



Munich Personal RePEc Archive

**The performances of Romanian
agriculture, given the resources allotted
in the socialist agricultural system,
compared to the market economy**

Miron, Liliana and Lup, Aurel

Ovidius University of Constantza, Ovidius University of Constantza

20 November 2015

Online at <https://mpra.ub.uni-muenchen.de/69326/>

MPRA Paper No. 69326, posted 08 Feb 2016 14:56 UTC

THE PERFORMANCES OF ROMANIAN AGRICULTURE, GIVEN THE RESOURCES ALLOTTED IN THE SOCIALIST AGRICULTURAL SYSTEM, COMPARED TO THE MARKET ECONOMY

LILIANA MIRON, AUREL LUP¹

Abstract: *The agricultural performances depend, on the one hand, on the volume, structure and quality of the resources allotted, and, on the other hand, on their management, according to the economic system and to the national policies in the field. This article draws a parallel between the two agricultural systems, i.e. the socialist-planned type and the private one, typical of the market economy. The following periods are compared: 1986-1989 for the former type and 2006-2009 for the latter type of agriculture. The comparison targets the main resources: the agricultural real estate (surface, structure and quality), land reclamations and fertilizers. Between 1986 and 1989, the agriculture benefited from generous resources: over three million ha equipped for irrigations, modern orchards and vineyards, large amounts of fertilizers; as a whole, a more intensive technological system in terms of inputs. The yields increased, especially in cereals. Two decades later, i.e. between 2006 and 2009, the agriculture became extensive. Irrigation decreased by 10 times, a large part of the vineyards and orchards were destroyed, the amount of fertilizers was reduced to 1/3 compared to the 1986-1989 period. In terms of performance, the Romanian agriculture became extensive during the market economy, but there are relatively few differences in the results expressed by the yield level. These express the difference in the technological level between the two periods, due to several causes that we are going to analyze in the article.*

Keywords: *performances, land reclamation, planed economy, market economy.*

INTRODUCTION

Agriculture, as an economic activity, uses the land as its main input and its performances depend on the operating mode of these inputs, characterized by size (stretch), structure and quality. At the national level, the size represents the total area between borders – 23839.1 thousand hectares, known as *the national land fund*. The agriculture uses 14611.9 thousand hectares of this area, i.e. 61.3%. In contrast to the surface, which can be regarded as constant, the structure and quality of the agricultural lands are parameters which vary in time, as a result of human intervention. In their turn, the agricultural performances are directly dependent on the nature, opportunity and level of intervention and, not least, on land resource management and exploitation, as a whole. The two agricultural systems differ radically in terms of the economic and social doctrine, type of property, organization, allocation of the main production factors, also compared to the other sectors of the economy, such as industry or trade, for instance. The comparison is considered appropriate as it can offer suggestions on the development of future strategies, especially since, as far as the market economy is concerned, the Romanian agriculture goes through another transition period.

MATERIAL AND METHODS

The material of this study is relatively diverse. Official statistical data on surfaces, inputs and outputs have been used. In order to quantify the influence of these factors on the results, profile research data, which will be presented below, have been used. Numerous data come from the studies and the research conducted by the author. All were processed by economic research means and methods.

¹ OVIDIUS University of Constantza;

RESULTS AND DISCUSSION

3.1. The land resource. The area and structure per uses of the agricultural land fund, at the end of 1989 and 2009, were as follows (Table 1):

Table 1. The area and structure per uses of the agricultural land fund (1989 and 2009)

Year	U/M	Agricultural field	uses:				
			arable	grassland s	meadow s	vineyard s	orchard s
1989	thousand ha	14759,0	9458,3	3256,9	1448,3	277,5	318,0
2009	„	14684,9	9422,5	3313,8	1528,0	215,4	205,2
Difference	±	-74,1	-35,8	+56,9	+79,7	-62,1	-112,8

Source: The Statistical Yearbook of Romania, 1990 and 2010.

The long-term agricultural uses have undergone insignificant changes in what concerns their size. In 1945, the agricultural land measured 15,062 thousand ha, of which 9,472.0 thousand ha was arable land, 5,147.0 ha was permanent grassland and 1,443.0 thousand ha were vineyards and orchards. During the socialist agriculture, the policy in the field designed to maximize the agricultural and arable area, particularly by turning the soil of the grazing grounds from non-mechanized sloping lands.

The agricultural and arable area also increased due to the desiccation of several hundreds of thousands of hectares in the Danube Valley. The Statistical Yearbook of 1989 referred to an agricultural area of 15,094.1 thousand ha, of which 10,080.4 thousand ha of arable land. It seems that these latest figures represented a political order, taking into account that the known objectives in the field aimed at 15,000 thousand ha of agricultural land, and at 10,000 thousand ha of arable land. The figures are refuted by the Romanian Statistical Yearbook of 1990, which mentions, for the end of 1989, only 14,759 thousand ha of agricultural land and 9,458.3 ha of arable land. The differences in area, registered between 1989 and 2009, although not spectacular, reveal a more intensive use structure during the socialist economy, more land that is arable, a larger area of orchards and vineyards, and fewer natural grasslands. The increased intensity in the field of vine and fruit plantations was also manifested, in this period, by the type of plantations, many of them being semi-intensive and intensive.

3.2. The Romanian socialist agriculture. After the completion of cooperativization process in 1962, the land exploitation was organized in large production units, reaching over 5,000 ha in size, as far as the state agricultural enterprises – SAE (known as IAS, in Romanian) are concerned, and 2,000 ha in agricultural cooperatives – AC (known as CAP, in Romanian). The mechanization services were concentrated in specialized units, i.e. machine and tractor stations – MTS (known as SMT in Romanian), later known as agriculture mechanization stations – AMS (known as SMA in Romanian).

Since the first *Five-Year Plan 1951-1955*, in Romania, increasingly larger resources have been allocated, in order to eliminate backwardness, particularly in mechanization. Later, from the 2nd half of the 60s, significant resources were directed towards land reclamation works, especially for irrigation. As far as mechanization is concerned, in just two decades, Romania succeeded in removing a historical gap, primarily in the agricultural endowment with tractors. In 1946, the first Romanian tractor, i.e. IAR-22 was produced, and, between 1959-1970, the area assigned to a tractor decreased from 684 ha to 91 ha per tractor.

In the following decades, however, the production of tractors was more oriented towards the export. Even in 1970, of the 29,289 tractors produced, 13,475 tractors, representing 46% of the entire production, were exported; five years later, i.e. in 1975, 71.4% of the entire production was exported. The share of exports remained at high levels, while the production of tractors decreased, so that, in 1989, **of the 17,124 tractors produced, 17,250 tractors were exported**. In the same year, i.e. 1989, in Romania, there were 62 ha of arable land per tractor, while in Greece there were 30.3 ha/tractor, in France - 20.8 ha/tractor, in Belgium - 12.2 ha/tractor, in Germany 8.3 - ha/tractor, the EU average being 19.6 ha/tractor (2).

As far as irrigation is concerned, in 1960, there was an area of 200 thousand ha equipped for irrigation, representing about 2% of the arable land. 30 years later, we had an area of over three million ha equipped for irrigation, representing almost one third of the arable land, Romania ranking thus third in Europe, after Spain and Italy, the former with only 16.5% and the later with 25.6% of the arable land.

With one of the largest areas equipped for irrigation, in connection to the size of the national land fund, in the last years of the planned economy of socialist agriculture, Romania achieved some of the lowest yields per unit area. In this case, the unsatisfactory results can be explained only by the wrong administration and by the inadequate resource management. The equipping of the three million ha involved a special investment effort, of about 13 billion US dollars, but the works had been made since 1966, in unreasonable rates. For the past 15 years (1974-1989), there was pursued, in particular, the expansion of the areas equipped for irrigation, in most cases dropping the technical requirements for conception and execution, and the environmental protection requirements. On about 40% of the respective area, the irrigation canals are unlined, the water loss reaching 30-60%, the yield of the pumping aggregates is below the catalogue values, the watering equipment has a low reliability level and others are technically obsolete (9). In order to achieve the quota of 5.5 million ha by the end of 1989, since 1983, the EELR (Enterprises for the Exploitation of Land Reclamation) county branches become EOELR (Enterprises for the Operation and Exploitation of Land Reclamation), priority being granted to the execution works.

Continuing to equip new land areas and neglecting the proper operation of the already equipped areas represent the first and the most serious errors in resource management and administration. This happened although the situation was acknowledged at the highest levels: *I do not want to return to the subject of irrigation and land reclamation, but because some comrades have raised the issue of supplementing some investments, I want to point out that, for 1981-1982, we decided not to start any new work. Let's finish the already started irrigation works, tune the existing systems - because some have already started to degrade. Let's ensure their proper functioning. Only when all systems work properly, we will build new ones (1).*

Indeed, in 1981, there were only 17 thousand ha equipped and, in 1982, 62 thousand hectares. Nevertheless, in 1983, a national program was launched (8), according to which, by the end of 1989, 5.5 million ha would be equipped for irrigation, which meant 55% of the arable land of the country. The designers and builders started their work, and, in 1983, there were 120.3 thousand ha equipped for irrigation, and, in the next year, the largest area was equipped, i.e. 261.6 thousand hectares. However, the real economy of the country could not stand neither the ruler's ambitions, nor the builders' momentum, so that the areas equipped annually began to shrink dramatically: 65 thousand ha in 1986, 55 thousand ha in 1987, 45 thousand ha in 1988, and only 27.2 thousand ha in 1989. The equipping continued to place designers in difficult situations, since the newly equipped areas triggered higher costs (longer water transportation canals, greater pumping heights, a more uneven relief requiring complex works). Thus, if around 69-70's, the investment for equipping one ha was around 14,000-16,000 lei/ha, 10 years later this had risen to 40,000-50,000 lei/ha. In addition, since the investment law at that time required that the investment should be recovered from the additional revenues in 10-12 years, the projects provided for increasingly higher yields per ha, so that the additional revenues ensure the compliance with the law. This led to the fact that, in the last years of planned agriculture, there were designed yields of 6,000 kg/ha for wheat and 10,000 kg/ha for maize, in any agro-climatic area of the country, including the wetter areas, where the yields obtained by irrigation were much smaller.

A thorough analysis of how the equipped areas were exploited during 1985-1989, the yields and the economic results are presented in the paper entitled *The Irrigations in Romania's Agriculture*, by A. Lup (3)². The main conclusions of this work, which justify, otherwise, the inappropriate technical and economic results, are the following:

² The data source on the operation of the irrigation systems is represented by the operational records of DGEIFCA (the General Economic Directorate of Land Reclamation and Agricultural Constructions) and of the EOELR county

a) The entire equipped area was not irrigated and the irrigation standards were lower than those recommended by the profile research. During 1986-1989, the equipped area increased from 2,731.1 thousand ha to 3,280 thousand ha, the four-year average being 2,989 thousand ha. The

Table 2. The area equipped for irrigation, the effectively irrigated area and the applied irrigation standard

Year	Equipped area thousand ha	Effectively irrigated area thousand ha	Irrigation standard cubic meters/ha
1986	2731,1	2212,2	1310
1987	2877,8	2287,9	1740
1988	3065,5	2397,2	2000
1989	3280,8	2527,0	1933
1986-1989	2989,0	2356,0	1746

Source: DGEIFCA Data (AGRI IF)

actually irrigated area (at least once) totaled 2,356 thousand ha on average, i.e. 78.8% of the equipped area. The irrigation standard ranged from 2,000 cubic meters/ha in 1988 and 1310 cubic meters/ha in 1986, the average being 1,746 cubic meters/ha, compared to the projected average standard of 2,700 cubic meters/ha, in order to ensure 50% of the AMR (Active Moisture Range), or 3,550 cubic meters/ha, in order to ensure 80% of the AMR. In reality, the water for the irrigated area was provided at a rate of 64.3% and 48.9% respectively. The failure to comply with the irrigation standards was triggered by the reduced performance of the pumping aggregates, and, especially, to the losses by infiltration from the partially non-impermeable canals (Figure 1).

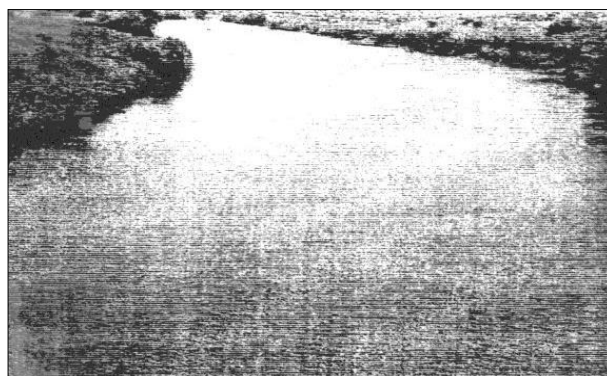
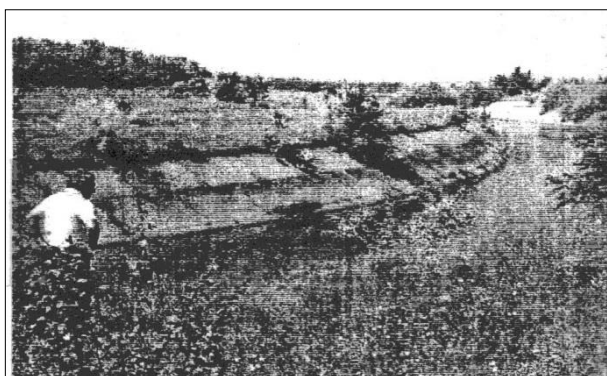
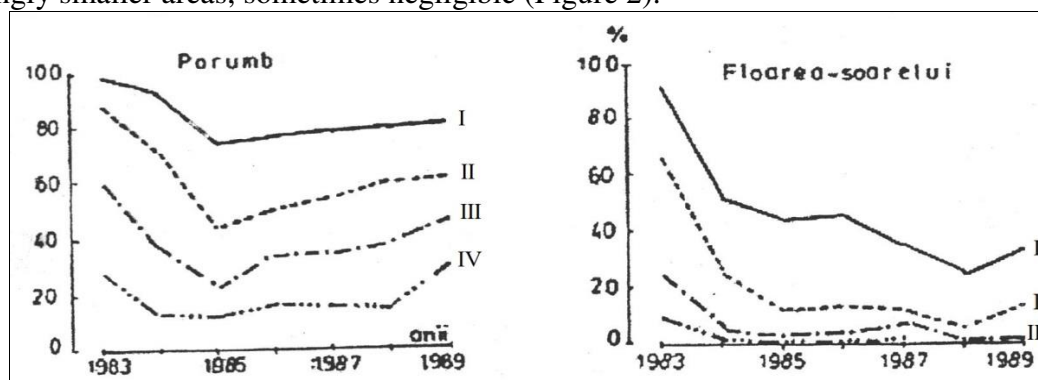


Figure 1. Partially impermeable and non-impermeable main canal in the irrigation system from Carasu, Constanta county (1991)

b) Failure to achieve the programmed number of irrigations. The area that has been watered at least once is statistically considered an irrigated area. Usually, most crops need more irrigations. The records of the EEOLR territorial units reveal that only the first irrigation was performed over the entire area (actually irrigated, not equipped). The other irrigations were made on increasingly smaller areas, sometimes negligible (Figure 2).



branches (Enterprises for the Execution and Operation of Land Reclamation Works), and those relating to the yields obtained, the costs and the economic results were drawn from the AGR-1 reports of the state agricultural enterprises and of the agricultural cooperatives of production, from nine counties in the south and east of the country, with equipped areas larger than 150 thousand ha.

Figure 2. The irrigation share at maize and sunflower, in the Romanian irrigation systems, during 1983-1989

c) The failure to provide the electricity needed in order to pump water, in order to transport it and to water the plants. It was one of the main causes, if not the most important one, due to which the immense efforts to build a formidable yield capacity – i.e. three million ha equipped for irrigation - has not been adequately harnessed. For instance, Table 3 shows the electricity insurance degree for the equipped areas, during 1986-1989 (Table 3).

Table 3. The electricity insurance degree for pumping the water on the equipped areas, during 1986-1989

Year	Equipped area thousand ha	Effectively irrigated area thousand ha	Irrigation standard cubic meters/ha	Insurance degree %
1986	2381,1	3453	2182	63,2
1987	2877,8	4173	1978	47,4
1988	3065,5	4450	2200	49,4
1989	3280,8	4714	2322	49,3
1986-1989	2989,0	4198	2171	51,7

Source: DGEIFCA Data (7)

The average for the four years under study reveals that the electricity insurance degree barely exceeded half of what was needed for a proper irrigation. This was also because the irrigation did not need a uniform consumption during the year. The maximum intensity of the irrigation season is between June and August, when, the appropriate irrigation of the equipped area, in the years 1988-1989, would have needed 20-25% of the national production of energy, in the respective period.

d) Lack of fertilizers. The capacity of the Romanian chemical fertilizer industry was assessed, in the last years of socialist agriculture, to 4.5 million tons of chemical fertilizers with active ingredients annually. The full use of this yield in the Romanian agriculture would have secured over 470 kg/arable ha. The greatest fertilizer yield was achieved in 1986, namely 3,278 thousand tones, which would cover about 340 kg/ha. However, as with the tractors, almost 50% of the yield was exported. In 1980, for example, in Romania, there were allotted 114 kg/ha, while in the Western European countries, there were applied 4-5 times larger quantities per ha.

e) The mismatch between the yield potential of the biological material, the technological standards and the allotted inputs. In the last years of planned agriculture, the use of high productivity breeds and hybrids was mandatory and, depending on the area and on the surfaces equipped for irrigation, the field density or the number of plants per ha was calculated for the circumstances when, during the growing season, the appropriate resources would be allocated, i.e. fertilizers, water, pesticides, etc. The failure to provide the resources in accordance with the requirements had negatively influenced the yields per ha, especially since the designed technologies were more efficient.

f) Various shortages and organizational and managerial dysfunctions. Throughout the socialist agriculture period, there were other numerous shortages, some of which have hindered the management of the main yield factors, as many as they were.

We quote here the lack of fuel and of spare parts, the poor reliability of the equipment, especially of the harvesting one. To these, there are added numerous organizational dysfunctions, most originating in the interference of the political factor in the management of the production units.

The sum of all these dysfunctions had finally led to particularly low yields per ha: about 3 t/ha in wheat and maize; 1.5 t/ha in sunflower; below 1,000 kg/ha in soybeans; 20-22 t/ha in sugar beet, or 12-13 t/ha in potatoes. These results have also been largely influenced by the agro-climatic area, from the south and east of the country, which was equipped and operated under irrigation, in a ratio of over 2/3.

3.3. The Romanian agriculture in transition to a market economy. After 1990, in the transition to a market economy, the Romanian agricultural system has changed radically, becoming one of the most extensive. First, the large production units were closed, entailing an excessive parceling of the agricultural land. The new landowners, counting several million, had no specialized

knowledge in the field, were deprived of any equipment, and did not have the necessary financial resources in order to purchase inputs. This led ultimately to an extreme technological intensification. The Law no.18/1991, under which the land of the former agricultural cooperatives was returned to its former owners or to their heirs, has been criticized right from the start and, practically, in the same year, there were suggested associative forms in order to reconstruct agricultural holdings compatible in size with the rational use of the land work equipment and with the operation of the irrigation systems.

By Law no.36/1991, there were proposed companies with legal personality and family associations without legal personality. None of these forms of association was attractive to farmers, as evidenced by the statistics of the Ministry of Agriculture, showing that, in 2001, compared to 1993, both the number and the share of areas were smaller in the associative forms than the number of the individual households and the areas owned by them (4). Neither was Law 166/2002 on agricultural holdings, which conditioned the granting of several facilities (mainly subsidies for certain products, the establishment of agricultural holdings of minimum 110 ha in lowlands and 50 ha in hilly areas), more successful.

Secondly, the destruction and abandonment of the irrigation systems has deprived the agriculture of one of the main yield factors, i.e. water. Consequently, in the most favorable agricultural areas, high intensity crops, such as maize, soybeans, sugar beet and potato, were abandoned or minimized, in the most favorable cropping areas.

On more than 2/3 of the agricultural areas, the extensive subsistence agriculture is practiced. It is true that, in parallel, a high performance modern agriculture is developed, with a small number of breeds that more resistant to drought (cereals, sunflower, rapeseed), in large units – tens of thousands ha -, some of them competing with the largest estates from the early twentieth century. Unlike the historic estates, the new great estates do not use the peasants' work and draft animals, but high productivity equipment, triggered by engines of several hundred horsepower. The proliferation phenomenon of the great super-mechanized exploitations is not strange to the persistence of millions of subsistence farms or to the rural exodus, including emigration. Thirdly, the fertilizer factor, with a yield intake which is maybe more important than water, as it is applicable throughout the entire cultivated area, has been used in amounts up to three times lower than in the socialist agriculture (41.4 kg/ha compared to 127.8 kg/ha in the first period).

3.4. Comparative performances. Between the two periods, i.e. 1986-1989 and 2006-2009, and, respectively, between the two agriculture types, there are differences in performance, as a result of the allocated resources and of their management mode.

Table 4. The average yields at the main crops during 1986-1989, compared to 2006-2009

Crop	U/M	1986-1989	2006-2009	Difference±	
				Kg/ha	%
The yield in cereals	thousand t	18569,7	13814,4	-4751,3	74,4
Wheat	kg/ha	3059	2530	-529	82,7
Maize	„	2941	2929	-12	99,6
Sunflower	„	1618	1266	-352	78,2
Soybean	„	886	1593	+707	179,8
Sugar beet	„	21572	31967	+10395	148,2
Potato	„	12982	14365	+1383	110,7

Source: Statistical Yearbook of Romania, 1990 and 2010 (6)

compared to 1,446 kg/ha); the maize yield increased from 1,769 kg/ha to 2,941 kg/ha (66.2%); and the sunflower yield increased from 1,114 kg/ha to 1,618 kg/ha (45.2%); the sugar beet yield augmented from 14,891 kg/ha to 21,572 kg/ha; and the potato yield increased from 8,587 kg/ha to 12,982 kg/ha (51.2%).

An evaluation of the performance of the two types of agriculture according to the most important quality indicator – i.e. the average yield per unit area – is shown in Table 4. The yield parameters are superior in the first period, compared to the one from the socialist agriculture, but well below the level appropriate to the resources assigned.

Indeed, compared to 1961-1965, the average wheat yield per ha doubled (3,059 kg/ha

The yields achieved during 1986-1989, although significantly higher compared to 1961-1965, are considered very inadequate compared to the resources allocated. During the reference period (i.e. 1986-1989), at least 20% of the area sown with cereals were grown in areas equipped for irrigation and the most water demanding breeds (soybean, sugar beet, potato) were cultivated only in areas equipped for irrigation. The chemical fertilizers were applied during the period 1986-1989 in the amount 127.8 kg/ha, in comparison with about 35 kg/ha during 1961-1965.

Regarding the comparison with the results from the 2nd period, i.e. 2006-2009, the latter are a logical consequence of extensive agriculture, with a minimum allocation of inputs. The yield level, compared to 1996-1998, is 82.7% in wheat, 99.6% in maize, 78.2% in sunflower. However, it is by 79.8% higher in soybeans, by 48.2% in sugar beet and by 10.7% in potatoes. A more rational use of inputs for extensive agriculture can explain the phenomenon.

The resource consumption per tone of product is also in favor of the extensive agriculture. For example, during 1986-1989, in the intensive agricultural system, a tone of cereals was obtained with 223 m³ of water and 65.4 kg of fertilizer, while in 2006-2009, in extensive agriculture, a tone of cereals was obtained with only 32,3 m³ of irrigation water and 28.5 kg of fertilizers.

CONCLUSION

1. The performances of the Romanian agriculture in the two compared periods (i.e. 1986-1989 and 2006-2009) accurately reflect the organization, structure and volume of the resources allocated and the administration and management of these resources.

2. The first period represents the end of a long process of agricultural modernization, when it had been invested heavily in mechanization, extensive land reclamation works, technological enhancement, performing biologic material, chemical fertilizers and pesticides, services.

3. At the same time, in some areas, such as in hydro-technical equipments, an increasing disproportion existed between the resources dedicated to the equipping of larger areas and those dedicated to rational exploitation.

4. Despite the progress registered in the endowment with mechanized equipment and in the supply with fertilizers, Romania remained far behind the Western European countries with developed agriculture. This was also due to the massive export, both of equipment and fertilizers.

5. The poor reliability of the equipment, especially of the harvesting one, the lack of spare parts, of electricity and fuels completed the list of the causes that triggered a low yield level per ha.

6. The 2nd period, i.e. 2006-2009, is the natural consequence of the disorganization from the first years after 1989. Both the politicians and the experts in the field believe that the abolition of the large agricultural holdings and the way in which the land was returned to its former owners represented strategic errors influenced by new political class in power.

7. In parallel, a type of high-performance agriculture is undergoing, represented by the immense agricultural holdings of tens of thousands ha, next to the still agonizing over three million subsistence farms with rudimentary technology and related results. In the future, the performant agriculture will proliferate, and the subsistence agriculture will disappear and, consequently, the peasant will be forced to leave and the villages will become desert, faster than the environment itself.

BIBLIOGRAPHY

1. **Ceaușescu N.**, 1981: *Cuvântare la Ședința de lucru pe probleme de agricultură*. Brașov, 9 ianuarie.
2. **Oțiman P.I.**, 1994: *Agricultura României la cumpăna dintre mileniul II și III*. Editura Helicon, Timișoara.
3. **Lup A.**, 1997: *Irigațiile în agricultura României*. Editura Ex Ponto, Constanța.
4. **Lup A.**, 2007: *Introducere în economia și politica rural-agrară*. Editura Ex Ponto, Constanța.
5. **Lup A., Liliana Miron**, 2015: *Evoluția producțiilor medii la hectar în perioada economiei planificate*. Sesiunea științifică de comunicări AOȘR, 26 martie, București.
6. **x x x**: Anuarele statistice ale României 1990 și 2010.
7. **x x x**: Dări de seamă AGR 1 IF ale DGEIFCA, București.

8. x x x: Programul național pentru asigurarea unor producții agricole sigure și stabile ... realizarea irigațiilor pe circa 55-60% din suprafața arabilă, 1983.
9. x x x: Raportul Comisiei Guvernamentale.