

## RESEARCH ON ROMANIA'S OIL SEEDS BIODIESEL PRODUCTION POTENTIAL

Agatha POPESCU<sup>1</sup>

**Abstract.** Romania has a high potential for producing biodiesel from rape, sunflower and soybean seeds. In the period 2006-2010, Romania cultivated 1,296 thousand ha in average, per year, with these oil crops and produced 6,748.5 thousand tons solid biomass, of which 44 % from sunflower, 20 % from rape and 36 % from soybean. Energy production estimate/year, based on seeds biomass, was 110,518.58 GJ, of which 54.2 % from sunflower, 20.5 % from rape and 25.2 % from soy bean. Annual biodiesel production was estimated at 277,631.5 thousand liters, of which 63.5 % from rape biomass, 33.5 % from sunflower biomass and 2.9 % from soybean biomass. In conclusion, Romania is able to reach its target of 20 % biofuel blend with classic fuels by the year 2020 according to the EU provisions.

**Key words:** biodiesel, biomass, oil crops, Romania, energetic efficiency

### 1. Introduction

“Biofuels represent substitutes for petrol and diesel and promptly available on a large scale for ordinary vehicles”( EU Renewable Energy Directive 2009/28/EC). Their use had the advantage to emit less than 35-40 % green house gases than the fossil fuel, with a positive impact on environment sustainability and to diminish fuel import decreasing the degree of energy dependence of a country.

The main biofuels are bioethanol and biodiesel. Despite that biofuels have advantages, the big disadvantages are related to land and food diversion to fuel and in addition increased pollution of the air and soil (Pimentel *et al*, 2005). Biodiesel is poorer in Carbon than diesel (-8.98 %) and Hydrogen (-0.79%), but it contains 10 % Oxygen, stimulating the burning process in the engine ( Burnete *et al.*, 2011).

For this reason, biofuels are used in some proportions with the classic fuels without imposing a change of the engines. Sunflower biodiesel but also rape and soy bean seeds, in general oilseed crops could offer an alternative to fossil diesel (Madyira *et al*, 2012).

Because biofuel could be produced of cereals, oil crops and other resources, one of the main aspects which has to be taken into consideration is the cultivated area

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<sup>1</sup> Prof.Ph.D., University of Agricultural Sciences and Veterinary Medicine of Bucharest, Romania, (e\_mail: agatha\_popescu@yahoo.com)