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## COMPARATIVE STUDY ON THE PROFILE OF AGRICULTURAL HOLDINGS WITHOUT LEGAL STATUS IN THE DEVELOPMENT REGIONS NORTH-EAST AND SOUTH-EAST OF ROMANIA

### ABSTRACT

The agricultural holdings without legal status, largely overlapping the rural population's households and providing content to the individual households, namely the peasant households, preserve the continuity of the vernacular village in terms of the community land and in demographic terms, through the families living in the villages, whose main occupation remains agriculture.

There are sensible differences between the holdings located in different county and regional areas, which reveals the distinctive typology of the agricultural holdings without legal status.

The present study relies upon processed data from the last censuses, namely, the Population, Dwellings and Households Census in Romania (2011) and the General Agricultural Census (2010), with reference to the current differences within the average profiles of the holdings from the counties located in the North-East and South-East Development Regions, highlighting the similar profile of the holdings, even though they belong to rather different geographical areas, with specific particularities.

**Key words:** agricultural holdings without legal status, individual agricultural holdings, commercial agricultural holdings, subsistence holdings, semi-subsistence holdings.

**JEL Classification:** Q15, Q24.

### 1. INTRODUCTION

The present world of the native village is under deep and dynamic transformation, determined by the reorganization of the production structures and systems of agricultural land operation, by strengthening the market economy and further on, by the dramatic demographic changes. All these have had a significant influence upon the active workforce resource utilization in the rural area.

Under these circumstances, the agricultural holdings can be structured, according to the social and economic criteria, by two main levels:

– commercial agricultural holdings, consisting of agricultural holdings with legal status and agricultural holdings without legal status, which fully or partially commercialize the obtained agricultural production;

– subsistence agricultural holdings where the obtained crop and livestock production goes mainly to self-consumption and semi-subsistence agricultural holdings where the agricultural production used for self-consumption has a larger share than the marketed production.

In the second category we find only the individual agricultural holdings out of which the subsistence agricultural holdings with an average agricultural area under one hectare represent 52.1% of the total number of individual agricultural holdings and operate 9.1% of the total area, namely 731 thousand hectares, while the semi-subsistence holdings with an average agricultural area of 1–2 hectares represent 19.0% of the total number of individual agricultural holdings and operate 12.9% of the total area, namely 1,033.8 thousand hectares.

The great importance of the subsistence and semi-subsistence agricultural holdings, with the social function as main priority and the economic function as subsidiary priority, results from the fact that more than 70% of the individual agricultural holdings have less than 2 hectares, but they operate only 1,765 thousand hectares of the total area of the country (11.2%), which means that the subsistence and semi-subsistence agricultural holdings have an average size of 0.65 hectares. Overall, the agricultural holdings without legal status operate 52.9% of the country's total agricultural area and are responsible for providing food for 45.1% of the total population of the country who lives in the rural area.

Out of the previously mentioned reasons, the study of the agricultural holdings without legal status by their profile, in a macro-territorial distribution, presents a scientific approach of interest, as their development leads to the improvement of the population's nutrition degree, both in quantitative and qualitative terms, as well as to the increase of the income sources by the sale of the surplus of agricultural products obtained on individual agricultural holdings, by increasing their performances.

## 2. STATE OF KNOWLEDGE

Romania's preparation for the accession to the European Union also presupposed adjusting the national system of statistics to the common requirements imposed by the statistical unitary system of the European Union (EUROSTAT). According to the juridical status of the agricultural holdings, two main categories of holdings were considered, namely the agricultural holdings without legal status and the agricultural holdings with legal status. Both types of holdings have been studied, analyzed, assessed, classified over time, presented by numerous authors, each focused on certain objective functions (Alexandri & Luca, 2017; Bohateret & Brumă, 2016; Bohateret & Brumă, 2015; Otiman, 2012; Popescu *et al.*, 2016; Popescu & Istudor, 2017; Tudor, 2015; Tudor & Balint, 2006; Unguru, 2017). Some

authors chose as sources the databases represented by the General Agricultural Censuses of 2002 and 2010, as well as the Structural Farm Surveys of 2007, 2013 and 2017, which present, according to a set of criteria, the statistical indicators by various types of holdings, by counties, development regions, macro-regions and nationwide (NRDP, 2014; GAC, 2010).

The presented data sources are not exhaustive, but they provide the possibility to conduct a large diversity of analyses and studies on well-defined themes. Lately, the agricultural holding with legal status has been the focus of attention, as it has been in a continuous stream of development and adjustment to the demands of modern agriculture performing on a large-scale (high productivity, performance and profitability) that commercializes batches of agricultural products of increasingly higher quality and quantity in a competition environment.

The agricultural holdings without legal status, due to their large number (over 3.8 millions) but with a low average agricultural area (about 2.18 hectares), do no longer represent a central object of interest for an efficient and profitable commercial agriculture, but merely a means by which the social function manifest itself freely, with no investments and related support in terms of legislation, logistics and finance, both from the national agrarian policies and from the Common Agricultural Policy of the European Union. There are a multitude of more or less approached debatable aspects, but the present study sticks primarily to identifying and profiling the agricultural holdings without legal status from the Development Macro-region 2 in Romania.

This is an important scientific endeavour, as several types of individual agricultural holdings will be duly substantiated, specific to the North-East and South-East development regions, by different macro-geographic areas. To our knowledge, this sort of study has never been attempted before, although in many cases the agricultural holding without legal status have been often studied and analyzed, in comparison with the agricultural holdings with legal status.

### **3. MATERIAL AND METHOD**

Although seven years have passed since the last General Agricultural Census (GAC), the impressive volume of statistical data continues to provide valuable primary resources for research. For the purpose of the current study, we have opted for a selective utilization of the statistical results from GAC 2010 concerning the agricultural holdings without legal status from the Macro-region 2, North-East and South-East development regions, without analyzing their evolution in relation to the statistical data from GAC 2002, as the structural changes at the level of agricultural holdings without legal status are very slow over time and the current paper does not intend to highlight the dynamics of their evolution, but only to pre-establish the profile of certain representative individual holdings from the area under analysis.

The research was made on the agricultural holdings from the development region North-Est, in the following counties: Bacău, Botoșani, Iași, Neamț, Suceava and Vaslui and in the development region South-East in the following counties: Brăila, Buzău, Constanța, Galați, Tulcea and Vrancea.

The study of agricultural holdings without legal status was based on their assessment according to five representative criteria:

- type of agricultural holding activity and land resources, with 6 indicators;
- land tenure modality, with 6 indicators;
- size of agricultural holdings, with 7 indicators;
- livestock herds, with 6 indicators;
- labor force utilization, with 6 indicators.

In order to obtain comparable results, we chose to present the entire study through the analysis of the indicators in reference to 100 agricultural holdings or, whenever necessary, to 100 hectares of agricultural land, which allows for a better quantification of the agricultural patrimony and holding structure (material and human potential included), and also a fast calculation of the size of different indicators, at the average level of each agricultural holding without legal status, by dividing the obtained results by 100.

On the basis of obtained results, in accordance with the specific majority weight of the analyzed indicators, by different criteria, representative types of agricultural holdings without legal status have been obtained, specific to each development region in part, overlapped on different macro-geographic areas. The comparative study of the two representative types of holdings from each region identifies the necessary future availabilities for the development of their social and economic function.

#### **4. RESULTS AND DISCUSSIONS**

Studying and establishing the profile of an agricultural holding is a thorough endeavour, based on a multi-criteria analysis, which subsequently makes it possible to outline the main characteristics and specific elements for the analyzed entities. In the present study, as previously mentioned, the analysis of the agricultural holdings without legal status was based on 31 indicators grouped into 5 evaluation criteria. In principle, for each holding, we took into consideration the following: type of agricultural activity, agricultural land area, land tenure modality, size of holding, livestock herds and labour force utilization. Information was obtained across six key areas: activity – land area – land tenure – size – livestock herds – labour force.

The analysis targeted the development regions North-East and South-East with their component counties, in reference to the average situation in Macro-region 2 (East, North-East and South-East regions) and was made on a unitary standard of 100 agricultural holdings without legal status, on the basis of the synthetic information processed and introduced in Annex 1.

**The activity type of the agricultural holdings** (Table 1). *North-East Development Region*: 74% are mixed holdings, with a variability ranging from 70% to 78% (Suceava and Iași counties); 24% are holdings specialized in crop production, with shares ranging from 20% to 29% (Iași and Suceava counties) and only 2% are specialized in livestock production, with shares ranging from 1% to 4% (Botoșani — Suceava and Neamț counties);

*South-East Devvelopment Region*: 73% are mixed holdings, with shares between 71% and 80% (counties Buzău, Vrancea and Brăila); 24% are specialized in crop production, ranging from 16% to 26% (Brăila and Vrancea counties) and only 3% have a livestock production profile ranging from 2% to 5% (Galați and Buzău counties).

According to the activity type of the agricultural holdings without legal status from Macro-region 2, the shares of the North-East and South-East regions is almost identical to Macro-region average, the mixed holdings representing 74%, the holdings specialized in crop production 24% and the holdings specialized in livestock production only 3%. We can notice the poor specialization of holdings by simple types of activities (crop and livestock production), as three quarters of holdings promote a mixed agricultural activity, i.e. crop and livestock production mix.

**Operated area in 100 agricultural holdings** (Table 1). *North-East Development Region*. The total area is 177 ha, with variations from 138 ha in Neamț county to 229 ha in Botoșani county; the utilized agricultural area is 161 ha, ranging from 126 ha in Neamț county to 215 ha in Botoșani county; the arable land has 101 ha, fluctuating from 68 ha in Neamț county to 155 ha in Botoșani county. Botoșani and Vaslui counties stand out in terms of largest areas (total, utilized and arable) ranging from 229 to 146 ha, while the counties Iași and Bacău have the smallest total, utilized and arable areas, ranging from 68 to 156 ha. On the average, in the North-East development region, the total area of agricultural holding is 1.77 ha, while the utilized agricultural area is 1.61 ha and the arable land area is 1.01 ha.

Table 1

Activity type of agricultural holdings and land resources

County	Type of activity (per 100 agricultural holdings, no.)			Operated area (ha) per 100 agricultural holdings				
	Mixed	Crop prod.	Livestock prod.	Total area	Agricultural area			Arable area
					Total	out of which:		
					Used	Unused		
Bacău	72	26	2	156	144	133	11	78
Botoșani	77	22	1	229	221	215	6	155
Iași	78	20	2	149	139	137	2	94
Neamț	72	24	4	138	128	126	2	68
Suceava	70	29	1	189	176	175	1	87
Vaslui	77	21	2	214	204	194	10	146
<b>Total NE</b>	<b>74</b>	<b>24</b>	<b>2</b>	<b>177</b>	<b>167</b>	<b>161</b>	<b>6</b>	<b>101</b>
Brăila	80	16	4	297	291	289	2	269
Buzău	71	24	5	177	164	162	2	93

Table 1 (continued)

Constanța	73	24	3	506	500	494	6	463
Galați	73	25	2	202	193	188	5	154
Tulcea	73	23	4	245	240	235	5	217
Vrancea	71	26	3	187	168	163	5	93
<b>Total SE</b>	<b>73</b>	<b>24</b>	<b>3</b>	<b>237</b>	<b>226</b>	<b>222</b>	<b>4</b>	<b>174</b>
<b>Macro 2</b>	<b>74</b>	<b>24</b>	<b>3</b>	<b>199</b>	<b>188</b>	<b>183</b>	<b>5</b>	<b>128</b>

Sources: own calculations based on data collected from [www.rga2010.djsct.ro/](http://www.rga2010.djsct.ro/), Constanța County Office of Statistics.

*South-East Development Region.* The total area is 237 ha, ranging from 177 ha (Buzău county) to 506 ha (Constanța county). The utilized agricultural area is 222 ha, ranging from between 162 ha (Buzău county) and 494 ha (Constanța county). The arable land is 174 ha, from 93 ha (Vrancea and Buzău counties) to 463 ha (Constanța county). Constanța county stands out as the county with the largest average area per agricultural holding in Romania (5.06 ha). The particularity of this county, which is a unique case in this respect, is determined, in a historical perspective, by the low average density of the population and significant land resources. The region also has two counties, namely Brăila (2.94 ha) and Tulcea (2.45 ha), with a total average area per holding above the level of the counties from the North-East development region, resulting from the same ratio of the population density to land resources.

It can be noticed that, in typological terms, in terms of total average area per holding, the counties Vrancea (1.78 ha) and Galați (2.02 ha) fall into the structural frame of the counties in the North-East region, where the historical influence of Moldavia historical region is still visible in all their administrative units. This observation can serve as an argument pleading for a change in the methodology that takes into account the historical regions of Romania for establishing the development regions. The agricultural holdings without legal status from Buzău county, due to the geographical features of their agricultural areas, fall into the average profile typically found in the Moldavian Sub-Carpathians and Curvature Sub-Carpathians.

As a result of their particular features, specific to Dobrogea area, the agricultural areas from Macro-region 2 are on the average by 11–20% larger than those from the North-East Region and by about 19–36% smaller than those from the South-East Region. There are differences that show that the agricultural land potential is higher in the southern part of Macro-region 2 than in its northern part, ranging from 30% to 56% of the land areas owned (total, utilized or arable).

The main feature of Macro-region 2, in terms of the size of the agricultural holding without legal status, is that the total area, in 100 agricultural holdings, is on the average, for the 5 counties with mountain and sub-mountain areas (Suceava, Neamț, Bacău, Vrancea and Buzău) 169 ha, out of which 50% is represented by arable area, as compared to 237 ha, out of which 79% arable area in the counties bordering the Prut and the Danube rivers and the Black Sea (Botoșani, Vaslui, Galați, Brăila and Tulcea). The size difference between the two categories of counties is approximately 29%.

From the previously presented analysis, in order to outline the two homogeneous groups of counties by the size of agricultural holding, two counties were excluded: Iași county because its total area (149 ha divided by 100 agricultural holdings) is typical for the size of the agricultural holdings from the mountain and sub-mountain areas in Macro-region 2, aspect determined by the higher population density facilitated by the very existence of Iași city, the capital of Moldavia historical region for 3 centuries; Constanța is the other excluded county due to its special status, as mentioned before, namely, the sparse distribution of rural localities and low population density.

Analyzing the total agricultural area, the results are a little different, with values between 1.1% in Constanța county and 10.2% in Vrancea county, smaller than the total area of holdings as they further include wooded areas, areas under buildings, yards, roads, etc. and also lacustrine areas, ponds and swamps (Figure 1).

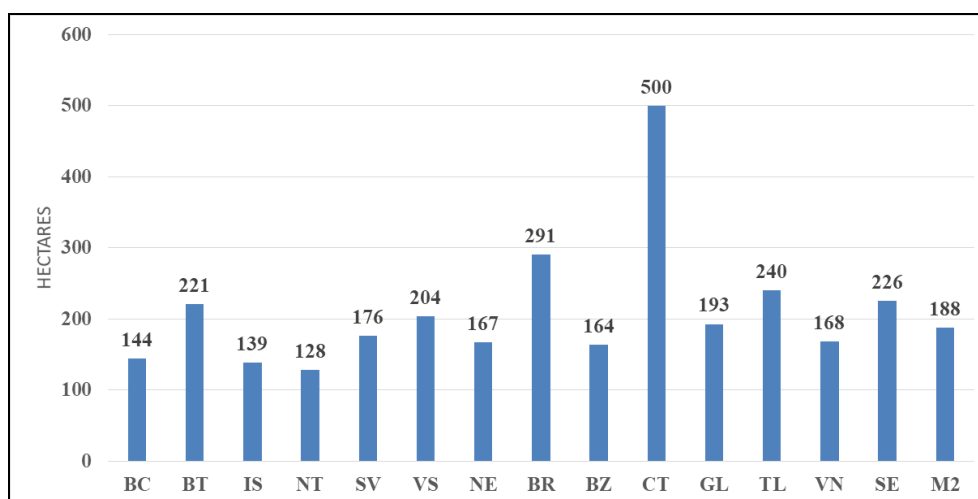


Figure 1. Total agricultural area per 100 agricultural holdings without legal status in the Development Macro-region 2 of Romania.

**Land tenure modality** (Table 2). *North-East Development Region*. In 100 agricultural holdings, the utilized agricultural area is 161 ha on the average, out of which 116 ha represent private property, fluctuating between 90 ha in Iași and Neamț counties to 155 ha in Suceava county; 20 ha leased in land, from 11 ha in Bacău county to 36 ha in Botoșani county and land used free of charge 13 ha, oscillating from 3 ha in Suceava county to 28 ha in Vaslui county. There are also 11 ha under concession agreement (2 ha), under sharecropping system (3 ha) and operated under other forms (6 ha), but these represent land tenure forms with a low share (about 7.4%).

*South-East Development Region.* In 100 agricultural holdings, the utilized agricultural area averages 222 ha, out of which 110 ha under private ownership ranging from 74 ha in Tulcea county to 46 ha in Brăila county; the leased in land is 73 ha, from 17 ha (Vrancea county) to 315 ha (Constanța county) and 16 ha represents land used free of charge, ranging from 5 ha (Constanța county) to 24 ha (Galați county).

Table 2

## Agricultural land tenure forms

County	Agricultural area used by land tenure type for 100 agricultural holdings (ha)					
	Private ownership	Under concession agreement	Leased	Sharecropping	Used free of charge	Other land tenure forms
Bacău	97	1	11	3	16	5
Botoșani	130	7	36	6	19	15
Iași	90	2	27	4	9	4
Neamț	90	2	18	2	9	4
Suceava	155	1	13	2	3	2
Vaslui	130	1	21	5	28	9
<b>Total NE</b>	<b>116</b>	<b>2</b>	<b>20</b>	<b>3</b>	<b>13</b>	<b>6</b>
Brăila	146	8	96	15	10	13
Buzău	110	2	22	4	14	10
Constanța	139	6	315	7	5	22
Galați	90	6	51	6	24	10
Tulcea	74	2	109	4	19	7
Vrancea	115	1	17	3	16	11
<b>Total SE</b>	<b>110</b>	<b>4</b>	<b>73</b>	<b>6</b>	<b>16</b>	<b>11</b>
<b>Macro 2</b>	<b>114</b>	<b>3</b>	<b>40</b>	<b>4</b>	<b>14</b>	<b>8</b>

Sources: own calculations based on data collected from [www.rga2010.djsct.ro/](http://www.rga2010.djsct.ro/), Constanța County Office of Statistics.

There are also 21 ha of land under concession agreement (4 ha), under sharecropping system (6 ha) and under other forms (11 ha). Comparing the two development regions in land tenure terms, it was noticed that the counties from Dobrogea and Brăila county have very large leased in areas in 100 agricultural holdings: 96 ha (Brăila), 109 ha (Tulcea) and 315 ha (Constanța). The growth resources, as previously mentioned, mainly come from the particular demographic structure (areas with low density population) and the sparse rural locality network in Dobrogea and finally from the significant land resources from Balta Brăilei (Figure 2).



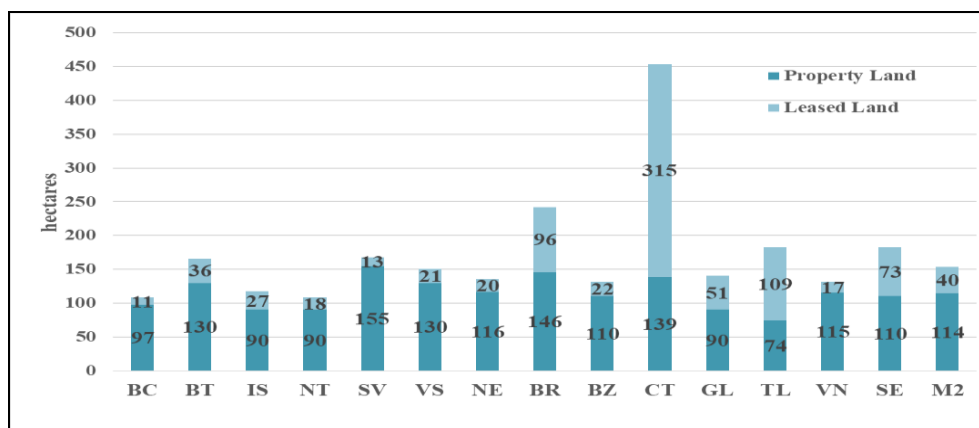


Figure 2. Utilized agricultural area into ownership and under leasing agreement in 100 agricultural holdings without legal status.

**Size of agricultural holdings** (Table 3). The study took into consideration the total area in 100 agricultural holdings without legal status distributed by 7 size classes of total area (under 0.5 ha; 0.5–1 ha; 1–2 ha; 2–5 ha; 5–10 ha; 10–50 ha and over 50 ha).

Table 3

Size of agricultural holdings

County	Total area by size classes in 100 agricultural holdings (ha)						
	Size class of total area						
	Under 0.5	0.5–1	1–2	2–5	5–10	10–50	Over 50
Bacău	8	14	30	54	24	15	10
Botoșani	7	13	33	79	35	34	29
Iași	9	14	28	45	14	13	26
Neamț	10	14	28	43	14	13	15
Suceava	7	16	37	65	28	29	8
Vaslui	6	11	35	90	37	18	18
<b>Total NE</b>	<b>8</b>	<b>14</b>	<b>32</b>	<b>61</b>	<b>25</b>	<b>20</b>	<b>17</b>
Brăila	10	9	20	59	40	52	108
Buzău	8	12	27	55	23	17	34
Constanța	13	8	11	28	32	70	345
Galați	9	13	27	51	21	27	53
Tulcea	13	11	16	27	19	32	128
Vrancea	7	14	32	64	29	19	22
<b>Total SE</b>	<b>9</b>	<b>12</b>	<b>25</b>	<b>51</b>	<b>26</b>	<b>30</b>	<b>84</b>
<b>Macro 2</b>	<b>8</b>	<b>13</b>	<b>29</b>	<b>58</b>	<b>25</b>	<b>24</b>	<b>42</b>

Sources: own calculations based on data collected from [www.rga2010.djsct.ro/](http://www.rga2010.djsct.ro/), Constanța County Office of Statistics.

The analysis according to this criterion requires the prior study of the percentage of holdings and their areas, by size classes of total area. Thus, it can be noticed that in the North-East Region 74.4% of the agricultural holdings without legal status fall into the size class under 2 ha, out of which 32.1% in the size class under 0.5 ha, 18.8% in the size class under 0.5–1 ha and 22.5% in the size class under 1–2 ha. The high proportion of agricultural holdings in the size class 2–5 ha (20.5%) is also notable, a typical situation for the small commercial farms. As regards the total area, the proportions are considerably different: the holdings under 2 ha have 46.7% of total area, with the following distribution by size classes: 4.4% in the size class 0.5 ha, 7.8% in the size class 0.5–1 ha and 18.1% in the size class 1–2 ha. In this case also, the highest percentage of total area (34.8%) belongs to the size class 2–5 ha.

In the South-East Region, the agricultural holdings without legal status are distributed as follows: 77.0% are in the size class under 2 ha, out of which 42.2% in the size class 0.5 ha, 17.3% in the size class 0.5–1 ha and 17.5% in the size class 1–2 ha. 16.9% of holdings are found in the size class 2–5 ha. As regards the total area, the proportions are much different, like in the case of the North-East Region: the holdings under 2 ha have only 19.1% only of total area, while the distribution by classes is the following: 3.8% in the size class under 0.5 ha, 5.0% in the size class 0.5–1 ha and 10.3% in the size class 1–2 ha. 21.5% of the total area of holdings fall into the size class 2–5 ha. The South-East Region stands out by its high percentage of holdings under 0.5 ha, namely 42.2%, with considerably high values in counties like Constanța (61.1%) and Tulcea (56.9%). By contrast, the agricultural land is concentrated in the size class over 50 ha, namely in Constanța (68.1%) and Tulcea (52.2%) counties, although only 1.6% and 0.8% of the total number of holdings are in this size class. High percentages of total areas in the size class over 50 ha are also found in the counties Brăila (36.4%) and Galați (26.1%). The particular aspects of the South-East Region are notably determined by the agricultural areas from lacustrine areas, with a sparse network of rural localities and, as it has been mentioned before, also due to the low density of the population, often with uneven distributions across the county areas. Coming back, briefly, to the analysis of the size of agricultural holdings in terms of total agricultural area by size classes, in 100 agricultural holdings, certain regional particularities were noticed.

The North-East Region has a total agricultural area that is distributed, in a decreasing order, in the size classes 2–5 ha with 61 ha, class 1–2 ha with 32 ha, class 5–10 ha with 25 ha, class 10–50 ha with 20 ha, class over 50 ha with 17 ha and class under 0.5 ha with 8 ha. In the size class under 2 ha, related to the subsistence and semi-subsistence holdings, the total area in 100 agricultural holdings is 54 ha, while the holdings over 5 ha have 62 ha. There are clear differences between counties that reveal, on one hand, limited land resources in 100 agricultural holdings in Vaslui county with 42 ha total area, in the size class under 2 ha, with the largest total area, in the size class 2–5 ha in Vaslui (90 ha) and

Botoșani (79 ha) counties. In the size class over 5 ha, in 100 agricultural holdings, there are total areas ranging from 98 ha in Botoșani county to 42 ha in Neamț county.

The South-East Region has its total area distributed, in decreasing order, in size classes over 50 ha with 84 ha, 3–5 ha with 51 ha, 10–50 ha with 30 ha, 5–10 ha with 26 ha, 1–2 ha with 25 ha, 0.5–1 ha with 12 ha and the size class under 0.5 ha with 9 ha. In the size class under 2 ha, related to the subsistence and semi-subsistence holdings, the total area for 100 agricultural holdings is 46 ha, while the holdings over 5 ha have 140 ha. By counties, there are noticeable differences, pointing out that in Constanța county, in 100 agricultural holdings in the size class under 2 ha, there are 32 ha land, with the largest areas in the size class over 50 ha (108 ha in Brăila county, 128 ha in Tulcea county and 345 ha in Constanța county). By comparing the two development regions (North-East and South-East) in terms of total area operated by 100 agricultural holdings, it is notable that in the case of the North-East Region in 100 agricultural holdings, by size classes of holdings, we have the following situation: for the holdings under 5 ha we have an area of 115 ha, compared to the South-East Region, with 97 ha, while for the holdings over 5 ha, there are 62 ha in the North-East Region as against 140 ha in the South-East Region (Figure 3).

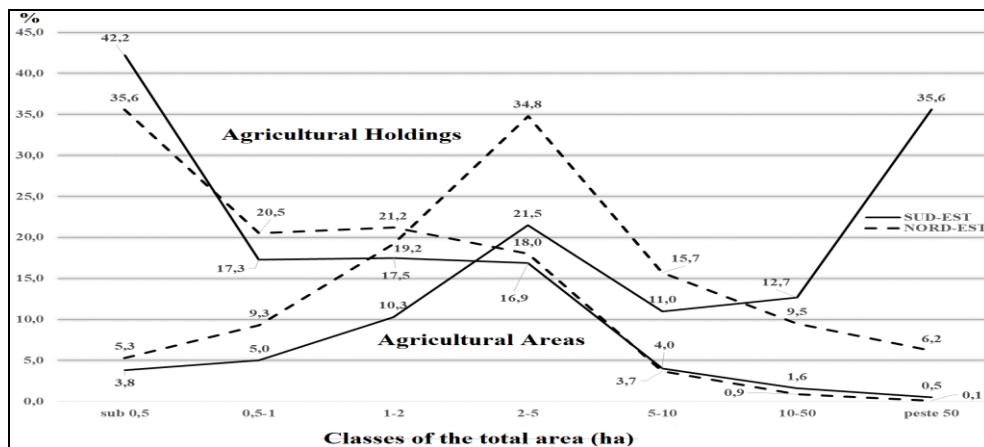


Figure 3. The structure of agricultural holdings and total area of holdings without legal status by size classes

Thus, it is found that there is a higher degree of willingness (44%) for commercial agriculture (farms over 5 ha) in the case of the agricultural holdings without legal status in the South-East Region as against the North-East Region, context in which there are 15% less land resources for subsistence and semi-subsistence holdings in the South-East Region than in the North-East Region.

The analysis of the total area of agricultural holdings by size classes, in 100 agricultural holdings, reveals that the proportion of areas included in mountain, sub-mountain, high hills and lacustrine areas is an important factor, as well as the density of the rural localities, which directly determines the level of the population density in the rural area.

**Livestock** (Table 4). In order analyze the total livestock herds in the cattle, swine, sheep, goat and poultry species, we considered 100 agricultural holdings in territorial distribution by counties and regions in Macro-region 2 (LSU – Livestock Unit/transformation coefficients: cattle 0.8 LSU/head; dairy cows 1.0 LSU/head; swine 0.2 LSU/head; sheep 0.1 LSU/head; goats 0.1 LSU/head; poultry 0.04).

Table 4

## Livestock

County	Livestock by species in 100 agricultural holdings (animal heads)					
	Cattle	Dairy cows	Swine	Sheep	Goats	Poultry
Bacău	40	22	65	105	39	978
Botoșani	85	47	50	229	19	1,263
Iași	47	27	63	159	21	1,288
Neamț	52	30	55	126	23	991
Suceava	91	51	49	141	10	888
Vaslui	46	26	80	171	35	1,597
<b>Total NE</b>	<b>61</b>	<b>34</b>	<b>60</b>	<b>151</b>	<b>24</b>	<b>1,142</b>
Brăila	76	45	135	453	78	2,057
Buzău	38	21	93	153	31	1,508
Constanța	60	30	99	514	169	1,769
Galați	30	16	60	191	58	1,493
Tulcea	58	24	90	589	136	1,772
Vrancea	47	25	70	144	35	1,130
<b>Total SE</b>	<b>47</b>	<b>25</b>	<b>87</b>	<b>269</b>	<b>67</b>	<b>1,541</b>
<b>Macro 2</b>	<b>55</b>	<b>31</b>	<b>70</b>	<b>195</b>	<b>40</b>	<b>1,288</b>

Sources: own calculations based on data collected from [www.rga2010.djsct.ro/](http://www.rga2010.djsct.ro/), Constanța County Office of Statistics.

The North-East Region has, in 100 agricultural holdings, a number of 61 cattle heads, out of which 34 dairy cows, 60 pigs, 151 sheep, 24 goats and 1,142 poultry, with a large oscillation ranging from 40 (Bacău county) to 91 cattle heads (Suceava county), 22 (Bacău county) to 51 dairy cow heads (Suceava county), 49 (Suceava county) to 80 pig heads (Vaslui county), 105 (Bacău county) to 229 sheep heads (Botoșani county), 10 (Suceava county) to 39 goat heads (Bacău county) and from 888 (Suceava county) to 1,597 poultry heads (Vaslui county).

The South-East Region has, in 100 agricultural holdings, a livestock number of 47 cattle, out of which 25 dairy cows, 87 pigs, 269 sheep, 67 goats and 1,541

poultry; their number also widely fluctuates, from 30 (Galați county) to 76 cattle heads (Brăila county), 16 (Galați county) to 45 dairy cow heads (Brăila county), 60 (Galați county) to 135 swine heads (Brăila county), 144 (Vrancea county) to 589 sheep heads (Tulcea county), 31 (Buzău county) to 169 goat heads (Constanța county) and finally, from 1,130 (Vrancea county) to 2,057 poultry heads (Brăila county).

In an aggregated analysis, by transforming the livestock herds into Livestock Units (LSU), in 100 agricultural holdings without legal status, we found out the following hierarchy by development regions: in the North-East Region, the average is 83 LSU/100 holdings, with livestock herds listed in increasing order in the following counties: Bacău (64 LSU), Neamț (72 LSU), Iași (74 LSU), Vaslui (80 LSU), Botoșani (99 LSU) and Suceava (102 LSU); in the South-East Region the average is 95 LSU/100 holdings, with the following hierarchy: Galați (67 LSU), Buzău (73 LSU), Vrancea (75 LSU), Constanța (143 LSU), Tulcea (144 LSU) and Brăila (149 LSU).

The position of counties changes when ranking them by the livestock load per unit area, calculated by relating the livestock herds in LSU equivalent to 100 ha total agricultural area. Thus, the following hierarchy is obtained:

a. in the case of North-East Region, with an average of 50 LSU/100 ha total agricultural area, the county ranking in increasing order is the following: Vaslui (37 LSU), Bacău (44 LSU), Botoșani (45 LSU), Iași (53 LSU), Neamț (56 LSU) and Suceava (58 LSU);

b. in the case of South-East Region, with an average of 40 LSU/100 total agricultural area, the county ranking is the following: Constanța (29 LSU), Galați (35 LSU), Vrancea (42 LSU), Buzău (45 LSU), Brăila (51 LSU) and Tulcea (59 LSU).

At the level of Macro-region 2, the average livestock density is 46 LSU/100 ha total agricultural area.

A more comprehensive analysis relates the number of herbivores, expressed in LSU, to 100 ha agricultural land, pastures and meadows, and the monogastric animals, expressed in LSU, to 100 ha arable land; this is a necessary differentiation according to the fodder resource, particular for each species. In this context, the load of ruminant animals per 100 ha agricultural land is 37 LSU in the North-East Region, while in the South-East Region 30 LSU/100 ha agricultural land, with a Macro-region 2 average of 34 LSU/100 ha agricultural land. In the case of monogastric animals, the load is 17 LSU/100 arable land in the North-East Region, while in the South-East Region we have 11 LSU/100 ha arable land, with an average of 15 LSU/100 ha arable land in Macro-region 2 (Figure 4).

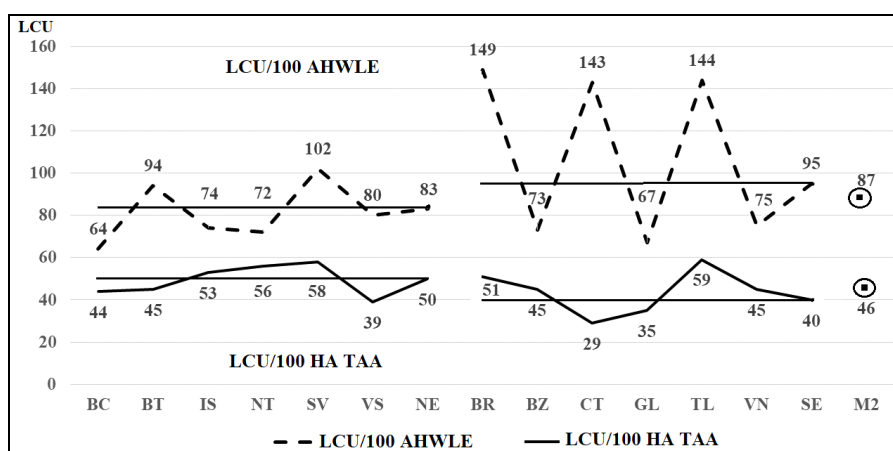


Figure 4. The livestock load expressed in Livestock Units (LSU), in 100 agricultural holdings without legal status (AGWLE) and in 100 ha total agricultural area (TAA).

**Labor force utilization** (Table 5). The final assessment criterion of the agricultural holdings without legal status refers to labour input utilization; for this purpose, 2 categories of indicators in reference to 100 agricultural holdings are used, persons who worked (total number, distributed by gender as men and women) and days worked (total, distributed by gender as men and women).

Table 5

Labor force utilization

County	Persons who worked per 100 agricultural holdings (no.)			Days worked per 100 agricultural holdings (days)		
	Total	out of which:		Total	out of which:	
		men	Women		men	women
Bacău	184	98	87	7,979	4,367	3,612
Botoșani	176	91	85	12,158	6,758	5,400
Iași	181	97	84	9,829	5,701	4,128
Neamț	184	96	88	9,267	4,977	4,290
Suceava	198	103	95	11,882	6,389	5,493
Vaslui	182	95	86	8,738	5,031	3,707
<b>Total NE</b>	<b>185</b>	<b>97</b>	<b>88</b>	<b>9,988</b>	<b>5,534</b>	<b>4,454</b>
Brăila	189	100	89	9,514	5,576	3,937
Buzău	166	87	79	8,264	4,555	3,709
Constanța	184	102	81	7,249	4,305	2,944
Galați	182	96	87	10,603	5,963	4,640
Tulcea	181	97	85	9,204	5,116	4,088
Vrancea	177	92	85	8,127	4,485	3,642
<b>Total SE</b>	<b>177</b>	<b>94</b>	<b>84</b>	<b>8,826</b>	<b>4,961</b>	<b>3,865</b>
<b>Macro 2</b>	<b>182</b>	<b>96</b>	<b>86</b>	<b>9,561</b>	<b>5,323</b>	<b>4,238</b>

Sources: own calculations based on data collected from [www.rga2010.djsct.ro/](http://www.rga2010.djsct.ro/), Constanța County Office of Statistics.

The North-East region has, on the average for 100 agricultural holdings, 185 persons who worked in a year; this number fluctuates from 176 persons (Botoșani county) to 198 persons (Suceava county), with the following men-women ratio: 52.4% men and 47.6% women, with small oscillations across counties.

Concerning the days worked in a year for 100 agricultural holdings, the region's average amounts to 9,988 days, with the following ranking of counties in ascending order: Bacău (8.0 thousand days), Vaslui (8.7 thousand days), Neamț (9.3 thousand days), Iași (9.8 thousand days), Suceava (11.9 thousand days) and Botoșani (12.2 thousand days), while the share by genders is 55.4% days worked by men and 44.6% days worked by women, with maximum differences between Bacău and Suceava counties with percentages of 35.4% (men) and 34.2% (women) in favor of Suceava.

On the average, in the case of the North-East Region, a person worked 54 days in one year, while the employment in agriculture of persons who worked is 23.0%, following an ascending hierarchy as follows: Bacău (18.3%), Vaslui (20.4%), Neamț (21.3%), Iași (23.0%), Suceava (25.5%) and Botoșani (29.4%).

The South-East Region has, on the average for 100 agricultural holdings, 177 persons who worked in a year, fluctuating between 166 persons in Buzău county and 189 persons in Brăila county, while the men-women ratio is 56.2% men and 43.8% women, with small fluctuations between counties.

As regards the days worked in a year, in 100 agricultural holdings, the region's average amounts to 8,826 days, with the following ranking of counties in increasing order: Constanța (7.2 thousand days), Buzău (8.3 thousand days), Tulcea (9.2 thousand days), Brăila (9.5 thousand days) and Galați (10.6 thousand days), while the gender proportion is 56.2% in favour of men, with maximum differences between Constanța and Galați counties, with 31.6 % men in favor of Galați and with maximum difference of 36.6% in women, more in Galați than in Constanța.

On the average, in the case of the South-East Region, a person worked over 50 days, while the employment degree in agriculture is 21.3%, with the following ranking of counties in ascending order: Constanța (16.6%), Vrancea (19.6%), Brăila and Buzău (21.3%), Tulcea (21.7%) and Galați (24.7%).

Overall, at the level of Macro-region 2, labour employment degree in agriculture is 22.1%, with an employment level in men of 23.4% and women 20.9% (Figure 5).

To sum up, the rural labor force who works in agriculture on the agricultural holdings without legal status in Macro-region 2 (East, North-East and South-East) has an average non-employment level of 77.9%, with insignificant differences between the North-East Region (77.0%) and South-East Region (78.7%).

**The macro-economic and social spatial Analysis.** The multi-criteria analysis, corresponding to the micro-economic research at holding level, made it possible to outline the representative profiles of agricultural holdings without legal status typically found in Macro-region 2, with both differences and similarities between the counties of the two investigated regions.

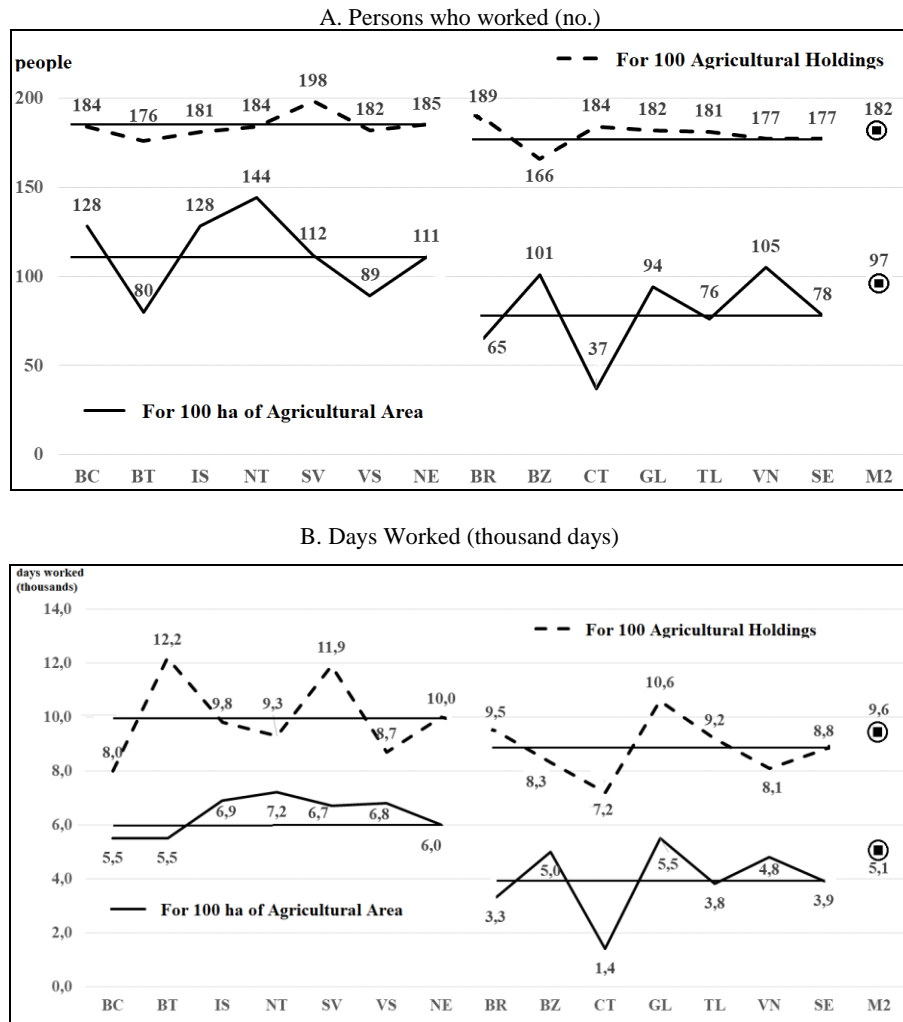


Figure 5. The employment of workforce on agricultural holdings without legal status.

These profiles are better structured if they are applied on a macro-economic and social system analysis, which enables to highlight the geographical, demographic and economic context at county or development region level. The analysis of two indicator categories in different bases has been considered as the best choice (Table 6):

- the first category includes the number of villages, rural population, rural households of the population, agricultural holdings without legal status and the total area of the agricultural holdings without legal status, in reference to 100 km<sup>2</sup> total area of the county;

- the second one includes Large Livestock Units, persons who worked in agriculture and days worked in reference to 100 ha total agricultural area.



Table 6

The load with entities, agrarian structures and existing resources in the counties from the North-East and South-East Regions

County	Total area – km <sup>2</sup> –	Density per 100 km <sup>2</sup>					Load per 100 ha total agricultural area		
		Villages –no.–	Rural population –loc.–	Rural households of the population –no.–	Agricultural holdings without legal entity		Livestoc k Units –no.–	Persons who worked –no.–	Days worked –no.–
Bacău	6,620.5	7.4	5,254	1,911	2,188	3,417	44	128	5,529
Botoşani	4,985.7	6.7	4,896	1,804	2,213	5,065	45	80	5,515
Iaşi	5,475.6	7.6	7,595	2,609	2,512	3,736	53	128	6,989
Neamţ	5,896.1	5.8	5,080	1,908	2,131	2,933	56	144	7,238
Suceava	8,553.5	4.4	4,333	1,459	1,855	3,503	58	112	6,762
Vaslui	5,318.4	8.4	4,549	1,673	2,053	4,393	39	89	4,281
<b>Total NE</b>	<b>36,849.8</b>	<b>6.6</b>	<b>5,210</b>	<b>1,860</b>	<b>2,134</b>	<b>3,771</b>	<b>50</b>	<b>111</b>	<b>6,002</b>
Brăila	4,765.8	2.9	2,517	920	1,014	3,016	51	65	3,272
Buzău	6,102.6	7.8	4,527	1,662	2,221	3,923	45	101	5,040
Constanţa	7,071.3	2.7	3,009	971	664	3,363	29	37	1,448
Galaţi	4,466.3	4.0	5,421	1,886	2,057	4,147	35	94	5,494
Tulcea	8,498.8	1.6	1,332	508	514	1,261	59	76	3,836
Vrancea	4,857.0	6.8	4,462	1,686	1,853	3,467	45	105	4,836
<b>Total SE</b>	<b>35,761.7</b>	<b>4.0</b>	<b>3,302</b>	<b>1,184</b>	<b>1,276</b>	<b>3,025</b>	<b>42</b>	<b>78</b>	<b>3,906</b>
<b>Macro 2</b>	<b>72,611.5</b>	<b>5.3</b>	<b>4,271</b>	<b>1,527</b>	<b>1,711</b>	<b>3,403</b>	<b>46</b>	<b>97</b>	<b>5,078</b>

Source: authors' processing based on Tempo Online, INS, <http://statistici.inse.ro/shop>.

The analysis was made in reference to the total area of counties. The following results have been obtained:

– the density of the rural settlements per 100 km<sup>2</sup> is very low: it ranges from 4.4 villages in Suceava county to 8.4 villages in Vaslui county in the North-East Region, while in the South-East Region it fluctuates from 1.6 villages in Tulcea county to 7.8 in Buzău county. The difference between the two regions is significant, as the North-East Region has a density of 6.6 villages per 100 km<sup>2</sup> as against the South-East Region with only 4.0 villages per 100 km<sup>2</sup>;

– the density of the rural population is rather low, oscillating between 43 inhabitants/km<sup>2</sup> in Vaslui county and 76 inhabitants/km<sup>2</sup> in Iaşi county, with an average density of 52 inhabitants/km<sup>2</sup> in the North-East Region as against the South-East Region with an average density of 43 inhabitants/km<sup>2</sup>, fluctuating between 13 inhabitants/km<sup>2</sup> in Tulcea county and 54 inhabitants/km<sup>2</sup> in Galaţi county;

– the population's rural households also have an average low density as the average in the North-East Region is 18.6 PH/100 km<sup>2</sup>, varying from 14.6 PH/100 km<sup>2</sup> in Suceava county to 26.1 PH/100 km<sup>2</sup> in Iaşi county, as opposed to the South-East Region where the average is 15.3 PH/100 km<sup>2</sup>, oscillating between 5.1 PH/100 km<sup>2</sup> in Tulcea county and 18.9 PH/100 km<sup>2</sup> in Galaţi county;

– the agricultural holdings without legal status have a slightly higher density than the population households, as the average is 21.3 AHWLS/100 km<sup>2</sup> varying

from 18.6 AHWLS/100 km<sup>2</sup> in Suceava county to 25.1 AHWLS/100 km<sup>2</sup> in Iași county in the North-East Region, while the average in the South-East Region is 12.8 AHWLS/100 km<sup>2</sup>, ranging between 5.1 AHWLS/100 km<sup>2</sup> in Tulcea county and 22.2 AHWLS/100 km<sup>2</sup> in Buzău county;

– the average total area of agricultural holdings without legal status in the North-East Region is 37.71 ha/100 km<sup>2</sup>, oscillating between Neamț county (29.33 ha/100 km<sup>2</sup>) and Botoșani county (50.65 ha/100 km<sup>2</sup>), as against the South-East Region where the average is 30.25 ha/100 km<sup>2</sup>, fluctuating between Tulcea (12.61 ha/100 km<sup>2</sup>) and Galați (41.47 ha/100 km<sup>2</sup>).

As regards the previously issues, there are some notable specifications:

– the population density is favoured by the existence of the hilly, sub-mountain areas and by the lower course of the Siret and Prut rivers and it is disadvantaged by the presence of mountain and lacustrine areas typically found in the upper course of the Danube river, the Danube Delta and in other parts of Dobrogea (specific to Dobrogea's Plateau);

– there are direct correlations between the existence of rural localities and population density;

– the ratios between the households of the rural population and the agricultural holdings without legal status are in favour of the latter at the level of Macro-region 2, with a 1:1.12 ratio with differences in the North-East Region (1:1.15) and in the South-East Region (1:1.10);

– the agricultural land resource is on average 34% in Macro-region 2, with differences between the North-East Region (37.7%) and the South-East Region (30.3%), with obvious dividing lines between the counties from Macro-region 2.

Considering that our analysis merely captures the specific weight of the agricultural holdings without legal status, the difference of existing agricultural land resources refers to the agricultural holdings with legal status. Thus, at the level of Macro-region 2, 55.1% of the agricultural area is owned by agricultural holdings without legal status, with differentiations from 65.1% in the North-East Region to 46.1% in the South-East Region; this aspect indicates the great importance of the individual peasant households, which, as mentioned before, own 1.12 AHWLS on the average per household at the level of Macro-region 2, with differences ranging from 1.15 in the North-East Region to 1.10 in the South-East Region.

## 5. CONCLUSIONS

The agricultural holdings without legal status entity at the level of Macro-region 2 have different characteristics by each region in part.

In North-East Development Region, the holdings have the following features:

– the prevailing type of agricultural activity per holding is mixed (74%), supplemented by activities in the crop production sector (24%) and only 2% in animal raising;

- the average size of holdings is low: 1.61 ha utilized agricultural area per holding;
- the total area is owned by subsistence and semi-subsistence holdings (30.5%), by small agricultural holdings (34.5%) and medium or large-sized agricultural holdings (35%);
- the utilized agricultural area is 72.0% into private ownership and 12.4% leased land;
- on the average there are on 0.6 cattle heads, out of which 55.7% dairy cows, 0.6 pig heads, 1.5 sheep heads, 0.2 goat heads and 11.4 poultry heads per agricultural holding;
- the average livestock load is 0.5 LSU per one hectare of total agricultural area;
- on the average, 60 working days per one hectare of agricultural area are used in one year;
- the average level of labour employment in agriculture is 23.0%.

In the South-East Region, the agricultural holdings are characterized by the following:

- the main type of agricultural activity per holding is mixed (73%), supplemented by activities in the crop production sector (24%) and only 3% in livestock raising;
- the average size of holding is low: 2.22 ha utilized agricultural area per holding;
- the total area is operated by subsistence and semi-subsistence holdings (19.4%), by small holdings (21.5%) and by medium or large-sized agricultural holdings (59.1%);
- the utilized agricultural area is 49.5% into private ownership and 32.9% leased in land;
- on the average, there are 0.5 cattle heads, out of which 53.2% dairy cows, 0.9 pig heads, 2.7 sheep heads, 0.7 goat heads and 15.4 poultry heads per agricultural holding;
- the average livestock load per agricultural hectare is 0.4 LSU/1 ha total agricultural area;
- on the average, 39 working days are used per one hectare of agricultural land in one year;
- the average level of labor force employment in agriculture is 21.3%.

Macro-region 2 (East, with North-East and South-East regions) has the profile of agricultural holdings without legal status determined by the following coordinates:

- the agricultural holdings are small, mostly oriented to subsistence farming;
- the farming practice is extensive, with an uneven proportion between the crop production sector and the livestock sector;
- the agricultural land is mostly into private ownership (two-thirds) and only one third comes from leased in land on the investigated holdings;

- the livestock production sector is poorly developed;
- the labor force is used only in a proportion of about 22%, with a low efficiency rate and consequently, low productivity;
- the counties from the Carpathians arch, namely the Moldavian Sub-Carpathians and partially from the Curvature Sub-Carpathians have a similar structure (Suceava, Neamț, Bacău, Vrancea and Buzău);
- Galați county has quite similar agrarian structures to the holdings located in the Moldova Plateau and Bârlad Plateau, together with Iași and Vaslui counties;
- Brăila, Tulcea and Constanța counties are strongly influenced by their lacustrine areas and the low density of the population and localities.

The study reveals the high level of complexity in the analysis and inter-correlation of data gathered and obtained in order to assess the situation of a certain agricultural holding structure in a certain area at a given time. From the analytical and general conclusions drawn for the North-East and South-East Development Regions, it results the need to promote a package of measures for the improvement of the Regional Agricultural Policy in order to revitalize the agricultural holdings without legal status. The package of measures should target the following aspects:

- developing a specific regional strategy for re-launching the agricultural holdings without legal status, namely the individual agricultural holdings whose main role is played by the rural household;
- legislative changes supporting the development of the entrepreneurial agricultural activities and individual non-agricultural activities;
- financing solutions for the present activities in agriculture and for promoting the specific investments related to small individual agricultural holdings, fully or partially subsidized;
- promoting cooperative structures among the individual agricultural producers for upstream and downstream agricultural activities;
- development of the low-scale agricultural machinery supply, to serve small agricultural holdings;
- reconsidering the use of crop production by the development of the stock raising sector;
- development of on-farm processing of local traditional products;
- attracting the individual agricultural holdings to participate in the commercial circuits;
- diversification of non-agricultural activities: tourism, services, crafts, small-scale traditional industry, sports and leisure activities;
- the harmonious development of the economic, social, environmental and cultural-spiritual functions of the individual agricultural holdings by promoting and development of the rural household as a complex economic-social entity.

The entire process of intervention cannot be done in the absence of a Code of Good Practices concerning the activity of the individual agricultural holdings in its entire complexity, which will give a practical meaning to the aggregated development and consolidation actions of the rural households.

This approach can be implemented only if adequate rural development policies are promoted, so that in a 10 to 15-year period, the villages from the North-East and South-East development regions may become poles of economic and social development for the rural world, in agreement with the environment through environment friendly policies. There are hopes in the near horizon of opening new financing programmes, such as promoting and cultivating the natural environment or the return to nature of the excessively anthropized rural areas.

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