

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

SWIM-H2020 SM Regional Activities THE SPANISH CASE, WITH EMPHASIS ON WATER SAVINGS

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•SWIM and Horizon 2020 SM Sustainable Management of Olive Oil Mills' Waste

05th/12/2018, Athens, Greece

This Project is funded by the European Union





INDEX

- I. DESCRIPTION OF THE SPANISH OLIVICULTURE
- II. DESCRIPTION OF THE OLIVE OIL SECTOR
- III. DESCRIPTION ABOUT THE POMACE OLIVE SECTOR
- IV. CONCLUSIONS

A DESCRIPTION OF THE SPANISH OLIVICULTURE

- Spain has in order to 2.6 million hectares of olive groves, almost 23 percent of the world olive grove, this is subdivided into 3 categories of olive groves, traditional (75%), Intensive (23%), suppressive (2%).
- The average size of a farm in Spain is 4.5 hectares, most of the olive grove is sloping. The main olive variety is picual
- More than 35% of the Spanish olive grove is irrigated. In Spain there are more than 500 thousand olive growers.
- The main growing areas are Andalusia, Extremadura, Castilla La Mancha and Catalonia.
- 12 percent approximately of olive fruit is destined to elaborate olive table, 82 percent to extract olive oil
- All the farmers are inside of 3 main associations: ASAJA, COAG, or UPA

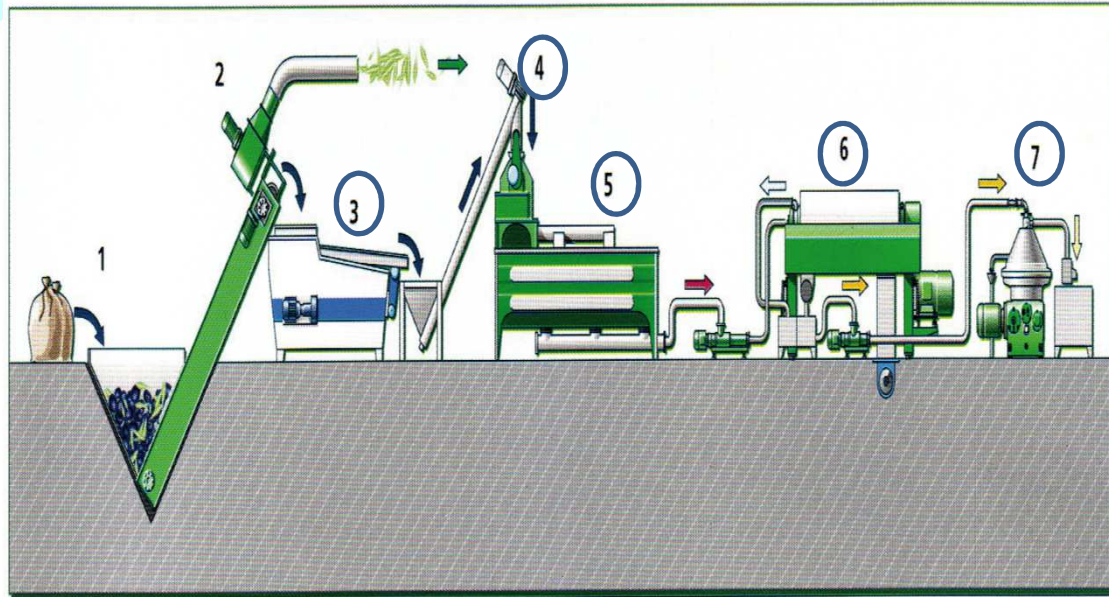
DESCRIPTION ABOUT THE POMACE OLIVE SECTOR

- In Spain there are 1876 oil mills distributed throughout the country's geography, but only six bottled companies hold 60 percent of the market
- More than 50% grind between 10 and 25 million tons of olives, the largest of them grinding 120 million kilograms of olives, is located in the province of Jaen
- 60 percent of the oil mills are producers' cooperatives, and the rest industrial, not excluding the mills grind 55 percent of the olives.
- 97 percent of the extraction systems are two phases
- Cooperatives are introduced in the association Agri-food and industrial olive oil plants in Infaoliva
- The Spanish machinery used in the olive oil production sector does not exceed 10 years old.
- Spanish market is leader in production more than 50% of the world, export, around a million tons, and in terms of quality of olive oils also probably currently is the most important

DESCRIPTION OF THE SPANISH OLIVE OIL SECTOR

- In Spain there are more than **500 thousand olive farms**
- They produce between **8 and 12 million tons of olive fruit**
- This fruit is ground in **1,876 mills**
- This olive oil plants produce as sub product between **5 and 7 million tons of waste water** (between the addition of the process and the fruit contain) which in turn conclude their process in **67 pomace processing plants**
- For each pomace processing plant there are **about 30 olive mills**
- The highest percentage of **this water is evaporated** in the pomace extraction plan with dryers.
- This water is evaporated due to 3 reasons, **lack of competitiveness** in order to use resources to solve the problem, **the rules does not allow the fertirrigation**, and **the process is so expensive** if we compare with the water price.

DESCRIPTION OF THE SPANISH OLIVE OIL SECTOR



Water consumption occurs, mainly due to the traditional system cultivation:

3. At the **reception** you have to wash the olives, usually except when it is not from the tree (5 – 10%) (1 – 3%)
4. **Hummermill** (1 – 3%)
5. **Malaxer** (5 -10%)
6. **Decanter** (2 -5%)
7. **Vertical separator** (0 – 2%)

A Spanish normal size oliva oil plant, it generate 11 millions tons of waste water per season

That means that for **every ton of olive fruit**, between the addition, and the water contented in the fruit, we **obtain around 700 liters of wastewater:**

450 of **fruity contain** (65%)

250 of **addition** (35%)

CONCLUSIONS

How to eradicate or reduce to the maximum the residual water in the mills:

1. On the one hand, it could reduce 35% (250 liters per ton of fruit) of the total by not adding water during the process, **raising awareness, training, educating and providing technology** (two engines, easy access of dams, paring tube and extreme speed in the decanter) to the director of the process of making olive oil.
2. The rest of the water generated by the content of the fruit, (65%, 450 liters per ton) could be eliminated by processing in the pomace oil extraction plant with a clarifier after a decanter three phases, or an evaporator also after decanter three phases, provided that the legislation allowed with that resulting water the fertirigation
3. Also it is important **to concentrate the olive pomace extraction plant** in order to optimize the investment, and size, the most important in Spain is El Tejar Group, it process around 0,5 millions of tons per season

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For further information

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Thank you for your attention.

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