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ANALYSIS REGARDING THE FLEET AND THE FARM EQUIPMENT IN ROMANIA COMPARED TO THE EUROPEAN UNION

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Abstract: *Taking under consideration the fact that the main factor of increasing work productivity, and increasing agricultural production is mechanization, in the present work, I want to analyze the evolution of the farm equipment fleet in Romania and the E.U. during 2010-2016, highlighting the upgrading trend of this sector compared to the demands from the Romanian farmers who buy these equipments from abroad. There are discussions regarding the decreasing of the number of workers in the agricultural sector due to the modernization and the invasion of the market with new models of tractors and equipments that ease the farmer's work by reducing the work hours by half for the same surface compared to the European average.*

Key words: *farm equipments, agricultural flee, share, arable*

JEL Classification: Q16

INTRODUCTION

Romania is ranked 6th in the top largest agricultural surfaces used in the European Union countries and it's among the first 10 global exporters of corn and wheat. According to the statistics from the National Institute of Statistics in Romania there are 3,9 million agricultural exploitations which represents a third of total agricultural exploitations on an European level.

Despite all these achievements, Romania is not mechanized enough, an important cause being the lack of funds, of irrigation systems, the fragmentation of the agrarian property as well as the lack of professional education of the people who work in this sector.

The modern agriculture has developed due to the mechanization, the optimization of production, the soil fertilization and the use of fito-technical protection by improving the formulas against the pests that have gained a certain resistance in time to used substances.

The main factor of increasing work productivity and increasing the agricultural production is mechanization. For all the technological phases of every crop, the mechanical workmanships (preparing the soil, planting/seeding, pest control and harvesting) have improved in time, the agricultural machines and equipments eased the agriculturalists work reducing the labour time by using one farm equipment for a larger area, for the same amount of time.

The farm equipment national market bore changes once Romania has adhered to the E.U.

The farmers had certain advantages, by disposing of funds and grants from the European/national programs they started buying machines and farm equipments from the foreign market, from Italy, Germany, USA, due to the lack of local producers.

MATERIALS AND METHODS

The data used to draft the present study have been supplied from the professional sites: INSSE (National Institute of Statistics), TRADE MAP, EUROSTAT and MADR (Ministry of Agriculture and Rural Development) as we are analyzing the situation of the farm machines and equipment fleet; the import and export of farm equipment; the enterprises who produce farm equipments as well as the manpower in the agricultural sector.

The research methods that are being used in this study are the quantitative, comparative analysis and the explanation of the statistical data along with own calculation, thus achieving a concise characterisation of this sector.

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RESULTS AND DISCUSSIONS

Approximately half of the surface used in agriculture in the E.U. (178,5 million ha) is owed by France (15,9%), Spain (13,4%) and Germany (9,6%), Romania being ranked 6th after Poland with a 7,6% share. Out of the total agricultural area, the E.U. owns a share of 59,8%, while the permanent crops surface spreads on 11,7 million ha.

Romania's territorial fond consists in 23839.071 thousand ha. The agricultural areas surface being 14622,58 thousands hectares in 2015, owning a share of 61% of total surface.

During the analyzed period 2010-2015 there have been no significant changes, the arable surfaces remaining relatively constant.

Table 1. The surface of the territorial fund by usage (thousand hectares)

Territorial fund usage	Years					
	2010	2011	2012	2013	2014	2015
Agrarian from which :	14634.44	14621.43	14615.06	14611.88	14630.07	14622.58**
Arable	9404.	9379.49	9392.26	9389.25	9395.30	9392.06**
Pasture	3288.73	3279.25	3270.61	3273.96	3272.16	3276.94**
Hayfields	1529.56	1554.70	1544.96	1541.85	1556.25	1545.46**
Vineyards and winegrowing seminary	213.57	211.35	210.48	210.27	209.42	211.01**
Orchards and fruit-growing nursery gardens	198.57	196.66	196.75	196.54	196.94	197.094**

Source: INSSE

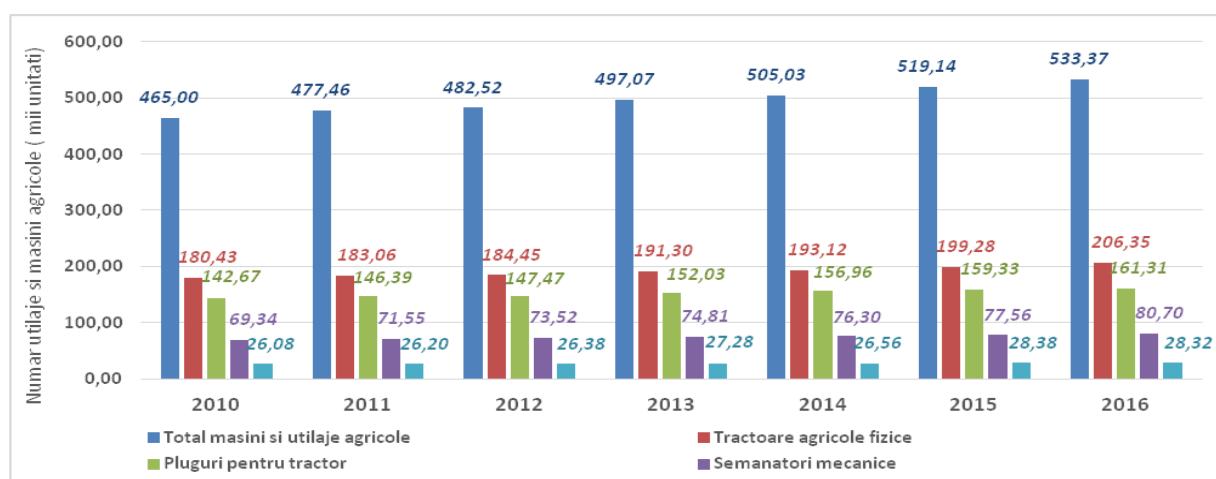
**assessments

The national fleet of tractors and farm equipments during 2010-2016 (diagram nr.1) has registered an increase of 14.7% in 2016 compared to 2010, representing 55,97 thousand ha.

The agricultural tractors had an ascending trend, with significant increasing after 2010, when Romania owned 180.43 thousand tractors and in 2016 the number of tractors has increased by 14,7% compared to the reference year 2010.

The number of tractor plows had the same rate as the tractors, so that if in 2010 there were 142.47 thousands, in 2016 their number has increased by 13,06% compared to 2010.

Diagram 1. Evolution of the fleet of tractors and main farm equipments in agriculture (thousand units)



Source: INSSE, MADR

According to the last data from Eurostat (table 2), in 2013 Poland owned a percent of 17,5% of total existing tractors in the E.U. and 75,14% of the harvesters. Compared to the first ranked European countries when it comes to the number of owned machines and farm equipments,

Romania registered smaller rates in farm equipment units, their share in Europe being 2,4% of total tractors, 9,8% of total seeders and 1,5% of total harvesters.

Table 2. Number of machines and farm equipments in U.E. in 2013 (thousand units)

Specification	Tractors	Seeders	Harvesters
E.U. (28)	7928.94	2074.11	1780.48
Poland	1388.31	114.2	1337.87
France	1065.12	52.68	59.18
Germany	778.58	44.5	62.75
Italy	1164.5	548.64	32.91
Romania	190.16	203.46	26.41

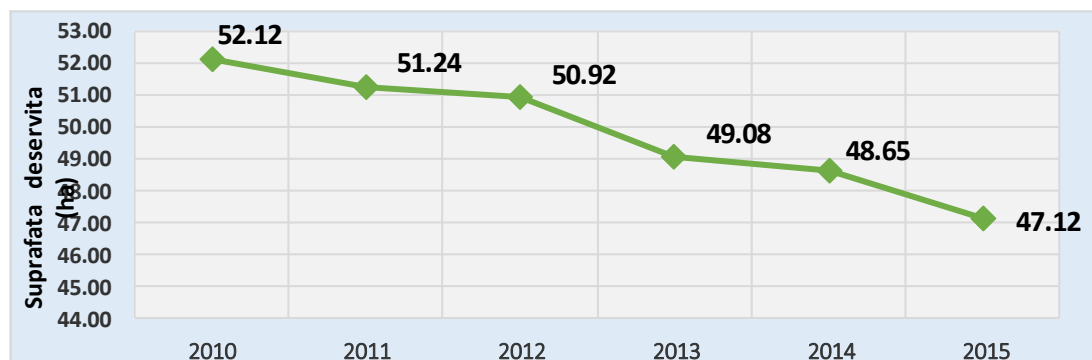
Source: Eurostat

According to MADR over two thirds of farm equipments have an outdated lifetime, so, a Romanian farmer uses a tractor for an average of 100 thousand hours compared to the European average of 3000-4000 hours.

According to diagram 2 where we can see the evolution of the surface operated by a tractor, there is a decreasing trend so that in 2010 a tractor cultivated a surface of 52.12 ha. Along with the mincing of the arable surface and the increase by 7% of the number of tractors, the surface operated by a tractor has reached 48.65 ha, 6,65 % less, although the European average is 1 tractor for every 13 cultivated hectares.

The tractors from Romania are overstrained compared to the equipments from other European countries. In 2015, the theoretical average loading per tractor has been of 47,12 arable hectare / tractor, meaning approximate three times more than France and approximate nine times more than Austria. Here, we can realize that there is a need of sustained and performant investments in order to become more efficient from this point of view. Hence the necessity to replace the old machines and farm equipments which means high costs of maintenance and usage for some models that have the advantage of increasing the production performance and a bigger coverage of the cultivated surface.

Diagram 2. Evolution of the surface operated by a tractor (ha)



Source: Operated data from INSSE

According to statistical data from The National Institute of Statistics the country's total working population had an ascending trend, reaching the maximum number of workers in the analyzed period in 2012 of 8,6 millions, followed by 2014 and 2015 when their number has decreased compared to 2012 by 1.61%, respectively 2,67%.

Approximate 2,4 million Romanians were working in agriculture in 2010, respective 29.15% of Romania's working population in 2007, 4,1% more than in 2015 when it's recorded the smallest share of agriculture workers out of active population.

The main influence which led to the decrease of manpower in agriculture has been given by the continuous mechanization of the agricultural sector, the population migration, the massing of the exploitable agrarian surfaces, getting to the point where a small number of people are administering larger surfaces.

Table 2. The working population in the agricultural domain, forestry and fishing (thousand persons)

Specification \ Years	2010	2011	2012	2013	2014	2015
Total working population	8371.3	8365.5	8569.6	8530.6	8431.7	8340.6
Population working in the agricultural sector, forestry and fishing	2439.9	2442	2510	2380.1	2304.1	2003.1
The share of workers from agricultural sector (%)	29.15	29.19	29.29	27.90	27.33	24.02

Source: INSSE, own calculations

The country ranked first in the in the classification of the population working in agriculture from Europe is Poland who registered in 2015 - 1937,1 thousand persons working in the agriculture sector, followed by Romania with a percent of 13,56% of total working population , Italy and Spain. The population working in agriculture in the E.U. has followed a decreasing trend so that in 2015, their number decreased by 7,87% compared to the first analyzed year.

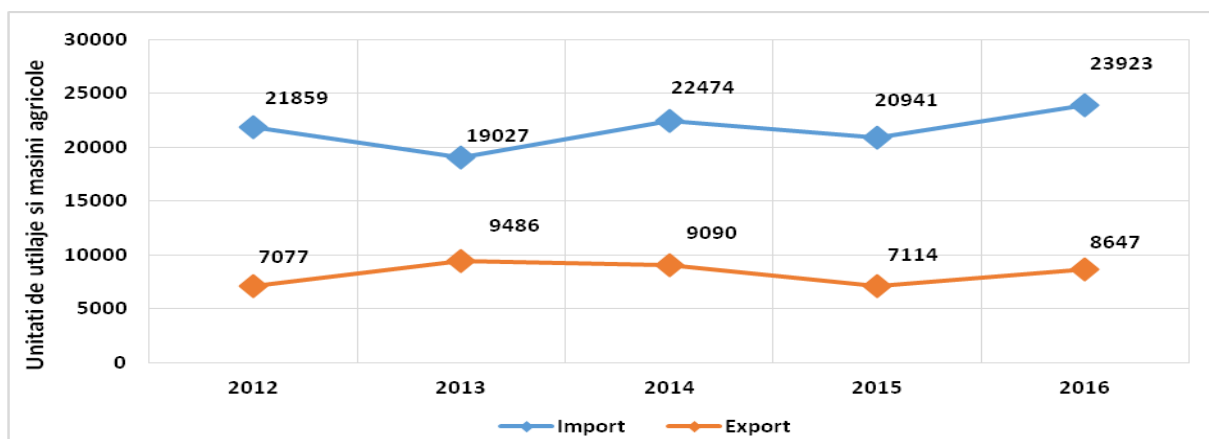
Table 3. Population working in the agricultural sector in E.U. (thousand persons)

Specification \ Years	2010	2013	2014	2015
E.U.-28	10 344.8	9 918.2	9 739.3	9 530.4
Romania	1 639.0	1564.0	1433	1293
Poland	1914.8	1937.1	1937.1	1937.1
Italy	1164	1077.5	1094.9	1119.8
Spain	963.8	841.7	824.3	818.7

Source: Eurostat

If in 1990 there were 27 inland enterprises that produced machines and farm equipment, in the last 25 years the number has decreased due to the fragmentation of the arable areas and the farmer's incapability to cultivate and administer these areas due to the lack of funding, that leading to the decreasing of investments in farm equipments so that in 2015, the number of inland farm tractors and equipments has been reduced to 8 (MAT-Craiova, RURIS Craiova, Maschio Gaspardo-Arad, IRUM- Reghin, Mecanica Ceahlau- Piatra Neamt, HOYO-Raşnov, TEHNOSTAR-Campineanca).

Diagram 3. Import and export of tractors and farm equipments (units)



Source: TRADE MAP

During the analyzed period 2012-2016, the number of imports and exports of tractors and farm equipment units has been increasing.

The import of farm equipment has increased in 2016 by 8.62 % compared to 2012. A part in this situation comes from the decreasing of the number of enterprises in Romania, which made farmers buy from abroad.

From a value point of view, Romania imported tractors of approximate 645 million euro in 2016, 25 % more than in 2015. The import of farm equipments, horticultural, of preparing and cultivating the soil registered almost 130 million Euro in 2016, increasing by 15 % compared to last year.

The value of the export of tractors in 2016 has been 52 million Euro, dropping 14 % comparative to 2015, and the export value of the farm equipment was in 2016 of 30 million Euro, 14 % more than the last year.

CONCLUSIONS

The agricultural sector in Romania has a significant growing potential but it's insufficiently exploited. The restructuring of agriculture and the rejuvenation of the rural economy represent two important keys in the future economic development of the country.

The first opportunity for the tractors and farm equipment market in Romania is the fact that the farm equipments market needs to be upgraded because the mechanization technology available in our country is very low and insufficient.

In the last years, the farm equipments market in Romania has registered an increase of investments in this sector, the influencing factors being the European funds, the special credits for agriculture or the use of second-hand equipments.

The main challenges of the farm equipments market in Romania are: the internal structure of the farms (reduced dimension and large fragmentation), the large number of subsistence farms, the insufficient drawing of European funds, the deficient infrastructure and farmer's restricted access to information.

The investments for updating the agricultural fleet or for purchasing farm equipment required in a farm can be made by accessing European funds PNDR 2014-2020 through the following measures:

- Sub measure 4.1 „Investments in agricultural activity”
- Sub measure 4.2 „Support for investments in manufacturing/merchandising and/or developing agricultural products”
- Sub measure 4.3 „Investments for developing, updating or adapting the agrarian and forestry infrastructure – The AGRICOLĂ access infrastructure”
- Sub measure 4.3 „Investments for developing, updating or adapting the agrarian and forestry infrastructure - The IRIGAȚII component”
- Sub measure 6.1 „Support for the settlement of young farmers”
- Sub measure 6.3 „Support for the development of small farms”
- Sub measure 7.2 „Investments in creating and updating the main infrastructure on a small scale”
- Sub measure 7.6 „Investments associated with protecting the cultural heritage”

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