

## Dynamics of World Oil Crops Market

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**Summary:** According to the harvested area, oil crops are the second most important crops after cereals. Soybean is the most important oil crop in terms of production and trade of oilseeds and meals, and second most important in terms of production and trade of vegetable oils after palm oil. Dynamics of prices of derived oil crop products in the international market is conditioned by the relationship between supply and demand in the overall market of oil crops. The substitution of animal fats with vegetable oils in human nutrition, the expansion of biodiesel industry and intensification of livestock production have led to increased demand for oil crops. The objective of this paper was to identify trends in production, consumption and trade of soybeans, rapeseed and sunflower and their derived products.

**Key words:** crops, demand, dynamics, markets, oil crops, oils, products, rapeseed, soybeans, sunflower

### Introduction

According to area harvested, oil crops are the second most important crop after cereals. In the last 25 years growing oil crops has gained in importance (Vollman & Rajcan, 2009). The main driving force on the demand side for oil crops are the growth of food demand in developing countries and increased use of vegetable oils for industrial purposes (FAO, 2003). The objective of this paper was to identify trends in production, consumption and trade of soybeans, rapeseed and sunflower as the most important crops in international trade.

### Material and Methods

Identification of trends in production, consumption and trade of oil crops was carried out in three sections. The first section analyzes the trends in production, consumption and trade of oilseeds in the world market. The second part analyzes the trends of production, consumption and trade of soybean, sunflower and rapeseed meal, while the third section analyzes trend in production, use and trade of oil from analyzed

oil crops. Statistical data used in this paper have been taken from the Food and Agricultural Organization (FAO) and the United States Department of Agriculture (USDA).

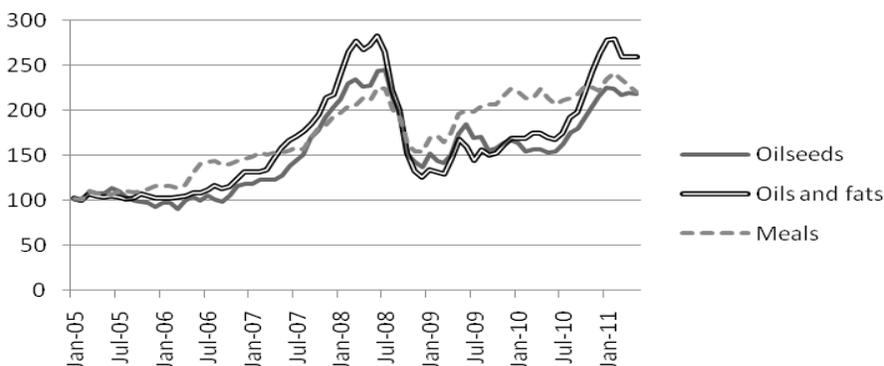
### Results and Discussion

In the last few decades oilseed sector was one of the most dynamic parts of the world's agriculture (FAO, 2003). According to FAO data, from 1999 to 2009 area harvested under oil crops increased at an annual rate of 2%, and the majority of area harvested were sown with soybeans. Graph 1 shows the price dynamics of oilseeds, meal and oil with base period 2002–2004. The price variability is most evident in the case of oil prices. On the other hand, meals had the lowest price variability. After a dramatic rise in prices during 2007, oil crops prices reached historical peaks in the first half of 2008. Fall in oil crops prices, which lasted only for six months, came into the second half of the 2008. At the beginning of 2010/11 market year (September/October) new price surge occurred and it lasted until February 2011. The new price surge was caused by many factors, including the

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**Monthly price indices of oilseeds, meals and oils and fats**



Source: (FAO, 2010b)

Graph 1. FAO monthly price indices of oilseeds, meal and oils and fats

Grafik 1. FAO mesečni indeksi cena uljarica, sačme i ulja

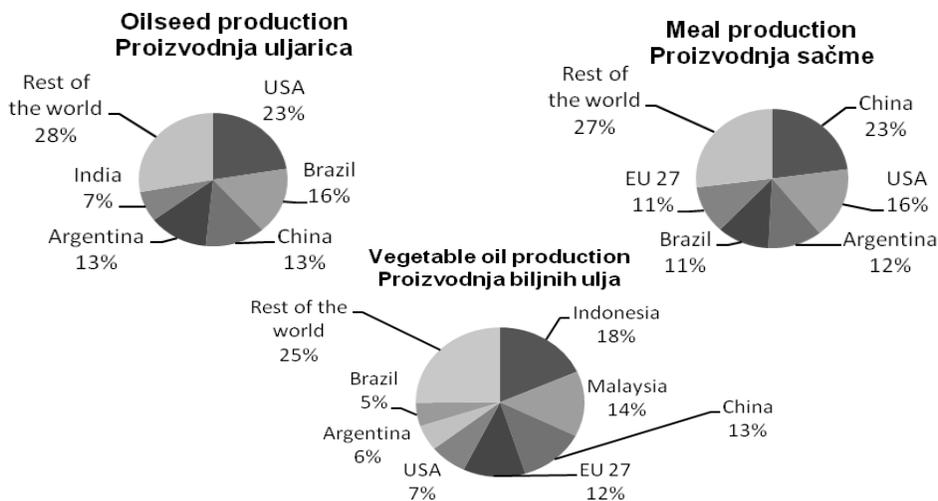
decline in production of soybean and palm oil caused by bad weather conditions, the growth of import demand for oil crops and derived products, the further depreciation of the US dollar, growth in demand for vegetable oils as the basic feedstock for biodiesel production (FAO, 2011a).

From 1999 to 2009 the production of soybeans, rapeseed and sunflower was increasing at an annual rate of 4.04%. Soybean has the largest share in the total production of oilseeds (about 30%). Soybean is one of the most valuable crops in the world, not only as oil crop used for animal feed production, but also as a good source of protein for human nutrition, and as an important feedstock for biodiesel industry (Masuda & Goldsmith, 2009). The leading producers of soybean in the world are the United States, Brazil, China and Argentina, which accounts for almost 90% of the total soybean production.

**International Market of Oilseeds**

According to its share in the world production, major oil crops are soybean, palm oil, cotton seed, rapeseed, groundnuts and sunflower. According to USDA data for 2009/10 the most significant producers of oilseeds in the world were the United States, Brazil, China and Argentina (Figure 1).

The main driving force on the demand side for rapeseed is the biodiesel industry. Major producer of rapeseed is the EU with the share of 35% in the



(Source: USDA)

Figure 1. World production of oilseeds, meals and vegetable oils by country in 2009/10

Slika 1. Proizvodnja uljarica, sačme i biljnih ulja u svetu po zemljama u 2009/10.

total world production. Significant proportions in the total rapeseed production also have China, Canada and India, which together with the EU accounts for 87.74% of total rapeseed production. The largest producer of sunflower in the world is the EU. The next leading producers of sunflower in the world are Russia, Ukraine and Argentina. These three countries produce almost 50% of the total world sunflower production. That is why they are in the world referred as the sunflower triangle (FAO, 2010a). Sunflower production of these three countries together with that of the EU accounts for about 70% of the total production.

The substitution of animal fats with vegetable oils in human nutrition, the expansion of the biodiesel industry and intensification of livestock production led to an increase in demand for oil crops (Commonwealth Bank of Australia, 2010). According to USDA data, the largest consumers of oil crops are China, the United States, Argentina, Brazil and the EU (70%). The largest consumers of soybean in the world are China, the United States, Argentina and Brazil, for rapeseed the EU, China, India, Canada and Japan, and for sunflower the EU, Russia, Ukraine, and Turkey (USDA, 2012).

Quantity of the total oilseeds production which is traded on the international market is on the increase. The most important exporters of oilseeds in 2009/10 were the United States, Brazil, Argentina and Canada and the top importers China, the EU, Japan and Mexico (Figure 2). In comparison with other analyzed oil crops, soybean also dominates in trade of oilseeds. Approximately 30% of the total soybean production is traded on the international market. The United States, Brazil and Argentina are top exporters of soybeans. On the other hand, the most important importers of soybean are China, the EU, Mexico and Japan.

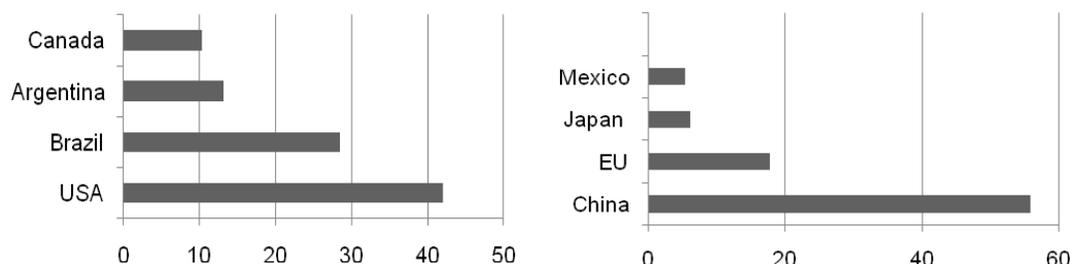
Amount of rapeseed traded on the international market accounts for about 16% of the total rapeseed production. The leading exporters of rapeseed are Canada, Ukraine, France and Australia and the most significant importers are Japan, China, the EU and Mexico. Quantity of sunflower production that is traded on international market decreases and from 1999 to 2009 accounted approximately 7% of the total sunflower production. According to USDA data, leading exporters of sunflower are Ukraine, Argentina, Russia and Turkey. On the import side, the most important players are the EU, the United States and China (USDA, 2012).

According to FAO estimates, global oilseeds production for 2011/2012 has been lowered mostly because of bad weather condition. Individually, the hardest hit crop is soybean, and due to a significant decline in soybean output in the United States, Brazil, Argentina and China it is expected that global soybean output will fall by almost 10 percent. The world rapeseed production will also fall mostly because of the production fall in the EU and India. In the 2011/12 the total sunflower production should have improvements (FAO, 2012).

### International Market of Meals

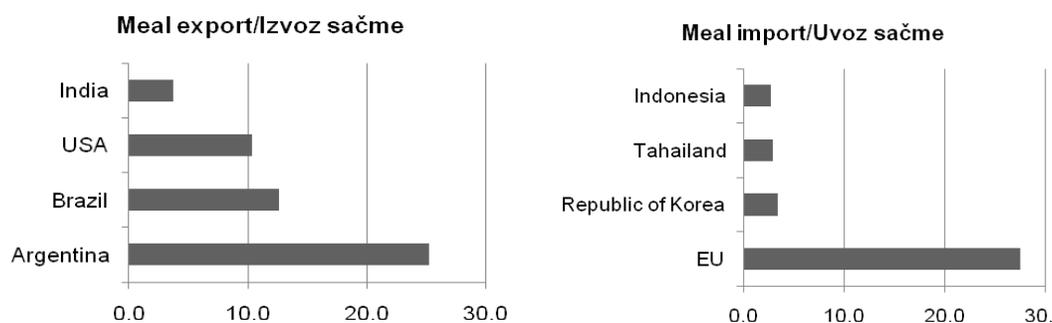
As a by-product produced during oil extraction, oil crops meal is very important high-protein product in animal nutrition (Commonwealth Bank of Australia, 2010). Soybean meal has the largest share of the total meal production (about 70%). Production of rapeseed meal accounts for 13% of the total meal production, while the sunflower meal production accounts for only 5%.

The major world producers of meals in 2009/10 were China, the United States, Argentina and



Source: USDA

Figure 2. Oilseeds export and import by country in 2009/10 in million tons  
Slika 2. Uvoz i izvoz uljarica po zemljama u 2009/10. godini u milionama tona



Source: USDA

Figure 3. Oil crops meal export and import by country in 2009/10 in million tons  
Slika 3. Izvoz i uvoz sačme po zemljama u 2009/10. godini u milionama tona

Brazil (Figure 1). China, the United States, Argentina and Brazil are also the major producers of the soybean meal with a share of 78.18% in the world production.

The most important producers of rapeseed meal are the EU, China, India and Canada. These countries together produce approximately 84% of the world production. Production of sunflower meal in the world tends to increase, and the major producers of it with a share of 75% are the EU, Ukraine, Russia and Argentina. According to FAO estimates for 2011/12, total meal production should drop compared to last season mainly because of the fall in soybean meal output (FAO, 2012).

Oil crops meal consumption in the world is also on the increase. The largest consumers of the meal in the world are China, the EU, the United States and Brazil with the share in total consumption of 65%. The most important consumers of the rapeseed meal are the EU, China, India and Japan. The largest consumers of sunflower meal in the world are the EU, Russia, Turkey and Argentina. Despite high prices, it is expected that world meal consumption will increase by about 8%. Approximately two thirds of the total world consumption will be concentrated in Asia (FAO, 2011a).

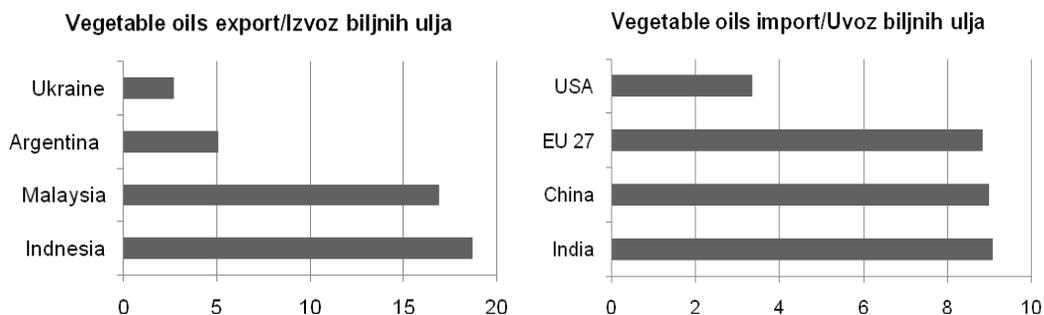
In the international market of meal, approximately 30% of the total meal production is traded per year. Most of the trade refers to trade of soybean meal. The most important exporters of meal are Argentina, Brazil, the United States and India, and the leading importers are the EU, Republic of Korea, Thailand and Indonesia (Figure 3). On the soybean meal export side, the most important player with a share of 44.84% is Argentina, and on the import side the leading position with a share of 50% has the EU. At the same time the EU is the major exporter and

importer of the rapeseed meal. The most important exporters of sunflower meal, with a share of 90% in the total sunflower meal export are Ukraine, Argentina, Russia and the EU. On the import side, leading positions are held by Turkey, the EU and Russia. Due to competitive prices, it is expected that soybean meal will have the highest importance in the international trade (FAO, 2011a).

### International Market of Vegetable Oils

Oils and fats are an important source of energy in the human diet. Besides the importance for human nutrition, although to a lesser extent, many vegetable oils are used for industrial purposes, mainly for the production of biodiesel. The production of the world vegetable oils is constantly increasing. In the total produced quantity of vegetable oils the highest share belongs to palm oil (30%), followed by soybean oil (28%), rapeseed oil (15%) and sunflower oil (9%) (Rossalio-Calle et al., 2009).

The major producers of vegetable oils in the world are Indonesia, Malaysia, China and the EU (Figure 1). From 1999 to 2009 the production of soybean oil, rapeseed oil and sunflower oil increased at an annual rate of 4.53%. The leading producers of soybean oil are the United States, China and Brazil, which together account for about 60% of the total produced quantity. Rapeseed oil represents the most important raw material for biodiesel industry. The largest producers of rapeseed oil include the EU, China, India and Canada with a share of 83.77% in the total production. The most important producers of the sunflower oil are the EU, Russia, Ukraine and Argentina.



Source: USDA

Figure 4. Vegetable oils export and import by country in 2009/10 in million tons  
Slika 4. Uvoz i izvoz biljnih ulja po zemljama u 2009/10. godini u milionama tona

World consumption of vegetable oils is constantly increasing as a result of increased human consumption and increased use for the industrial purposes. Increased consumption of vegetable oils for industrial purposes is directly connected with increased production of biodiesel. The most important consumers of the vegetable oils in the world are China, the EU, India and the United States which account for more than a half of the world's vegetable oils consumption (USDA, 2012).

Approximately 35% of the total oils production is annually traded on the international market. On the vegetable oil export side the leading positions are held by Indonesia, Malaysia, Argentina and Ukraine, and on the import side China, the EU, India and the United States (Figure 4). The most important type of vegetable oil which is traded on the international market is palm oil. Sunflower oil has a marginal position in the global oil market. In comparison to other analyzed vegetable oils, exported quantity of the soybean oil is on the first place and the major exporters are Argentina, Brazil and the United States. On the import side, leading positions are held by China, India and France. The leading exporters of the rapeseed oil are Canada and EU and the most important importers are China and EU (USDA, 2012). Despite the expected rise in sunflower production, according to FAO estimates, bad soybean production will pull down total quantity of the oil extracted in 2011/12 (FAO, 2012).

## Conclusions

In the last few decades oilseed sector was one of the most dynamic part of the world's agriculture. The substitution of animal fats with vegetable oils in human nutrition, the expansion of the biodiesel

industry and intensification of livestock production led to an increase in demand for oil crops. Dynamics of prices of basic oil crops products in the international market is conditioned by relationship between supply and demand in the overall market of oil crops.

In terms of importance in the international trade the most important oil crops are soybeans, palm oil, rapeseed and sunflower. Individually, soybean is the most important oil crop in terms of production and trade of oilseeds and meal. In terms of production and trade of vegetable oils soybean is on the second place, after palm oil. Sunflower oil has a marginal position in the global oil market. As with other agricultural commodities prices (such as cereals, dairy products, etc.) from the beginning of 2007 there has also been an extreme rise in prices of oil crops and their derived products. The price variability is the most evident in the case of oil prices. On the other hand, meals had the lowest price variability. In 2011/12 the prospects for rise in oil crops production are marginal due to the increased competition for arable land between oil crops and cereals (FAO, 2011a).

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## Dinamika svetskog tržišta uljarica

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**Izvod:** Prema obimu zasejanih površina, uljane kulture su nakon žitarica druga najznačajnija grupa useva. Soja predstavlja najvažniju uljanu kulturu kada je reč o proizvodnji i trgovini zrnom i sačmom, dok se po proizvodnji i trgovini uljem nalazi na drugom mestu iza palminog ulja. Dinamika cena osnovnih proizvoda uljanih kultura na međunarodnom tržištu uslovljena je odnosom ponude i tražnje na celokupnom tržištu uljarica. Savremeni trendovi u ljudskoj ishrani u vidu supstitucije masti životinjskog sa mastima biljnog porekla, ekspanzija industrije biogoriva i intenzivnija stočarska proizvodnja dovele su do rasta tražnje za uljaricama. Cilj istraživanja u ovom radu predstavlja identifikovanje trendova u proizvodnji, upotrebi i trgovini soje, uljane repice i suncokreta, kao najznačajnijim uljanim kulturama u međunarodnoj razmeni.

**Ključne reči:** dinamika, proizvodi, soja, suncokret, tražnja, tržište, uljana repica, uljarice, ulje, usevi