021).

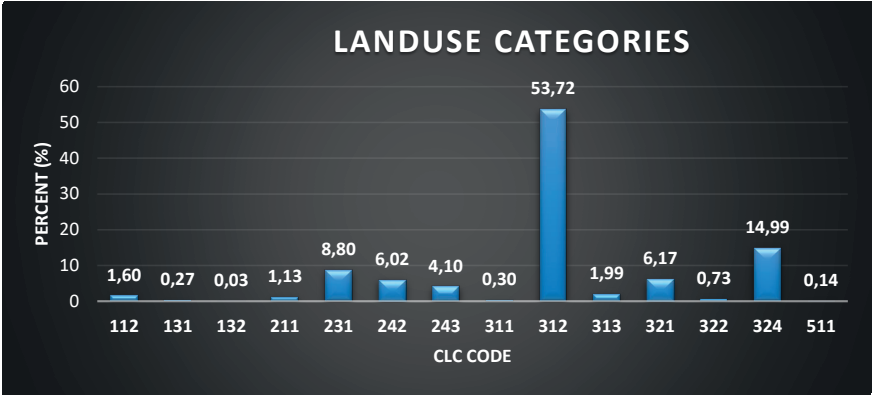


Figure 5. Land use categories in Dorna Basin (Source of data: ArcGIS Online/CLC 2018 - <https://land.copernicus.eu/pan-european/corine-land-cover/clc2018>/<https://www.arcgis.com/index.html>, personal processing in Microsoft Office Excel)

Trends in traditional agriculture. Climatic variations associated with other mountain conditions favor biodiversity, generating support for the growth of large and small ruminants and implicitly the development of households and micro-farms specific to mountain areas (Khan et al., 2013; Zhang et al., 2013; Necula et al., 2022a; Török et al., 2014). Cattle breeding has a major impact on the country's animal economy and is essential for mountain communities. Suceava County has an appreciable land fund, which is divided into a plateau and a mountain region. Animal breeding in this county has a traditional character and a major economic impact, having large herds of cattle and sheep. At the end of 2008, the livestock of Suceava county included 123147 cattle, predominantly from indigenous breeds (Pinzgau, Brown Cow of Maramureș, and Simmental), which produced 3455000 hl of

milk/year; 234833 sheep, predominantly from the Țurcană and Țigaie breeds; 16533 goats; 19618 pigs. Comparatively, at the end of 2022, cattle and pig herds decreased significantly (to 111366 and 14554, respectively), whilst sheep and goats herds decreased moderately (223059 and 11337, respectively) (Table 1). Moreover, the dynamics revealed important oscillations. Thus, at the end of 2022, the number of cattle decreased by 9.56%, and of pigs, by 25.81%. The decreases were less important in the case of sheep (by 5%) and goats (by 31.42%) (Statistical Report of Suceava Sanitary Veterinary and Food Safety Directorate-personal processing).

The main activities of "Țara Dornelor" are forestry and agriculture, the two branches being adapted to the area and local potential. Traditional foods in the Dornelor area are mainly products of animal origin, obtained to a

large extent from cattle and sheep breeding, and to a lesser extent, from the breeding of goats and pigs. In this context, it could be said that "Țara Dornelor" with its mountainous landscape, with its meadows, and hayfields, include and offer, through centuries-old traditions, the breeding of cattle and sheep. In the "Țara Dornelor" region, livestock numbers evolved differently compared to the county's statistics (Table 1). In 2018, cattle populations were 16288, remaining approximately constant with small fluctuations until 2020 (16516 heads), with even a small increase in 2021 (16780 heads), followed by a significant decrease ($p < 0.05$) in 2022 (15806 heads). Regarding sheep, in 2018, there were 3154 animals with a significant increase ($p < 0.05$) in 2019 (3544 animals), then a decrease ($p < 0.05$) was recorded in 2020 (3312 animals), a new increase in 2021 (3632 animals), followed by a significant decrease ($p < 0.05$) in 2022 (2937 animals). The total number of goats in 2018 was 497, followed by a constant decrease until 2021 (342 animals), and followed next, by a significant increase ($p < 0.05$) in 2022 (747 animals). Concerning pigs, in 2018, the herd consisted of 548 animals, followed by a constant increase until 2021 (824 animals), and then, a significant decrease ($p < 0.05$) being registered in 2022, by halving the herd (434 animals) (Statistical Report of Suceava Sanitary Veterinary and Food Safety Directorate). Moreover, of the total cattle herd (in 2022), 77.61% (3538) appeared in the "Official Control of Production Performance" (Order 188/2011 on the amendment of the norms for the assessment of breeding cattle (https://www.cdep.ro/pls/legis/legis_pck.htm_act?id=105257)). At the end of 2022, the old autochthonous cattle breeds were still well represented in the Dornelor area; therefore, Transylvanian Pinzgau and Dorna Cow, totaling 1080 animals, while Brown cow of Maramureș was represented by 668 animals. In addition, the Romanian Spotted Cattle (1124 animals) and Romanian Black Spotted cattle (666 animals) were added to the aforementioned data (Statistical Report on the number of animals by breed, 2022). At the same time, the monitored specimens are valuable from the point of view of genetics and milk production, and their number as genuine

breeds can be greatly increased by the inclusion of half-breeds and related youth. The domestic bull breeds, Transylvanian Pinzgau and Brown of Maramureș, are genetically and historically adapted to the natural conditions of high mountain areas with wild meadows, making very good use of cellulosic fodder (Mang, 2011). Furthermore, they show particular resistance to adverse climatic conditions, weather, and pathologies (Rey, 1979; Popa et al., 2021; Necula et al., 2022b). Mountain climatic factors also have positive effects on milk quality, directly influencing the physical-chemical and hygienic-sanitary parameters (Someșan et al., 2015; Necula et al, 2021; Necula et al, 2022a). It is also known that the relationship between the nature of the lands, the functioning of ecosystems, and animal production is supported by the biodiversity of mountain ecosystems (Dumont et al., 2013; Souza et al., 2015). The quality of the milk from the Dornelor region is well known, and this has already been appreciated on a national scale. Dorna dairy products are also highly appreciated, being centered around the Dorna Swiss cheese, which is the most representative dairy product (brand) in the area. Currently, this assortment of cheese is produced according to traditional standards, as an authorized product specific to the Dornelor area, and labeled as "Mountain Product" (<http://www.madr.ro/docs/ind-alimentara/Ghid-produs-montan.pdf>).

Swiss cheese is a traditional Emmentaler cheese, which is part of the category of fine cheeses, having a specific manufacturing technique, with a long maturation time, at least 90 days, which requires special skill from those who carry out this technological process. The success of obtaining this assortment implies appropriate climatic conditions, which are specific to this area since this cheese is obtained only in mountainous regions. Geo-climatic conditions in mountainous areas have a major impact on the health and well-being of animals, both through direct action on them and indirectly on the biodiversity of fodder resources (Machiko et al., 2014; Someșan et al., 2015).

Table 1. Evolution of livestock in the Domeloro area (in the period 2018-2022)
(Statistical report on the number of live animals in holdings during 2018-2022 - personal processing)

No. ert.	UAT	CATTLE					SHEEP					GOATS					PIGS				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
1.	Cirlibaba	671 ^{IE}	701 ^{ID}	743 ^{IA}	729 ^{IB}	717 ^{IC}	27 ^{IH}	25 ^{IH}	25 ^{IH}	25 ^{IH}	150 ^{IG}	50 ^{EN}	18 ^{GP}	19 ^{IP}	22 ^{IO}	229 ^{BM}	9 ^{IU}	6 ^{IV}	32 ^{IT}	55 ^{IS}	2 ^{IW}
2.	Ciocănești	825 ^{IC}	860 ^{IB}	875 ^{IA}	876 ^{IA}	820 ^{BD}	330 ^{CG}	305 ^{CH}	274 ^{CK}	281 ^{IL}	278 ^{IL}	12 ^{IN}	15 ^{IN}	19 ^{IM}	18 ^{BM}	20 ^{BM}	35 ^{EV}	44 ^{IU}	57 ^{IT}	56 ^{CT}	67 ^{BS}
3.	Iacobeni	260 ^{PD}	265 ^{IB}	263 ^{IC}	270 ^{IA}	248 ^{IE}	98 ^{IG}	90 ^{IH}	83 ^{IL}	80 ^{IK}	84 ^{IL}	4 ^{IM}	4 ^{IM}	3 ^{IM}	4 ^{IM}	3 ^{IM}	10 ^{IT}	11 ^{IT}	10 ^{IT}	11 ^{IT}	23 ^{IS}
4.	Vatra Domei	953 ^{IC}	931 ^{ED}	970 ^{EB}	972 ^{EA}	824 ^{EE}	152 ^{IK}	284 ^{II}	347 ^{IG}	340 ^{HI}	280 ^{IL}	57 ^{EN}	61 ^{EM}	63 ^{EM}	60 ^{EM}	40 ^{EO}	48 ^{DT}	23 ^{IV}	51 ^{IS}	31 ^{IU}	9 ^{IW}
5.	Doma Arini	1809 ^{EC}	1785 ^{ED}	1905 ^{EB}	1923 ^{EA}	1669 ^{EE}	410 ^{IL}	379 ^{IL}	578 ^{IG}	527 ^{HI}	370 ^{EK}	45 ^{EN}	45 ^{EN}	36 ^{EP}	40 ^{EO}	250 ^{BM}	17 ^{IV}	69 ^{IS}	38 ^{IT}	16 ^{IV}	33 ^{IU}
6.	Panaci	2111 ^{EA}	1974 ^{EC}	2047 ^{EB}	1966 ^{ED}	1914 ^{EE}	152 ^{IL}	143 ^{IL}	220 ^{HI}	230 ^{IG}	135 ^{IK}	116 ^{EM}	94 ^{EN}	92 ^{EN}	79 ^{EO}	79 ^{EO}	159 ^{AS}	152 ^{AT}	108 ^{EV}	113 ^{DU}	61 ^{EW}
7.	Șarul Domei	3394 ^{IB}	3205 ^{ID}	3421 ^{IA}	3388 ^{IC}	3186 ^{IE}	496 ^{IK}	873 ^{IG}	791 ^{AI}	774 ^{IL}	623 ^{IL}	81 ^{EM}	76 ^{BN}	68 ^{BO}	67 ^{BO}	56 ^{IP}	89 ^{EV}	144 ^{IU}	231 ^{AS}	159 ^{BT}	52 ^{AW}
8.	Doma Candrenilor	2886 ^{IC}	2894 ^{IB}	2869 ^{ID}	3087 ^{IA}	2867 ^{IE}	583 ^{BI}	482 ^{IL}	487 ^{IL}	648 ^{IG}	276 ^{IK}	43 ^{EM}	41 ^{IM}	18 ^{EN}	13 ^{EO}	43 ^{EM}	20 ^{AW}	66 ^{EU}	98 ^{DT}	172 ^{AS}	40 ^{EV}
9.	Coșna	1462 ^{DD}	1457 ^{EE}	1465 ^{EC}	1503 ^{EA}	1489 ^{EB}	234 ^{IG}	160 ^{EL}	159 ^{EL}	179 ^{HI}	169 ^{IL}	0 ^{IN}	3 ^{IM}	3 ^{IM}	3 ^{IM}	0 ^{IN}	30 ^{IU}	30 ^{IU}	62 ^{ES}	54 ^{ET}	26 ^{EV}
10.	Poiana Stampei	1917 ^{DE}	1940 ^{DD}	1958 ^{EC}	2066 ^{DA}	2072 ^{EA}	658 ^{AI}	803 ^{IG}	348 ^{IK}	548 ^{EL}	572 ^{BL}	89 ^{BM}	49 ^{AO}	52 ^{BN}	36 ^{AP}	27 ^{EO}	131 ^{BT}	103 ^{CV}	133 ^{BT}	157 ^{ES}	121 ^{AU}
	TOTAL	16288 ^C	16012 ^D	16516 ^B	16780 ^A	15806 ^F	3140 ^I	3544 ^H	3312 ^I	3632 ^G	2937 ^K	497 ^N	406 ^O	373 ^P	342 ^Q	747 ^M	548 ^V	648 ^U	820 ^T	824 ^S	434 ^W

Legend: Values followed by distinct lowercase letters in the same column indicate significant differences between localities ($p < 0.05$), values followed by distinct capital letters in the same row (A-E for cattle, G-K for sheep, M-Q for goats, S-W for pigs) indicate significant differences between years ($p < 0.05$); UAT - territorial administrative units.

The agritourism potential. Rural tourism is in continuous development in the Dornelor area, which has a picturesque, unpolluted natural setting with a multitude of recreational options and valuable gastronomic, cultural, and historical potential. More and more domestic and foreign tourists prefer this rural environment, being attracted by the possibility of discovering the environment, changing the way of life, as well as by the agricultural activities specific to mountain areas. The number of guesthouses has considerably grown, especially in recent years. In addition, the mountainous area of the Dornelor region meets all the necessary conditions for the development of this form of tourism. Since the 1990s, the area has effectively established itself in the practice of this type of tourism, gradually becoming more and more sought after by tourists.

The main favorable factors that have given a continuous development to this form of tourism in the Dornelor region are the beauty of the area, the air quality, the density of houses and guesthouses, the special quality of the ecological products obtained in this area, with national and international value, as well as the existence of a rich biodiversity (<http://politici.weebly.com/turism/turismul-in-suceava>).

The tourist endowment of the Dornelor land can be highlighted by the beauty of natural landscapes, the multitude of natural monuments, the wealth, diversity and originality of folk and ethnographic art; the presence of balneo-climatic resorts, and the abundance of biodiversity. Thanks to the special tourist potential, the Dornelor area is at the forefront of national tourism, under the name of "Northern Bucovina" (<http://politici.weebly.com/turism/turismul-in-suceava>).

CONCLUSIONS

The Dornelor area is a geographical area rich in natural resources, generated by the interaction of specific factors, such as the petrographic and tectonic structure, the pedo-geoclimatic profile, the forest fund, the meadows, and mountain meadows favorable for raising animals and the local anthropogenic factor. These factors give value and preserve the natural framework

specific for obtaining genuine traditional products. The climate of the area is influenced by the structuring of the relief on altitude steps, distinguishing depression and mountain variations in temperature, humidity, precipitation, and atmospheric pressure. The special level of biodiversity is ensured by a valuable floristic and faunal diversity, with a great diversity of taxa (forest fruits, edible mushrooms, medicinal plants) and a rich hunting and fishing fund. The specific natural conditions favor the development of forestry, animal breeding (mainly cattle and sheep), and implicitly the production of traditional foods, which can constitute a solution in the current food crisis.

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