

1. GENERAL DESCRIPTION OF OLIVE GROWING IN MONTENEGRO

1.1. Introduction



Figure 1. Location of Montenegro
(Source: UN)

Olive growing is concentrated along the coast of Montenegro where, according to historical records, it was introduced by the Greeks many centuries ago. In the Middle Ages, governments issued decrees and recommendations to stimulate the expansion of olive cultivation, which was to reach its peak in the late eighteenth century.

Living proof of its long history is to be found in the country's centuries-old groves, which are home to two outstanding ancient specimens: the 'Old Olive' of Bar and the 'Big Olive' of Ivanovici near Budva, both estimated to be 2 000 or more years old.

(Source: University of Montenegro)

1.2. Socio-economic indicators

- **Area:** 13 812 sq km (UN, 2008)
- **Capital city:** Podgorica (UN)
- **Currency:** Euro (EUR) (UN, 2008)
- **Population:** 624.213 (World Bank, 2009)
- **Urban population:** 60% (World Bank, 2010)
- **Rural population:** 40% (World Bank, 2010)
- **Life expectancy:** 71.6 years (men), 76.5 years (women) (UN, 2005/10)
- **Main exports by quantity:** wheat flour, barley beer (FAOSTAT, 2009)
- **Main imports by quantity:** non-alcoholic beverages, wheat flour (FAOSTAT, 09)
- **GNI per capita, PPP (current international \$):** 12 590 (World Bank, 2010)
- **GDP per capita, PPP (current international \$):** 12 676 (World Bank, 2010)
- **Employment in agriculture:** 8.6% (World Bank, 2008)
- **Employees in agriculture, female:** 1% (World Bank, 2008)
- **Employees in agriculture, male:** 2% (World Bank, 2008)
- **Employment in olive growing:** > 1 120 (IOC, 2008/09 workdays)

2. BACKGROUND DATA

2.1. Olive oils

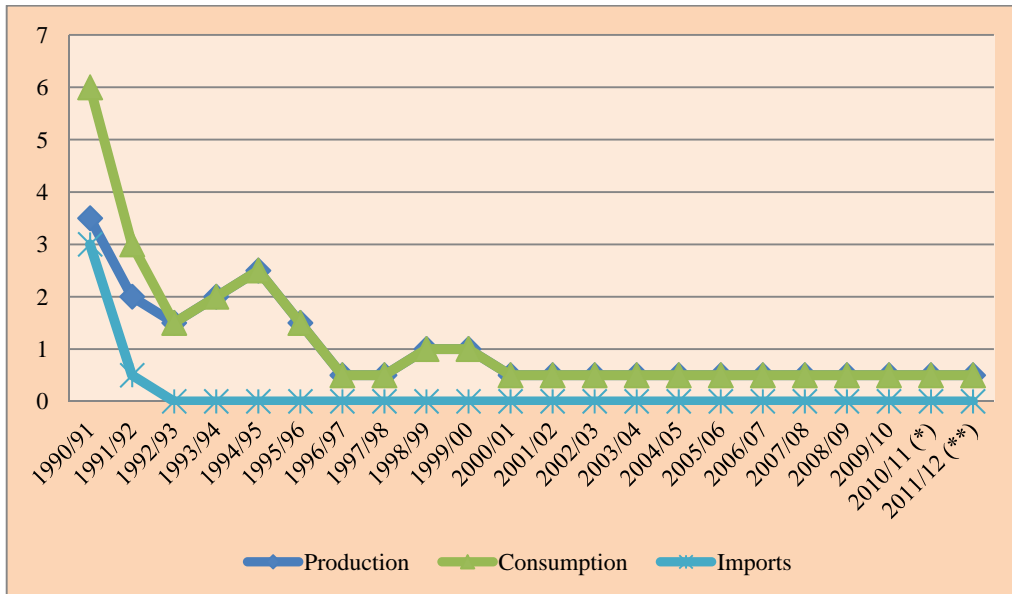


Figure 2. Olive oil production, consumption and imports 1990–2012 (1 000 tonnes)

* Estimates

** Forecasts (Source: IOC)

2.2. Table olives

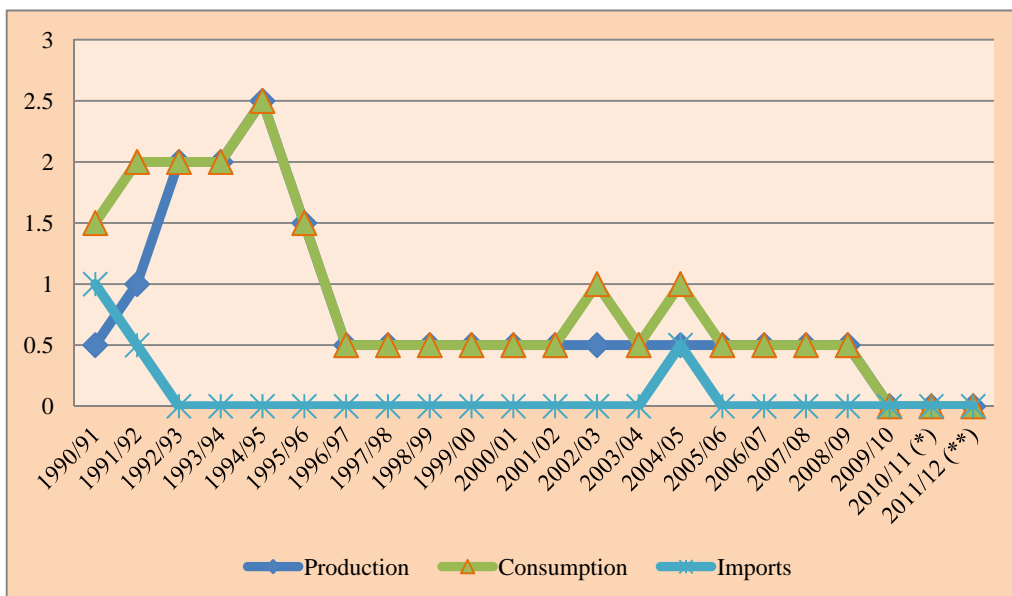


Figure 3. Table olive production, consumption and imports 1990–2012 (1 000 tonnes)

* Estimates

** Forecasts (Source: IOC)

2.3. Total area planted

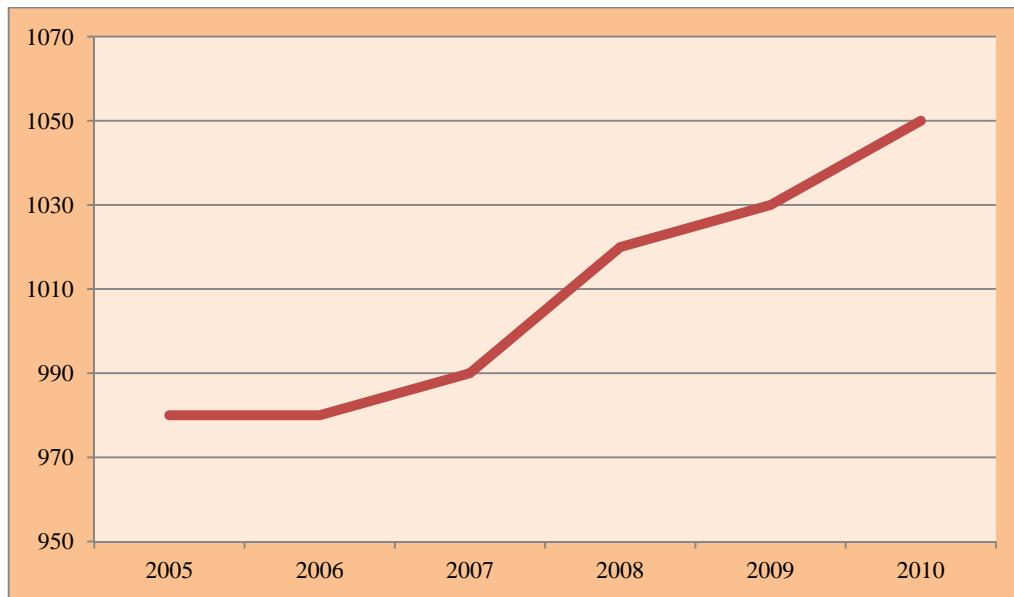


Figure 4. Changes in area planted with olive trees (ha) (Source: IOC)

3. OLIVE INDUSTRY IN MONTENEGRO

3.1. Orchard resources

Although the area under olives represents no more than 0.1% of the total cultivated land in Montenegro and the olive sector is small, the specific soil and climatic conditions of the Montenegrin coastline, like those in other Mediterranean countries, are conducive to the expansion of olive growing.

Relatively large expanses of olive trees exist in the areas of Lustica (20 000 trees) and Ulcinj–Valdanos (80 000 trees), which are protected by law. About 95% of Montenegro's olive orchards are privately owned. (Source: University of Montenegro)

In 2009, there were 3 000 agricultural holdings with olive orchards, which were under 5 ha. Most olive groves are between 0.2 ha and 2.0 ha.

Three categories of orchard emerge when itemised by age (IOC questionnaire):

- Young orchards (< 5 years old): 150 ha
- Orchards at full bearing (5–15 years old): 100 ha
- Old orchards (> 50 years old): 800 ha

3.2. Location



Figure 5. Olive growing zone in Montenegro (Source: University of Montenegro)

The olive growing zone of Montenegro lies between 18° 25' and 19° 25' East and 41° 52' and 42° 30' North. Olive orchards cover about 3 200 ha, or about one-third of the total area under fruit trees, spread along the 293-km long coastline where the climate is Mediterranean.

The average temperature is 15.5 °C, with an absolute minimum of -8.5 °C and an absolute maximum of 40.0 °C. The average annual rainfall in Montenegro is 1 652 mm. The olive growing areas are mainly hilly (85%), lying on the slopes of the mountain massifs of Orjen, Lovcen and Rumija.

The olive growing areas of the Montenegrin coast can be divided into two sub-areas:

- Bar sub-area including the municipalities of Ulcinj, Bar and Budvu where the Zutica variety predominates (95–98%)
- Boka Kotorska sub-area including the municipalities of Tivat, Kotor and H. Novi. Besides Zutica, other varieties are grown such as Crnica, Lumbardeška, Sitnica and Šaruljaidr. (Source: University of Montenegro)

3.3. Varieties

There are many autochthonous varieties (domestic and domesticated). In general, the Zutica variety predominates (65%), followed by Crnica (14.8%), Sitnica (5.5%), Lumbardeška (6.6%) and Šarulja (4.5%). Another 2% is made up of other native varieties.

Foreign varieties – Picholine, Leccino, Coratina, Itrana and Ascolana tenera – represent around 3% of the total. From the agronomic standpoint, there is interest in varieties which give large fruit and are resistant to low winter temperatures.

Zutica

The presence of this variety on the Montenegrin coast dates back to ancient times.

It is a vigorous, productive variety but its marked alternate bearing detracts significantly from its worth.

It has an early start of bearing and it flowers early. It is self-compatible and it has a high pistil abortion rate. Its productivity is high and alternate. Its time of ripening is intermediate. It grows well in fertile land and does not tolerate damp soils. The tree limbs can break easily under the weight of snow or the action of strong winds. The fruit has a high removal force. Generally, it is used for oil production, and gives an oil yield of 22- 23%, although it is also used for pickling. It is freestone and it has a flesh-to-stone ratio of 6.

Climatic conditions and plant health permitting, the fruit can remain a long time on the tree, so making it possible to delay harvesting. It is greatly appreciated by local consumers, who consider it irreplaceable because of the distinctive taste of its oil.

It is moderately sensitive to olive leaf spot and sensitive to attacks from olive fly and low temperatures. Conversely, it is resistant to olive knot, olive anthracnose and *Cercospora cladosporioides*.

(Source: World Catalogue of Olive Varieties, IOC)

3.4. Olive oil: production and yield

Over the last ten years, domestic production of olive oil has averaged 500 t compared with 1 600 t in 1990/91–1999/00. This equates with a sharp decline of 68.75%. According to the Montenegro Statistics Office, there were 447 900 trees in 2010, which yielded 2 343 t of olives.

Cultural practices and harvesting can be fully mechanised on 600 ha of the olive orchards and partially mechanised on a further 400 ha. No mechanisation at all is possible on 50 ha.

3.5. Olive oil: processing sector

The processing sector consists of 25 oil mills, 15 of which use presses or super-presses. The remaining 10 are continuous two-phase facilities, each of which are located in the southern olive growing areas. Mills can handle an average 250–500 kg fruit/hour.

Itemised by grade, in 2009/10 Montenegro produced 300 t of virgin olive oil (up to 2°), 240 t of ordinary virgin olive oil (up to 3.3°) and 60 t of extra virgin olive oil (up to 0.8°). (IOC questionnaire)

3.6. Olive oil: marketing, domestic consumption

Over the last decade, Montenegrins consumed 500 t of olive oil per year on average. This is a dramatic decrease compared with the 1 950 t they consumed in the preceding 10-year period (Table 3).

In 2009/10, the reference year used in the IOC questionnaire, producers received an average farm gate price of €1.5/kg for conventionally (non-organic) olives.

National production falls far short of domestic requirements, which means that Montenegro imports olive oil from Italy, Spain and Greece.

Table 3. OLIVE OIL (Source: IOC)

	Average (t) 1990/91–1999/00	Average (t) 2000/01–2009/10	Change (%)
Production	1600	500	-68.75
Consumption	1950	500	-74.36

3.7. *Table olive subsector*

Between 2000/01 and 2009/10, table olive production averaged 450 t, which reflects a sharp drop from the level of the previous decade (see table below). Consumption behaved similarly, falling from an average of 1 350 t in the 1990s to 550 t in the 2000s, which works out at a decrease of 59.26%.

Crop yields in table olive orchards average 300 kg/olives ha.

Table 4. TABLE OLIVES (Source: IOC)

	Average (t) 1990/91–1999/00	Average (t) 2000/01–2009/10	Change (%)
Production	1 150	450	-60.87
Consumption	1 350	550	-59.26

3.8. *Future measures*

The Ministry of Agriculture has assigned budgetary funding to support the revitalisation of Montenegro's olive orchards, the majority of which need regenerative pruning and renewal.

4. SOURCES

IOC questionnaire

IOC database

<http://www.internationaloliveoil.org/estaticos/view/130-survey-and-assessment-division>

United Nations

<http://data.un.org/Default.aspx>

World Bank

<http://data.worldbank.org/country>

FAOSTAT

<http://faostat.fao.org/site/342/default.aspx>

University of Montenegro, Biotechnical Faculty, Centre for Subtropical Cultures, Bar

<http://www.efncp.org/download/OlivefarminginMontenegro.pdf>