

EVOLUTION AND DEVELOPMENT POTENTIAL FOR INPUTS IN THE ROMANIAN AGRICULTURE

Crina Turtoi¹, Camelia Toma², Camelia Gavrilesuc³

Abstract

The paper assumes that the trends of the Romanian agriculture structural characteristics and of the main inputs are basic elements in assessing the development potential of the sector. The results show that the current endowment of Romanian agriculture with technical means, together with poor management at farm level cannot ensure timely performance of agricultural operations as required by proper technologies. Several causes of this situation have been identified, including: excessive land fragmentation, low scale use of material and technical base, poor operation of irrigation systems, inadequate farm and inputs management in general. This leads to low productivity and crop losses, compared with the situation in other EU Member States.

Key words: agriculture, holdings, land fragmentation, mechanization, irrigation, labour force.

INTRODUCTION

The main areas covered by the analysis were: (i) the structural changes in the structure of the utilized agricultural area and its distribution by main land use categories, reflected in the data of the 2002 Agricultural Census, Farm Structure Surveys 2005 and 2007; and (ii) evolution of the main inputs (equipment, irrigations, fertilizers, labour force) during the analysed period.

1. Trend of the holdings structural characteristics

The final results of the 2002 General Agricultural Census (GAC) are indicating a severe

1 Dr. Crina Turtoi, Institute of Agricultural Economics, Romanian Academy, Bucharest, Casa Academiei Române, Calea 13 Septembrie 13, sector 5, București, cod 050711, cturtoi@yahoo.com

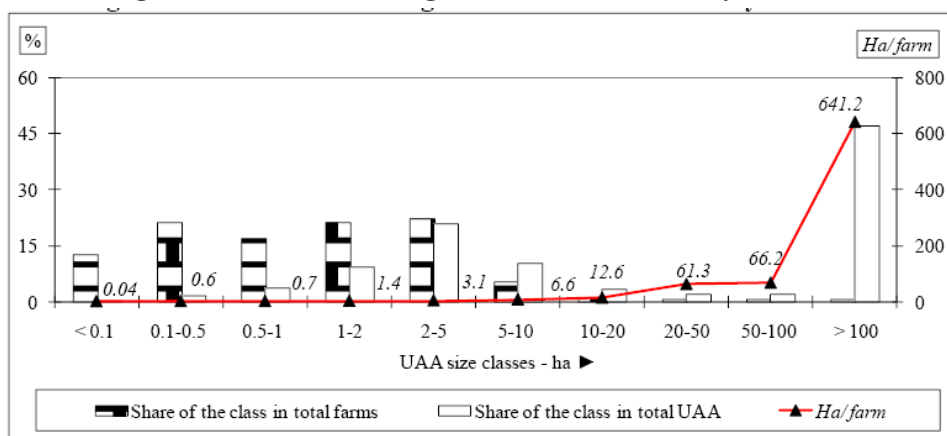
2 Dr. Camelia Toma Institute of Agricultural Economics, Romanian Academy, Bucharest, cameliatoma2004@yahoo.fr

3 Dr. Camelia Gavrilesuc Institute of Agricultural Economics, Romanian Academy, Bucharest, cami_gavrilesuc@yahoo.com

fragmentation of the Romanian land capital (figure 1). Family farms utilized 55.3% of the total agricultural area of the country and had an average size of 1.73 ha/holding. At the other end, the legal entities utilised 44.7% of the total agricultural area of country and had an average size of 274.4 ha/holding⁴. About 0.2% of the total number of holdings, sized over 100 ha, are utilising almost 47% of the total UAA, in holdings with an average size of 641 ha/holding. The largest concentration of holdings (22.2 %) corresponds to 2-5 ha land size category and is utilising 20.9% of the total UAA, with an average size of 3.05 ha/holding.

Census results revealed a *predominant orientation of the family farms towards subsistence agriculture* (table1).

Figure 1: Number of holdings and structure of UAA by size classes



Source: General Agricultural Census 2002, Romania, National Institute of Statistics, 2004

Table 1. Destination of the agricultural production by the farm’s legal status

Legal status of the farm	Destination of the agricultural production			TOTAL
	Only for self consumption	The surplus may be marketed	Mainly for marketing	
Number of holdings				
Share in total Family Farms	76.7	21.2	2.1	100.0
Share in total Legal Entities	32.5	19.7	47.8	100.0
Share in Total holdings	76.5	21.2	2.3	100.0
Total Utilized Agricultural Area (ha)				
Share in total UAA of the Family Farms	52.0	40.6	7.4	100.0
Share in total UAA of the Legal Entities	21.2	18.2	60.7	100.0
Share in Total UAA of the country	38.2	30.6	31.2	100.0

Source: General Agricultural Census 2002, Romania, National Institute of Statistics, 2004

⁴ General Census of Agriculture 2002, Volume 1, table 3, pg. 3, National Institute of Statistics

Out of the total Utilized Agricultural Area (UAA), 38.2% was utilized only for self consumption by 76.5% of the holdings, 30.6% of UAA was utilized by 21.2% of the holdings that were occasionally marketing the surplus, while only 7% of the UAA was utilized by the remaining 2.3% of the holdings for obtaining a production mainly marketing oriented. In the period 2002-2007, significant changes occurred in the structure of Family Farms (FF), by UAA size classes and use categories (table 2). The number of FF in the class under 5 ha, diminished by 14%, with different allocation on land use categories (decline by 11% in arable land, by 19% in permanent crops and by 24% in permanent pastures and meadows). An increase by 45% was noticed in the number of holdings in the class 5-20 ha, by 80% in the class 20-50 ha and by 19% in the class over 50 ha.

Table 2. Trend in the number of family farms, by size classes and use categories, 2002-2007 ('000 holdings)

Family farms ('000)	Arable land			Kitchen gardens			Permanent meadows and pastures			Permanent crops		
	2002	2005	2007	2002	2005	2007	2002	2005	2007	2002	2005	2007
< 2 ha	2195	2006	1843	2038	1703	1740	927	771	602	792	620	603
2-5 ha	916	985	928	659	659	673	533	529	513	397	382	362
5-20 ha	244	345	355	175	235	260	153	209	232	96	132	136
20-50 ha	8	15	15	5	9	11	3	9	8	2	4	5
> 50 ha	5	6	6	3	3	4	1	3	3	1	1	2
TOTAL	3368	3356	3146	2879	2609	2688	1616	1520	1357	1288	1140	1107

Source: GAC 2002, FSS 2005, FSS 2007, NIS Romania

The number of Legal Units (LU) experienced a continuous decrease for all categories of land use (Table 3).

Table 3. Trend in the number of LU, by size classes and use categories, 2002-2007 (number of holdings)

Legal Units (number)	Arable land			Permanent meadows and pastures			Permanent crops		
	2002	2005	2007	2002	2005	2007	2002	2005	2007
< 2 ha	3048	1975	1571	1766	1279	937	430	331	230
2-5 ha	2386	1899	1749	1235	1013	967	273	208	181
5-20 ha	4049	3516	3069	2020	1830	1756	466	421	325
20-50 ha	801	672	755	342	344	400	137	125	124
> 50 ha	7127	5480	5881	4072	3561	3566	978	611	466
TOTAL	17411	13542	13025	9435	8027	7626	2284	1696	1326

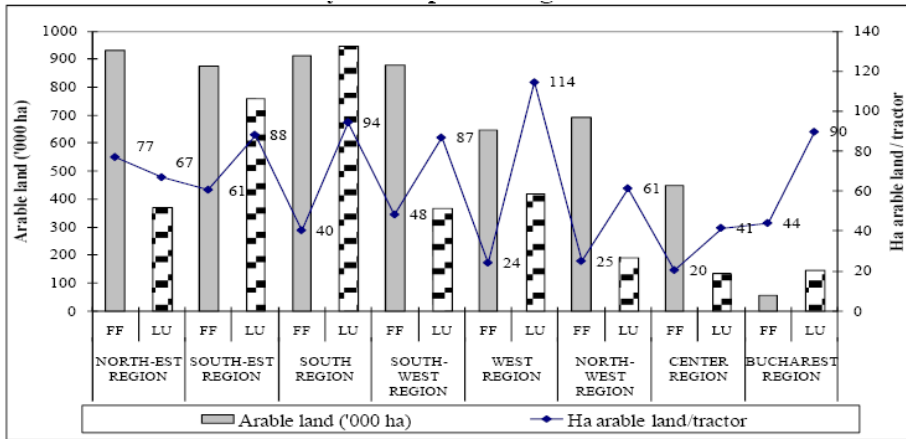
Source: GAC 2002, FSS 2005, FSS 2007, NIS Romania

We can associate these trends with the agricultural policy that **stimulated the association process**, taking into account as well that the increase of the UAA has been a pre-conditions for holdings to qualify for access to development funds.

2. Evolution of the main inputs

In order to estimate the mechanization level of agricultural holdings, the tractor fleet has been investigated by development regions (figure 2). The slight increase in the number of tractors resulted in reducing the load of arable land per tractor, which reached an average of 55.1 hectares of arable land/physical tractor (FSS 2007). The value of this indicator is, however, far beyond the normal parameters needed for the current conditions of Romania (25-35 ha / tractor). There are large disparities by development regions as well: the load varies from 33.2 ha arable land/tractor in Central region to almost 90 ha arable land/tractor in the South-East.

Figure 2. Arable land and arable land/tractor, by legal status of the holdings, by development regions



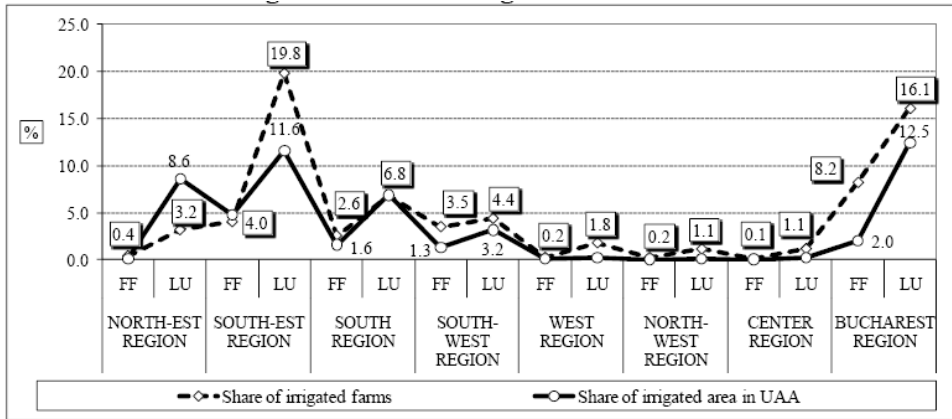
FF = Family farms; LU = Legal units

Source: authors' calculations based on the General Census of Agriculture 2002, NIS, 2004

With 55 hectares of arable/tractor, Romania is attending a low level of endowment, versus 4.2 ha of arable land/tractor in Austria, 5.0 ha of arable land/tractor in Italy, 7.9 ha of arable land/tractor in Belgium, 14.6 ha of arable land/tractor in France, etc.

According to the data of 2002 GAC, few holdings applied irrigation (figure 3).

Figure 3. Share of holdings that applied irrigations in total number of holdings and share of irrigated area in total UAA



FF = Family farms; LU = Legal units

Source: authors' calculations based on the General Census of Agriculture 2002, NIS, 2004

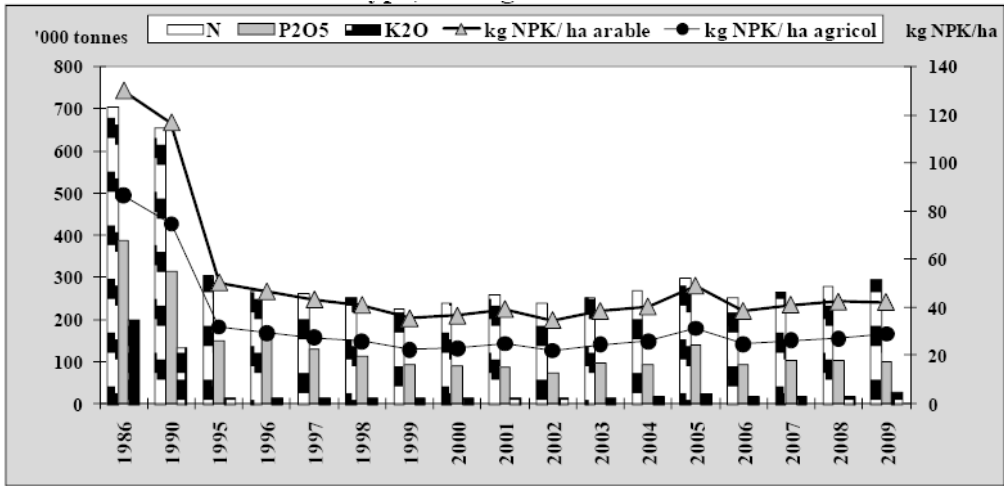
By regions, the share of irrigated area in the utilized agricultural area of the region had the highest values in the region Bucharest (12.5% of UAA), followed by the region S-E (11.6% of UAA), the region N-E (8.6% of UAA), the region South (6.8%) and the region S-V (3.2% of UAA). The largest share of irrigated areas in total UAA belongs to Legal units (LU). The number of holdings that applied irrigations, both under individual and common operation system decreased by almost 60%, while the effectively irrigated area decreased by 57% (table 4).

Table 4. Agricultural holdings and area arranged for irrigation and total irrigated area, by UAA size classes, 2002-2007

			Size classes of the UAA					TOTAL
			< 2 ha	2-5 ha	5-20 ha	20-50 ha	> 50 ha	
Area arranged for irrigation	Holdings number	2002	172,434	60578	14,645	1,040	2,354	251,051
		2007	65,262	28,197	7,346	543	898	102,246
	Area - ha	2002	117,025	180,195	107,343	31,443	1,074,813	1,510,819
		2007	53,388	84,148	56,558	16,409	404,826	615,328
Irrigated area	Holdings number	2002	72,053	5,242	1,319	405	803	79,822
		2005	31,352	2,719	1,132	93	146	35,442
		2007	29,223	2,919	741	139	343	33,365
	Area - ha	2002	30,484	14,114	11,128	12,621	332,172	400,518
		2005	14,118	8,052	9,315	2,749	58,960	93,194
		2007	15,511	8,215	7,538	4,471	137,717	173,452

Source: General Agricultural Census 2002, FSS 2005, FSS 2007, NIS

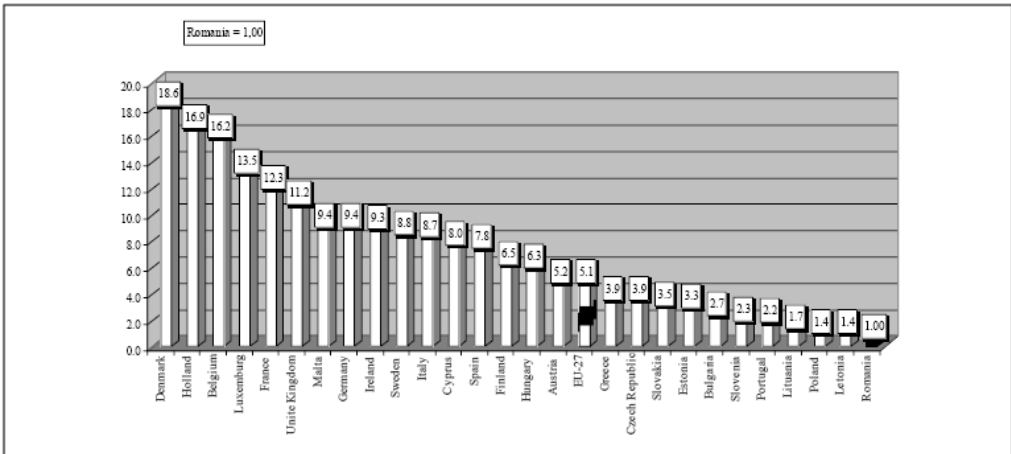
Figure 4. Trend of using chemical fertilizers in Romanian agriculture, by type, during 1986-2003



Source: Romania’s Statistical Yearbook, 1987-2010 series, NIS

As compared to the other EU Member States, the amount of chemical fertilizers applied in Romania is 4 times lower, far below the technological requirements (41 kg/ha in 2007). This represents both an asset and a constraint (figure 4). The total consumption of N, P, K kg/agricultural ha correspondingly decreased in the same period, from 86.4 kg/ha in 1986, to about 24 kg/ha (1999-2009 average).

Figure 5. Economic efficiency of utilizing labour (GVA/ person working in agriculture) in Romania, compared to EU-27 (2006)



Source: Calculations based on Agriculture in the European Union, Statistical and Economic Information, Eurostat, 2008

As compared with other EU Member States, Romania has the highest share of population employed in agriculture (30%), in total employed population (2007) (figure 5). On a full-time basis (expressed in Annual Working Units) it has been estimated that only one-third of the total number of persons involved in agricultural activities would be really needed (based on 2002 GAC data).

Conclusions

The low profitability in Romania's agriculture resulted in the decapitalization of this sector and represented the main factor of agricultural production stagnation. The large gaps compared to the EU Old Member States (EU-15) also stem from the differences in the agricultural support policy. The European Union largely supported the increase of the agricultural output as well as farm modernization for more than 40 years. The New Member States will no longer get production subsidies from the Community, the support will go mainly for rural development. The effects of the new agricultural production mechanisms cannot be predicted yet, mainly for the New Member States. The human factor, with a decisive role in the increase of agricultural performance, largely depends on the development of entrepreneurial skills among the large mass of farmers.