

OILSEED RAPE CROP IN ROMANIA UNDER CLIMATIC CONDITIONS OVER THE LAST 5 YEARS: CULTIVATED AREAS AND YIELDS

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Abstract

During last years the oilseed rape has expanded on crop due to its high oleic content and to the increasing of numerous technical applications based on rapeseed oil such as: use of rapeseed oil as an alternative to fossil fuels, use of rapeseed oil for pharmaceutical industry, use of rapeseed oil in chemical industry for obtaining industrial solvents etc. The extension of rape crop was promoted by the European Union's restriction to cultivate genetic modified soybean and also by the penetration of varieties, particularly the new hybrids that allow rape cultivation within varied areas in terms of climatic conditions. In Romania, over the last 20 years the cultivated area of oilseed rape has increased from 14 800 ha in 1990 to 381.000 ha in 2011, the rape crop becoming one of the most important field crops in the country.

Key words: areas, biofuel, oilseed rape, yield.

INTRODUCTION

In recent decades, the oil crops sector has been one of the most vibrant in world agriculture. Over the past 20 years the sector grew at 4.3 percent per annum compared with an average of 2.3 percent per annum for all agriculture [3]. The major driving force has been the growth of food consumption in developing countries, mostly in the form of vegetable oil but also direct consumption of soybeans, groundnuts, etc., as well as in the form of derived products other than oil [3].

Another major driving force has been the non-food industrial use of vegetable oils, with China and the EU being major contributors to this growth [3].

In terms of actual oil produced and used, the world currently uses some 40 percent of supply for non-food applications. Two decades ago the share was less than half of this. The main industrial products involved include paints, detergents, lubricants, oleo chemicals in general and, increasingly, biodiesel. These are commodities for which world demand can be expected to grow much faster than the demand for food [3].

In terms of food, oilseed rape has a content between 61 and 72% in two of the valuable substances: fat (42-48%) and protein (19-24%)

which had led over the last years to an increased attention for this crop, attention carefully materialized also in Romania by expanding cultivated area.

In Romania an essential role for the extension of rape crop area had and still has the non-food use of rapeseed oil in obtaining biodiesel.

The increasing demand of biofuels due to the enforcement of EU Directive 2003/30/CE which state that by the year 2020, biofuels should have a percentage of 20% from total conventional fuels used in road transport sector, makes this ascending driving force of oilseed rape crop cultivated area to continue in the near future.

Besides subsidies for energy crops, in farmer's option for rape crop it can be mentioned the following arguments which illustrates importance of oilseed crop:

- the early harvest makes rape to be an excellent plant for winter cereals;
- meeting almost all requirements for diesel engines, the rapeseed oil is used for biodiesel production [1];
- abundant in proteins, minerals and carbohydrates rapeseed cakes have a good fodder value being an excellent feed for swine and cattle;
- by its incorporation in the soil in a certain growth stage the oilseed rape help to limit

the drains mainly of nitrogen and other nutrients, a reason for rape to be an important source of green manure [1];

- use of canola straws in building materials.

MATERIAL AND METHOD

The present analysis was conducted during 2012 using as sources the specialized literature from Romania and abroad. Also were consulted the results of reports achieved by competent national institution.

The main indicators used for this analysis are represented by cultivated area, yield and production. Data used for the present analysis are official data extracted from the available statistical yearbooks of National Institute for Statistics and also statistics released by the Ministry of Agriculture and Rural Development. Data have been processed using the common statistical method such as fixed basis index as presented in the bellow formula, where X_n is the variable value in the year n and X_1 is the variable value in the year 1 considered comparison basis.

$$FBI = (X_n / X_1) \times 100$$

RESULTS AND DISCUSSIONS

The extension of rape crop was promoted by the European Union's restriction to cultivate genetic modified soybean and also by the penetration of varieties, particularly the new hybrids that allow rape cultivation within varied areas in terms of climatic conditions.

Together with Romania's European Union adhesion in 2007, our country has aligned to EU legislation prohibiting the OMG soy crop which forced the farmers to abandon the cultivation of this crop and to turn their attention to other crops.

By comparing cultivated areas of canola and soybean from the years of EU pre adhesion and adhesion, it can be concluded that most of Romanian farmers had decided to replace soybean crop with rapeseed crop. Therefore in 2007 year the cultivated area with oilseed rape was 364.9 thousands ha, being approximately three times higher than in 2006, while cultivated areas with soybean degreased from

177.5 thousand ha in 2006 to 133.2 thousand ha in 2007 (Table 1).

Table 1. Rapeseed and soybean cultivated areas in 2006 and 2007

| Area cultivated with : | UM | 2006 | 2007 | 2007/2006 % |
|------------------------|-------------|-------|-------|-------------|
| Soybean | Thousand ha | 177.5 | 133.2 | 75.05 |
| Rapeseed | Thousand ha | 102.5 | 364.9 | 355.89 |

Source: 2006 – FAO 2012

2007 - N.I.S. Data -2011 Statistical Romanian Yearbook

In Romania, according to the official estimations, the surfaces which can be cultivated with oilseeds crops during one agriculture year and respecting crops rotations and using performing technologies are evaluated to 1.6 million ha, out of which 950 thousand ha with sunflower, 500 thousand ha with oilseed rape and 150 thousand ha with soybean [4].

During analyzed period 2007 – 2011 the oilseeds crops cultivated area had increased from 1340.4 thousand ha in 2007 to 1455 thousand ha in 2011.

Taking as reference 2007 year, in 2010 rapeseed crop had a spectacular increase being placed on second position within oilseeds structure with 537.3 thousand ha, meanwhile in 2011 rapeseed crop has maintained its second position even the increase exceeded only 1.4 times 2007 increase (Table 2).

Table 2. Structure of oilseeds crops cultivated area, 2007-2011

| | Area -thousand ha- | | | | | |
|------------------------------|--------------------|-------|--------|-------|-------|-------------|
| | 2007 | 2008 | 2009 | 2010 | 2011* | 2011/2007 % |
| Oilseed crops, out of which: | 1340.4 | 1246 | 1253.8 | 1410 | 1455 | 108.55 |
| Sunflower | 835.9 | 813.9 | 766.1 | 790.8 | 988 | 118.20 |
| Rapeseed | 364.9 | 365 | 419.9 | 537.3 | 381.6 | 104.58 |
| Soybean | 133.2 | 49.9 | 48.8 | 63.9 | 74 | 55.56 |

Source: 2007 - 2010 - N.I.S. Data -2011 Statistical Romanian Yearbook
2008 - N.I.S. Data -2008 Statistical Romanian Yearbook

* N.I.S. Data- press release no.70/30.03.2012

In 2011 the rapeseed cultivated area was 381.6 thousand ha which means a share of 26.23% from the Romania's oilseeds crops cultivated area by comparing with 2007 year when it has a share of 27.22% (Table 3).

Table 3. Share of rapeseed crop of Romania's oilseed crops cultivated area (%)

| | 2007 | 2008 | 2009 | 2010 | 2011* |
|-----------------------------|--------|-------|--------|-------|-------|
| Oilseed crops (thousand ha) | 1340.4 | 1246 | 1253.8 | 1410 | 1455 |
| Rapeseed (%) | 27.22 | 29.29 | 33.49 | 38.11 | 26.23 |

For Romania the most favorable areas for rapeseed crop cultivation includes Câmpia de Vest (Western Plain), Câmpia Dunării (Danube Plain), Dobrogea and the south of Moldavia [2]. The most important rapeseed crop cultivated areas in Romania are mainly in the south-east and southern region, areas where the rapeseed importance among oilseeds crops it is shown by the year to year increase of cultivated areas. In these regions the counties with the most important oilseed rape cultivated areas are Călărași, Ialomița, Teleorman in South region and Constanta, Brăila, Tulcea, Galați in South East region (Table 4).

Table 4. Distribution of oilseed rape cultivated areas by Development Regions (thousand ha)

| | 2007 | 2008 | 2009 | 2010 | 2010/2007 % |
|--------------------|-------|-------|-------|-------|-------------|
| Romania | 364.9 | 365 | 419.9 | 527.2 | 144 |
| Macro region 1 | 9.2 | 8.1 | 10.8 | 8.5 | 92 |
| North-West | 7.2 | 6.6 | 8.1 | 5.0 | 70 |
| Centre | 2 | 1.6 | 2.7 | 3.4 | 172 |
| Macro region 2 | 157.4 | 191.8 | 210.7 | 237.4 | 151 |
| North-East | 30.2 | 36.6 | 49.8 | 25.9 | 86 |
| South-East | 127.2 | 155.2 | 160.8 | 211.5 | 166 |
| Macro region 3 | 163.3 | 122.7 | 150.8 | 201.4 | 123 |
| South - Muntenia | 159 | 119.2 | 147.9 | 195.6 | 123 |
| Bucuresti - Ilfov | 4.3 | 3.4 | 3 | 5.8 | 134 |
| Macro region 4 | 35 | 42.4 | 47.6 | 79.9 | 228 |
| South-West Oltenia | 27.3 | 32.9 | 35.6 | 62.9 | 231 |
| West | 7.7 | 9.5 | 12 | 17.0 | 221 |

Source: EUROSTAT - v2.9.10-20120426-852PROD_EUROBASE
No statistical data for 2011

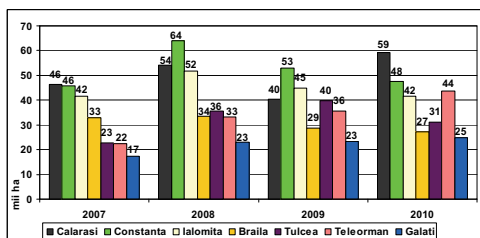


Fig. 1. The evolution of rapeseed cultivated areas during 2007-2010 in the main 7 counties in Romania

By analyzing the rapeseed crop cultivated areas in the above mentioned counties, we can observe that the most important growing surface is in Teleorman county, where the rapeseed cultivated area increased in 2010 by 94% compared with 2007 when rapeseed surface occupied 22,424 ha. We can also observe that on the top of largest rapeseed cultivated areas counties, the first position oscillates between Călărași and Constanța counties.

During 2007-2011 period the oilseed rape production has registered a continuous increasing trend, on the one hand due to the increasing of cultivated areas and on the other hand due to the yield increasing per ha. By comparing with 2007 year when total oilseed rape production was 361.5 thousand tons, in 2011 year this production increased 2 times reaching 744.8 thousand tons. (Table 5)

Table 5. Dynamics of total and average production for rapeseed crop during 2007 - 2011

| | 2007 | 2008 | 2009 | 2010 | 2011* | 2011/2007 % |
|----------------------------------|-------|-------|-------|-------|-------|-------------|
| Average production (kg/ha) | 991 | 1,844 | 1,357 | 1,755 | 1,951 | 197 |
| Total production (thousand tons) | 361.5 | 673 | 569.6 | 943 | 744.8 | 206.03 |

Source: 2007 - 2011 - MARD data (<http://www.madr.ro>)
* N.I.S. data - press release no.70/30.03.2012

Regarding the yield per ha, in 2011 it can be observed an increase by 97% compared with 2007 when the yield was 991 kg. By comparing 2011 year with 2010, although the yield increased by 11% the oilseed rape production has decreased by 22.4% due to the reduction of cultivated area.

CONCLUSIONS

During last years the oilseed rape has expanded on crop due to its high oleic content and to the increasing of numerous technical applications based on rapeseed oil such as: use of rapeseed oil as an alternative to fossil fuels, use of rapeseed oil for pharmaceutical industry, use of rapeseed oil in chemical industry for obtaining industrial solvents etc.

In Romania, during 2007 – 2011 period, with a share of 26.23%, the rapeseed crop had reached the second position in the oilseed crops structure, which highlights the growing importance of this crop among oilseeds crops. The largest rapeseed cultivated areas are in following counties: Călărași, Constanța, Ialomița, Tulcea, Brăila, Teleorman and Galați. During 2007 – 2011 period the oilseed rape production has registered a continuous increasing trend, on the one hand due to the increasing of rapeseed cultivated areas and on the other hand due to the yield increasing.

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