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### Subsistence agriculture in Romania- a modus vivendi?

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#### Abstract

The paper intends to make an analysis at regional level in the South-East region of the country in order to determine the present situation of agriculture in this region compared to the whole country. The paper investigates the crop structure, the irrigated area and the number of irrigation equipment in the region, the market orientation of farms, the type and development level of the non-agricultural activities, the labour force, and the specialization of farms. The objective of this paper is to analyze the regional agricultural characteristics and to determine the level of entrepreneurship in the area, so that farmers and regional policies might better interfere in order to help farmers adjust their production to the market and obtain a benefit. A comparison with the situation at the whole country will be also provided. The paper concludes that Romanian subsistence agriculture is still a “modus vivendi”, and most likely only time and the force of new technologies employed by the large commercial companies will partly solve the issue.

**Keywords:** subsistence, regional analysis, irrigations

## **Introduction**

Subsistence agriculture has played an important role in Romania after 1990. In early '90s it acted as a social buffer, while during the last years it represented a good opportunity for low-cost industry development. Subsistence agriculture has a special particularity due to its high share in national agriculture. The Romanian agriculture also reveals a polarized structure. According to Mathijs (2004) subsistence agriculture represents “food production without commercialization”, and this definition might fit the best the Romanian agricultural reality analyzed in this paper. It represents a complex and significant topic due to its prevalence and influence both on local rural development and last but not least, on the local low cost industry development. The high level of subsistence in Romania is not only the result of the land reform, but also of the inability to link the agricultural sector with the upstream and downstream industries (Aligica, 2003).

Subsistence agriculture is a combination of a producer and a consumer point of view, and as such, its definition can be specified as household not marketing any product in the market (producer point of view, Von Braun, 2003), or as “most output is produced for family consumption...and a few staple foods...are the chief sources of nutrition” (consumer point of view – Todaro, 2006).

The analysis is made both at national and regional level because a review of previous agricultural studies reveals the importance of analyzing the regional development (Vincze, 2000) in order to better respond to the local rural development needs.

In 2005, at national level, the utilized agricultural area per household represented 3.3 ha, which means that in most of the households the production is meant mainly for self consumption. According to statistics, almost 44% of households hold less than 1 ha. Nevertheless, according to the last data, the average utilized agricultural area (UAA) per household started to increase from 3.1 ha in 2002 to 3.5 ha in 2007. The number of households proportionally decreased, reaching 3.93 million, i.e. less by 12% compared to 2002. By categories, the average utilized agricultural area represented 2.3 ha for individual households and 270.5 ha for legal entities.

### **Agricultural producers in the S-E region and national level**

The analysis is based upon the statistical data from the Agricultural Census of 2002, the Agricultural Structural Surveys of 2005 and 2007 and upon a regional survey conducted in the respective region in the year 2006. According to the Farm Structural Survey, 2007, the main agricultural producers in the South-East region of Romania are represented by individual producers (99%) and legal entities (commercial companies, agricultural associations, units belonging to public administration and others) (1%). Similar percentages are valid at national level (Table 1).

**Table 1.** Number and agricultural area of agricultural households

Types of agricultural households	No. of farms (2002)	UAA (2002-ha)	No. of farms (2005)	UAA (2005-ha)	No. of farms (2007)	UAA (2007-ha)	Changes in number (2007/2002)	Changes in area (2007/2002)
<i>Individual farmers</i>	552729	1063311	529678	1303119	498570	1263234	90%	119%
<i>Legal entities</i>	2827	1085857	2468	848089	2849	924752	101%	85%
<i>Total S-E</i>	555556	2149168	532146	2151208	501419	2187987	90%	102%
<i>Individual farmers</i>	4462221	7708754	4237889	9102018	3913651	8966308	88%	116%
<i>Legal entities</i>	22672	6221949	18263	4804683	17699	4786737	78%	77%
<i>Total National</i>	4484893	13930703	4256152	13906701	3931350	13753045	88%	99%

Source: Agricultural census 2002, Agricultural structural survey 2005, Agricultural structural survey 2007

**Table 2.** Average area per farm

Types of agricultural holdings	Average area ha/fa 2002	Average area ha/farm 2005	Average area ha/farm 2007	Managed land 2005 as % of total land	Managed land 2007 as % of total land
<i>Individual farmers</i>	1.9	2.5	2.5	61%	58%
<i>Legal entities</i>	384.1	343.6	324.6	39%	42%
<i>Total S-E</i>	3.9	4.0	4.4	100%	100%
<i>Individual farmers</i>	1.7	2.1	2.3	65%	65%
<i>Legal entities</i>	274.4	263.1	270.5	35%	35%
<i>Total National</i>	3.1	3.3	3.5	100%	100%

Source: Agricultural census 2002, Agricultural structural survey 2005, Agricultural structural survey 2007

In 2007, in S-E region, 58% of the land is managed by individual farmers and 42% by legal entities. This reveals a high polarization process with 1% of farmers managing 42% of the land and 99% of individual farmers managing 58% of the land. At national level 65% of the land is managed by individual farmers and 35% of the land is managed by legal entities (Table 2).

### Farmers' specialization

At regional level, 84% of individual producers are specialized both in crop production and livestock breeding (Table 3). The legal entities are specialized mainly in crop production (82%), 16% have a mixed specialization and 2% are specialized only in livestock breeding.

**Table 3.** Specialization of agricultural producers

Types of agricultural producers		No. of holdings	Mixed livestock and crop production	%	Only crop production	%	Only livestock breeding	%
S-E Region 2002	Individual	498570	421700	84%	67188	13%	12531	2%
	Legal entities	2827	464	16%	2316	82%	47	2%
National level 2007	Individual	3913651	3252011	83%	582396	15%	79244	2%
	Legal entities	17699	2231	13%	15152	86%	312	2%

Source: Agricultural Census 2002, Agricultural structural survey 2007

One might say that farmers usually do not switch from crop production to livestock production due to tradition and expertise, but they are more willing to switch within crop production from one crop to another crop according to the market demand. Similar percentages are valid for the national level.

### The commercialization of the agri-food products

At regional level, considering the number of hectares managed by individual producers (58% of the total land), one can say that the degree of agri-food commercialization of the individual producers is very low. The individual farmers produce mainly for self-consumption (76%), due to the fact that the level of production obtained on a small scale is much reduced and the farmers are not oriented towards markets (Table 4). On the other hand, legal entities produce mainly for commercialization (63%).

**Table 4.** Marketability of the products by agricultural holdings

Agricultural holdings		Self consumption (no)	%	Surplus is meant for commercialization (no)	%	Mainly for commercialization (no)	%
Individual holdings	S-E Region	423652	76%	111623	20%	17454	4%
	National	3422089	77%	947484	21%	92468	2%
Legal entities	S-E Region	622	22%	583	21%	1622	57%
	National	7322	32%	4461	20%	10834	48%

Source: Agricultural Census, 2002

For S-E region, Table 4 reveals that 76% of individual producers produce only for self consumption (i.e. they are semi-subsistence farmers), while 57% of legal entities produce mainly for commercialization purposes. Accordingly, only 4% of individual producers are market oriented and 20% of them have some surplus which is meant for commercialization.

At national level, the percentage of self consumption of individual households is even higher, while for legal entities sale 48% of the production.

It is interesting to note that at regional level, the non agricultural activities carried out by the agricultural producers in the S-E area are very few. This suggests a very small degree of entrepreneurship in the area.

**Table 5.** Non-agricultural activities carried out by individual and legal entities

Holdings which carry out non-agricultural activities	Individual	Legal	Total
Number of holdings S-E region	19338	677	20015
% of total number S-E region	6%	40%	6%
Number of holdings –national level	1598600	5526	1604126
% of total number –national level	37%	30%	37%

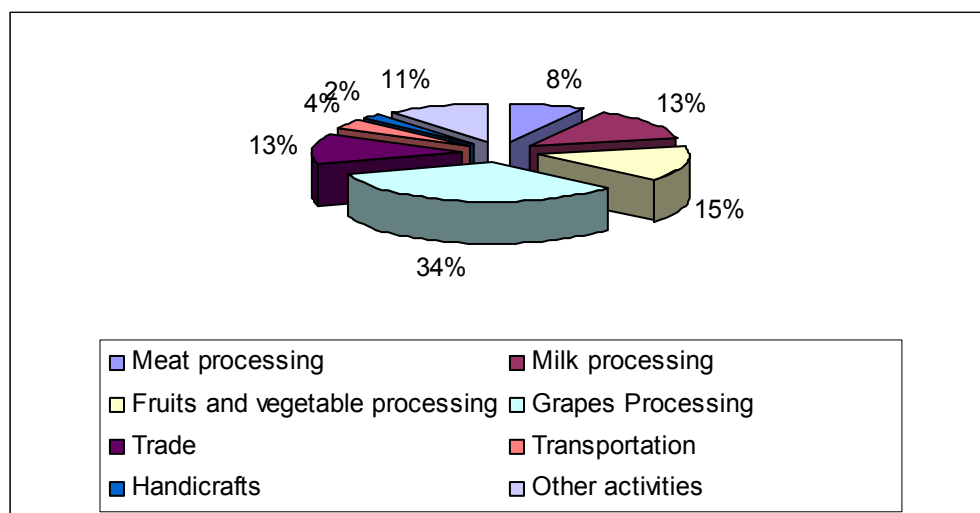
Source: Agricultural structural survey 2005, National Institute for Statistics

Table 5 reveals that the percentage of those agricultural producers carrying out non-agricultural activities is very small. Meat, milk and vegetable processing are the main activities carried out in the region. Legal entities have a stronger entrepreneurship status, 40% of them being involved in non-agricultural activities.

At national level, the degree of entrepreneurship of individual households is much higher i.e. 37%, and only 30% for legal entities. An interesting consideration, which is partially in contrast with the definition of subsistence given by Todaro (2006) presented above, the Romanian subsistence food production is not limited to staple crops or nutritious food, but is also relevant for complex food products such as wine and spirits, cheese and cured meat. This particular area in subsistence agriculture is household food processing, where households manufacture their own products, through bioprocesses that have a certain level of technology and technical knowledge. In fact, this kind of household can be considered as a form of "subsistence food firm", having a larger interference with the food production market, since also members of the family coming from urban area prefer to obtain these products from relatives rather than from retailers (Bleahu, 2002).

Figure 1 reveals the non agricultural activities carried out by the agricultural holdings in the S-E region of Romania. The main non agricultural activities carried out by the agricultural holdings are: grapes processing (34%), fruits and vegetable processing (15%), milk processing (13%), trade (13%), other activities (11%), meat processing (8%). The area has tradition in vegetable and fruits growing as well in vineyards, and this is reflected in the processing activities.

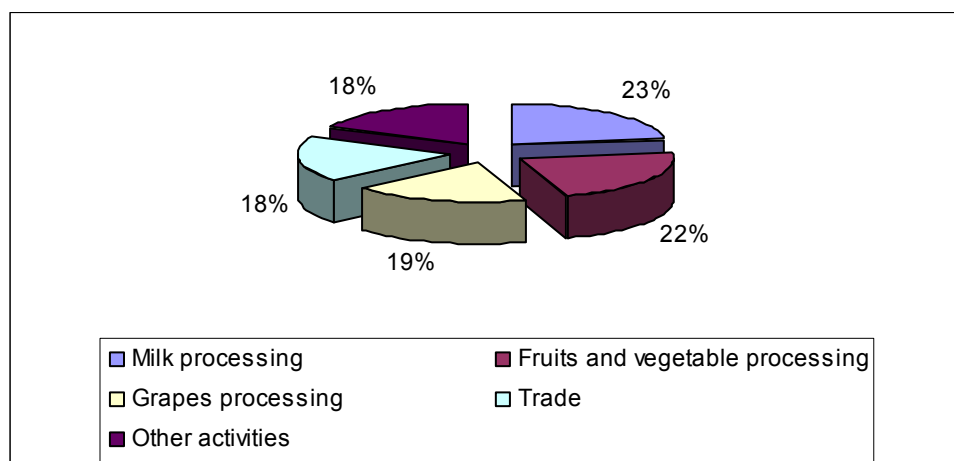
**Figure 1:** Non agricultural activities carried out in the S-E region



Source: Agricultural Census, 2002

At national level, milk processing is the main non agricultural activity carried out (23%), followed by fruits and vegetables processing (22%), grapes processing 19%, trade 18%, and other activities.

**Figure 2:** Non-agricultural activities carried out at national level



Source: Agricultural Census, 2002

### Irrigation in the S-E region and at the national level

This section gives an overview of the irrigation in the S-E region and the main irrigated crops. The irrigated cropping pattern by type of producers is presented in Table 6 and 7.

**Table 6.** Irrigated area, cropping pattern, number of individual producers that irrigate, S-E region

Individual producers	Irrigated area -ha	Cropping pattern %	Number	%
Wheat	9278.4	19%	1071	6%
Maize	19579.0	41%	8121	48%
Sunflower	9312.0	19%	1095	6%
Soybean	1813.1	4%	88	1%
Sugar beet	135.3	0%	61	0%
Potatoes	969.6	2%	343	2%
Vegetables	3514.8	7%	4318	25%
Fodder	1959.9	4%	895	5%
Vineyards	107.4	0%	300	2%
Orchards	18.8	0%	25	0%
Meadows	2.5	0%	4	0%
Other crops	1432.0	3%	620	4%
Total	48122.5	100%	16941	100%

Source: Agricultural Census, 2002

In 2002, in the South-East region, 16941 individual farmers irrigated a total of 48122.5 ha. The main irrigated crop was maize 41%, followed by wheat 19%, sunflower 19%, and vegetables 7%. A total of 1222 legal entities irrigated 116175.3 ha. The cropping pattern of the legal entities is

quite different from that of the individual producers. The legal entities irrigate mainly wheat (30%), maize (19%), sunflower (17%) and soybean (10%), (table 7).

**Table 7.** Irrigated area, cropping pattern, number of legal entities, that irrigate, S-E region

Legal entities	Irrigated area - ha	Cropping pattern %	Number	%
Wheat	34659.3	30%	213	17%
Maize	21747.6	19%	293	24%
Sun-flower	19355.8	17%	220	18%
Soybean	11741.9	10%	95	8%
Sugar beet	408.0	0%	15	1%
Potatoes	355.8	0%	28	2%
Vegetables	2334.2	2%	78	6%
Fodder	6564.5	6%	131	11%
Vineyards	7771.4	7%	22	2%
Orchards	2547.7	2%	21	2%
Meadows	837.0	1%	3	0%
Other crops	7852.3	7%	103	8%
Total	116175.3	100%	1222	100%

Source: Agricultural Census, 2002

Out of the total irrigated area, 29% is irrigated by individual producers and 71% of legal entities.

The statistical data and the survey carried out in this region show that the main water users are of two types – individual producers (those market-oriented) and commercial companies (legal entities). The water users are organized in water users associations and receive water from the national water supplier according to their demand but only after meeting a certain threshold, so that the water provider will cover its costs.

**Table 8.** Number and area by types of agricultural producers with own irrigation infrastructure, 2002 and 2005

Type of agricultural producers	Number of holdings with irrigation infrastructure		Area with irrigation infrastructure		% of the area with irrigation infrastructure		Average size of irrigable area/holding, ha	
	2002	2005	2002	2005	2002	2005	2002	2005
Individual producers	72333	n.a	223867.2	n.a	19%	n.a	3.1	n.a
Legal entities	789	n.a	317148.3	n.a	59%	n.a	402.0	n.a
Total S-E	73122	40721	541015.5	280940	45%	13%	7.4	
National level	251051	102246	1510815	615328	11%	4.4%	6.0	6.0

Source: Agricultural Census, 2002, Agricultural structural survey 2005

Table 8 reveals that in the S-E, in 2002, only 19% of the area farmed by individual farmers is covered by irrigation infrastructure while the area covered with irrigation infrastructure belonging to legal entities represents 59%. In 2002, 45% of the South-East area was covered with irrigation infrastructure and 11% of the area at national level. At national level, the area covered with irrigation infrastructure decreased in 2005 from 11% to 4.4%, while at regional level the decrease was even more dramatic, i.e., from 45% in 2002 to 13% in 2005.

**Table 9.** Irrigation application by types of agricultural producers

Type of agricultural producers	No of holdings irrigating	Irrigated area, ha	% of the irrigated land	% of holdings irrigating	% of holding in total
Individual producers	16941	48122.5	29%	93%	5%
Legal entities	1222	116175.3	71%	7%	72%
<b>Total S-E 2002</b>	18163	164297.8	100%	100%	6%
<b>Total : national level 2005</b>	79822	400515	2.9%	0.6%	0.6%

Source: Agricultural Census, 2002, Agricultural structural survey 2005

By type of agricultural producers, 93% of individual producers irrigate 29% of the irrigable area, while 7% of the legal entities irrigate 71% of the irrigable land. At the whole region, only 5% of the total individual producers irrigate while in the total legal entities 72% irrigate. At national level, in 2005, only 2.9% of the land was irrigated by 0.6% of the farms. The irrigation system has been partly destroyed or the water users associations do not reach agreements on how much or when they should irrigate. Thus, many times the threshold required by the national water supplier is not reached. This is why a large part of the irrigation system does not work or it gets destroyed.

**Table 10.** Irrigated cropping pattern Galati County %

Specification	2005	2004	2003	2002	2001	2000
Wheat	7.6	16.4	8.3	23.6	27.1	0.0
Barley	5.0	4.7	2.8	4.2	1.6	0.0
Maize	41.8	38.7	42.8	33.1	36.8	40.2
Sun-flower	6.9	7.4	9.9	10.7	7.3	11.4
Soybean	9.6	20.2	23.9	16.0	14.1	24.4
Sugar beet	0.0	0.4	2.0	0.8	0.3	2.7
Potatoes	5.0	2.2	1.8	1.7	1.6	1.9
Vegetables	24.1	10.0	8.5	9.8	11.2	19.5
Total	100	100	100	100	100	100

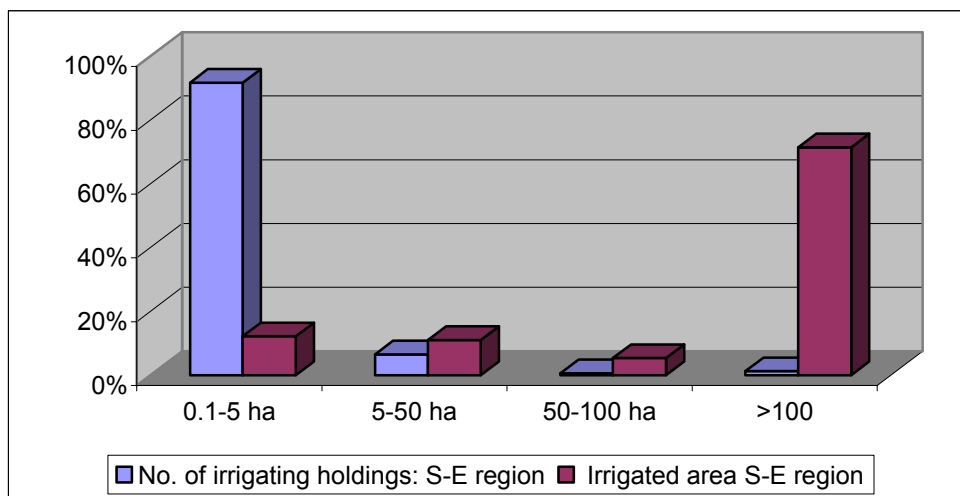
Source: National Institute for Statistics, 2005

In order to see the change in the cropping pattern in the region over the years, due to data limitation only Galati County, belonging to the S-E region was chosen. Table 10 reveals a change in the irrigated cropping pattern in this county in the period 2000-2005. In 2005, mainly vegetables (24.1%) and maize (41.8%) were irrigated. The cropping pattern in 2005 differs a lot in comparison with the year 2000 when the irrigated cropping pattern was more diversified. This situation is explained by the fact that farmers have oriented themselves towards more added value crops, which can better respond to irrigation such as vegetables and maize.

In the South-East of Romania, 92% of the irrigating holdings belonging to the land category 0.1 – 5 ha irrigate 12% of the area, while 1% of the legal entities irrigate 74% of the land (Figure 3).

**Figure 3:** Number of irrigating holdings and the irrigated area by land categories in the South-East region of Romania

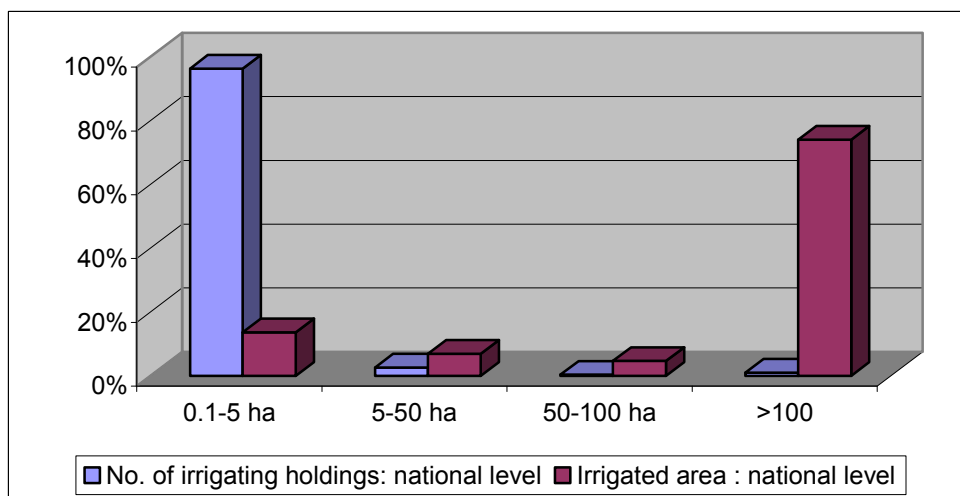




Source: Agricultural structural survey 2007

At national level, 96% of the irrigating holdings belonging to the category 0.1-5 ha irrigate 14% of the land, while 1% of the legal entities irrigate 75% of the land (Figure 4). The situation is explained by the polarization land process which took place in the last years. This process is even more obvious at national level. The intermediate land categories, respectively 5-50 ha and 50-100 ha are irrigated by less than 10% of the holdings.

**Figure 4:** Number of irrigating holdings and the irrigated area by land categories at national level



Source: Agricultural structural survey 2007

### Labour force in the Romanian agriculture

Romania ranks first in the total number of agricultural labour force at the EU level, respectively 20% of the total European labour force.

The Romanian agriculture employs mainly family labour force, a situation which is similar to the European area. At the European Union level, 23% of the labour force is employed on the

subsistence farms, 59% represents family labour force and 18% labour force coming from outside the farm (Table 11).

**Table 11:** Labour force in agriculture

Specification	Total	Subsistence farms	Family labour force*	Thousand annual labour units	
				Labour force coming from outside farm	
				regular	occasional
EU 27 total	12716	2929	7447	1459	881
EU average	471	1077	275.7	54	32.6
<b>Romania</b>	2596	1241	1180	53	121
Poland	2274	547	1608	58	61
Belgium	70	1	55	11	3

Source: Eurostat 2007,  
\*excluding subsistence farms

Comparing Romanian levels of subsistence with some other European countries (Table 11), it is possible to notice that the Romanian labour force level is similar to that of Poland while Belgium lies at the opposite pole. Also, Poland ranks second in the total number of agricultural labour force with, respectively 17%.

**Figure 5:** Labour force in the Romanian agriculture



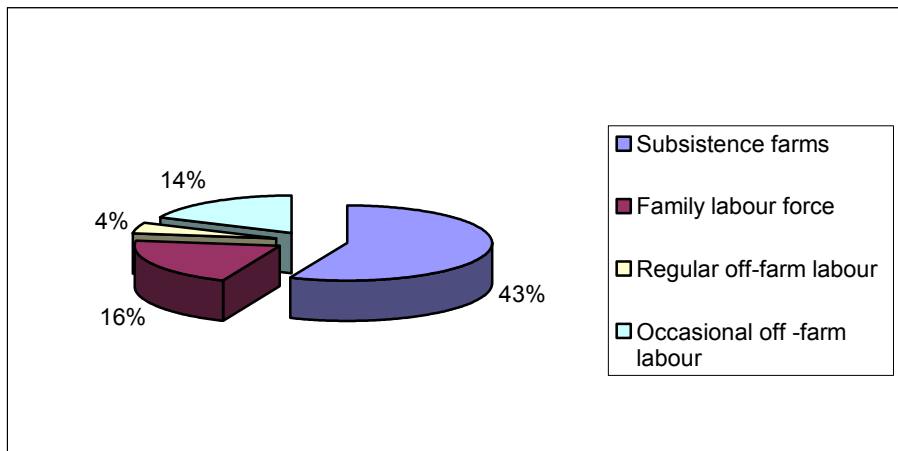
Source: Eurostat 2007

Family labour force represents 45% in Romania, and those employed by the subsistence farms represent 48% of total agricultural labour force (Figure 5). Small percentages, 2% and 5% respectively, are represented by regular off farm labour and occasional off farm labour.

At the EU level, 42% of the labour force employed on the subsistence farms comes from Romania, while 16% of the EU family labour force is Romanian. Quite a large percentage of EU

occasional off- farm labour is also represented by the Romanians, 4% respectively 14% (Figure 6).

**Figure 6:** Share of the Romanian labour force in the EU agricultural labour force



Source: Eurostat 2007

## Conclusions

Some improvements have been noticed in the last period, although subsistence agriculture continues to prevail in the Romanian agriculture; it can be seen as a social buffer in a period of crisis but also as a good opportunity for the development of the low cost industry (a worker might accept a smaller salary in a factory as long as he can produce for his self –consumption on his own plot of land). The entrepreneurship level is quite low in the S-E region, but higher at national level. Also, the type of entrepreneurship is different. This requires different development strategies for different regions.

Unfortunately, the irrigation infrastructure has been much eroded both at national and regional level, while the irrigated area has decreased by half both at regional and national level.

Subsistence agriculture connects the producer and consumer very closely. In fact, the same person faces some issues on the supply side, some on the demand side, revealing the particular case in which the producer knows exactly the needs and the tastes of consumers. In this case he can produce accordingly, in terms of quantity and quality in a case of perfect symmetric information. This consideration can be relevant, considering the characteristics of these products, similar to geographical indications: it would help tracking the origin of products, which were produced due to availability of raw materials and are seemingly refined according to the taste of local consumers (producers and their relatives), with a direct interface between the two counterparts.

At the same time, the trends in changes of privately owned agricultural area may influence the processing chain of agricultural products to a less extent, since consumers can produce subsistence foods without owning land, just purchasing raw materials, or owing small plots of land.

However, the economic constraints, high production risk (also in terms of food safety) and uncertainties faced by the farmer can make a big difference between this kind of consumer and

the consumer in neo-classical economics, and these differences should be analyzed carefully before interpretation.

One might conclude that subsistence agriculture is still a “modus vivendi”, and most likely only time, the change of the generation and the force of new technologies/equipment employed by the large agricultural commercial companies will partly solve the issue. In this respect, the larger agricultural commercial companies might become more capitalized and able to farm more land eventually bought or leased in from individual farmers. The individual farmers will eventually regard the subsistence agriculture as a hobby done mainly because of emotional reasons. At the same time, the agricultural commercial companies have to respect their contractual arrangements with the individual farmers so that the individual farmers are willing to lease out their land and be aware that they are only land owners but no longer agricultural producers.

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