OLIVE GROWING AND CLIMATE CHANGE

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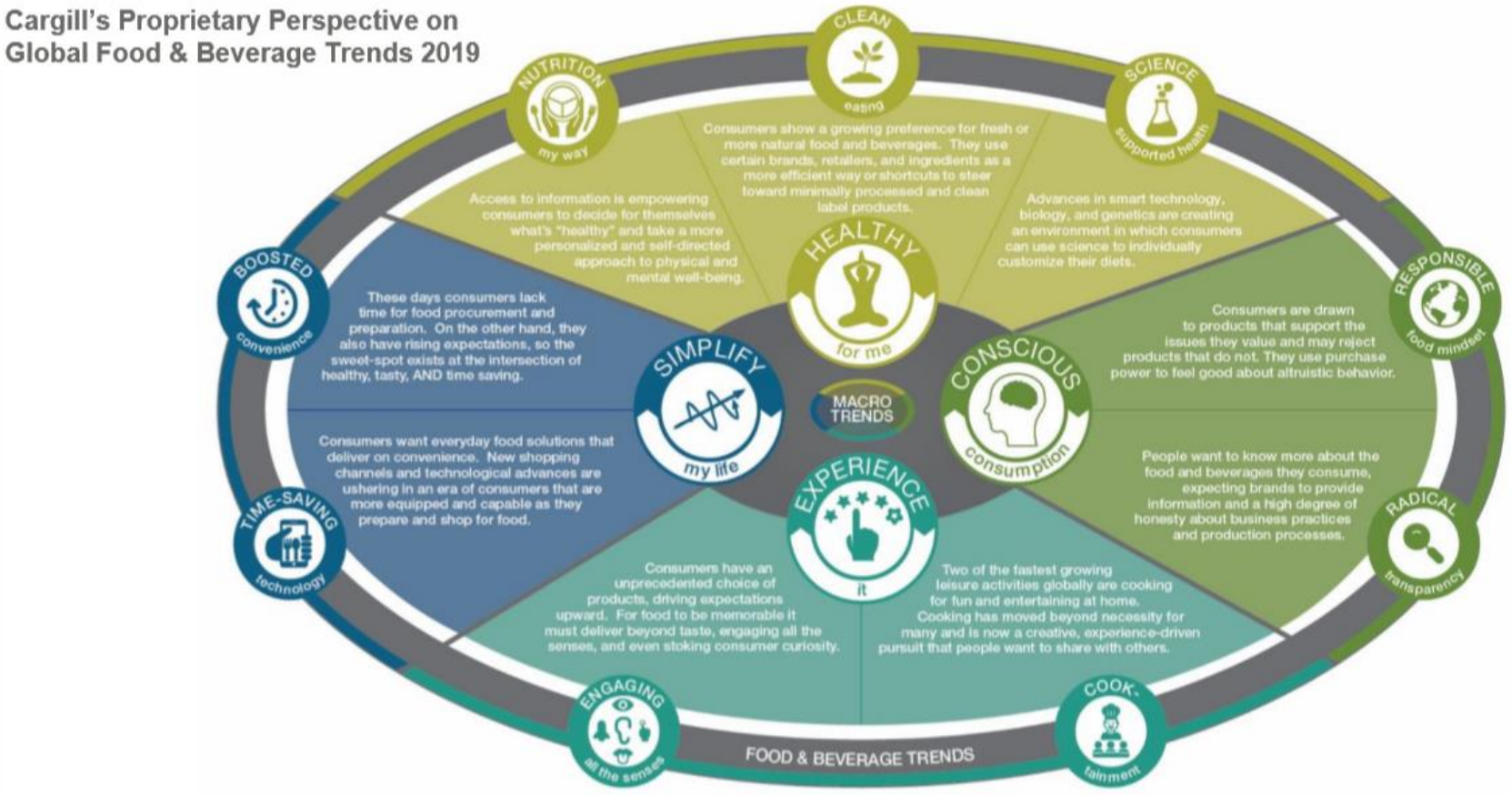
TOPIC HIGHLIGHTS

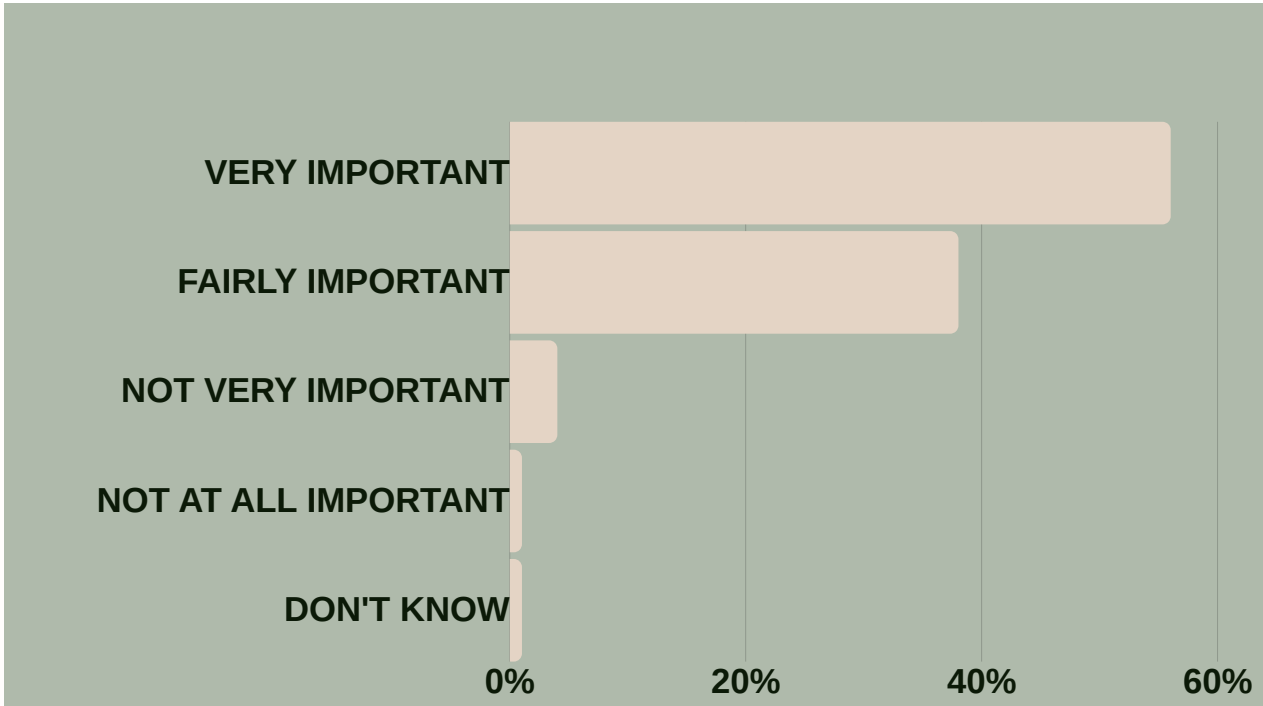
1. Introduction: global trends
2. The IOC Campaign to raise awareness of the positive impact of olive growing
3. World evaluation of the carbon balance of olive oil
4. Conclusions

GLOBAL FOOD & BEVERAGE TRENDS 2019



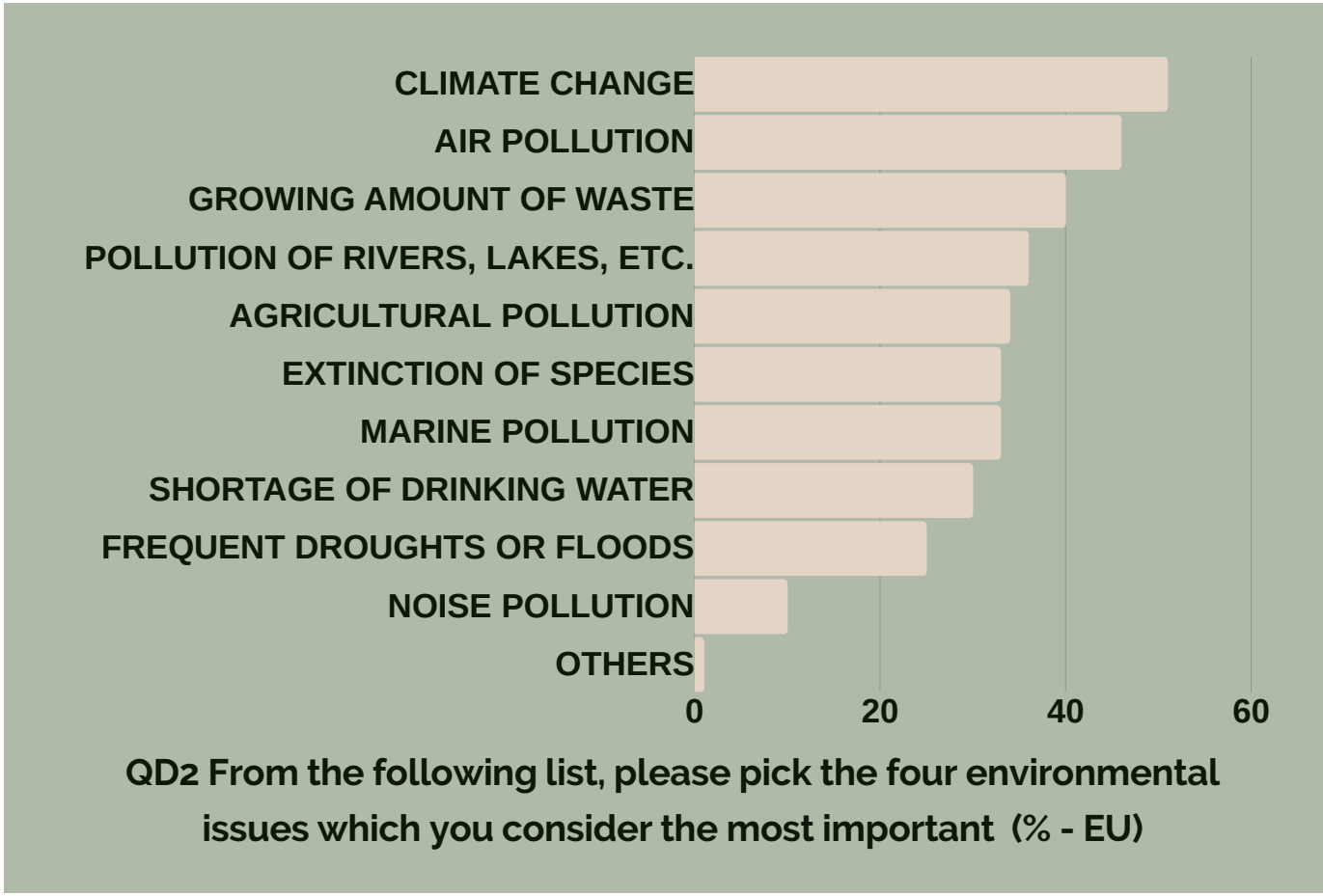
Source. Generating organic growth: Workshop "Medium-term outlook for the EU agricultural commodity markets", Cargill (2019)

A MAJORITY OF EUROPEANS THINK THAT PROTECTING THE ENVIRONMENT IS IMPORTANT TO THEM PERSONALLY (94%)



Source. Flash Eurobarometer 468 (2017), Attitudes of European citizens towards the environment

AND CLIMATE CHANGE (51%) AND AIR POLLUTION (46%) ARE CONSIDERED THE MOST IMPORTANT ENVIRONMENTAL ISSUES



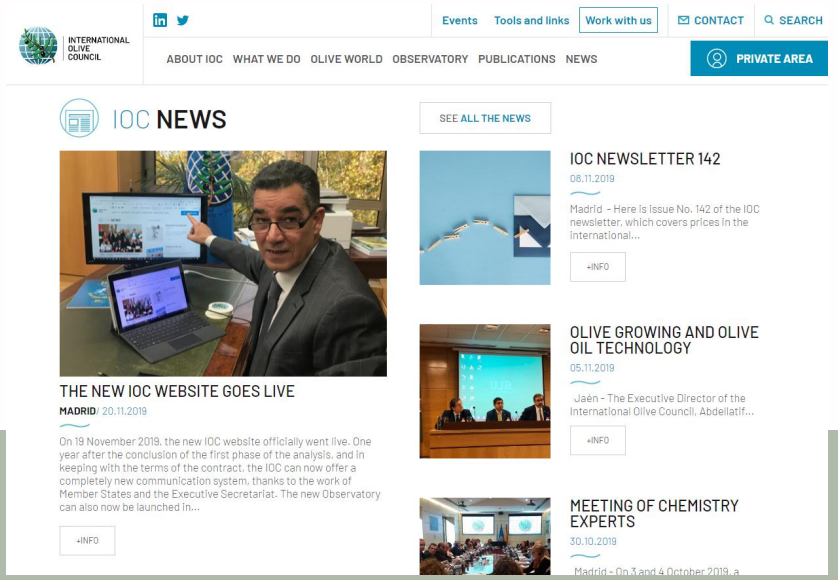
Source. Flash Eurobarometer 468 (2017), Attitudes of European citizens towards the environment

PEOPLE WORLDWIDE ARE CLAMING FOR A SOLUTION, ESPECIALLY YOUNGER GENERATIONS...

WHAT ARE THE INITIATIVES THE IOC HAS LAUNCHED IN ORDER TO ADDRESS THE PROBLEM OF CLIMATE CHANGE?

Although agriculture and livestock are thought to be responsible for 14% of green house gas emissions; several studies show that the olive tree is capable of fixing CO2 in the soil in a stable way.

IOC STEPS TO BRING AWARENESS OF CLIMATE CHANGE AND OLIVE GROWING



STRATEGY

HIGHLIGHT THE POSITIVE EFFECTS OF OLIVE GROWING IN THE ENVIRONMENT

APPROACH

DEVELOP A TOOL IN ORDER TO ESTABLISH THE CRITERIA FOR DETERMINING THE BALANCE SHEET CO2 OF OLIVE OIL

ACTION

PROVIDE OLIVE OIL WITH A POSITIVE DIFFERENTIATION RECOGNIZED IN SEVERAL NATIONAL MARKETS

2012	2015	2016	2016-2017	2017
✓Set up a group of experts on the calculation method of olive carbon balance	✓Created a tool to estimate the carbon balance of olive oil	✓Taken part in the EU initiative EF (Environmental Footprint) Pilots for the development of the Product Environmental Footprint Category Rules of olive oil	✓Taken part in the COP22 (Marrakech)	✓Launched the IOC study about "Carbon balance of olive cultivation in the world"

A COMMITMENT OF THE IOC: BACKGROUND OF THE CARBON BALANCE OF THE OLIVE TREE AROUND THE WORLD

17

SUSTAINABLE MANAGEMENT STRATEGY MARRAKECH 2016

THE IOC PRESENTS A STRATEGY ON SUSTAINABLE MANAGEMENT OF OLIVE OIL PRODUCTION on the occasion of COP22

PROGRAMME

9:00 ARRIVAL OF PARTICIPANTS

9:15 **OPENING**

Olive growing & climate change mitigation

9:30 **THE IOC GLOBAL CO2 BALANCE OF OLIVE GROWING**

Abdelkrim Adi
IOC Head of the olive growing, olive oil technology and environment unit

9:45 **CARBON BALANCE IN THE OLIVE GROWING, AGRONOMIC VARIABLES AND SCENARIOS**

Juan Francisco Hermoso León
Technology transfer and services to olive growing and nuts.
IRTA Mas de Bover

10:20 **THE SOFWARE TOOL, COMMUNICATION PLAN AND DISSEMINATION OF INFORMATION**

Juan Antonio Polo Palomino
CO2 Consulting

10:40 **RECOMMENDATIONS FOR IMPROVING THE CARBON BALANCE**

Cristos Xiloyannis
Università degli Studi della Basilicata | UniBas

11:15 COFFEE BREAK

PROGRAMME

11:45 **ROUND TABLE: *OLIVE GROWING & CLIMATE CHANGE ADAPTATION***

Abichou Mounir
Institut de l'olivier de Zarzis
Tunisia

Ricardo Fernández-Escobar
University of Córdoba
Department of Agronomy, ETSIAM
Córdoba-Spain

Zohar Kerem
Institute of Biochemistry, Food Science and Nutrition
HUJI
Israel

13:00 **ROUND TABLE: *OLIVE GROWING & CLIMATE CHANGE COMMUNICATION***

Teresa Perez
Olive oil environmental footprint
Inter-professional Spanish Olive Oil Association

Annunziato Scaramozzino
Project: Olive4Climate-Life
UNAPROL
Italia

13:45 **CLOSING**

14:00 LUNCH

"CARBON BALANCE OF OLIVE CULTIVATION IN THE WORLD" (2017)

WORLD EVALUATION OF THE CARBON BALANCE OF OLIVE OIL

- IDENTIFY THE MAIN PRODUCER COUNTRIES (12)
- DESIGN SCENARIOS BASED ON CROP VARIABLES (144)
- DEFINE POTENCIAL SCENARIOS
- INFROMATION REGARDING THE OLIVE OIL PRODUCTION CYCLE
- DETERMINE THE BALANCE OF CARBON THROUGH THE IOC WEB TOOL

ANALYSIS PLANTATION MODELS

Operating model	Traditional dry	Traditional irrigation	Intensive	High density	Superintensive
					
Framework	10-12 x 10 m	10 x 10 m	6-7 x 5-6 m	5-7 x 2-4 m	4 x 1,5m
Formation	2-3 branches/tree	1-2 branches/tree	High trunk	Trunk 2 branches/central axis	Central axis/ smartree
Harvest system	Vibrator/manual	Vibrator trunk	Vibrator with umbrella	Colossus/lateral	Combine harvester
Irrigation resources	-	1500m3/ha	2000 m3/ha	2500 m3/ha	3500m3/ha
Average production	2000kg/ha	4000kg/ha	6500 kg/ha	8000 kg/ha	9500 kg/ha

SOURCE

Hermoso et al. (2014)

CULTIVATING THE CROPS

	Traditional machinisable (dry/irrigation)	Intensive (irrigation)	High density (irrigation)	Superintensive (irrigation)
Fertilisastion	Foliage Soil/fertirrig	Foliage Soil/fertirrig	Foliage Fertirrigation	Foliage Fertirrigation
Pests and diseases	2/3 treatments (1 it + ½ prim)	4 treatments (2 ot + 2 prim)	4-5 treatments (1 inv+2 pri+2ot)	5 treatments (1 inv+2 pri+2 ot)
Phytos and foliage application	Spray	Spray	Spray	Spray
Soil Maintenance	Tilling Coverage espont.	Minimum tillage coverage streets	Vegetal coverage pruning residue	Vegetal coverage pruning residue
Pruning y desvareto	Renovation **> 30 years**	Formation 6 years Produc. **<30 years**	Formation 5 years Produc. **< 20 years**	Formation 4 years Produc. **< 15 years**
Removal of pruning residues	Manual	Manual and grinding	Grinding	Grinding

SOURCE

Aproximación a los costes de cultivo del olivo. AEMO (2010)

MILL DIMENSIONS

Duration: 50 days	AOVES from the plantation Traditional-Traditional irrigation-intensive			High intensitive	Superintensi
					
Daily intake	2000 kg	6000kg	13000kg	24000 kg	38000 kg
Mill capacity	10 t	20 t	30 t	60 t	75 t
Installed capacity	10 Kw/10 KwT	20 Kw/35 KwT	40 Kw/ 35 KwT	40 Kw/125 KwT	100 Kw/150 KwT
Hours day/crop year	5/35	10/128	14/208	13/171	16/203
Investment	100.000€	150.000€	225.000€	350.000€	500.000€

SOURCE

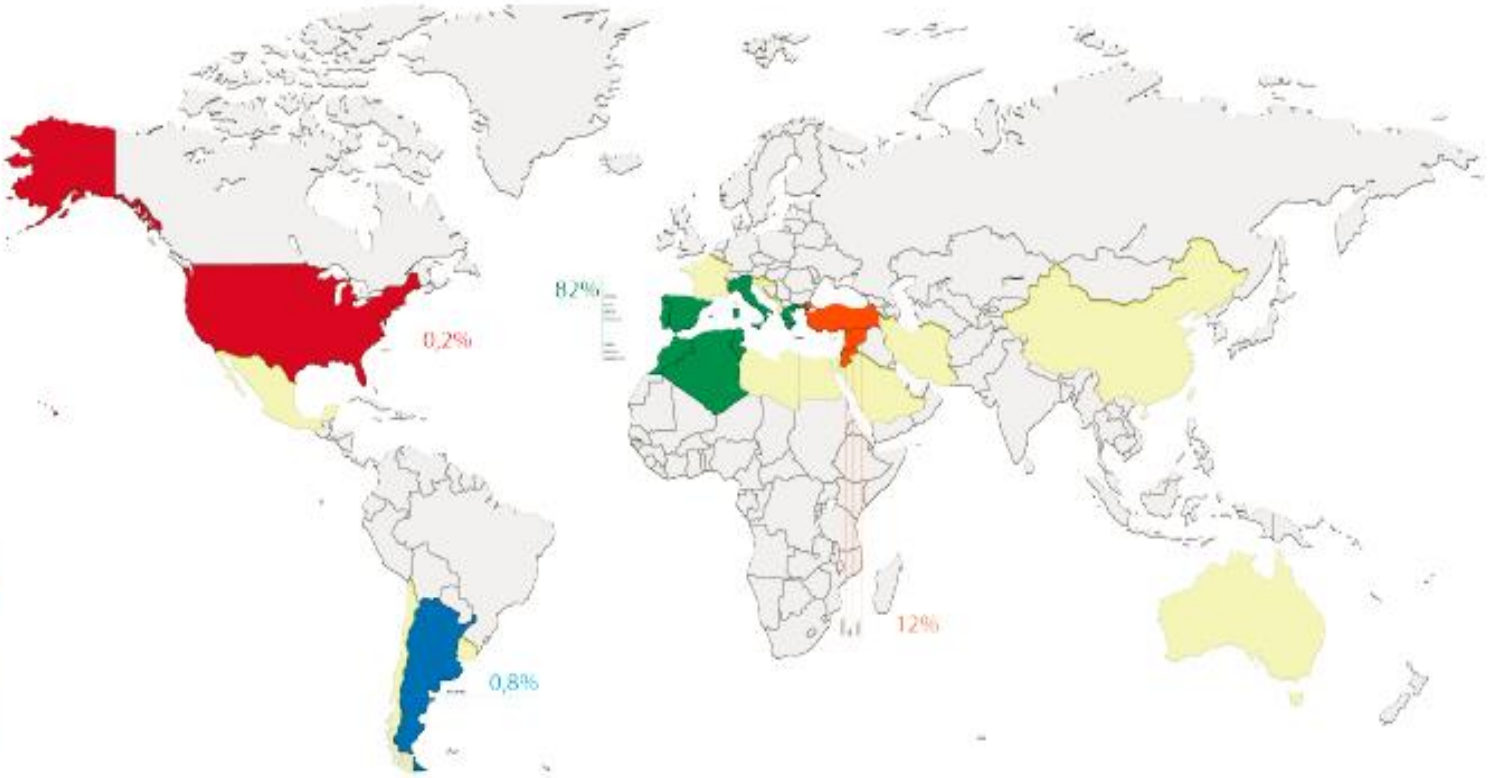
Hermoso et al. (2014)

BALANCE OF C02 OLIVE CULTIVATION

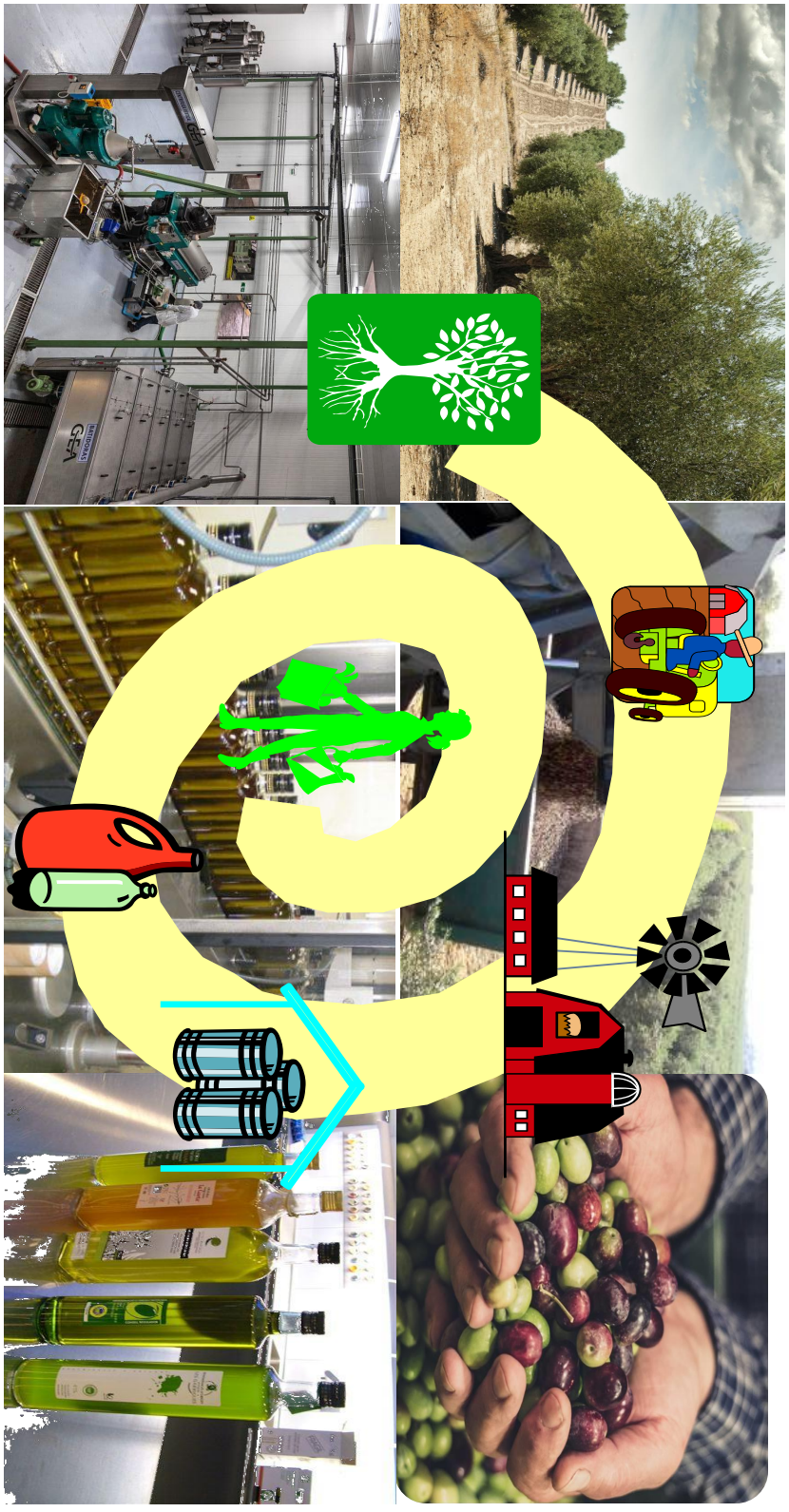
MAIN PRODUCER COUNTRIES

Variable/ Geographic region		Country	Production (1000t)	Global Production (%)	By Region (%)
V1,1	West Mediterranean	V 1,1,1 Spain	1.240,04	43,08%	81,93%
		V 1,1,2 Italy	415,77	14,44%	
		V 1,1,3 Greece	287,21	9,98%	
		V 1,1,4 Tunisia	177,43	6,16%	
		V 1,1,5 Morocco	117,86	4,09%	
		V 1,1,6 Portugal	66,69	2,32%	
		V 1,1,7 Argelia	53,43	1,86%	
V1,2	East Mediterranean	V 1,2,1 Syria	159,71	5,55%	11,82%
		V 1,2,2 Turkey	159,71	5,55%	
		V 1,2,3 Jordan	20,79	0,84%	
V1,3	South America	V 1,3,1 Argentina	24,14	0,84%	0,84%
V1,4	North America	V 1,4,1 USA	5,00	0,17%	0,17%
Total (V1,1+V1,2+V1,3+V1,4)			2.727,79	94,76%	94,76%
Global total			2.878,71		

CO2 EMISSIONS BY REGION



LOCALIZACIÓN DE ZONAS GEOGRÁFICAS



BALANCE OF CO2 OF OLIVE CULTIVATION - LIFE CYCLE -

BALANCE DE CARBONO DEL CULTIVO DEL OLIVO EN EL MUNDO

SITUACIÓN ACTUAL

22 COP = 200 PAISES COMPROMETIDOS

SECTOR AGRARIO = 14% EMISIONES GEI MUNDIALES

EL OLIVAR COMO SUMIDERO DE CO2

01

LA LABOR DEL C.O.I.

02

DIAGNÓSTICO DE LA PRODUCCIÓN

03

	Producción aceite (1.000 t)	Representatividad Producción mundial (%)
ESPAÑA	1.340,04	42,08
ITALIA	411,77	14,44
GRECIA	287,21	9,06
TÚNEZ	177,43	6,74
TURQUÍA	150,71	5,55
SIRIA	150,71	5,55
MARRUECOS	117,86	4,06
PORTUGAL	66,63	2,32
ARGELIA	53,43	1,86
JORDANIA	20,79	0,72
ARGENTINA	24,14	0,84
EEUU	5,00	0,17
RESTO	150,02	5,24
TOTAL	2.878,71	100,0

67%

CONCENTRACIÓN

Aproximadamente, el 67% de la producción de aceite de oliva mundial se centraliza en los países de España (42%), Italia (14%) y Grecia (10%). El resto de países mantiene una tendencia ascendente, pero inferior a la de los 3 mencionados.

48%

SUPERFICIE

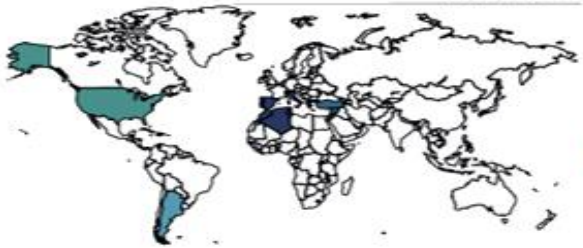
Los 3 países que concentran la mayor parte de la producción del aceite de oliva ocupan un 48% del total de la superficie cultivada a nivel mundial.

VARIABLES TÉCNICAS AGRONÓMICAS

04

05

RESULTADOS



WEB APP PARA CALCULAR EL BALANCE DE CO2 MUNDIAL

1 HA DE OLIVAR NEUTRALIZA PRACTICAMENTE LA HUELLA DE CARBONO ANUAL DE UNA PERSONA

PRODUCIR 1 LITRO DE ACEITE DE OLIVA CAPTURA 10,65 KG CO2 DE LA ATMOSFERA

LA PRODUCCION MUNDIAL DE ACEITE DE OLIVA ABSORBE LAS EMISIONES DE UNA CIUDAD DE 9.000.000 HABITANTES

"CARBON BALANCE OF OLIVE CULTIVATION IN THE WORLD" (2017)

CONCLUSIONS

“An olive tree footprint stores the annual carbon footprint of a person”

“The world production of olive oil absorbs the emissions of 16,000 people”

"The world olive stores an amount of CO2 equivalent to that originated by 7,000,000 inhabitants"

“The olive grove is a sustainable strategy against climate change”

THANK YOU FOR YOUR ATTENTION

JAIME LILLO

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