

Workshop n°4

Environmental sustainability in the Catalan olive oil PDO

A preliminary approach

GUADARRAMA-FUENTES, Omar Vicente
GIL, José María
(CREDA-UPC-IRTA)

Protected Designation of Origin

(a) originating in a specific **place, region** or, in exceptional cases, a **country**;



Territory

(b) whose quality or characteristics are essentially or exclusively due to a **particular geographical environment** with its inherent **natural and human factors**;



Environment

Social

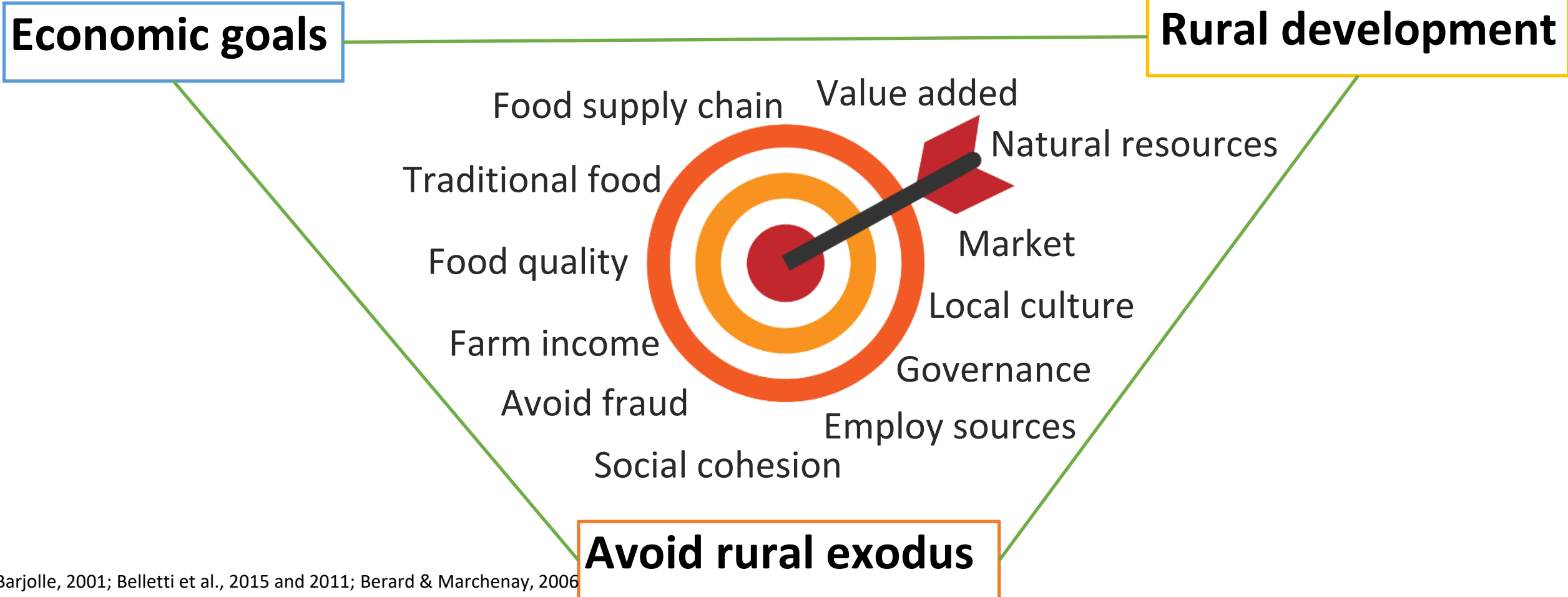
(c) the **production steps** of which all take place in the defined **geographical area**.



Know-how



Objectives of the PDO

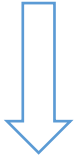


Barjolle, 2001; Belletti et al., 2015 and 2011; Berard & Marchenay, 2006

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Research aims

Definition



Territory

Environment

**What role does the PDO
play in environmental
sustainability?**

Goals



Rural development

Natural resources

Avoid rural exodus

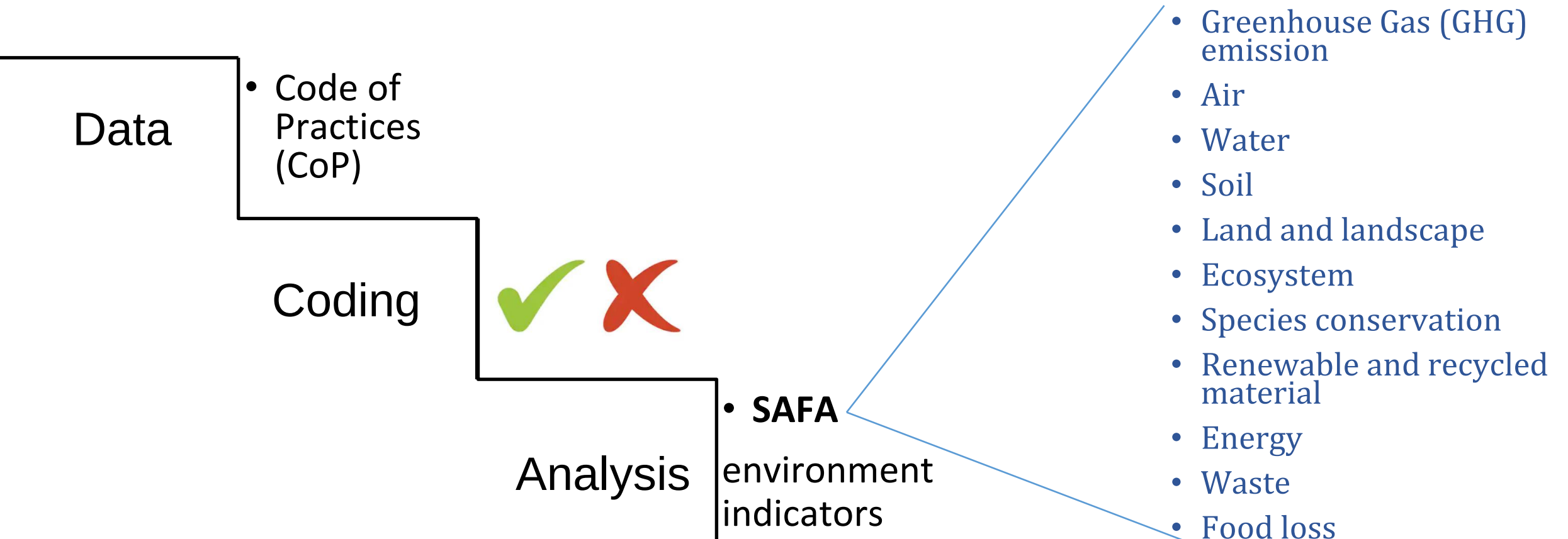


Origin
Diversity
Territories

Methodology

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Content analysis



Catalonia, Spain



Olive Oil PDO





Origin
Diversity
Territories

Results

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

GHG emission / Air

- During the drying of the **pomace**, volatile particles and compounds are produced that need to be trapped before to reach the atmosphere.
- Volatile particles from **herbicides** use during cultivation.
- **Noise** generation as outputs of production



CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Water

- When the olives arrive at the mill, they are **washed**.
- Bottling have helped gradually **reducing water use**.
- The continuous extraction process improved performance and productivity, but **consumed ten times more water**.
- The irrigation system and intensive production appeared.



CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Soil

- It is an undemanding tree in terms of soil quality which grows in **acidic and basic pH**, in **limestone and silicon soils**.
- During the cultivation phase, 3 or 4 agricultural task are being performed: **cutting the grass**, preparing the soil **for harvest** (autumn) and placing the **harvest meshes** (winter)
- The land is not tilled on the sides of the olive grove to **prevent erosion**.
- The fertilization is mainly made in winter with **fertilizers based on N, P, K** of foliar type



CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Land (Cultivation practices)



- The cultivation of the olive grove is mostly located in **rain fed land**. Later, the **irrigation system** and intensive production appeared.
- **Pruning** is done to rejuvenate the tree, shape it and promote fruit growth.
- **Pest control** is carried out in collaboration with the local government as corrective and precautionary measures.
- The PDO Consortium determines **the harvest dates** in each production cycles

CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

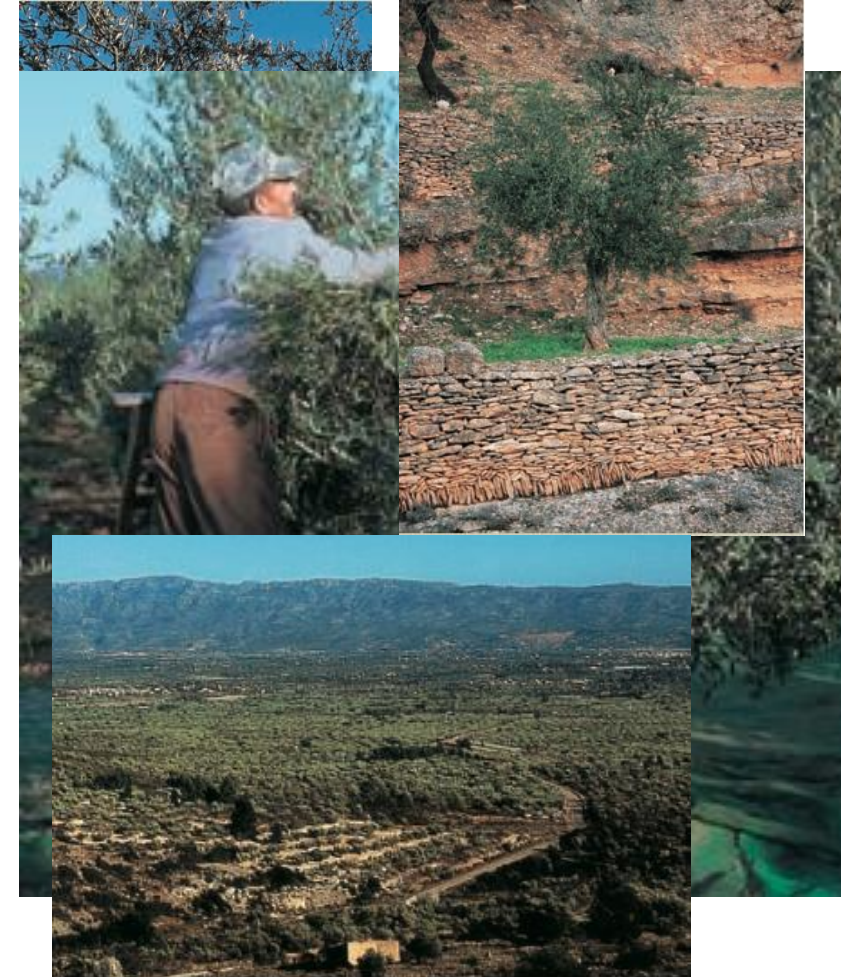
*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Landscape

- The olive tree can either be **planted alone or live with other crops, trees** and even with cereals and **vines**
- The average planting **framework is 9 x 9** meters, but depending on the area it can be between 7 and 12 meters
- The olive grove is grown on **terraces** or in **small gardens**, delimited by margins and **stone walls**, which helps retaining the soil and preventing erosion.
- The Catalan olive grove is characterized by being on **sloping soils** with slopes (between 15 and 25%) as well as being **low fertile soils**
- Olive harvesting is done by using the technique of **“ordeño” (reaping)**

(The worker carefully handpicks them from each branch by dropping the olives on a mesh)

CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.



*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Ecosystem



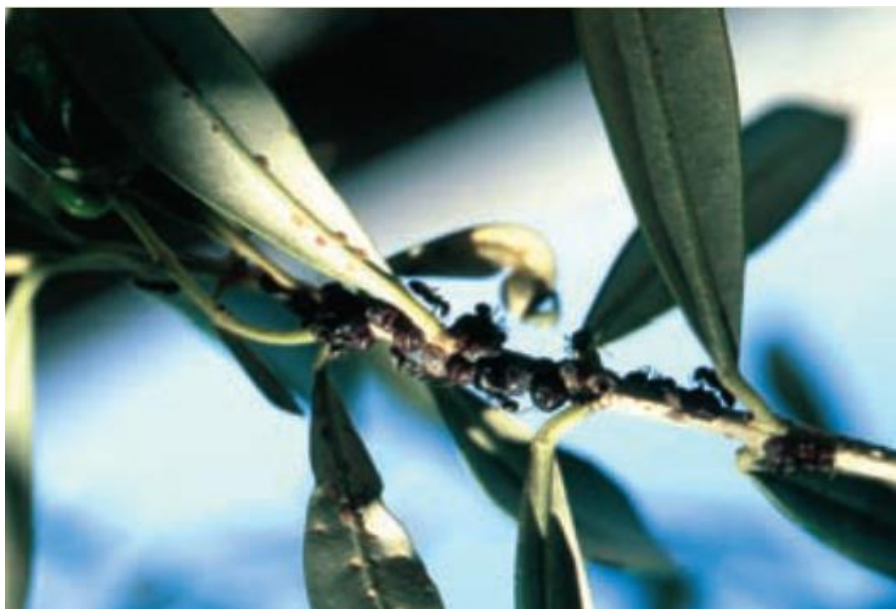
- The olive groves reach their maximum productivity between 35 and 150 years, which makes it possible to have **centenary trees**
- The olive tree is an evergreen tree, so it remains **green all year long**.
- The olive grove has adapted to the **Mediterranean climate**: it resists the summer drought and withstands winter frosts
- The presence of leaves on trees during summer and winter **lessens the climatic contrast in the soil**
- In winter, olive trees provide **shelter and food to a large number of species of mammals and birds**
- The olive trees are home to **wintering and nesting species**, which attracts a number of birds of prey because of the number of preys finding shelter in the hollows of old trees

CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Ecosystem (Pest control)

- Most of the pest problems are caused by the **olive fly** that affects the quality and production of olive.
- In order to get rid of the fly, **traps and food, sexual and visual attraction** systems are used



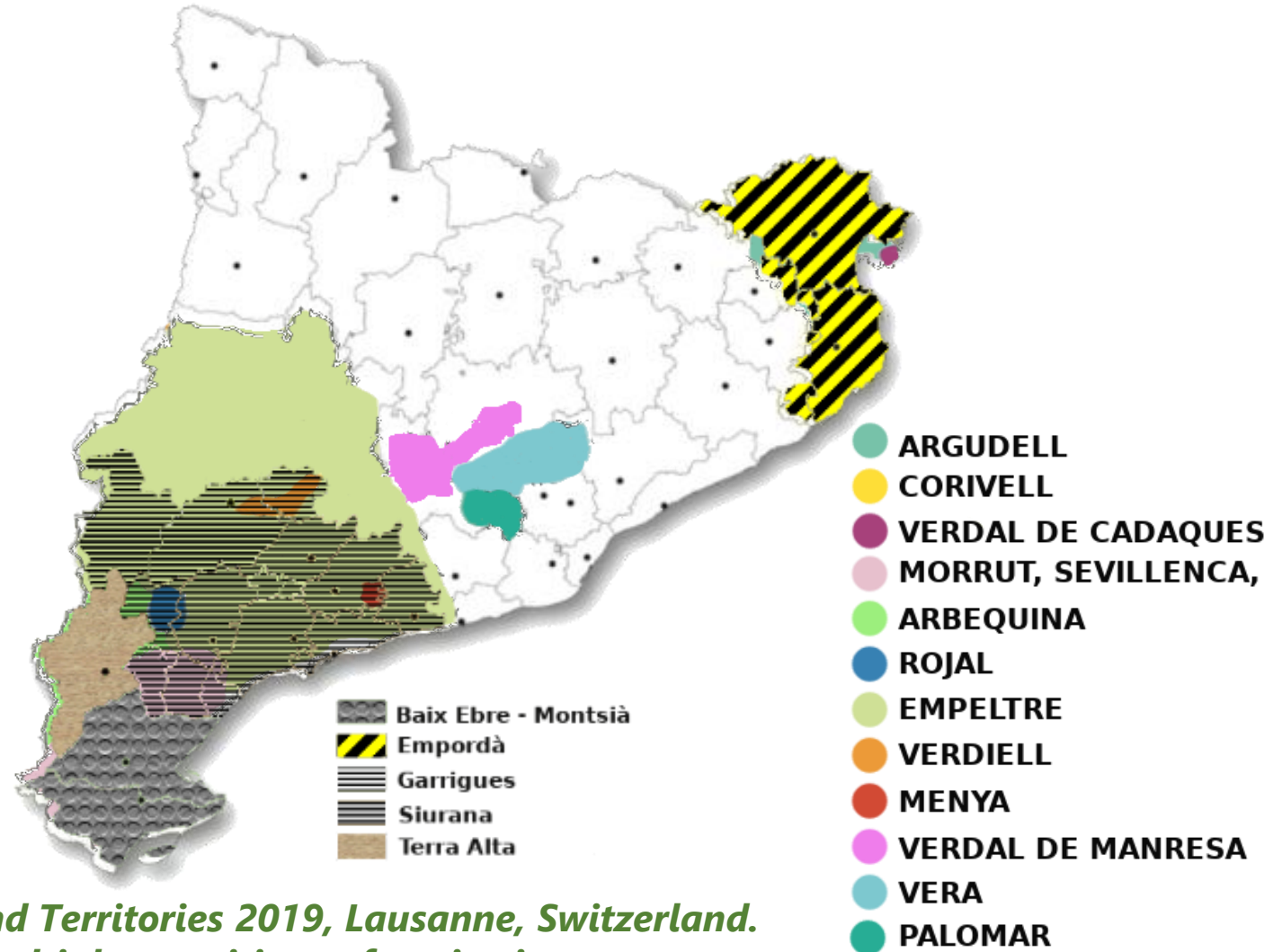
Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Species conservation

- **Yield production** of olives is **1500 kg/ha** in the rain fed land system and **4100 kg/ha** in irrigation. The olive yield is between 17 and 30%, depending on the variety.
- In Catalonia, there are **41 varieties** of olives, of which **25 are endemic** and **18 are adapted**. PDOs protect 5 endemic and 5 adapted varieties
- The **Arbequina variety** is considered to be the Catalan olive, being the most widespread in the region.

CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.



*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Renewable and recycled material

- The legal provisions in terms of bottling have helped gradually promoting the use of more **environmentally friendly materials** that can be recycled. However, plastic is the most common used material.
- Bottling is performed through a mechanical process using **5 litter plastic bottles**



Energy

- The **modernization of the olive sector** has increased the use of energy as an input
- The **continuous extraction process** improved performance and productivity, **twice** as much energy



CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Food loss / Waste

- The continuous extraction process improved performance and productivity, but **doubled the production of alpechin** (vegetable water)
- National and Local legislation on food waste and waste disposal.
- No control of waste and by-products disposal.



CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Final remarks

- Mediterranean culture is defined by the use of the three basic pillars: **wheat, wine and oil**
- Olive oil has a **cultural, religious, social, environmental and economic value** which is expressed through **gastronomic, cosmetic and medicinal uses**
- **Four factors have driven the evolution of the sector:** the aim to increase production, technological innovation, environmental legislation and the generation of instruments for environmental management.
- The agri-food industry has incorporated environmental management mechanisms (**good practices, waste stream management, management systems**, etc.) and preventive measures (**efficient resource consumption, cleaner production**, etc.) to make Industrial development compatible with environmental protection
- The **ecological and landscape** value as well as the environmental value of the olive tree are significant.

CRBE-M; CRE; CRG; CRS; CRT-A; Boatella & Contreras, 2008.

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*



Origin
Diversity
Territories

Conclusions

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*

Catalans Protected Designation of Origin in the olive oil sector performs some agroecology actions, which must be preserved. Besides, they have to implement other activities oriented to achieve the environmental sustainability, under the SAFA framework, in order to maintain the land, biodiversity, agricultural practices, locals species, and natural resources protected not just as a way of production, but also as a way of social cohesion, local development, and identity.

Bibliography

- Abela J. A. (2002) Las técnicas de Análisis de Contenido: Una revisión actualizada. Documento de trabajo. Fundación Centro Estudios Andaluces. Granada.
- Barjolle, D. (2011). The setting up of a GI A toolkit for the different phases of the local process Importance of the qualification phase. In *Creating value through Geographical Indications: the power of origin* (pp. 1–24). Retrieved from https://ec.europa.eu/agriculture/sites/agriculture/files/events/2011/gi-africa-2011/barjolle1_en.pdf
- Belletti, G., Marescotti, A., Paus, M., Reviron, S., Deppeler, A., Stamm, H., & Thévenod-Mottet, E. (2011). The effects of protecting Geographical Indications: Ways and means of their evaluation. *Swiss Federal Institute of Intellectual Property*, 7(7). [https://doi.org/Publication No 7](https://doi.org/Publication%20No%207)
- Belletti, G., Marescotti, A., Sanz-Cañada, J., & Vakoufari, H. (2015). Linking protection of geographical indications to the environment: Evidence from the European Union olive-oil sector. *Land Use Policy*, 48, 94–106.
- Bérard, L., & Marchenay, P. (2006). Local products and geographical indications: Taking account of local knowledge and biodiversity. *International Social Science Journal*, 58(187), 109–116. <https://doi.org/10.1111/j.1468-2451.2006.00592>.
- Boatella Riera, J., Contreras, J. ((2008) Els Olis d'oliva de Catalunya. Departament d'Agricultura, Ramaderia I Pesca. Barcelona.
- FAO (2013) SAFA Sustainability Assessment of Food and Agriculture Systems. INDICATORS. FAO, Rome.

Bibliography

Regulation (EU) no. 1151/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 November 2012.

Consejo Regulador Baix Ebre – Montsià (2019) DOP Baix Ebre – Montsià, Cataluña, Recuperado de <http://www.dopbaixebremontsia.com>

Consejo Regulador Empordà (2019) DOP Empordà, Cataluña, Recuperado de <http://www.oliemporda.cat>

Consejo Regulador Garrigues (2019) DOP Garrigues, Cataluña, Recuperado de <http://www.olidoplesgarrigles.com>

Consejo Regulador Siurana (2019) DOP Siurana, Cataluña, Recuperado de <http://www.dopsiurana.com>

Consejo Regulador Terra Alta (2019) DOP Terra Alta, Cataluña, Recuperado de <http://www.dopoliterraalta.com>



Origin
Diversity
Territories

THANK YOU

GRACIAS
ARIGATO
SHUKURIA
DANKSCHEEN
TASHAKKUR ATU
SUKSAMA
BIYAN
SHUKRIA
GOLABHADITA
EYCHAMITO
JUSPAXAR
KONKUPUNREK
MAKKE
GRAZIE
MEHRBANI
PALINGS
BOLZIN
MERCİ

*Forum Origin, Diversity and Territories 2019, Lausanne, Switzerland.
Agroecology: multiple transitions of territories*