IOC

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OLIVE GROWING, OIL TECHNICAL AND ENVIRONMENTAL UNIT
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INTERNATIONAL OLIVE COUNCIL

A TEAM EFFORT

Anything is possible with the right team.

The Executive Secretariat of the IOC is pleased to give our readers detailed information on the activities carried out during what has been a very difficult 2020.

The activities of the Olive Growing, Oil Technical and Environmental Unit, outlined in the following pages, are this intergovernmental organisation's contribution as the world faces the pandemic. This year, we have worked hard to keep our commitments to the international community and our member countries.

And this is just the tip of the iceberg of a whole year at the IOC. A lot of our activities took place by video-conference, but the team was no less dedicated and committed to creating opportunities for a sector that fuels millions of companies around the world.

Enjoy!

THE ACTIVITIES OF THE OLIVE GROWING, OIL TECHNOLOGY AND ENVIRONMENT UNIT

The first article of the International Agreement on Olive Oil and Table Olives 2015 outlines olive growing, olive oil technology and technical cooperation as some of the main objectives of the International Olive Council (IOC). The vast majority of these activities fall under the remit of the Olive Growing, Olive Oil Technology and Environment Unit. The Unit's mission is to encourage research and development activities in the field of olive growing and olive oil technology, and to promote technology transfer and training. The main goal is to modernise olive growing and the olive products industry as well as to improve the quality of the products made and sold on the global market.

The Unit is also responsible for studying the interaction between olive growing and the environment, particularly with a view to promoting environmental conservation.

This Unit seeks to encourage the use of modern techniques to produce olive oils and process table olives that increase production, reduce costs, improve quality and protect the environment.

It is thus interested in the technical fields of olive growing: the genetic improvement of varieties, multiplication, disease and pest control, irrigation, pruning, harvesting, land management, olive oil production, recycling of oil mill by-products, etc.

The Olive Growing, Olive Oil Technology and Environment Unit deals with these issues in different ways. It implements projects in collaboration with IOC member countries, it publishes books and technical guides, and holds and takes part in

To develop these often complementary activities, the Unit drew up a work plan that takes the objectives of the International Agreement 2015 into account as well as the problems the olive sector has faced in recent years, particularly with regard to the identification and conservation of genetic resources, to combatting phytosanitary problems and diseases caused by certain olive pathogens, as well as to develop activities aimed at technology transfer to member countries and the promotion of IOC standards to improve the quality of olive oils traded internationally.

To this end, the Unit has established relations with certain international organisations such as the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), European and Mediterranean Plant Protection Organisation (EPPO), International Plant Protection Convention (IPPC) the Food and Agriculture Organisation of the United Nations (FAO), as well as research centres and universities specialising in olive-growing (CNR, ANSES, CSIC, EFSA, ITPGR, SupAgro, UCO, UJA...). It has also signed collaboration agreements, particularly with UJA, UCO, FAO and SUPAGRO, and other agreements that are currently being negotiated such as the International Treaty on Plant Genetic Resources for Food and Agriculture or FAO's ITPGRFA.

GENETIC RESOURCES AND PHYTOSANITARY PROBLEMS OF THE OLIVE TREE

The conservation, use and improvement of the genetic resources of olive varieties, their multiplication, the control of olive diseases and pests, the certification of olive tree seedlings produced in nurseries are key issues.

On the sidelines of the international seminar entitled "Integrated actions against Xylella fastidiosa" organised in 2018 with the CIHEAM, representatives from EPPO, FAO, CIHEAM and IPPC met to define a strategy for collaboration entitled Road Map-Xylella fastidosa "FR-XF Olivier", to combat olive tree pathogens, particularly Xylella fastidiosa (XF) and Verticillium.

To this end, a common action plan (CAP-XF Olivier) was drawn up between these organisations.

THE MAIN OBJECTIVES OF CAP-XF OLIVIER

- Develop courses of action at the national level to prevent, control and manage plant health in olive cultivation (XF)
- Facilitate international trade in olive tree seedlings that are certified pathogen-free, including XF

THE EXPECTED RESULTS

- Provide information and training for countries on how to prevent, control and manage phytosanitary diseases in olives (XF)
- Establish a certification system for authentic and healthy olive tree seedlings, free of pathogens in particular XF

This common action plan for operators in the sector is made up of the following two main courses of action:

I- Implications and awareness for the implementation of FR-XF Olivier

II- Technical activities:

- Normative and regulatory aspects
- Monitoring:
- Set up mechanisms to monitor and inspect plant health in olive orchards and nurseries.
- Develop guides for olive orchard management practices and production schemes for healthy olive trees.
- Define monitoring resources and means in member countries.
- Training of technicians in charge of official phytosanitary control:
- Upgrade the knowledge of staff responsible for official control, inspection and surveillance, in particular in international standards, good practices for the phytosanitary management of XF and other pathogens, diagnostics and laboratory analytical techniques.
- Certification system
- Inclusion in the protocol for the certification of olive tree seedlings of the detection of XF in order to facilitate international trade in seedlings.
- Evaluation of the resistance of plant material to pathogens
- Sharing and dissemination of information.
- Most of these activities have been completed and the rest are in progress.
- THOC Project: True Healthy Olive Cultivars

Fruits and endocarps from the cultivars 'Zarza' and 'Lechín de Sevilla', which exhibited subtle genetic differences (SI = 0.991) but clear morphological differences. Trujillo et al., (2014).

In the same vein, and in accordance with an agreement signed with the University of Córdoba, the Unit has implemented a project entitled TRUE HEALTHY OLIVE CULTIVARS (THOC). The objective of this project is to provide the olive germplasm banks on the IOC network with authentic initial material free of the pathogens responsible for olive tuberculosis (Pseudomonas savastanoi), verticillium disease (Verticillium dahliae), sudden death syndrome (Xylella fastidiosa), ArMV, CMV, CLRV, SLRV and Meloidogyne Spp. and Xiphinema, from the Córdoba Olive Germplasm World Bank (BGMO CAP-UCO-IFAPA).

Plant material from the main varieties of olives that are traded internationally has been authenticated, sanitised, multiplied and made available to member countries.

The THOC project has made it possible to:

- Conduct screening tests and sanitise plant material in the UCO International Germplasm Collection, in order to obtain mother plants that will constitute the authentic and healthy basic material for propagation in the IOC network of germplasm banks;
- Create reference collections of DNA and endocarps from these cultivars;
- Establish a list of correct denominations of authenticated cultivars that are used in national and international trade. Synonyms, homonyms and naming errors could be detected using the UPOV morphological and molecular SSR characterisation methods.

This project was also a precautionary measure against the spread of devastating pests and diseases such as those caused by Verticillium dahliae and Xylella fastidiosa and contributed to achieving the objectives of the Road Map - Xylella fastidiosa "FR- XF Olivier".

TRAINING IN THE PHYTOSANITARY MANAGEMENT OF GERMPLASM BANKS AND AUTHENTICATION OF OLIVE GENETIC RESOURCES

A technical training course was held by videoconference for managers of the banks on the IOC network to provide them with the necessary information and tools to implement surveillance, control and phytosanitary management mechanisms in national and international germplasm collections. This helped them continue their work on the use of genetic resources and to complete the training carried out in December 2019 with the University of Cordoba on techniques for the manipulation of genetic material, authentication, diagnosis and eradication of olive pathogens.

During this training, the collections' progress was analysed: the state of identification and authentication of the varieties in the banks, the morphological (UPOV) and molecular (SSR, SNP) markers used, the phytosanitary status of each collection (according to the European standard), as well as homonyms, synonyms and naming errors and molecular variants (according to the guide proposed and approved at the Córdoba seminar).

The objective was to assess the technical level of the collections, to consolidate the IOC germplasm network within the framework of the International Treaty on Plant Genetic Resources for Food and Agriculture, to facilitate the free exchange of authenticated healthy plant material, and to provide access to stakeholders in the olive sector and the scientific community to this authenticated healthy material and the corresponding databases.

INTERNATIONAL SEMINAR TO UPGRADE THE KNOWLEDGE OF STAFF IN CHARGE OF PHYTOSANITARY INSPECTION

Olive growing is threatened by many pests, including emerging, re-emerging and quarantine pathogens.

Prevention and early detection of these pathogens is a top priority before any control measures can be taken. Surveillance and control, using the most appropriate methods, are key to a healthy olive orchard.

The IOC worked with the CIHEAM-IAMZ of Zaragoza and experts from the institutions of the IPSP-CNR (Italy), the Conselleria de Agricultura, Desarrollo rural, Emergencia climática y Transición ecológica de Valencia (Spain), IAS-CSIC (Spain), the University of Córdoba (Spain) and EFSA (Italy), to organise a virtual international seminar entitled Control and Surveillance of Olive Pathogens.

The main objective was to harmonise the technical and phytosanitary aspects of the production of olive tree seedlings in IOC member countries, by presenting them

with the most recent information on pathogens, in order to improve the knowledge of staff in charge of phytosanitary inspection and certification of olive tree seedlings.

The main themes of the training were the biology, ecology and epidemiology of the main pathogens that threaten the olive tree, in particular Xylella fastidiosa and Verticillium dahliae; the understanding of the international regulatory and normative context under which the surveillance and control of olive pathogens is carried out; the identification of relevant parameters for survey design and effective monitoring with emphasis on sampling procedures and diagnostics using case examples on Xylella fastidiosa and Verticillium dahliae; and the ability to prepare and design risk-based surveys and monitoring activities.

The seminar allowed participants to:

- Have a solid knowledge of the biology, ecology and epidemiology of the main pathogens that threaten olive groves, in particular Xylella fastidiosa and Verticillium dahlia;
- Understand the regulatory context and the international standards that govern the monitoring and control of olive pathogens;
- Be able to identify relevant parameters for designing effective surveys and monitoring, with particular attention to sampling and diagnostic procedures for Xylella fastidiosa and Verticillium dahliae as case studies;
- Be able to prepare and design risk-based surveys and follow them up.

COLLABORATION WITH INSTITUTIONS, UNIVERSITIES AND SPECIALISED RESEARCH CENTRES

Six collaboration agreements on technical subjects have been adopted by the Council of Members, and the seventh is currently being drawn up:

1. IOC-CIHEAM Agreement
2. IOC-UCO THOC1 Agreement
3. IOC-UCO THOC2 Agreement
4. IOC-UJA Agreement
5. IOC-Sup Agro Montpellier Agreement
6. IOC-FAO Agreement
7. IOC-TIRPAA International Treaty on Plant Genetic Resources for Food and Agriculture (ongoing)

These agreements have been written by the Olive Growing, Olive Oil Technology and Environment Unit in order to collaborate with these institutions on technical, environmental and training issues and to promote IOC standards to improve the quality of olive oils traded internationally.

COLLABORATION WITH SPANISH PARTNERS

"The importance of the conservation and sustainable use of olive genetic resources and the role of the world germplasm banks"

A first meeting was held between the IOC, the Ministry of Agriculture, Fisheries and Sustainable Development of the Junta de Andalucía (CAGPDS), the University of Córdoba (UCO) and the Andalusian Institute for Research and Training in Agriculture and Fisheries, Food Production and Ecology (IFAPA). The meeting, which was held by videoconference, examined the role and future of olive genetic resources and the possibility of developing joint projects on this topic.

COLLABORATION IN INTERNATIONAL PROJECTS

OliveMed Project: Diversity of varieties, olive growing systems and markets in the face of climate change.

From gene to variety

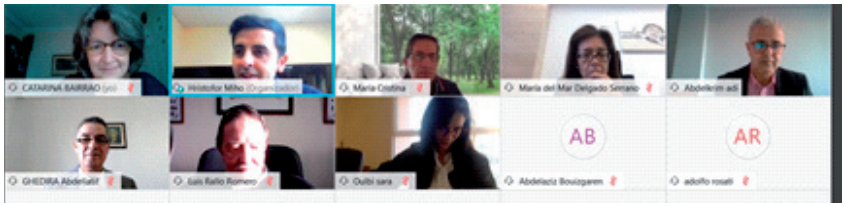
From variety to agro-ecosystem

From agro-ecosystem to territory and market

How can the diversity of olive growing systems (traditional agroecosystem, monovarietal orchard, high density systems) and the diversity of olive oil markets be factors of resilience for olive growing in the Mediterranean in a context of global changes? Can the genetic diversity of cultivated and wild olive trees be an asset for adaptation to climate change (winter cold deficit and water deficit)? These are the two main questions that structure the OliveMed_2 project.

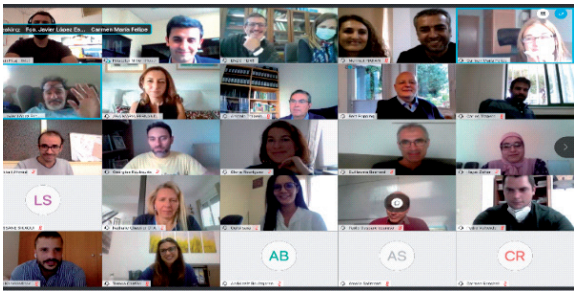
Gen4Olive Project

The loss of biodiversity has a major impact on the olive sector, one of the most important crops from a cultural and economic point of view. Emerging diseases and climate change threaten the sector on a daily basis. The sector has been aware of the risk of genetic erosion in recent years and only a few varieties are used by farmers, while there are more than 1 200 varieties to choose from the world over.



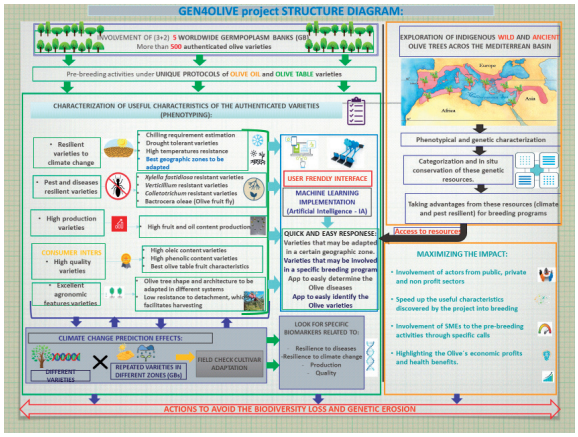
Olive genetic resources could be the key to solving these problems, but they remain largely unexplored. Major handicaps still hamper their exploitation, such as the lack of harmonised morphological, molecular and agronomic characterisation of varieties, and the lack of collaboration between germplasm banks and farmers.

GEN4OLIVE is a large interdisciplinary and transdisciplinary consortium that aims to use the genetic resources of the olive tree by bringing them closer to more breeders and markets. The overall objective of GEN4OLIVE is to accelerate the mobilisation of olive tree resources and promote pre-breeding activities by developing an intelligent and user-friendly interface that will use artificial intelligence to make the most of olive tree resources.



GEN4OLIVE will develop collective pre-breeding activities for the in-depth characterisation of more than 500 global varieties and 1 000 wild and ancient genotypes around four themes: climate change; pests and diseases; production and quality; and modern planting systems.

Some 17 countries are participating in this project and five germplasm banks of the IOC network, including three international collections, with a budget of around €7 million.



Participant organisation name	Country
INTERNATIONAL OLIVE COUNCIL	
UNIVERSITY OF CÓRDOBA	ES
SANTA CRUZ INGENIERIA SL	ES
TECHNOLOGICAL CORPORATION OF ANDALUSIA	ES
GALVEZ PRODUCTOS AGROQUIMICOS SLU SPAIN CORDOBA	ES
UNIVERSIDAD DE GRANADA SPAIN GRANADA	ES
UNIVERSIDAD DE JAEN SPAIN JAEN	ES
CÁMBRICO BIOTECH	ES
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS FRANCE	FR
FOCOS GBR - FOODCONSULTINGSERVICES GERMANY	DE
ENOSI FYTORIOUXON ELLADOS GREECE ATHINA	GR
HELLENIC AGRICULTURAL ORGANISATION "DIMITRA". INSTITUTE OF OLIVE TREE AND SUBTROPICAL PLANTS	GR
UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA ITALY ROMA	IT
CONSIGLIO PER LA RICERCA IN AGRICOLTURA E L'ANALISI DELL'ECONOMIA AGRARIA ITALY ROMA	IT
CENTRE REGIONAL DE LA RECHERCHE AGRONOMIQUE DE MARRAKECH	MA
MINISTRY OF AGRICULTURE AND FORESTRY, ANKARA, TURKEY	TR
ANKARA UNIVERSITESI TURKEY ANKARA	TR

ACTIVITIES PLANNED FOR 2021

- True Healthy Olive Cultivars project THOC 2
- Workshop on the certification system for olive tree seedlings
- World catalogue of the main genetically authenticated olive tree varieties
- Seminar on the olive tree in the face of climate change
- Technical cooperation and technology transfer

TECHNOLOGY TRANSFER AND PROMOTION OF TECHNICAL COOPERATION AND RESEARCH AND DEVELOPMENT IN OLIVE GROWING

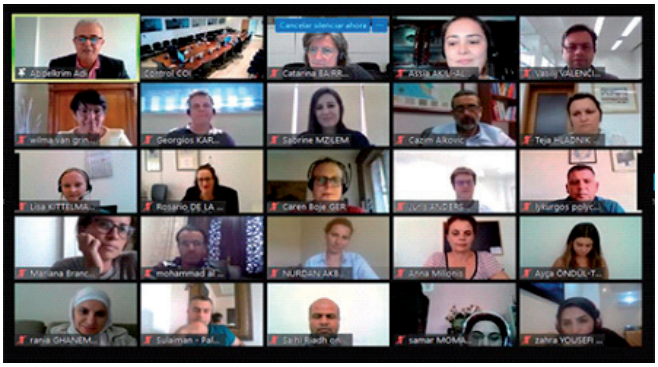
Activities to encourage research and postgraduate studies

- PhDs: Four doctoral scholarships have been awarded for the study of subjects of interest to the olive sector
- Master's: Scholarship holders will present their work at the end of the academic year.
- Expert Course on Virgin Olive Oil Tasting – UJA (postponed due to covid-19): 25 candidates from 13 countries have been selected to receive grants.

TECHNOLOGY TRANSFER AND PROMOTION OF TECHNICAL COOPERATION IN THE OLIVE SECTOR

Course for the leaders of virgin olive oil tasting panels

Every year, the IOC organises courses for the leaders of virgin olive oil tasting panels. Assessing quality according to IOC methods by approved tasting panels is a very important part of the olive oil production process, as is a panel's contribution to elaborating these oils and their responsibility in international trade. The courses aim to update panel members' knowledge on the norms and rules governing the recognition of their competence by the IOC.



International course on hygiene control and quality management in the table olive industry

The IOC partnered with the Agricultural University of Athens to organise a graduate course on hygiene control and quality management in the table olive industry, on the occasion of the university's 100th anniversary.

The course was inaugurated by the Executive Director of the IOC, Abdellatif Ghedira, and the Rector of the University, Spyridon Kintzios, both of whom stressed the importance of the course for technicians and professionals from IOC member countries.

Various topics were covered by leading experts in the field, including table olive processing, quality management, safety, hygiene standards, microbiological criteria and sensory evaluation.

Efstathios Z. Panagou, the course director, and Abdelkrim Adi, the Head of the Olive Growing, Olive Oil Technology and Environment Unit of the IOC, concluded the course together.

Training and technical cooperation at national and inter-regional level

The pandemic restricted the activities of the ES to the following:

Algeria

An IOC expert provided technical assistance for the Algerian tasting panel at ITAFV for 5 days in January 2020 for 11 members of the national panel.

Jordan

Two IOC experts carried out a five-day technical assistance mission to determine the age of millennial olive trees in Jordan in February 2020.

The ES plans to organise some activities that had to be postponed due to covid-19 (Israel, Italy and Palestine) and to respond to other Member requests depending on budgetary availability and the pandemic.

STAY TUNED!

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