

## **ANALYSIS ON MODERNIZING THE FLEET OF TRACTORS AND AGRICULTURAL MACHINERY IN ROMANIA**

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### **Abstract**

*Romania is classified among the top six countries in Europe with an agricultural area of 14,635,500 hectares (an area of 0.65 ha specific per capita), the 5th place as arable land (0.45 ha per capita capita). It also has an area of 4,900,000 ha of pastures and hayfields, the 7th in Europe and an area of 6,800,000 ha of forests.*

*During the communist period, until 1989, Romania had the capacity to produce in the country, they were making machinery agricultural works, so that in Brasov and Bucharest U650 produced tractor drill was done. Today all machines are imported from countries like USA (John Deere), Germany (Fendt, Horsch, Claas), Italy (Maschio Gaspardo), Holland (New Holland). It is expected that in the coming period will make its appearance on the Romanian market of Chinese tractors that are more affordable and can be repaired easily.*

**Keywords:** *modernization, park tractors, agricultural machinery*

**JEL classification:** *Q10, Q12, Q13*

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### **1. Introduction**

In Romania are cultivated large tracts of wheat, corn, sunflower and rapeseed, whose productions are used mainly obtained both in human food and animal feed from.

Romania exports to European Union countries obtained significant amounts of agricultural production, which is represented by returning raw materials as finished products back to the country. Export of finished goods

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could contribute to a significant increase in gross domestic product, which has a much higher price than the marketing materials.

It should be noted that agriculture, together with forestry and fishing contributed 5.6% to gross domestic product (GDP) of Romania in 2013, unlike 2012 when agriculture contributed only 4.9% GDP of the country, so it is noted that the agricultural sector's contribution increased significantly in 2013.

With arable means, Romania fails to reach production performance of Western European countries, because faced with an excessive ownership and lack of technical equipment performance which leads to practicing rudimentary agriculture so that some exploitations Agriculture still have patrimonial agriculture communist symbol, old tractor U650.

After Romania joined the European Union since 2007, European funds by farmers was an evolution of the agricultural park owned Romanian farms, where there was an increase in farm productivity.

## **2. Material and methods**

This paper aims to analyze the development of fruit growing sector in Romania by analyzing acreage, yields obtained, the production and consumption of fruit during the period 1990-2013.

The data allowed us to perform this analysis were collected by means of public institutions, including the National Institute of Statistics and Ministry of Agriculture and Rural Development.

The study was to research, analyze and interpret statistical data. These, together with extracts from the theoretical literature allowed the identification of mutations in agriculture occurred in the process of collectivization and privatization.

## **3. Results and discussions**

Romania has some of the most fertile and rich soil, benefiting from a temperate continental climate that favors the cultivation of a wide variety of plants, from the great culture of wheat, corn, sunflowers, at culture as something more exotic: goji, almonds, kiwi, aronia, wet climate to specific crops, like asparagus and rhubarb.

Romania's relief is distributed egocentric, so prone mountain area, with its pastures and alpine meadows, hills and plateau zone where they meet occupied large areas with trees and potato crops, and in the lowlands, where

they encountered Chernozems predominates great culture and cultures in protected areas established (greenhouses and solariums).

In the study under review Romania's land fund and technical equipment of farms.

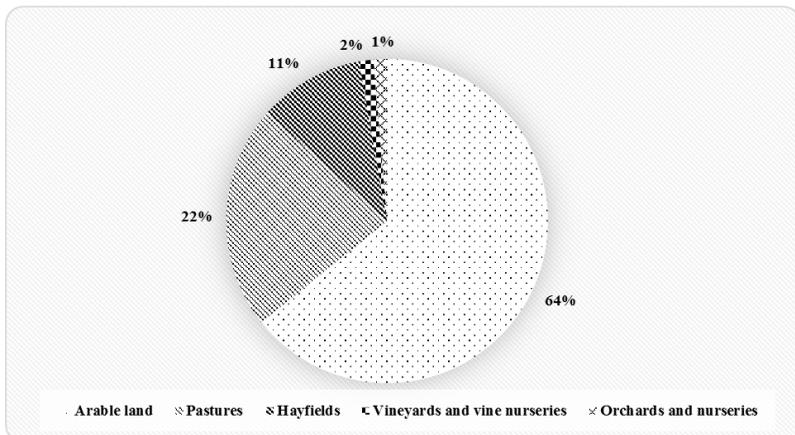
**Table 1: Land area by use (thousands ha)**

How to use the land	Years								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Agricultural area</b>	14741	14731	14709	14702	14685	14634	14621	14615	14612
<b>Arable land</b>	9420	9435	9423	9415	9423	9404	9379	9392	9389
<b>Pastures</b>	3364	3334	3330	3333	3314	3289	3279	3271	3274
<b>Hayfields</b>	1515	1525	1531	1532	1528	1530	1555	1545	1542
<b>Vineyards and vine nurseries</b>	224	224	218	214	215	214	211	210	210
<b>Orchards and nurseries</b>	218	213	207	207	205	199	197	197	197

Source: Data processing by the National Institute of statistic, Tempo-Online - series time;

Analysing the land by use in the period between 2005 - 2013, it notes that farming land not show significant changes, which is relatively constant.

**Figure 1: The agricultural area by use in 2013**



Source: Data processing by the National Institute of statistic, Tempo-Online - series time;

The agricultural area of the country, by use is divided into: arable land, pastures, meadows, vineyards and nurseries, vineyards and orchards and nurseries.

Analyzing data from 2013 reveals that 64.25% of the total agricultural land in Romania is occupied by arable land, while pastures occupy 22.40% of the total. At the opposite end area occupied by vines and vine nurseries occupying only 1.43% and fruit orchards and and nurseries 1.34%.

Lack of financial resources, technical equipment makes Romanian farms are underdeveloped. However, after Romania joined the European Union, our country has benefited from EU funds to be able to renew the equipment.

**Table 2: Park of tractors and agricultural machinery (number)**

Categories of tractors and agricultural machinery	Years								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
Tractors physical	173043	174563	174003	174790	176841	180433	183064	184446	191301
Tractor plows	137018	138594	139782	141512	142519	142671	146386	147471	152031
Mechanical cultivators	27143	26317	27262	27522	27675	27795	28926	29173	29565
Mechanical drills	66732	67761	67674	68308	68916	69337	71554	73519	74805

Source: Data processing by the National Institute of statistic, Tempo-Online - series time.

In the agricultural mechanization, agricultural tractors number had an upward trend, with significant increases after 2007, when Romania held a number of 174,003 tractors, and in 2013, the number of tractors increased by 9.04% compared to 2007.

Number plows for tractors grew at the same pace as the number of agricultural tractors, so that in 2007 there were 139 782 plows, while in 2013 the number rose tractor plows to 8.05%, compared to 2007.

Mechanical cultivators have had an upward trend, so in 2007, in Romania were 27 262 cultivators and 2013, the number of machines increased by 7.79% compared to 2007.

Mechanical seed drills are part of the same trend as other equipment, Otherwise that in 2007 there were 67 674 seeders and in 2013 the number of these machines has increased by 9.53% compared to 2007.

Analyzing the data, the most significant increase was recorded among planters, followed closely by farm tractors. In contrast most timid increases were recorded by mechanical cultivators.

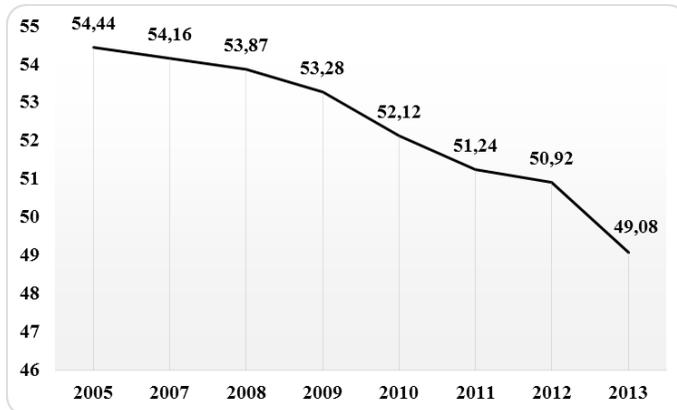
**Table 3: The arable area served by a tractor**

Specification	Years						
	2005	2007	2008	2010	2011	2012	2013
Tractors physical (number)	173043	174003	174790	180433	183064	184446	191301
Arable land (ha)	9420205	9423255	9415135	9404008	9379489	9392262	9389254
The area served by a tractor (ha)	54,44	54,16	53,87	52,12	51,24	50,92	49,08

Source: Data processing by the National Institute of statistic, Tempo-Online - series time;

In 2007, an agricultural tractor serving an area of 54.16 hectares, while in 2013, the area it serves a tractor is 49.08 hectares.

**Figure 2: Evolution worked surface of a tractor in Romania (ha)**



Source: Data processing by the National Institute of statistic, Tempo-Online - series time;

Analyzing served by a tractor arable land is found that it has rides on a downward trend, implying that on the one hand, continuous growth of agricultural tractors on the other hand remains constant arable surface of the country.

#### **4. Conclusions**

Romania has a significant agricultural area of 9,389,254 hectares, in the year 2013 so that sufficient use of performance equipment is imperative.

There is a decrease in the area serviced by a tractor so that in 2005-2013 the area served by a tractor fell by 9.84%. This proves that Romanian farmers have turned to purchasing a greater number of machines, underpinned

by strong performance of these agricultural equipment, both in terms of consumption and efficiency.

With the new National Programme for Rural Development 2014-2020, is projected to decrease surface serviced by a tractor, because most farmers will head to European funds for the purchase of agricultural machinery more efficient and effective.

Also, Romanian farmers are bolstered by reforms of the Ministry of Agriculture and Rural Development, gave a subsidy on diesel consumption for agricultural activities. The amount paid by the subsidy, the year 2014 was approximately 1.4 lei / litter, which is designed to encourage use at maximum capacity farmers owned machinery.

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