MED

MEDITERRANEAN INSTITUTE FOR AGRICULTURE, ENVIRONMENT AND DEVELOPMENT

ANNUAL REPORT 2020

MED
MEDITERRANEAN INSTITUTE FOR AGRICULTURE, ENVIRONMENT AND DEVELOPMENT

20200 annual report

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1. INTRODUCTION

2020 has been the year of launching MED, the Mediterranean Institute for Agriculture, Environment and Development, which includes three former R&I units: ICAAM, from the University of Évora, CEBAL, in Beja and MeditBio, in the University of Algarve. 2020 has been a challenging and highly motivating year, where the new MED started its activities and many new pathways had to be defined.

The Mission of MED is the promotion of the sustainability of ecosystems and food security as contribution towards territorial cohesion and human wellbeing. This means optimizing management to enhance the resilience, productivity and profitability of the Mediterranean pastoral, agri-food and forestry value chains while delivering environmental and social benefits. It also means ensuring the preservation of nature and landscape, and rural vitality.

2020 was the year where the COVID-19 has limited all society activities. The life of the newly created R&D unit was surely affected by the crisis, in the networks, the events, the exchanges, and even in the work developed – as confinement has also brought limitations to the time dedicated to work, by individual researchers. We have managed however to maintain our activity and show promising scientific outputs, and we are confident that these will bring results in the future.

MED is a largest R&D Unit in Portugal, combining agronomy, ecology, food sciences and territorial integration. With 180 senior researchers of different disciplines, its heterogeneity favors inter – and transdisciplinary approaches. MED focus is on the Mediterranean context and particular challenges, not least natural resources use, protection and regeneration, under known scenarios of climate change.

The following sections of this Report demonstrate MED's activities and achievements in 2020.

2. ABOUT US

The aim of MED is both to increase excellence in research and to contribute with solutions to be applied by the private and public sectors to enhance the sustainability of agroecosystems, the environment and the supporting territories. Interaction with stakeholders and an increasing number of multi-actor projects, is key for identifying research needs and for securing dissemination of applicable results.
MED's 5 main goals are to:
1) improve resources use efficiency;
2) improve the sustainability of the food system and of the Mediterranean diet;
3) assure biodiversity conservation and landscape multi-functionality;
4) promote organizational capability and sound governance mechanisms;
5) identify pathways towards resilience and adaptation under known climate change scenarios.

MED is on the forefront of international research debate. The many H2020 and other European projects, as well as the networks where MED or its researchers are involved, document and create the conditions for this internationalization.

The eight Thematic Lines structure the research in MED so that questions from practice can be treated in an integrated perspective across disciplines and specialties. And so that more complete and comprehensive support can be given to practice, from the knowledge we produce. Research in MED is developed by different teams, in different research groups, supported by different labs, in a complex and dynamic structure. Nevertheless, there are clearly defined goals and the research developed, contributes to the goals of at least one of the Thematic Lines.

MED develops its activities based on multidisciplinary teams comprising researchers from multiple areas, as Agricultural Engineering, Biotechnology, Animal Science, Plant Production, Biology, Physics, Chemistry, Ecology, Economic, Social, Geography, Landscape and Territorial Sciences, Soil Sciences and Veterinary Medicine.

Through cooperation with other national and international I&D institutions, the work allows to achieve: understanding the complex Mediterranean production systems and to promote technological innovation as a means of responding in an integrated manner, to the social, economic and technical needs in the field of agriculture, while preserving natural resources and environmental quality.

The largest share of research and related activities has been financed by external, competitive funding. The FCT funding for MED has made it possible to set in place supporting structures and human resources as the UDIT and the Executive Director. And in 2020 also the process of contracting other researchers, to supplement the needs identified in each thematic line, has been launched.

3. STRUCTURE DESCRIPTION AND CHART

DIRECTIVE BOARD

Ensures the regular management of the Institute, according to the plans and budget approved by the Scientific Council. The Director is the elected President of the Scientific Council and nominates the Vice-Directors.

DIRECTOR

Teresa Pinto Correia (mtpc@uevora.pt), President of the Scientific Council
Full Professor, PhD in Geography, University of Copenhagen, Denmark

VICE-DIRECTORS

Maria João Cabrita (mjbc@uevora.pt)
Assistant Professor, PhD in Agricultural Sciences, University of Évora, Portugal

Rui Charneca (rmcc@uevora.pt)
Assistant Professor, PhD in Veterinary Sciences, University of Évora, Portugal

Rui Lourenço (lourenco@uevora.pt)
Researcher, PhD in Biology, University of Évora, Portugal

SCIENTIFIC COUNCIL

MED's Scientific Council is composed of all eligible PhDs (i.e. PhDs who comply with predefined standards of scientific production – see Annex 2 of MED's Regulation). Its functions include the discussion and approval of scientific and financial reports, plan of activities and budget as well as the admission of new members. The President of the Scientific Council is elected for 3 years and assumes the functions of Director of the Institute.

PERMANENT COUNCIL OF THE SCIENTIFIC COUNCIL

The Permanent Council of the Scientific Council advises the Board of Direction on current affairs. It is formed by the members of the Board of Direction and by the Coordinators of the Research Groups and the Coordinators of the MED's nodes (CEBAL and University of Algarve).

EXTERNAL SCIENTIFIC ADVISORY BOARD

Formed by international experts in the scientific areas of MED that periodically will evaluate MED's activity and achievements.

- Hubert Wiggering – University of Postdam, Germany
- Gad Baneth – Koret School of Veterinary Medicine – Israel
- Jorgen Primdahl – University of Copenhagen, Denmark
- Maria João Santos – Utrecht University, Nederlands
- Javier Abadía – Aula Dei Experimental Station – Council for Scientific Research (EEAD-CSIC), Spain

EXTERNAL STAKEHOLDER PANEL

The constitution of a MED External Stakeholder Panel arose from the need to establish an interaction between research and actors on the region in the agricultural sector, in the food value chain and in the management of the environment and resources.

MED wants that its Stakeholder Panel functions as a privileged area of discussion and consultation at regional and national level on the MED's strategy and activities, which will ensure a better link to practice as a whole, considering the various potentialities and problems that characterize the south of Portugal. However, due to the limitations of the COVID-19 crisis and the multiple requirements that the Board had to reply to, in 2020, this Panel has not been set in place yet.

Contacts and interactions with stakeholders are diverse in MED, from the Board and also from different researchers, individually and organized in teams, in projects and other initiatives. As an institutional initiative, we aim to set the External Stakeholder Panel in place as soon as possible.

EXECUTIVE DIRECTOR

The Executive Director supports the daily management of MED. He promotes the management of scientific institutional networks (national and international), and the coordination of joint activities; represents the Board of Directors, researchers and research areas of MED in external events; promotes the inter-disciplinary research approaches and support to their implementation, within the research unit MED, among its researchers, and between the units of different managing institutions; and manages the administrative processes of research.

Nuno M. Pedroso (nmpsp@uevora.pt)

Researcher, PhD in Biology, University of Évora, Portugal

ADMINISTRATION AND FINANCE

The administrative team ensures communication with the central administration of the University of Évora in conformity with the established procedures.

Fernanda Seabra (fmos@uevora.pt; med@uevora.pt)
Technical assistant
Technical Support Office for Research Units and Chairs
Science and Cooperation Services, University of Évora

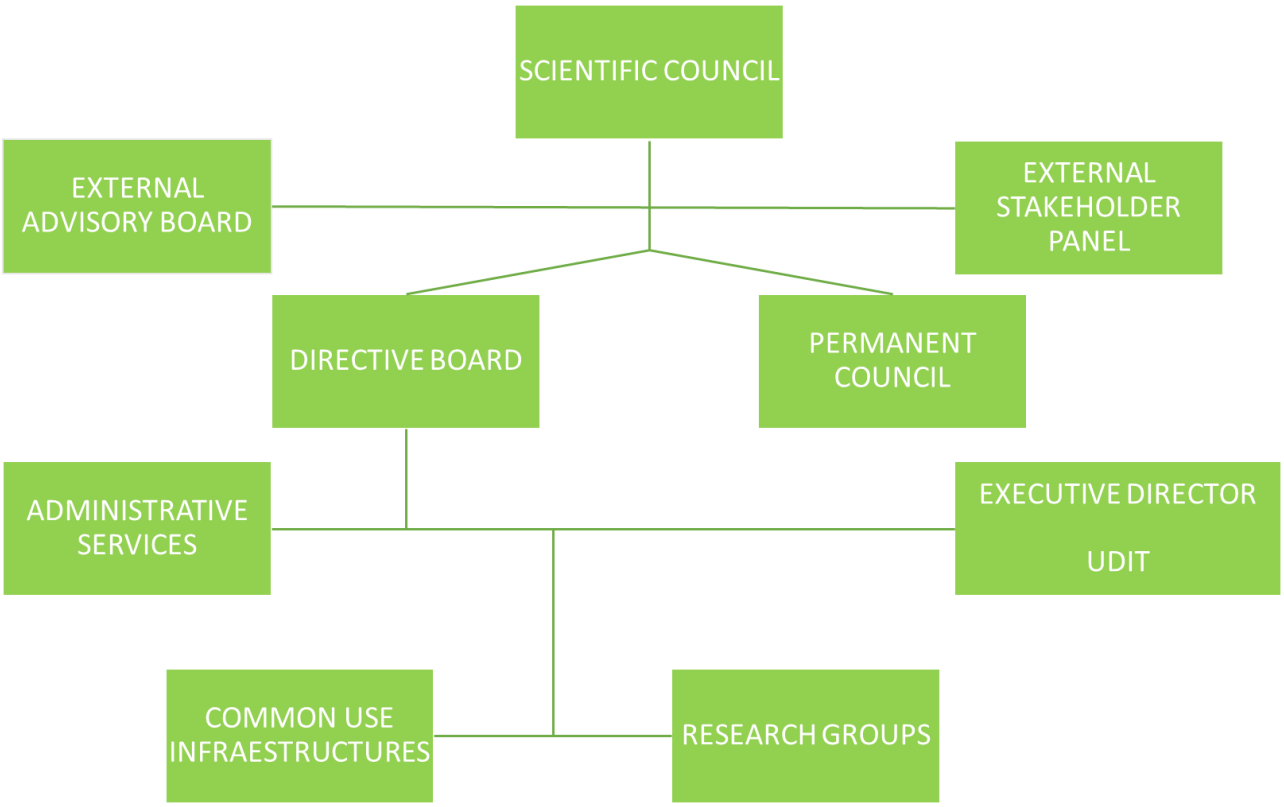
COMMUNICATION OFFICE (UDIT)

The Office for Communication, Technology Transfer and Innovation (UDIT) is dedicated to the dissemination of Research & Development results and to the promotion and transfer of technologic innovation, thus contributing to science outreach and regional development. It is also this office that manages the database of researchers and their scientific production.

Patrícia Vacas de Carvalho (pvc@uevora.pt; udit_med@uevora.pt)
UDIT Coordinator (January – October)
Management and Science Communication

Luis Piteira Gomes (lag@uevora.pt; udit_med@uevora.pt)
UDIT Coordinator (November – December)
Researcher, PhD in Biology, University of Évora, Portugal

ORGANIZATION CHART

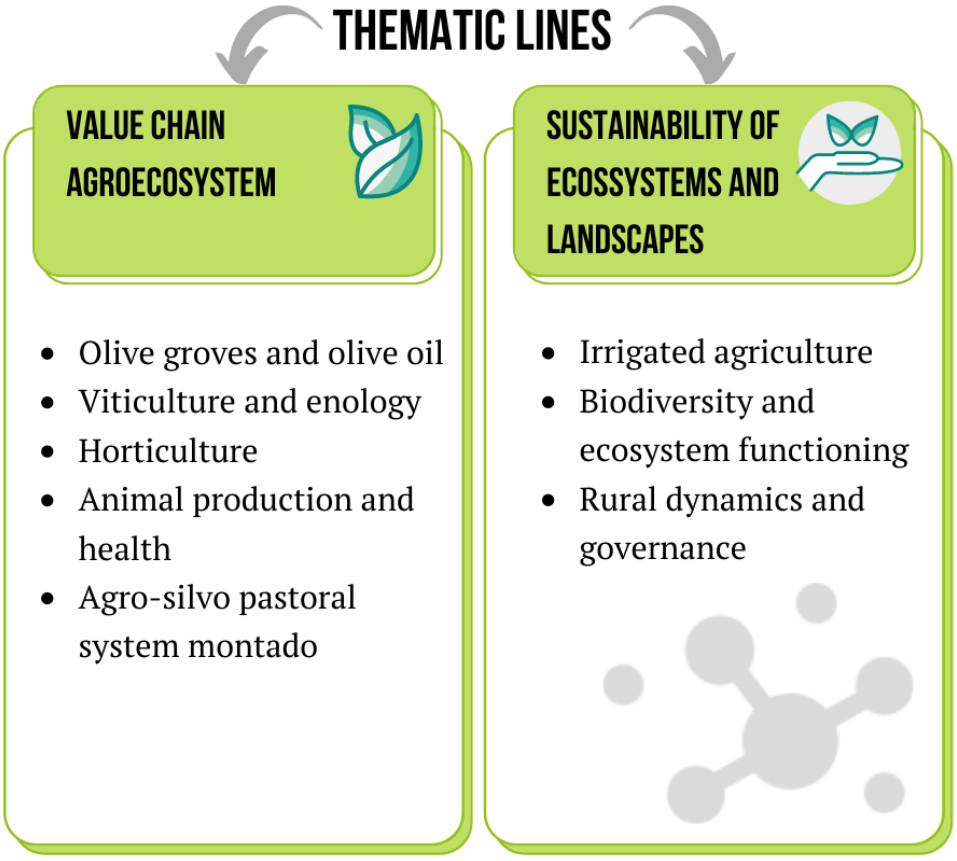


4. RESEARCH ORGANIZATION IN MED

MED's strategy is to promote interdisciplinary and problem-solving research at global, regional and local scale.

THEMATIC LINES

The research in MED and its heterogeneity are explored in eight Thematic Lines (TL). TL are organized in two complementary approaches centred on: a) a value chain or an agroecosystem and cross-cutting themes crucial for the sustainability of the Mediterranean ecosystems and landscapes.



RESEARCH GROUPS

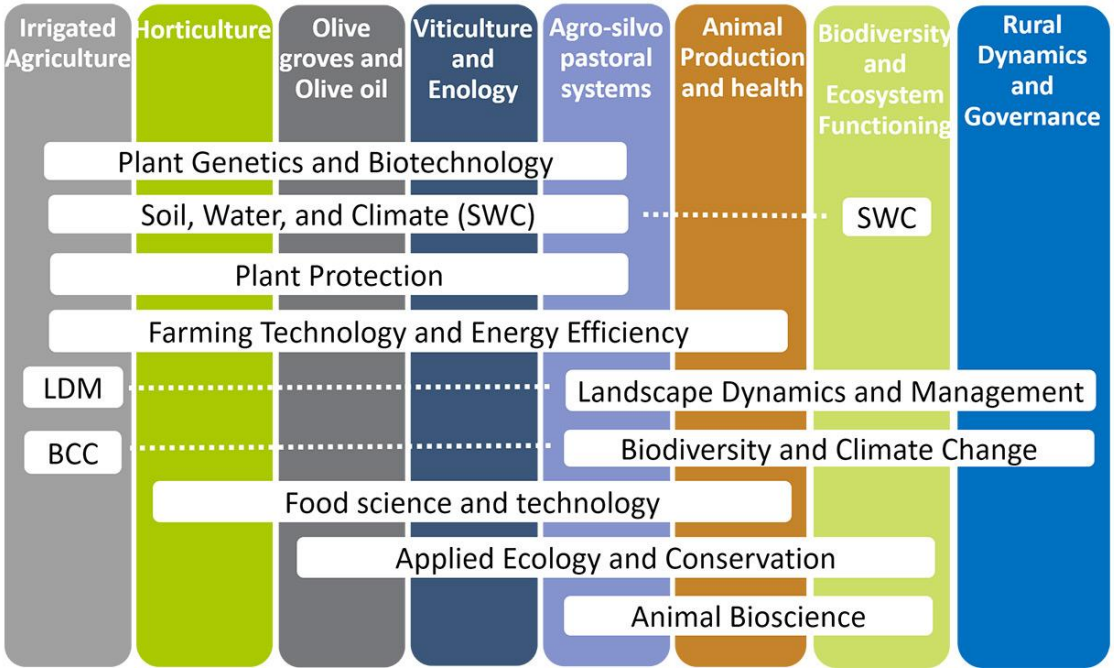
MED's Research Groups bring together researchers who carry out their research activities in a certain knowledge area. Each researcher may belong to more than one Research Group (RG), but it's mandatory to dedicate more than 50% of research time to an only one RG. RG are formed in two ways:

a) around a disciplinary area and a related methodological approach
b) around a study object, combining diverse and complementary disciplines.

ANIMAL BIOSCIENCES (ABG)
FOOD SCIENCE AND TECHNOLOGY (FST)
PLANT PROTECTION (PP)
PLANT GENETICS AND BIOTECHNOLOGY (PGB)
APPLIED ECOLOGY AND CONSERVATION (AEC)
SOIL, WATER AND CLIMATE (SWC)
FARMING TECHNOLOGY AND ENERGY EFFICIENCY (FTE)
LANDSCAPE DYNAMICS AND MANAGEMENT (LDM)
BIODIVERSITY AND CLIMATE CHANGE (BCC)

Researchers are encouraged to orient their investigation to feed into the TLs, and collaborate with researchers inside or outside the Groups. Each Group (and researcher) may contribute to one or more of the TLs. Flexibility and interaction are key concepts, and integration towards common goals (in the TLs) is a strategic positioning.

Contribution of the Research Groups to the Thematic Lines



INFRASTRUCTURES

MED Infrastructures area composed by the laboratories and experimental support units that are spread by the University of Évora, CEBAL and University of Algarve. The management of these infrastructures is dependent on each management unit (MED Headquarters manages the University of Évora Labs and MED nodes manages CEBAL and UAlg Labs, respectively).

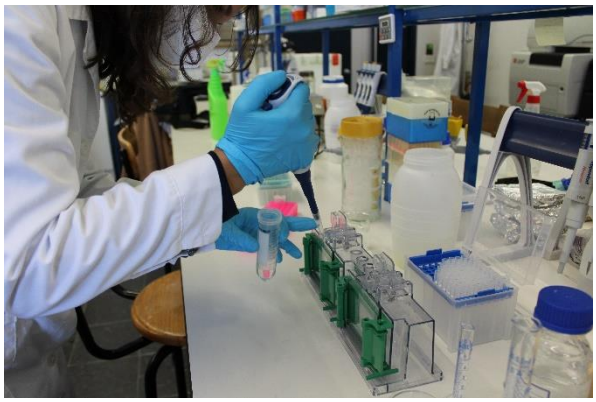
UNIVERSITY OF ÉVORA

LABORATORY AREAS:

- FOOD AND NUTRITION TECHNOLOGY
  - Laboratory of Technology and Post-harvest
  - Nutrition and Metabolism Laboratory
  - Oenology Laboratory
  - Technology and Quality Laboratory of Regional Products
- PHYSIOLOGY, HEALTH AND ANIMAL BEHAVIOR
  - Laboratory of Applied Animal Physiology
  - Laboratory of Palynology and Aerobiology
  - Laboratory of Reproduction and Lactation
  - Microbiology Laboratory
  - Parasitology Laboratory - Victor Caeiro
- SOILS AND WATER
  - Rural Engineering Laboratory
- LANDSCAPE, ECOSYSTEMS AND BIODIVERSITY
  - Laboratory of Botany
  - Laboratory of Ornithology
  - Macromycology Laboratory
- VALORISATION OF GENETIC RESOURCES AND PLANT PROTECTION
  - Entomology Laboratory
  - Laboratory of Plant Virology
  - Molecular Biology Laboratory
  - Mycology Laboratory
  - Nematology Laboratory
  - Plant Breeding and Biotecnology Laboratory
  - Soil Microbiology Laboratory

EXPERIMENTAL SUPPORT UNITS

- Plant Growth Chambers
- Ultrafreezers
- Experimental winepress
- Animal Testing
- Microscopy and Cytometry
- Geotechnologies Equipment
- Greenhouse Complex
- Processing of Plant Material
- Field Equipment
- Experimental Plots (Plots of Spontaneous Vegetation)



CEBAL - ALENTEJO BIOTECHNOLOGY CENTER FOR AGRICULTURE AND AGRO-FOOD

- Bioinformatics tools development unit
- Molecular biology and genomic tools unit
  - *In vitro* plant propagation room
  - Plant growing room
- Interdisciplinary Unit of Analytic chemistry
  - Chromatography room
- Food biotechnology unit
- Bioproducts unit
  - Section of biological in vitro processes – potential evaluation
  - Microbiology section
- In-Out Unit - experimentation and technological experience on a pilot scale:
  - Food biotechnology climatized room
  - Biohazard sample processing room
  - Process and extractive technologies room
  - Membrane technology room

UNIVERSITY OF ALGARVE

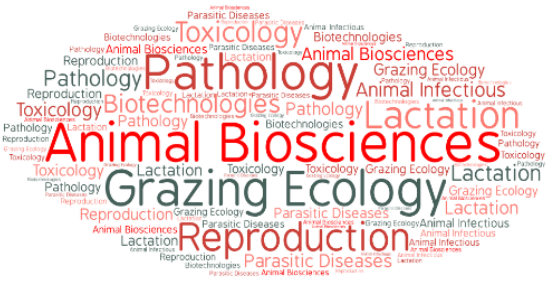
- Biopolymers and Rheology
- Molecular Biotechnology and Phytopathology
- Plant Biotechnology
- Food Science
- New Products Development and Sensory Analysis
- Oenology
- Post-harvest ID&T station
- Entomology
- Genomics and Genetic Improvement
- Horticulture and Post-Harvest
- Microbiology
- Plant nutrition
- Chemistry of natural products
- Processing
- Soils and waste
- Virology


Ludovico Silva


Amilcar Duarte

RESEARCH GROUPS HIGHLIGHTS

GROUP: ANIMAL BIOSCIENCES (ABG)



HEAD OF GROUP: Elsa Leclerc Duarte, [emld@uevora.pt]

VICE-HEAD OF GROUP: Elvira Sales Baptista [elsaba@uevora.pt]

INTEGRATED MEMBERS: 39 members
PhD STUDENTS: 13 Students

[See List point 14 - MED Members]

Keywords: Biomarkers of health and disease| Autochthonous animal breeds | One Health | Animal welfare

Major Competences of the Group

ABG is a multidisciplinary group that comprehensively covers all aspects of animal bioscience, from fundamental research in biochemistry, physiology and genomics, to problem-based applied research on animal health, production systems and related technologies. The disciplinary-based key competencies allow research at the molecular, cellular and tissue level, as well as in-vivo approaches related to the farm, companion animals and wildlife. ABG members have been developing cross-cutting approaches particularly in the following areas:

1. New phytopharmaceutical compounds to improve animal and human health;
2. Behaviour, welfare and health-related biomarkers for the diagnosis of degenerative joint;
3. Diseases, fertility, thermoregulation and adaptation to extreme climate conditions, food intake and diet preferences;
4. Characterization of the salivary proteome and lipidome and its relation to health, taste and feeding strategies;
5. Animal genetics and genetic basis of production parameters and disease resistance;
6. Trending and (re)emergent animal or zoonotic diseases in the Mediterranean context including farm, companion, wildlife and game species and their consequences for production, welfare and Public health.
7. One health approach to solve hot topic issues such as antibiotic resistance;
8. Improved animal farming, welfare and production in the Mediterranean context.

The Group holds specific competencies in resource efficiency (efficient and robust animals/efficient food chains), and healthy livestock and people (prevention, control and eradication/ the microbiome animal and human health). The Group is actively committed to contributing to the thematic lines Animal Production and Health, Agro-Silvo-pastoral systems - Montado and Biodiversity and Ecosystem Functioning.

MAJOR ACHIEVEMENTS IN 2020

The experimental farm facilities, MED laboratories and CEBAL laboratory have allowed researchers to address transversal themes to human and animal health, as well as to perform research within the frame of several production systems. Particular research efforts have been made in the areas of new phytopharmaceutical compounds, reproduction and diagnostic technologies, joint diseases in the horses and the dog model, autochthonous breeds production and eco-friendly farming, genetics and genetic basis of disease resistance, animal ecology and welfare, wildlife and game species health. Research themes were aligned with the animal task force top research priorities drawn by the European Union, in particular Resource efficiency (efficient and robust animals/Efficient food chains) and Healthy Livestock and People (prevention, control and eradication/ the microbiome, animal end human health). Additionally, 3 ABG members take part in the Animal Welfare Body of the University of Évora, which certifies the compliance of ethical standards in all projects involving animals.

The projects and publications of the group in 2020 reflect:

1. The fulfilment of the challenges launched by the regional smart specialization strategy for the ALENTEJO region, with several regional funding programmes: 1- NAQUIBIODPSA: Obtaining Veterinary Medicines from Silver Nanoparticles fixed in Polymeric Chitosan Hydrogels 2- EQUIMAIS; better equine production 3- ECO-PIG - Development of an innovative food mixture for finishing pig males of native breeds, outdoors, with benefits for the quality of the meat and the sustainability of the system. 4- ARCO-Alentejo Region Applied Research for COVID-19, "Testing with Science and Solidarity". These technology transfer programmes are mostly bottom-based, allowing to meet different regional stakeholders' demands. These are regularly involved in the projects, formally or informally, such as breeders associations and animal feed producers.
2. Fundamental research programmes within the scope of vaccine development for wildlife and game species, mycotoxins and microbiome (FCT/ nationally funded) in collaborations with national animal or human health authorities: "Development of an edible vaccine for the control of viral haemorrhagic disease (RHDV2) in wild rabbits" and "Early exposure to mycotoxins and potential health impact"
3. Strengthening of cooperation networks such as CYTED - Programa Iberoamericano de Ciencia y tecnología para el desarrollo, two COST ACTIONS: SOUND-CONTROL Standardizing output-based surveillance to control non-regulated diseases of cattle and ENOVAT European Network for Optimization of Veterinary Antimicrobial Treatment. Additionally, ABG participates in the OHIN- One Health International Network; European FABRE platform (an industry-led platform of breeding and reproduction organizations and institutes), participates in the National Network of Necropsy and Forensic Toxicology Centres in Vet-Onconet, a surveillance network for veterinary oncology cases.
4. ABG continued to be deeply committed to education, science communication and public awareness throughout several outreaching activities to students and the general public. One ABG member is a One Health Ambassador awarded by the One Health Lessons and has been actively committed to One Health education for high school students. Several ABG members participate in 2 Erasmus + programmes: 1-Critical Thinking for Successful Jobs and 2-Enhancing Food Safety in the Mediterranean. Several ABG members were dedicated to undergraduate and post-graduation education, in particular by supervising several Master students and PhD students from the PhD programme in Veterinary Science, Biology and Biochemistry of the University of Évora.

ISI / SCOPUS PUBLICATIONS - 41
[Numbers referring to the complete list in Point 13]
1; 4; 8; 10; 11; 12; 13; 14; 15; 16; 29; 30; 42; 47; 64; 65; 72; 94; 102; 110; 111; 118; 122; 123; 133; 136; 162; 164; 167; 171; 180; 181; 184; 189; 194; 199; 202; 204; 205; 206.

BOOK AND BOOK CHAPTERS – 3
B17; B20; B23.

RESEARCH PROJECTS – 15
[Numbers referring to the complete list in the Point 10]
41; 3; 81; 25; 45; 48; 53; 55; 56; 59; 60; 75; 77; 88; 90.

GROUP: FOOD SCIENCE AND TECHNOLOGY (FST)

HEAD OF GROUP: Maria João Lança [mjlanca@uevora.pt]

VICE-HEAD OF GROUP: Cristina Conceição [cristinaconceicao@uevora.pt]

INTEGRATED MEMBERS: 26
PhD STUDENTS: 9
[See List point 14 - MED Members]

Keywords: Food Science | Food technology | Food safety and quality | Mediterranean Diet | Nutritional value | Composition of food | Sensory Assessment| Microbial quality

Major Competences of the Group

The Food Science and Technology group has expertise in a wide range of matrices such as meat and by-products, fish, cheese, milk and milk products, fruits, nuts, olives and oil, grapes and wine, wine spirits, bee products and seaweeds. The group has the skills to work and analyze matrices whether traditionally produced or by alternative methodologies. The group has competencies in matrices proximal composition analysis, nutritional value, microbial quality, evaluation, and sensory analysis to guarantee the essential food quality, safety, and valorization of products.

To this end, FST has knowhow in a wide range of laboratory analyses, including microbiological, physicochemical, spectrophotometric determinations, sensorial analysis, gas chromatography (GC and GC-MS), high-performance liquid chromatography (HPLC), pyrolysis-compound-specific isotopic analysis (Py-CSIA) and stable isotope ratio mass spectrometry (SIRMS).

The group also develops work on the component related to food safety, namely at the level of alternative and sustainable fruit disinfestations methods; preservative agents in the food industry such as essential oils and plant extracts as well as at the level of development of environmentally friendly biodegradable packaging and active and intelligent packaging and several emerging food preservation techniques.

Equally patent is the development of techniques and analysis that make it possible to track the authenticity of products such as traceability and adulteration techniques / chemical food safety / molecular imprint polymers.

MAJOR ACHIEVEMENTS IN 2020

a) The beginning of a new association with and between small producers for the development of a new pork sausage;

b) Development of alternative and sustainable methods, for disinfecting fruit and the utilization of microbiological contamination as quality indicators, especially in halophyte plants and aromatic herbs;

c) Application of vegetable extracts, essential oils, obtained from aromatic and their by-products, like antioxidants and/or antimicrobials for its putative use in the food industry where the use of preservative agents is relevant;

d) Development of initial studies on bee products (honey, propolis and royal jelly) to evaluate their biological properties of interest to health;

e) Development of environmentally friendly packaging based on by-products and application of emerging technologies for food preservation,

f) Development of a meat sausage formulation: Porco Malhado de Alcobaça;

g) Development of new wine spirits (brandies) ageing technologies and acquisition of knowledge about the chemistry of wine spirits ageing and development of new products;

h) Determination of the odorant compounds in aged brandies, from different ageing systems to add innovation and value to Portuguese wines and spirits;

i) Assessment of varietal and geographic discrimination of olive oils by using different analytical approaches;

j) Study of some nutraceutical olive oil´s compounds based on a combined analytical approach;

k) Development and implementation of a selective methodology for the trace analysis of pesticide residue levels in olive oils;

l) Determination of the impact of technology on the wine´s characteristics;

m) Identification of molecular markers associated with characteristics of economic interest of Porco Alentejano, and the development of a molecular traceability system for the breed based on the identification of specific SNPs;

n) Determination of proximal composition, fatty acid profile, nutritional lipid quality, health indexes and persistent organic pollutants in the fillets of wild freshwater and migratory fish species of commercial interest;

o) Contributing to the knowledge and improvement of the quality of brandies and other alcoholic beverages with a focus on the volatile and phenolic compounds in alcoholic beverages and raw materials used;

p) Validation of two prototypes for the enhancement of thistle flower and leaf.

ISI / SCOPUS PUBLICATIONS - 68

[Numbers referring to the complete list in Point 13]

4; 6; 17; 18; 19; 20; 24; 28; 29; 30; 31; 32; 36; 37; 38; 42; 44; 49; 53; 54; 63; 65; 66; 67; 68; 69; 70; 75; 81; 82; 83; 84; 86; 90; 91; 97; 98; 100; 101; 107; 108; 112; 113; 114; 116; 117; 118; 122; 124; 127; 129; 131; 133; 134; 135; 136; 141; 144; 145; 146; 151; 155; 156; 157;158; 159; 163; 165; 176; 183; 194; 195; 200; 202; 212; 213; 218.

BOOK AND BOOK CHAPTERS –7

B8; B18; B23; B26; B33; B34; B35.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 11

[Numbers referring to the complete list in Point 10]

25; 36; 45; 50; 52; 81; 86; 74; 76; 92; 93.

GROUP: PLANT PROTECTION (PP)

HEAD OF GROUP: Maria Rosário Félix [mrff@uevora.pt]

VICE-HEAD OF GROUP: Ana Alexandre [anaalex@uevora.pt]

INTEGRATED MEMBERS: 21
PhD STUDENTS: 7
[See List point 14 - MED Members]

Keywords: Beneficial soil microbes | Abiotic and biotic stresses | Low input strategies | Economic and environmental sustainability

Major Competences of the Group

The Plant Protection group comprises 33 researchers with different expertises, sharing the common goal of finding new strategies to improve the production in agroecosystems with economic and environmental sustainability.

The main areas and competencies of the research group are:

a) The use of beneficial microbes to improve plant growth and protect the crops against biotic and abiotic stresses. The group focuses on: (i) arbuscular mycorrhiza fungi (AMF) and how cultural practices (soil mobilization, weed control, use of cover crops) can enhance the benefits of mycorrhization and AMF functional diversity; (ii) soil beneficial bacteria and the molecular basis of their interaction with the host as well as the role of rhizobia and other plant-growth promotion bacteria in improving plant growth under stress conditions;

b) The study of plant pathogens causing the most devastating diseases in the main Mediterranean crops, as olive, grapevine, almonds and in a new emergent crop in Alentejo region that is the cannabis medicinal crop. This research is focused on the molecular identification and characterization of the plant pathogens associated with the key diseases and the design of rapid and sensitive diagnostic techniques. Using the background knowledge in plant virology, the group is studying the use of the virus as vectors to induce resistance against several harmful plant pathogens like *Xylella fastidiosa* and Colletotrichum spp. In addition, the gene dynamics of the host responses against pathogens infection are being used to design new strategies for sustainable plant protection;

c) The investigation of the problems caused by plant-parasitic nematodes in important crop and forestry plants, using: (i) Integrative diagnosis, molecular systematics and genetic diversity of plant-parasitic nematodes; (ii) Combine molecular biology, cell biology and Omics (genomics, transcriptomics and metabolomics) to understand molecular plant-nematode interactions and successful parasitism; (iii) Finding new sustainable and green solutions for plant-parasitic nematode biocontrol;

d) The study of the main pests in Mediterranean crops by: (i) addressing arthropod biodiversity and genetics; (ii) developing new control methods alternative to chemical control, using a holobiotic approach of the pest organisms and focus on the olive crops and particular

challenges. The research focuses thus on integrated genetic studies, ecologic methods and field trials;

e) The use of antagonistic fungi isolated from organic composts for the biological control of plant soil diseases and, simultaneously, reducing the application of pesticides;

f) Rehabilitation of soils and water, removing drugs and respective metabolites from urban wastewater using aquatic plants by optimization of biobeds performance using bioaugmentation processes and using naturally developed indigenous arbuscular mycorrhizal fungi to improve growth and metal toxicity tolerance of crops in acidic soils.

MAJOR ACHIEVEMENTS IN 2020

All collaborations previously established with national and multinational companies were maintained, as for example with Fertiprado, Corteva Agriscience, Bayer-Monsanto, Fundação Eugénio de Almeida, Sociedade Agrícola Torre de Figueiras, North and Centre Regional Agencies of Agriculture Ministry, Technical Association of Winemakers of Alentejo (Associação Técnica dos Viticultores do Alentejo – ATEVA) and Esporão S.A (Wine Company). In addition, new protocols and collaborations were established, as for example with Ag-Innov Centro de Excelência – Sugal Group.

New projects were financed in 2020 in competitive calls, namely two projects funded by national funds for Science (FCT) and a knowledge transfer project (Alentejo2020). member of the group integrates the collaborative laboratory InnoVPlantProtect (https://iplantprotect.pt/) with active participation in the design of new research projects and knowledge transfer activities.
Researchers from the NemaLab group were awarded the prize “MycoExplorer” which aims to explore a sustainable solution to control a migratory plant-parasitic nematode - prémio Crédito Agrícola.
Researchers of Entomology Laboratory developed several models of mass capture traps for fruit flies, for which there is an ongoing patent request, and participate as an expert on the ‘EIP-AGRI Focus Group ‘Pests and diseases of the olive tree’ Biodiversity and pest management.

ISI / SCOPUS PUBLICATIONS - 33
Numbers referring to the complete list in Point 13)
4; 6; 32; 33; 34; 44; 46; 51; 55; 76; 77; 82; 95; 103; 112; 119; 139; 140; 141; 147; 148; 164; 165; 168; 169; 170; 175; 192; 195; 202; 203; 204; 214.

BOOK AND BOOK CHAPTERS – 6
B4, B5; B7; B27; B28; B29.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 13
Numbers referring to the complete list in Point 10)
26; 36; 43; 46; 47; 53; 64; 65; 71; 80; 82; 92; 95.

PLANT GENETICS AND BIOTECHNOLOGY (PGB)

HEAD OF GROUP: Anabela Romano [aromano@ualg.pt]

VICE-HEAD OF GROUP: Augusto Peixe [apeixe@uevora.pt]

INTEGRATED MEMBERS: 21
PhD STUDENTS: 2
[See List point 14 - MED Members]

Keyword(s): Plant biotechnology | Molecular diagnostics and markers | Phenotype-genotype associations| Gene functional analysis

Major Competences of the Group

The Plant Genetics and Biotechnology group (PGBG) holds a wide spectrum of competencies including plant omics, genetics and breeding, plant tissue culture, plant physiology and developmental biology. The group focuses its research on the use and development of molecular and biotechnology tools, for characterization, propagation, and breeding of important Mediterranean forest and agricultural species, like the cork oak, olive, grapevine, almond, strawberry tree and cardoon. From the recent research lines some items can be highlighted:

- Unravelling the genetic basis of cork formation and quality;
- Genetic characterization and diversity evaluation of natural plant populations of cardoon, and production of the plant bioactive compounds;
- Identification of molecular and metabolic pathways related with adventitious root formation in olive;
- Gene pyramiding to improve grapevine resistance against powdery and downy mildew;
- New strategies for walnut and olive micropropagation (micrografting and somatic embryogenesis);
- Transcriptome of wheat and grapevine miRNAs in response to abiotic stresses;
- Identification of gene networks involved in the innate immunity of plant species against harmful microbes.

MAJOR ACHIEVEMENTS IN 2020

Apart from quantifiable outcomes directly related to research, such as the number of articles and book chapters in international peer-reviewed journals and the ongoing I&D projects, other highly relevant accomplishments must be highlighted.

- Establishment and molecular characterization of two germplasm collections, one of the strawberry tree (Arbutus unedo L.), and the other one of wild rocket (Diplotaxis tenuifolia).

Over 429 Mega nucleotides and two sets of 500 SSR/microsatellite loci were uploaded to the NCBI database;

- Important information achieved on the molecular networks of cork formation with a focus on the suberin biosynthesis and lenticular channels levels;
- Healthy and value-added almond plants made available to the market by using novel biotechnological tools on their production systems;
- A gene network accounting to the innate immunity of P. purpurea to P. cinnamomi was identified;
- A new grapevine hybrid cultivar with tolerance to powdery and downy mildew registered in the Portuguese grapevines plant catalogue;
- A new technique for walnut micropropagation involving ex vitro rooting of micropropagated explants, and simultaneous micrografting;
- Establishment of olive lines with different embryogenic competence to be used for gene expression studies upon silencing or overexpression;
- Development of a phenotyping tool able to select grapevine plants with improved tolerance upon temperature stress;
- Identification of molecular events involved in olive adventitious rooting efficiency, and wheat and grapevine responses to abiotic stress;
- Establishment of a reliable protocol to assess seed viability through calorespirometry;
- Edition of the special issues in international journals with impact factor:
  - "Powdery Mildew Genetics" in Genes. https://www.mdpi.com/journal/genes/special_issues/mildew_resistance
  - "Biotechnological Approaches for the Production of Bioactives" in Plants. https://www.mdpi.com/journal/plants/special_issues/BiotechnologicalApproaches_Production_Bioactives
  - "Cellulose and Lignin Feedstock for Renewable Materials" in Polymers. https://www.mdpi.com/journal/polymers/special_issues/cellulose_lignin_feedstock
  - "Advances on the Biological Mechanisms Involved in Adventitious Root Formation: From Signaling to Morphogenesis" in Frontiers in Plant Science.
  - https://www.frontiersin.org/research-topics/12529/advances-on-the-biological-mechanisms-involved-in-adventitious-root-formation-from-signaling-to-morp
  - "Molecular Breeding in Horticultural Plants" in Plants. https://www.mdpi.com/journal/plants/special_issues/Molecular_Breeding_Horticultural

Finally, it is worth mentioning that in the scope of technology transfer, some of the work developed within the PGBG's framework, such as the walnut micrografting, are already being used by the spin-off company Despertafolia Lda. Moreover, several companies involved in the LIVESEED project have already expressed their interest in using the phenotyping methodologies developed for both, plant stress tolerance, and seed viability evaluation.

ISI / SCOPUS PUBLICATIONS - 27

Numbers referring to the complete list in Point 13)

7; 24; 35; 52; 60; 61; 67; 82; 85; 95; 109; 120; 128; 138; 152; 153; 154; 157; 158; 168; 170; 183; 194; 209; 220; 221.

BOOK AND BOOK CHAPTERS – 4

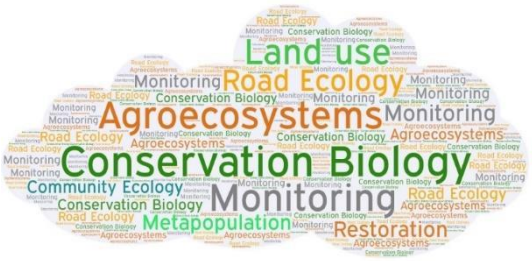
B10; B11; B12; B26.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 14

(Numbers referring to the complete list in Point 10)

15; 36; 44; 45; 50; 57; 67; 70; 72; 79; 80; 84; 86; 87.

APPLIED ECOLOGY AND CONSERVATION (AEC)



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INTEGRATED MEMBERS: 20
PhD STUDENTS: 6
[See List point 14 - MED Members]

Keyword(s): Biodiversity monitoring and conservation | Ecosystem processes and services | Habitat recovery | Landscape fragmentation and connectivity

MAJOR COMPETENCIES OF THE GROUP

- Biodiversity monitoring and conservation – defining effective methods to monitor how human disturbance affects biodiversity (including fungi, plants, freshwater communities, and terrestrial vertebrates);
- Sustainable management of natural resources. Vast experience in agroecosystems such as montado (cork oak woodlands), olive orchards and vineyards;
- Ecosystem processes and services – analyzing species interactions and ecosystem dynamics.
- Designing and implementing conservation measures for species and habitat recovery (natural habitats ecological restoration and invasive species control);
- Assessment and management of ecological impacts of biological invasions, mainly birds, fishes, and plants;
- Integrated management of roads and other linear infrastructure.

MAJOR ACHIEVEMENTS IN 2020

A European Patent Application was submitted, as a result of the consistent research in improved isolation and maintenance of *Terfezia spp.* mycelium cultures enabling sustainable use of this natural resource.

Consolidation of the work focused on the use of birds as indicators of management practices and human interventions on the landscape, namely by the publication of two scientific articles on the topic of the ecological impacts of biological invasions by birds.

The promotion of native plant species remains a key objective. We have been working with regional species that are of conservation interest and/or ornamental interest. As part of the project “Native Plants in the City– Rethinking Urban Green Spaces” small gardens were planted in the city of Évora to create islands of biodiversity in the urban environment.

We continue to promote the use of native plant species. We have been working with regional species that are of conservation interest and/or ornamental interest. The project “Native plants in the city – Rethinking urban green spaces” made it possible to plant small green areas, to create “islands” for the

regional biodiversity promotion and refuge in an urban environment. The germplasm seed bank (at the University of Évora Herbarium) collection has been incremented, keeping to be a fundamental tool for safeguarding native species seeds.

With nature conservation being one of the focuses, the group maintained a strong activity in applied research and scientific dissemination for stakeholders and the public, transmitting knowledge to facilitate more adequate ecosystem management and raising awareness. In this context we highlight:

- The publications about invasive alien plant species control techniques efficiency and cost-benefit analyses, based on the results of several studies, either in the context of protected areas or along with linear infrastructures;
- Involvement of stakeholders and local population in volunteer actions, technical training and the publication of a practical manual (available at https://www.med.uevora.pt/pt/documentos/) about native plants use advantages in a climate change scenario, mainly regarding water shortage and the need for more resilient gardens;
- Monitoring reports of the Natura 2000 Network in Portugal including the cartography of natural and seminatural habitats and flora of Sites of Community Importance (SIC) classified under the Habitats Directive - SIC Barrocal; SIC Caldeirão; SIC Monchique;
- Coordination and contribution to the preparation of Special Conservation Areas (ZEC) Management Plans, under the Habitats Directive – flora, vegetation and habitats component;
- Several members collaborated and are authors of Red List Vascular Flora Continental Portugal;
- Organization of the awareness seminar: "Control of invasive flora species in the LIFE LINES project" (15/10/2020) included in the National Week about Invasive Species;
- Co-organization of technical conferences on the multiplication of rare species, at CICYTEX – Spain;
- Launch of two flyers (PT/EN) about the preservation of the continental Laurissilva relics;
- Participation, by invitation of ICNF, in several events of the “Workshops for the harmonization of procedures for monitoring, assessment and conservation of the habitat types of community interest” promoted by the European Commission and the Spanish Government.

Increase in the research capacity of this group, with the award of 3 FCT doctoral grants. The research objectives of these PhDs are oriented towards the MED goals: management of the remains of natural habitats in cork oak forests, biodiversity on the verges of agricultural systems such as olive groves and vineyards and biodiversity conservation.

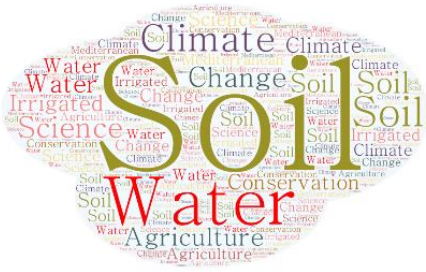
ISI / SCOPUS PUBLICATIONS - 30

(Numbers referring to the complete list in Point 13)
6; 26; 27; 35; 39; 48; 62; 74; 79; 87; 105; 121; 125; 130; 142; 143; 160; 172; 175; 178; 186; 187; 188; 196; 197; 198; 199; 210; 219.

BOOK AND BOOK CHAPTERS – 4
B3; B22; B30; B32.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 17
(Numbers referring to the complete list in Point 10)
1; 2; 4; 6; 7; 13; 14; 16; 34; 44; 48; 49; 54; 61; 67; 84; 90.

SOIL, WATER AND CLIMATE (SWC)



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INTEGRATED MEMBERS: 13
PhD STUDENTS: 4
[See List point 14 - MED Members]

Keyword(s): Soil science and soil and water conservation | Climate and agricultural change | Mediterranean Irrigated agriculture | Water resources planning and management

MAJOR COMPETENCIES OF THE GROUP

Soil Science and Applications, Hydrology and Water Resources Engineering, and Climate may be considered as the 3 disciplines constituting the scientific domain of the Group SWC. These disciplines are basic to any agroecological activity, as they provide basic scientific knowledge to agricultural, forest and animal production, as well as to any environmental impact assessment. This characteristic of fundamental sciences gives the group a special position among the MED research groups, as this pool of knowledge is required for the application of many project proposals in the frame of MED. Therefore, the members of this group may act as fundamental scientists specialized in one of the 3 disciplines or they may participate as researchers in almost any project of the institute.

MAJOR ACHIEVEMENTS IN 2020

In 2020 MED continues strongly represented in the Portuguese Soil Partnership through a professor and researcher who is also a member of the MED group Soil, Water, and Climate and Chair of the Portuguese Soil Science Society (SPCS).

Another member of this group who is chair of the European Conservation Agriculture Federation since 2011, acted as chair of the Organizing Committee of the 8th World Congress on Conservation Agriculture. This Congress, planned to take place in 2020, was postponed to 2021. Yet, a series of webinars was organized during the second half of 2020, counting on the strong engagement of FAO.

On several occasions the results of the project ACUAsave (Conservation Agriculture and Efficient Water Use) were presented, highlighting the water-saving capacity of effective soil in irrigation agriculture.

Through its members, the SWC group of MED became represented in two National Centres of Competencies, one on Corn and Sorghum, the other on Climate Change in the Agroforestry Sector.

Other members participated in several activities, either national or international, in the scientific domains of soil and water resources and the climate, namely in what climate change mitigation and adaptation is concerned.

ISI / SCOPUS PUBLICATIONS - 16
(Numbers referring to the complete list in Point 13)
5; 8; 80; 102; 149; 152; 180; 181; 185; 193; 201; 202; 203; 204; 205; 209; 224.

BOOK AND BOOK CHAPTERS – 7
B2; B9; B24; B15; B21; B24; B31.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 15
(Numbers referring to the complete list in Point 10)
4; 7; 11; 16; 30; 31; 39; 43; 49; 50; 51; 68; 73; 78; 82.

FARMING TECHNOLOGY AND ENERGY EFFICIENCY (FTE)

HEAD OF GROUP: José Rafael Marques da Silva, [jmsilva@uevora.pt]

VICE-HEAD OF GROUP: Fátima de Jesus Folgôa Baptista [fb@uevora.pt]

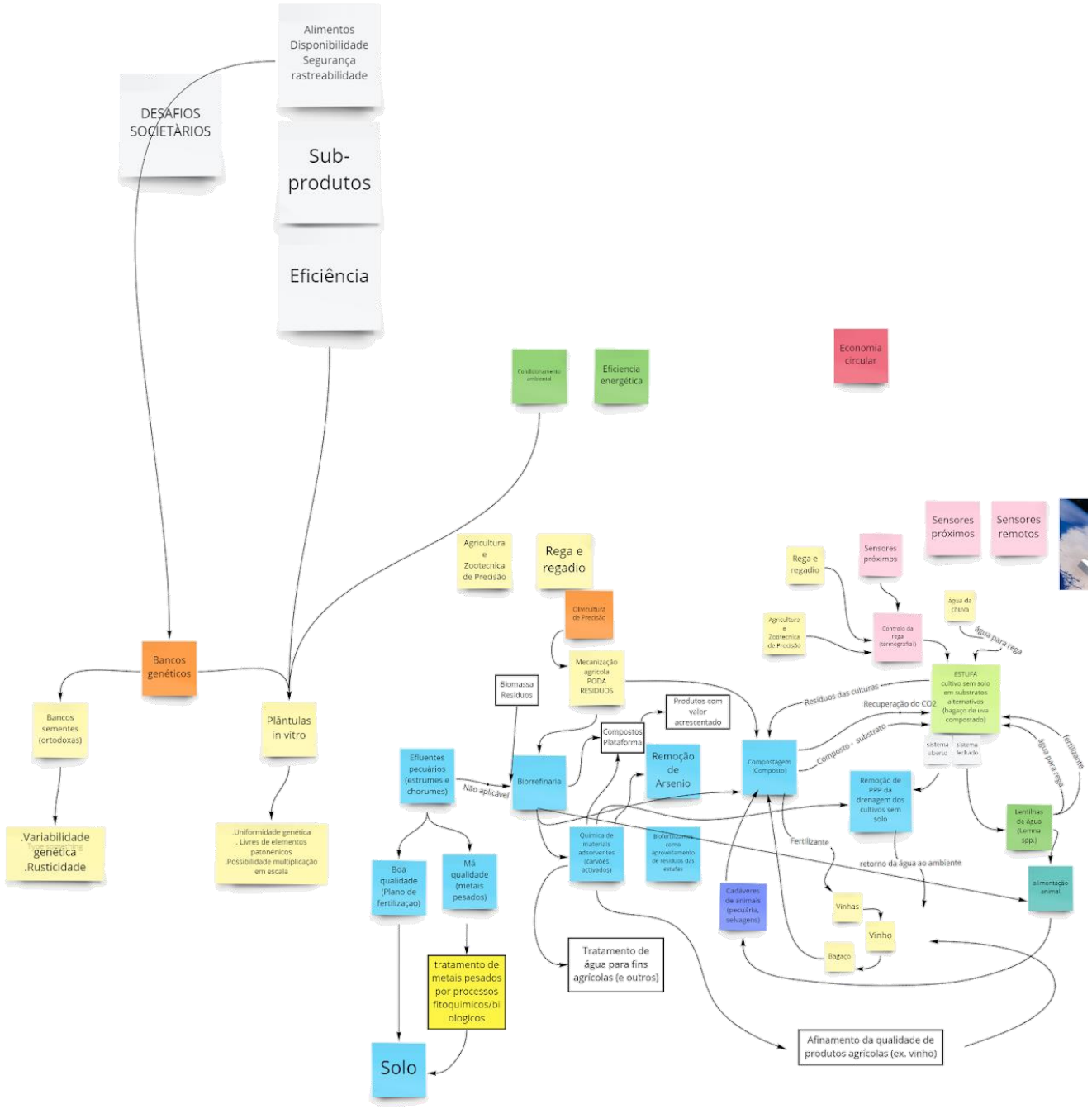
INTEGRATED MEMBERS: 15
PhD STUDENTS: 2
[See List point 14 - MED Members]

Keyword(s) | Development of farm machinery | Precision agriculture and PLF | Energy efficiency in agro-production and industry | Material and energetic use of biomass

MAJOR COMPETENCIES OF THE GROUP

The group Farming Technology and Energy Efficiency (FTE), has a group that is a highly diverse one and that could be interpreted as a problem or as an advantage. Normally a high level of specialization is important for scientific research in specific areas of knowledge. So, to be productive in terms of research in science teams must be focused and highly specialized. However, innovation needs diversity because without diversity new ways of related things doesn't appear.

In resume, one can say that the major competence of FTE group is diverse as can be seen in the next diagram where the group have discussed their competencies (Agriculture, Engineering, Precision Agriculture, Soil, Water, Remote sensing, GIS, GNSS, Energy, Biotechnology, Residues and they valuation, Circular economy…).

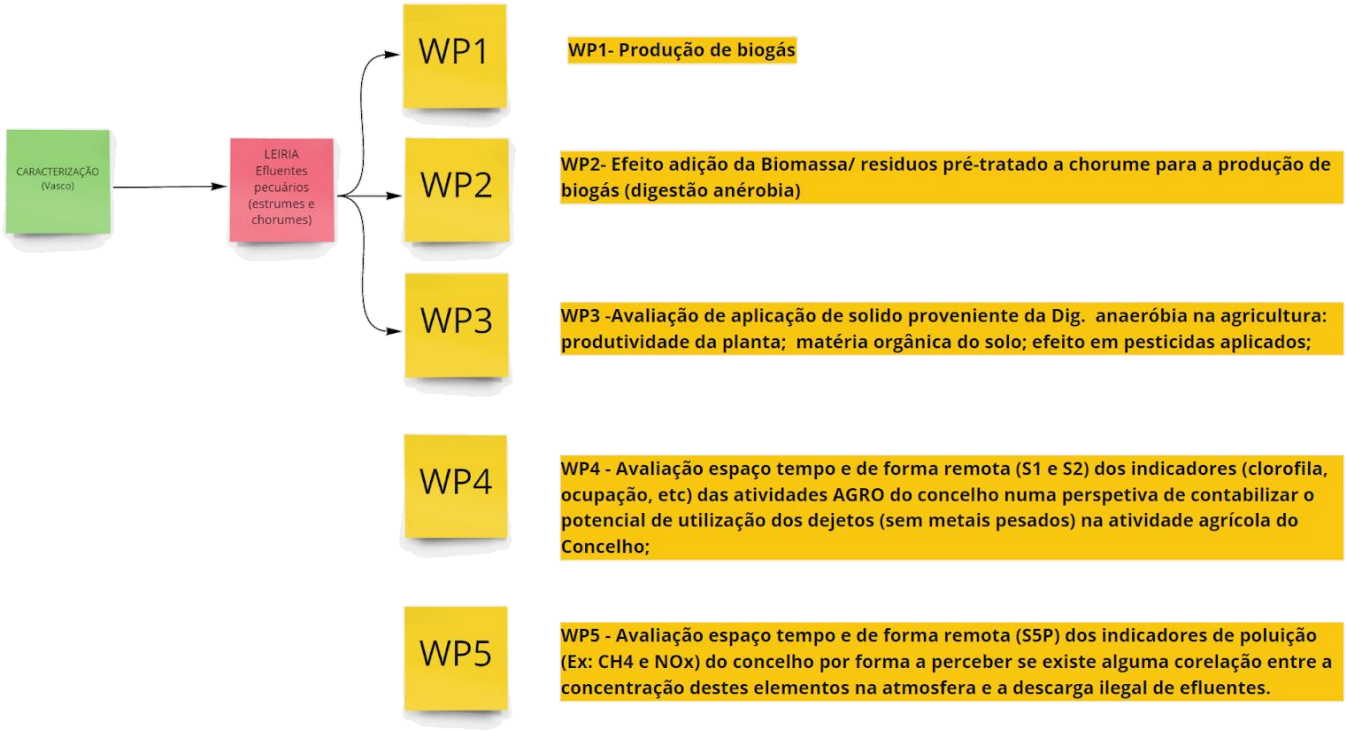


MAJOR ACHIEVEMENTS IN 2020

Diversity has one major problem, integration. The risk could be that the FTE group can see a lot of things but can't work together.

Several sessions were made to test how the group could resolve a problem together and the following Figure was produced. In resume, the discussion was centred on a huge problem in terms of animal effluents of a particular region and how the group could resolve the problem as a research/innovation group?

At this stage, one can see from the next Figure that there is potential to resolve problems together and the next step is to find a real problem where the group can be evolved on, has a group.



ISI / SCOPUS PUBLICATIONS - 11
[Numbers referring to the complete list in Point 13]
41; 45; 95; 150; 166; 174; 201; 202; 203; 204; 205; 222; 223.

BOOK AND BOOK CHAPTERS – 2
B5; B27.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 19
[Numbers referring to the complete list in Point 10]
9; 10; 19; 24; 26; 28; 31; 33; 42; 51; 57; 58; 66; 71; 73; 79; 82; 86; 87.

LANDSCAPE DYNAMICS AND MANAGEMENT (LDM)

HEAD OF GROUP: José Muñoz-Rojas, [jmrojas@uevora.pt]

VICE-HEAD OF GROUP: Constança Camilo Alves [calves@uevora.pt]

INTEGRATED MEMBERS: 16
PhD STUDENTS: 5
[See List point 14 - MED Members]

Keyword(s): Land use systems | Spatial analysis and modelling | Monitoring mechanisms | Public policies and planning | Adaptive management and governance | Co-construction of knowledge | Landscape functions

MAJOR COMPETENCIES OF THE GROUP

This group is unique in the Portuguese context in bridging together landscape functions, modelling, management and governance. The focus of the research group is on Mediterranean rural and farming landscapes. Members of the group include social, economic, agronomic, spatial and ecological scientists, who employ distinctive methods, concepts and techniques. This allows for an interdisciplinary approach that is essential for tackling complex social-ecological challenges arising in the landscapes of Mediterranean Portugal and Mediterranean Europe, and that is targeted in the EU´s Green Deal and Climate Pact (2020), 2030 Biodiversity Strategy, Cohesion Policy (2020) and CAP reform 2021-2026. All of these are policies and funding programs that will determine Portugal´s rural policies, public funding schemes and action plans for years to come. In addition to the diversity of approaches and concepts that researchers in the group jointly encompass, they also apply a multiplicity of techniques and tools, including quantitative and qualitative, social, economic, modelling, spatial and design-oriented and bio-physical and ecological. Members of the group work in the lab, field and also directly with stakeholders. An asset of this group is its experience and expertise in working with trans-disciplinary processes to progress towards knowledge co-construction and action-oriented research. This multiplicity of skills, tools and approaches has secured its success in gaining external funding, with its members now involved in 15 international projects (https://www.med.uevora.pt/international-projects/) funded at the EU level. Furthermore, members of this group are also involved in international networks aiming at knowledge exchange and joint action, included UNIMED and COST. At the National level, team members contribute or co-lead in 6 other projects and initiatives funded by the FCT and other regional and national agencies. The team has worked since its inception on delivering advice and co-constructing knowledge that is useful for informing better land-use governance and management options that can contribute towards the sustainability and resilience of Mediterranean rural landscapes. To help achieve this, the group plans on delivering a joint position paper and contributing to various new research project proposals. We expect that these joint outputs can help clarify where our distinctiveness and value as a group lies in comparison with other equivalent research groups, whilst they also help us disseminate our values, competencies and potentialities more widely.

MAJOR ACHIEVEMENTS IN 2020

The approach of this team to the Montado silvo-pastoral systems of central and S Portugal through a combined social-ecological and largely trans-disciplinary perspective that brings together multiple disciplines and scientific paradigms, actors, networks, operational approaches and spatial-temporal scales is a working example on how the different methods and infrastructures of the group are being combined. This combination of methods, levels and approaches becomes apparent through the set of multiple projects and publications that are listed as follow.

Ultimately, the current approach of this groups is to apply this complex multi-level and trans-disciplinary approach to study and move rural land-use systems and landscapes towards enhanced sustainability and resilience levels to other systems of relevance in Alentejo and the wider Mediterranean macro-region, including (but unrestricted to): olive groves, small-agriculture and mountain farming systems.

Last, it ought to be pointed out that this team is especially active in engaging, and liaising with diverse actors and stakeholders acting across governance levels from the farm to the region to jointly co-construct new theories and operational programs for land-use sustainability. This is equally apparent from the list of projects and initiatives that are listed below.

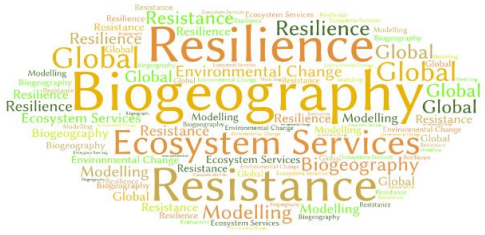
ISI / SCOPUS PUBLICATIONS - 22

(Numbers referring to the complete list in Point 13)
2; 23; 25; 35; 57; 58; 72; 73; 88; 99; 124; 125; 126; 160; 179; 182; 191; 197; 211; 215; 219.

BOOK AND BOOK CHAPTERS – 5
B3; B6; B16; B25; B29.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 33
(Numbers referring to the complete list in Point 10)
1; 2; 4; 5; 7; 9; 10; 12; 13; 16; 17; 18; 19; 20; 21; 23; 26; 27; 31; 33; 36; 40; 42; 49;51; 53; 55; 60; 66; 67; 84; 85; 89.

BIODIVERSITY AND CLIMATE CHANGE (BCG)



HEAD OF GROUP: José M. Herrera, [jmherrera@uevora.pt]

VICE-HEAD OF GROUP: Diogo Alagador [alagador@uevora.pt]

INTEGRATED MEMBERS: 9
PhD STUDENTS: 1
[See List point 14 - MED Members]

Keyword(s): Biogeography | Ecosystem Services | Ecosystem Resilience and Resistance | Global Environmental Change | Modelling

MAJOR COMPETENCIES OF THE GROUP

The Biodiversity and Climate Change (BCC) group follow a multidisciplinary approach for investigating the impact of the major drivers of global environmental change (particularly, landscape modification and climate change) on biodiversity as well as on ecosystem processes and services (BEPS). This group has also strong competencies to develop spatially-explicit conservation plans to promote the persistence of BEPS in current and future landscape scenarios undergoing environmental changes. Cross-cutting approaches to the conservation of BEPS have been addressed, particularly:

1. species distribution model development
2. climate-driven predictions of the impact of invasive species
3. eco physiological experiments
4. phylogenetic and trait-based approaches to species extinction
5. ecosystem services modelling
6. conservation management
7. disentangling food-web environment relationships
8. statistical tools development

The BCC Group holds specific competencies in ecological and statistical modelling, agroecology thermal ecophysiology and experimental biogeography. It is also actively committed to contributing to the thematic line on Biodiversity and Ecosystem Functioning, but also others such as those focused on Olive Groves and Olive oil and Rural Dynamics and Governance.

MAJOR ACHIEVEMENTS IN 2020

Despite the BCC Group aggregating a relatively low number of integrated members (n=9), it is a very active Group in terms of scientific productivity. Thus, the total number of manuscripts published during 2020 was 10. Remarkably, most of these works were published in top-ranked SCI journals including Nature Ecology and Evolution, Nature Communications, Global Ecology and Biogeography, Frontiers in Biogeography, Journal of Environmental Management and Diversity and Distributions.

Researchers from the BCC Group have also actively participated in national and international projects research. As an example, a BCC researcher is the national coordinator of SHOWCASE, a H2020 project that integrates a total of 10 European countries and that is focused on determining and establishing incentives for the conservation of biodiversity in agroecosystems.

The BCC group is similarly highly committed to training a new generation of researchers. Thus, at this moment there are a total of two PhD students granted with highly competitive studentship programmes and two more are expected to be integrated this very year of 2021.

Lastly, during 2020 the BCC Group aggregated a new integrated member who won a contract from the highly competitive ALENTEJO 2020 programme, which is intended to attract high qualified human resources (ALT20-59-2019-24).

ISI / SCOPUS PUBLICATIONS - 10

(Numbers referring to the complete list in Point 13)
3; 21; 22; 56; 71; 87; 91; 96; 104; 142.

BOOK AND BOOK CHAPTERS – 1
B1.

RESEARCH PROJECTS COORDINATED BY A MEMBER OF THE GROUP - 29
(Numbers referring to the complete list in Point 10)
29; 33.

THEMATIC LINES STRATEGY 2020

OLIVE GROVES E OLIVE OIL

Boost quality and notoriety of olive groves and olive oil production mainly from Portuguese olive varieties, increasing competitiveness of the sector

Coordinator: António Bento Dias

Co-Coordinator: Raquel Garcia

GOALS - The main goal is to enhance the sustainability of olive groves and olive oil production, mainly from Portuguese olive varieties. The rapid growth of olives in Alentejo was based on imported varieties with different organoleptic characteristics of the Portuguese ones. To preserve the specificity of Portuguese varieties, there is an urgent need to overcome the difficulties associated with their use in intensive production.

RESEARCH STRATEGIES:

There are different research problems to tackle according to the research focus

- For olive groves are the lack of quality of plant material; phytosanitary limitations of Portuguese varieties; lack of knowledge of production techniques more suitable for intensive production of these varieties.

  RESEARCH QUESTIONS: 1) selection, genetic improvement, and propagation of these varieties; 2) evaluation of varietal behaviour to optimize end-product production; 3) biology of key pests and diseases, developing alternative methods to chemical fight and evaluation of functional diversity of the ecosystem; 4) adequate olive canopy to continuous canopy shaking harvesting; 5) development of techniques and technologies for the use of by-products of olive groves.

- For olive oils, the main problems are the quality certification, guaranty of its authenticity and geographical and varietal traceability and genuineness (in terms of adulterations). Some drawbacks related to mill wastes could be also appointed.

  RESEARCH QUESTIONS: 1) metabolomic studies involving “profiling” and “fingerprinting” approaches of Portuguese olive oil varieties; 2) assessment of food safety in terms of pesticide residues and other contaminants; 3) treatment and recovery of mill wastes promoting their valorization.

The sustainability of the Portuguese olive oil sector constitutes a key factor for its competitiveness.

VITICULTURE AND ENOLOGY

Optimize management strategies to improve the efficiency and productivity of Alentejo vineyard and enhance wine quality, addressing the plant and its environment (soil and climate), the wine and the technology and the market and consumption

Coordinator: Maria João Cabrita

Co-coordinator: Ana Elisa Rato

GOALS: The main goal of the thematic line is optimizing management strategies to improve the efficiency and productivity of Alentejo vineyard and enhance wine quality, addressing the plant and its environment (soil and climate), the wine and the technology and the market and consumption. Baring this in mind, increasing wine (and wine-related products) quality and typicity, while increasing the knowledge on new technologies and the development of integrated strategies for the pest and diseases management of the vines, were the main areas of research activity during 2020.

RESEARCH STRATEGIES: Research strategy aims to contribute to the following research questions: 1) how to increase plant resilience to biotic or abiotic stress; how to increase the productivity (quantity and/or quality) of vines, maintaining the sustainability of the production including soil conservation;2) how to improve quality and added value of products (table grapes, wines, spirits), taking advantages of the differentiation provided by Portuguese varieties and new technologies;3) how to optimize energy and water consumption, wastes and by-products management and valorize then economically;4) how to increase resources use efficiency and reduce production costs;5) how to improve environmental and social sustainability of the vitivinicultural sector.

During 2020, researchers were mainly focused on: a) strategies to increase plant resilience, namely by assessing if arbuscular mycorrhizal fungi inoculation increases plant tolerance to high temperatures and increasing knowledge on grapevine trunk diseases and the phytopathogenic fungi associated with it in vineyards in Alentejo; b) strategies to improve quality of wine products, namely by increasing knowledge on volatile composition of wines and spirits addressing also alternative ageing technologies for wine spirits. Research outcomes contributed to increased knowledge on the complex disease associated with the decline of grapevine in Portugal, particularly in Alentejo region; establishment of sustainable management strategies and control methods against these pathogens including the exploitation of symbiosis with beneficial microbes; and increasing knowledge on varietal wines and the impact of news technologies on its quality.

Results were published in 13 articles in peer review journals.

ANIMAL PRODUCTION AND HEALTH

Optimize animal production by the rational use of natural resources, the adaptation of species/breeds to a changing environment and production systems, taking into account both animal and human health, and food quality and safety

Coordinator: Rui Charneca

Co-Coordinator: Ricardo Romão

GOALS: Due to the highly diverse scientific interests and skills of the MED members contributing to the MED´s Animal Production and Health Thematic Line, three comprehensive main goals were defined to include, as much as possible, the different types of research both on the course or forecasted. These goals were:

1. The development of nutritional, "omics", reproductive and management tools to optimize Mediterranean animal production systems towards sustainability (ecological and economic) and resilience, focusing on a circular economy approach;
2. The development of nutritional, "omics", ecological, epidemiological and technological tools to address animal welfare and environment adaptation problems, and promote healthier animals reducing the use of antimicrobials in a "One Health" approach;
3. The improvement of quality assessment and safety of existing and new animal products, coming from animals bred according to the new practices developed in goal 1 or from technological innovations (reduction of salt and other additives, study of alternative natural additives, use of recent preservation technologies, etc)

The first two goals are especially focused on knowledge that allows the optimization at multiple levels of the Mediterranean animal production systems while considering the European Union Farm to Fork Strategy. The third goal is more specific as it addresses explicitly the animal products, both raw or transformed, regarding their differentiated qualitative characteristics and safety.

RESEARCH STRATEGIES: Based on their interests and skills of the MED´s researchers contributing to the Animal Production and Health Thematic Line, several research projects were carried out and proposed and approved during 2020. The 2020 ongoing research included projects focused on the use of vegetal by-products or alternative feeds on animal nutrition, especially in ruminants; animal health topics both on domestic and wild species and on the quality and safety of animal products. The approved and, in some cases, started research projects during 2020 included the study of alternative feeds for swine nutrition; reproductive efficiency of horses; pig's welfare and study of quality and safety of animal products of several species to their valorisation. Most of the research is made using local breeds of the different species to answer national farmers' needs. To achieve both scientific excellence and to address the main questions and problems of animal breeders and animal products industry, MED researchers participate and apply to different projects typologies as the National and European Research and Innovation projects (FCT and EU calls), Co-promotion projects (led by enterprises but involving knowledge institutes (KI) as scientific partners) and Demonstration and Knowledge and Technology Transfer projects. As much as possible, MED researchers are encouraged to involve in the projects with a higher number of disciplines/themes and also to involve MED colleagues working in other Thematic Lines to potentiate synergies between research teams and to

obtain more wide-ranging results. Finally, and to expand the research possibilities and to maintain or increase the contacts and relationships with other KI's, MED has active participation on several networks being the most related to the Animal Production and Health thematic line, the European FABRE platform, the ECOGRAM network, the Global Network on Silvopastoral Systems and the EURAGRI consortium. MED members were also involved in ongoing and proposed COST actions.

AGRO-SILVO PASTORAL SYSTEMS – MONTADO

Optimize sustainability and support adaptive management of the Montado, by combining its different components and integrating ecosystem services, products' added value, landscape multifunctionality, and better informed public policies, ultimately reducing the loss in tree canopy density and total area

Coordinator: Nuno Guiomar

Co-Coordinator: Carlos Godinho

GOALS: The resilience of agro-silvo-pastoral systems (hereafter Montados) is determined by a regime of ecological disturbances and land uses within specific thresholds. Exceeding these limits leads to imbalances in the interactions between its three fundamental components: trees, understory vegetation and livestock. The lack of detailed monitoring data on the spatial and temporal dynamics of these components was identified as the two highest-ranking priorities, among the objectives previously set for this Thematic Line, the development of (1) spatially explicit databases of structural characteristics of Montados and test of indicators (2) to assess the quality of pastures and soil health in Montados. According to the previous results, the tree layer varies in composition, density and age structure, but its global decline is evident and widespread. In most cases, this decline proceeds slowly by decreasing tree density at the stands' level, but the (3) assessment of the relative importance of factors on cork oak dieback showed high spatial variability. Sudden death, clear cuts to promote other land uses, and the loss of large areas after stochastic disturbances, i.e. wildfires, are also not negligible. These losses result in increased fragmentation of Montado patches, which increase their vulnerability to future disturbances, and require (4) spatial and temporal approaches to changes in Montado connectivity. The heterogeneity of the Montados is extremely high, regardless of the spatial and temporal scales at which it is observed, analyzed or assessed. This variability is determined by the diversity of biophysical characteristics over which these land-use systems are distributed, and by the different management models, not always adjusted to their carrying capacity. However, this system carrying capacity can be enhanced by improving soil fertility and soil biological activity to (5) increase plant growth and nutritive value of pastures, reducing production costs, or through cork oak irrigation to (6) increase the success of future afforestation initiatives and also tree growth in drought-prone regions. Knowledge building on the above-mentioned components of Montados is critical to (7) promote adaptive management, increase the competitiveness of production systems and optimize governance strategies and simultaneously reduce risks and reverse tree decline. Such diversity of characteristics, needs and goals require us to (8) identify and classify the different types of Montados; (9) promote co-construction with stakeholders to find well-adapted solutions for each context and speed-up changes; (10) import knowledge more effectively into private and public managers and decision-makers; and (11) implement clear and easy-to-measure indicators for system-wide assessment to monitor efficiently land-use activities, policy strategies and consequent changes and to support adaptive management and adjustments in financing schemes.

RESEARCH STRATEGIES: The Research Strategy relied on applying multiple and innovative techniques for collecting and analyzing quantitative and qualitative data, and on strengthening cooperation with other institutions and researchers both at national and international levels. Cross-disciplinary collaboration was a striking feature of this Thematic Line (TL), which is reflected both in the

methodological approaches carried out in 13 papers already published (plus 8 submitted) in peer-reviewed scientific journals and in the topics covered by the 8 projects (plus 5 submitted to competitive funding) that allowed to reach the main findings (6 PDR, 2 POCTEP-INTERREG, 1 LIFE, 1 Arimnet2). Applied research to support management decisions in Montados was conducted to assess (1) pasture quality through combined instrumental and laboratory research methods and remote sensing-based metrics to evaluate its potential use for upscaling in situ measurements; (2) the effects of chemicals on soil fertility and pasture quality to reduce animal supplementation needs; (3) the diversity of benefits resulting from different grazing schemes; (4) precision agriculture technologies to face challenges imposed by climate change; (5) innovative methodologies and technologies for diagnosis, monitoring and control the flathead oak borer (*Coraebus undatus Fab.*), a biotic agent that affects cork production; (6) the competitiveness of Montado production systems. Field-based experimental research supported by funding designed for implementing experimental plots allowed to assess (1) the effects of irrigation and fertigation of cork oak trees on tree growth aimed at reducing the time until the first cork stripping, and (2) the effectiveness of Keyline design for Montado restoration. Participatory research was also applied in the scope of Tertúlias do Montado, where knowledge on specific topics was shared and discussed to search for solutions to the multiple challenges faced in Montado areas. Regarding the monitoring process, two independent approaches were carried out: (1) estimation of structural characteristics at tree level (canopy cover, tree height and biomass) based on advanced remote sensing approaches using multi-sensor data provided by different satellites; (2) identification of dieback trees through high-resolution images using standard Web Mapping Services in QGIS to promote spatial-explicit assessments of tree mortality and related factors. International cooperation was strengthened through the participation of MED in international networks such as the Global Network on Silvopastoral Systems (107 members of 29 countries worldwide) to promote and scaling up of silvopastoral systems worldwide; and the EcoGram Network (11 Ibero-American countries) embedded in the CYTED programme (Ibero-American Programme on Science and Technology for Development) to enhance innovative management practices in silvopastoral systems. At national level, dissemination and outreach activities were also carried out in the scope of different projects, and concerning the objectives of this TL, MED is represented in 4 Competence Centers (CS): CS for Alentejano Pig and the Montado; CS for Cork tree and Cork; CS for Climate Change in the Agro-Forestry Sector and CS for Extensive Grazing.

IRRIGATED AGRICULTURE

Support a strategic use of the available irrigation water and facing climate change trends, by assessing water availability and productivity, soil and water conservation

Coordination: Gottlieb Basch

Co-Coordinator: Luís Leopoldo Silva

GOALS: This Line tackles three major PROBLEMS in Irrigation Agriculture, which are: 1) limited availability of water in all Mediterranean regions, 2) lack of a territorial/regional strategies to coordinate the use of the available water resources, and 3) low added value of the irrigated crops.

RESEARCH STRATEGIES:
Proposal of research lines to be followed:

- Water availability in the territory: How much water is available for agriculture (including treated waste water) and how will climate change impact this availability? To answer this question, the efficiency and management of water distribution networks must be assessed.
- What benefits in terms of agronomic productivity and economic return could be attained through the integration between rainfed and irrigated agriculture, when compared to purely irrigated summer crops. I.e., through complementary irrigation of traditionally rainfed-grown crops.
- Considering irrigation water availability is limited shortly, how to evaluate the rational/best use of the water available. How and what priorities need to be set?
- What agricultural management practices allow for more efficient use of irrigation water?
- Economic assessment of the use of irrigation in animal-based production systems.
- Besides soil degradation through erosion in both rainfed and irrigated systems, the additional impact of irrigation on the degradation of soil structure and the threat of salinization are real concerns and must be addressed.

In 2020, MED was granted a proposal (ALT20-46-2018-13) to set up a small irrigation agriculture centre, envisaging 3 types of irrigation: mobile, variable overhead irrigation (Centre pivot) (8 ha), fixed overhead irrigation (2.5 ha) and drip irrigation (0.65 ha). The setting-up of this centre has been followed by the coordination of these thematic research lines and a proposal for contracting e dedicated technician was submitted successfully.

BIODIVERSITY & ECOSYSTEM FUNCTIONING

Contribute to a more sustainable future that fosters human wellbeing through appropriate biodiversity and ecosystem management.

Coordination: Diogo Alagador

Co-Coordinator: Frederico Mestre

GOALS: In 2020, the main goals of "Biodiversity and Ecosystem Functioning" research line have been tracked using three scientific approaches: a) advances on fundamental science; b) progress on applied research and c) biotechnology add-ins with potential scientific and market values.

All studies in the line converged into the general-purpose to deep the knowledge about biodiversity patterns and processes (at several scales); maximize ecosystem functionality and the upgrade of ecosystem services; value living resources for sustainable agriculture, food and pharmaceutical industries; promote sustainable land use management mainly within the multifunctional Montado system in Alentejo; identification on natural indicators of environmental condition; monitoring threats and trends in the conservation status of several native fauna and flora; measuring the multidimensional impacts of climate change over biodiversity and ecosystems, and; providing rigorous information to plan conservation policies and to establish conservation actions on the ground for recovering the functionality of specific taxonomic units and ecosystem processes in the verge of local extinction and/or mal-function.

Some research studies have been conducted under the scope of national and European projects and the studies (in the final stages of development) have been published in several scientific journals of distinct scientific areas. Given the pandemic crisis, in 2020 there were few congress participations and the ones participated by members have been conducted online. Generally, members in the line are part of national and international research networks and the strengthening of in-line collaborations has been attempted although still deserving much more effort and engagement. During 2020, several researchers have applied for funding under different funding programs, either for projects and/or for salaries. Biotechnological advances and the production of software dealing with distinct problems allowed research in the line to be potentially replicated and used in other contexts.

The research line is also involved in academia: in classroom teaching and through master and PhD thesis supervision. Several educational activities have been conducted framed by initiatives to publicize science for the civil society (Noite Europeia dos Investigadores, Ciência Viva among others). Ideally, those participations have caught the eye of high school students to engage them in ecological sciences and have provided evidence about the relevance of biogeography, ecology, agroecology, conservation biology and biotechnology to overcome the current ecological crisis. Several courses have been prepared mainly within the scope of the SummerSchool edition, hosted by the University of Évora.

Research in the line has been publicized in media, mainly in national and local newspapers, but also in press releases on national and international electronic platforms. Science communication articles have also been produced and submitted to blogs and web pages (eg. Museu Virtual da Biodiversidade).

RESEARCH STRATEGIES: During 2020, the three pillars underpinning the major research activities in the line: a) fundamental knowledge; b) applied science; and c) biotechnology, were well covered at distinct taxonomic, geographic and socioeconomic scales.

At the broadest geographical scales (global to continental), the analyses have covered wide sets of terrestrial vertebrate species with particular emphasis on the impacts of global change over distinct species interaction types, trophic structures, food webs and species distributions. In parallel, a new multi-scaled conservation paradigm to maximize success in the protection of biodiversity under global change has been strengthened. It provides a dynamic vision on conservation areas and land tenures and it absorbs critical dimensions of the anthropic world (socio-economy and wellbeing). Experimental studies using mesocosms infra-structures have provided guidance about the impacts of climate change on the structure and stability of food webs in freshwater systems, and over the energy flows among the distinct guilds.

The Mediterranean biome, in particular the Montado system in Alentejo, was deeply covered in 2020 research. Besides the fundamental questions endorsed (see below), an integrative overview of the agro-silvo-pastoral systems has been explored under different perspectives: monitoring of ecosystem services, the control of the biology and ecology of floristic and phytocenotic values which support regenerative and restoration actions as well as balanced tradeoffs with land-use practices.

Taxonomically, studies have been diverse. The functional role of fungi over Montado and their control of ecosystem services was approached as well as the conservation status of the mycobiota in the region. Taxonomic revisions, new field sampling techniques and novel tools for taxonomic identification (metabarcoding) were undertaken for fungi. The value of symbiotic mycorrhiza as controls of invasive plants and other habitat stresses was measured.

Advances on the knowledge of the composition and functionality of soil microbiota were substantial, with research focusing on the symbiotic relationships of Rhizobium bacteria and leguminous roots, providing nitrogen and natural organic enrichment of soils. The impact of distinct agricultural soil management activities over the effectiveness of the symbiosis was tested as well their impacts over the microorganism dynamics, in particular their effects over the bioprotection of plants.

Studies on specific taxonomic groups have been conducted such to: a) evaluate the role of birds and bats on the control of pathogenic diseases in Montado productions (olive oil, wine, cork), as well as their roles as agents of plant dispersal; b) appraise the importance of raptor bird species as indicators of environmental pollution; c) assess the magnitude and mechanisms favouring the invasions by bird species; d) evaluate the ecology and conservation status of birds; e) go deeper in the knowledge of the causes, patterns, processes and consequences of the movement of small mammals for the restoration of agricultural landscapes and expansion of zoonosis; and f) understand the dynamics of small mammal metapopulations in agriculture systems, their threats (habitat fragmentation and linear structures), distribution and conservation status.

Biotechnology advances of the thistle plant (upgrading of genetic and biochemical profiles) are providing new ground for its commercialization for the food and pharmaceutical industries.

HORTICULTURE

Higher sustainability of the strongly developing horticultural sector in South Portugal.

Coordination: José Teixeira Leitão

Co-Coordinator: Mário Reis

GOALS: The goals of Thematic line Horticulture were focused on promoting the sustainability and conservation of the biodiversity, while improving the productivity of horticulture through an efficient use of the resources and implementation of biotechnological tools. The achievement of these goals was prosecuted trough the achievement of the following specific objectives:
The increase the bio-protection of horticulture crops against pests and diseases by implementation of agricultural techniques or by metabolomic and biotechnological approaches, including the introgression of genetic resistances, while trying to obtain a deeper knowledge of the plant-pathogen interactions, including at the cellular and molecular level.
The development of technological solutions and sustainability indicators on smart greenhouse production and to improve crop performance under abiotic stress.
The establishment of ex-situ germplasm collections of fruit and other horticultural crops and to promote the production of selected high-value genotypes. Improvement of the sustainability of management of fruit crops, optimizing pruning, fertilization and irrigation. Introduction of new crops adapted to edaphoclimatic conditions of the region with emphasis on resources limitations. The prevention of the introduction of new pests and diseases.
The optimization of the procedures for extraction of bioactive compounds from aromatic plant species using green approaches, and to achieve the chemical and biological characterization of the obtained extracts and to use of novel “green” solvents and developing novel cellulose-based materials.
The improvement of plant tissue culture techniques to produce plant biomass in controlled conditions without compromising the species natural habitats, and to produce clean of virus vegetatively propagated crops via meristem culture.
The development and optimization of new processes to ensure the safety of the food products while improving their nutritional and sensorial value. The study of the effect of alternative and sustainable methods for food preservation. To implement new food packaging using biodegradable plant materials.
The use spectral techniques like FT-NIR for the analysis of fruit quality parameters, and remote sensing using NIR- spectral approaches as potential indicators for rapid identification of crop nutrition status.

RESEARCH STRATEGIES: Regarding the promotion of bio-protection in horticulture, trials were developed to study mycorrhization and the use of organic residues composts and metabolomic and biotechnological approaches, including the introgression of genetic to powdery mildew in peas and Fusarium in tomato), plant-pest with nematode P. penetrans interactions, including at the cellular and molecular level.
Germplasm ex-situ collections of strawberry tree and wild rocket were established. Plant tissue culture techniques were developed to produce plant biomass in controlled conditions without compromising the species natural habitats, and to obtain virus-free material.
Improved management of horticultural production was prosecuted with the test of microalgae and composts as biostimulants.

New crops were introduced considering the predicted climatic changes, as well as the prevention of the introduction of new pests and diseases on the actual crops.
Biotechnological new approaches were tested regarding the extraction and characterization of bioactive compounds from aromatic plants, and to use of novel “green” solvents for extraction and dissolution of polyphenols, developing novel cellulose-based materials.
Fruit quality and safety studies were performed, namely on of the effect of ultraviolet radiation and electrolyzed water, as well as new food packaging using biodegradable plant materials.
The use spectral techniques like FT-NIR for the analysis of polyphenols, anthocyanins and antioxidant activity and remote sensing using NIR- spectral approaches as potential indicators for rapid identification of the crop nutrient status.
New technological solutions and sustainability indicators on smart greenhouse production were tested to improve crop performance under abiotic stress.

RURAL DYNAMICS & GOVERNANCE

Empowered actors, better targeted public policies and enhanced rural sustainability in Mediterranean context.

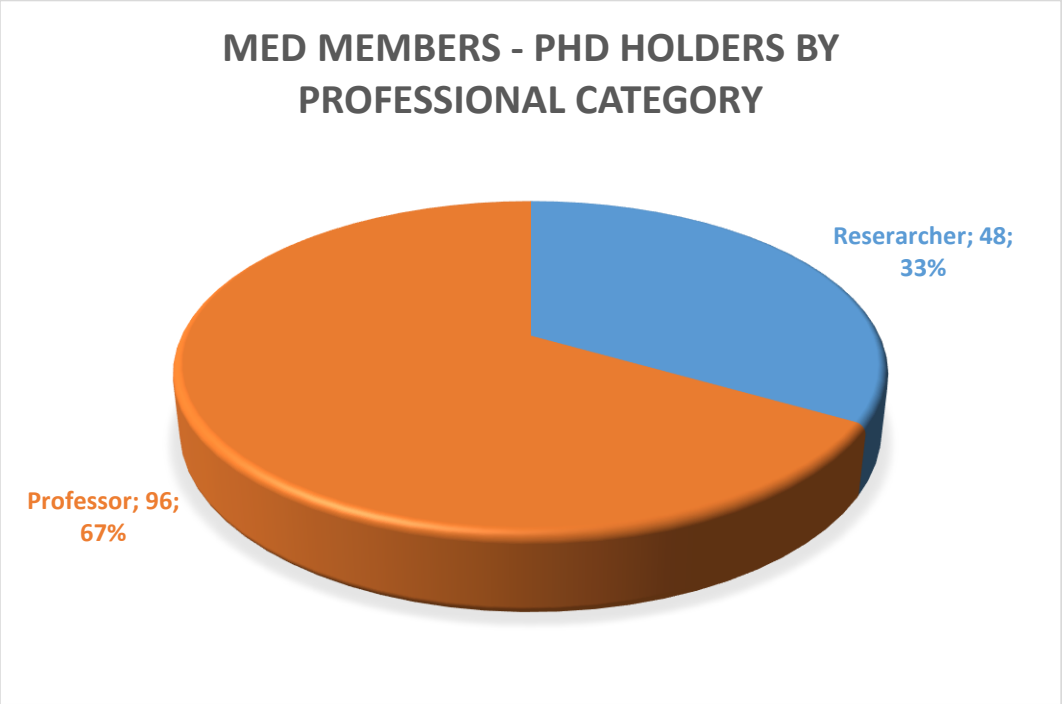
Coordination: Maria de Belém Costa Freitas

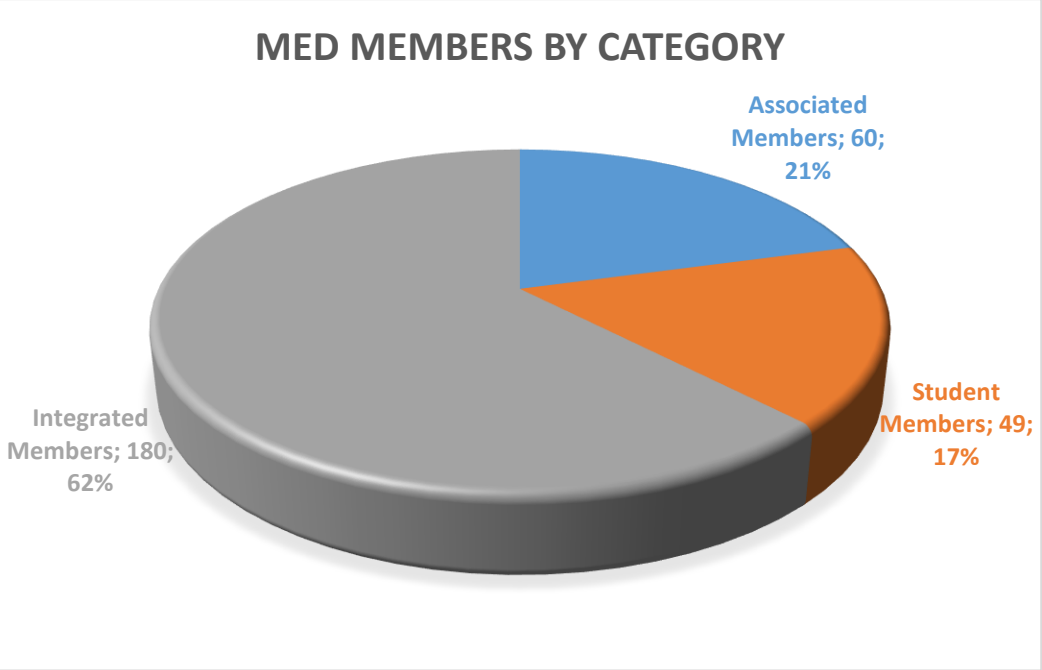
Co-Coordinator: Helena Guimarães

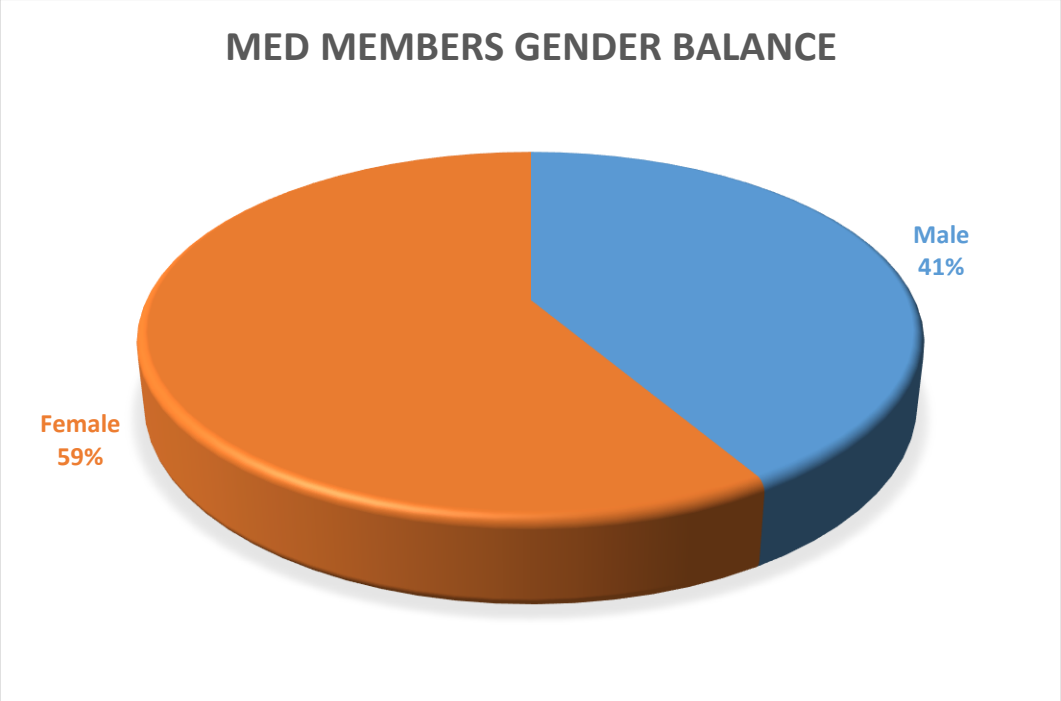
GOALS: The territorial and socio-ecological perspectives on agriculture and ecosystems are too many times forgotten or devalued. In this sense, the main goals of this thematic line are tied with these perspectives and the contribution of Mediterranean agriculture, related ecosystems and the involved actors, to rural development in terms of supporting employment, ancillary businesses, and environmental services.
Our main concerns are particularly the governance models, the policy models and the innovation models that exist or can be developed in rural areas and how these impact the production activities and the preservation of the ecosystems.
During 2020, we particularly addressed the questions of governance and policy models, namely in what concerns the typology of small farms in Europe, their role in regional food systems, the role of participatory monitoring and evaluation of regenerative agriculture to enable social learning, adoption, and out-scaling, how economic activities support the territory in beef and sheep Montado systems and the role of the stakeholders' economic health and Common Agriculture Policy coupled and decoupled payments in these systems and finally, how a Result Based Payment (RBP) scheme may be implemented in the Montado system. We also start to address the question of rural fires prevention combining scientific and local knowledge to develop risk reduction strategies built with the community.

RESEARCH STRATEGIES: As research strategies, we have mapped the interests and meeting points of the researchers that converge in this thematic line.
In what concerns policy models, our strategy was to join people from several MED investigation groups to work in a different agricultural policy model. The research on the possible implementation of a RBP for the Montado system joined together people from Animal Bioscience, Applied Ecology and Conservation, Plant Protection, and Landscape Dynamics and Management.
Governance models were particularly addressed with researchers from the Landscape Dynamics and Management group, working with international partners, both in the questions of small farms as in the competitiveness analysis of the Montado beef and sheep systems or the development of a rural fires' mitigation strategy, focusing in how to involve citizens in the rural world to enhance rural development and, at the same time, promote the empowerment of different actors in the rural world?
Finally, in what concerns the innovation models, and besides the innovation that is intrinsic to new governance and policy models, our strategy during 2020 was to strengthen this area with one researcher particularly focused on this thematic.

5. MED PEOPLE 2020






MED MEMBERS GENDER BALANCE
Male
41%
Female
59%

6. NETWORKING

MED aims to be at the forefront of international research while being actively involved in discussions on strategies for research in the field of environmental sustainability, food production and territorial cohesion. The involvement of researchers in many international projects and networks strongly contributes to this. Internationalization is supported by core funding covering participation in international networks, scientific meetings, preparatory meetings for projects submission to competitive funding, and by inviting international colleagues for research stays in MED.

UNIMED AND THE SUB-NETWORK ON FOOD AND WATER

The subnetwork "Food & Water" was created to address challenges of the Mediterranean region with a focus on agricultural systems and their resilience in the context of issues such as climate change and water management, as well as bio-energy, territorial integration and agro-industrial value chains. Coordinated by MED-University of Évora the subnetwork has partners from all over the Mediterranean basin. The objective of the subnetwork is to bring together research centers, university departments, faculties, academics and researchers that work in this fields, in order to favor scientific cooperation, the exchange of experiences and information, the strengthening of existing partnerships and the establishment of new collaborations.

OTHER INSTITUTIONAL NETWORKS

- EURAGRI: European Agricultural Research Initiative (https://www.euragri.aau.dk/)
- Global Network on Silvopastoral Systems (https://globalsilvopastoralnetwork.org/)
- Rede ECOGRAM (Programa Cyted) - Red Iberoameriana para la Mejora Productiva de Sistemas Silvopastorales Mediante la Utilización de Sistemas Ciberfísicos
- FABRE- TP: Farm Animal Breeding and Reproduction Technology Platform (http://www.fabretp.eu)
- Agribenchmark - The Beef and Sheep Network (http://www.agribenchmark.org/)
- RIBOLIVA: Red Iberoamericana de Olivar y Aceites de Oliva (http://www.riboliva.com)
- INDEHESA: Instituto Universitario de Investigación de la Dehesa (http://indehesa.unex.es/)
- ESF-EURAPMON
- IENE Infra Eco Network in Europe.

7. TRAINING

In 2020 MED participates, in the following PhD programs:

- Agricultural and Environmental Sciences [course in association]
- Landscape Arts and Techniques
- Biology
- Biochemistry
- Food Sciences [course in association]
- Veterinary Sciences
- Interdisciplinary Landscape Management [course in association]
- Biochemistry
- Agribusiness & Sustainability [course in association]

8. SCIENCE & SOCIETY

MED is actively involved in bringing its research and researchers closer to society. This is done through communicating our scientific breakthroughs through media, website and social networks, organizing outreach activities, such as visits from high schools and universities and science displays.

MEDIA AND SOCIAL MEDIA

The "Office for Communication, Technology Transfer and Innovation" (UDIT) from MED maintains an active communication with the outside world through its website, social media networks, scientific events and press releases.

MED's website (www.med.uevora.pt) was launched in 28th of July, and until the end of the 2020 had a total of 759 visits. November was the month of most visits (n=289). The visits to the website are mainly form Portugal (n=650), Spain (n=23) and Brasil (n=18). In 2020, were produced 45 news for the website.

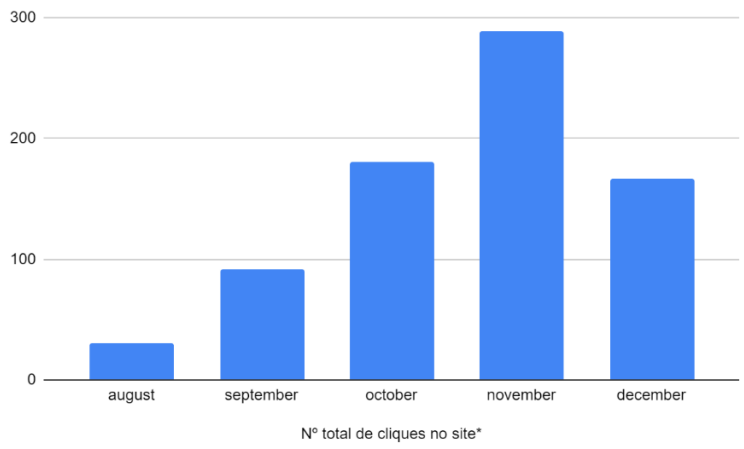


Figure 1 – Number of visits for MED's website during 2020 (since it was launched).

MED maintains active accounts on Facebook, LinkedIn, Twitter and YouTube.

Facebook - https://www.facebook.com/MEDUniversidadeEvora/

LinkedIn - https://www.linkedin.com/in/meduevora/

Twitter - https://twitter.com/MED_UEvora

Youtube - https://www.youtube.com/channel/UCC_ggolllbZ1FYUqag2xc8w

There were distributed two MED Newsletters during 2020 (July and November).


NEWSLETTER | JULHO 2020

MED

INSTITUTO MEDITERRÂNEO PARA A AGRICULTURA, AMBIENTE E DESENVOLVIMENTO

É com enorme satisfação que vos fazemos chegar a primeira Newsletter MED.

Esta Newsletter é interna do MED, e irá chegar a todos os investigadores de dois em dois meses. Procurará dar a conhecer os últimos resultados da investigação desenvolvida nos 3 pólos do MED bem como as últimas notícias do centro.

Participe activamente no MED, informando sobre toda a sua produção científica, prémios, distinções e projectos ganhos.
Esperamos pelos seus contributos!

PROJETOS RECENTEMENTE APROVADOS/INICIADOS

Estratégias de Alimentação Inovadoras para uma Produção Animal Sustentável
Responsável: Miguel Elias

9. 2020 - A YEAR IN REVIEW

JANUARY

30th – Talk with Elsa Lamy, MED & Escola de Ciências e Tecnologia – UÉvora, - Sabores do Vinho - Novos olhares da ciência

FEBRUARY

10th – Initiative "Um dia com…" with Jose Herrera – MED-UÉvora; Desafios e oportunidades na conservação da biodiversidade em olivais do Alentejo [CEBAL]

12th – Open day of Operational Group RegaCork - Rega de precisão de sobreiros em modo de produção intensiva de cortiça

15th – Training action "Cooperar nos Recursos Silvestres - Fileira dos Cogumelos" by Celeste Santos e Silva [MED-UÉvora]

18th – Lecture "Fogos Florestais e Proteção da Natureza: o pós-fogo" with João Paulo Almeida Fernandes [MED-UÉvora]

20th – Seminar "As maiores ameaças fitossanitárias aos citrinos" [MED-UALG]

28th – ECOLIVES Project Final Seminar "Gestão sustentável em Olivais" coordinated by Jose Herrera [MED-UÉvora]

MARCH

APRIL

MAY

12th, 13th and 14th - WEB WINE WAY - InfoWine.Forum: The Web Wine Way 2020, initiative of VINIDEAs, with the support of MED

18th May to 26th June – Kids draw contest by LIFE LINES Project

14th – Online Talk organized by "A Caravana Agroecológica", na initiative of cE3c, with the participation of Ana Fonseca (MED – UÉvora) about small-scale agriculture, familiar agriculture, and organic farming.

JUNE

9th – 1st Tertúlia do Montado On-line

23th – 2nd Tertúlia do Montado On-line

25th – Final Conference of SALSA Project "SALSA - Small Farms, Small Food Businesses and Sustainable Food Security"

JULY

2nd - Debriefing session focused on solutions to overcome licensing barriers in small-scale production and processing under the NEWBIE Project.

7th – 3rd Tertúlia do Montado On-line

9th - Live-stream: Ciclo de Conferências Vida Rural – Intensificação sustentável – with the participation of Isabel Brito (MED-UÉvora)

9th – Online event to discuss the better way to execute the "Mission Soil – EU Mission" hosted by Sofia Colares Alves, Head of European Commission representation in Portugal, with the several experts, including Teresa Pinto-Correia - MED's Director and coordinator of the Mission Soil, Health and Food.

24th July to 11th September – Training "Operadores de Máquinas Agrícolas 2020"

AUGUST

3rd – Beggining of a summer training in Molecular Biology Laboratory (MED-UÉvora) under the theme "Melhoramento de Plantas assistido por Marcadores Moleculares – seleção de híbridos de videira como exemplo prático" for which integrates final year students of the Degree in Biotechnology at the University of Évora. Trainings are coordinated by Hélia Cardoso and Augusto Peixe (MED-UÉvora) and are supported by the Project "Programa de conservação e melhoramento genético da videira" financed by FEADER and coordinated by PLANSEL Lda.

30th august to 11st September – Ciência Viva Training "Biomarcadores Salivares: Diz-me a Saliva que têns, dir-te-ei o que comes", coordinated by Elsa Lamy (MED-UÉvora)

SEPTEMBER

23rd - VIII Simpósio de Biotecnologia – UFPel with the participation of Esther Menendez (MED-UÉvora) with the communication "Managing Plant Microbiome for a Sustainable Agriculture"

25th - EURAGRI workshop webinar "The EU Green Deal – living up to the challenges"

29th - Webinar "Como minimizar o Desperdício Alimentar na indústria agroalimentar", organized by University of Évora and InovCluster under the S4agro Project.

OCTOBER

14th – Online session "Eficiência no Uso da Água nos Sectores da Viticultura e Horticultura" under CEBAL's initiative "Um dia com.." [MED-CEBAL]

14th – Webinar "Understanding Food Safety: Concepts and Challenges in a Changing World", organized by Subnetwork UNIMED Food & Water – University of Évora (MED), together with FAO.

31st – Activity "Noite das Criaturas das Trevas", organized by Project LIFE LINES

NOVEMBER

11th - 2nd Thematic Webinar - Food waste management towards a sustainable food production organized by Subnetwork UNIMED Food & Water – University of Évora (MED), together with FAO.

3rd - Encontro Ciência 2020, with the participation of Teresa Pinto-Correia under the theme of the Mission Board – Mission Soil, health and food

21th - Workshop "Avaliação da Condição Corporal em equinos" at Coudelaria de Alter, organized by Project "EQUI MAIS- MELHOR PRODUÇÃO EQUINA"

25th - Roadshow Tecnológico Nacional "Valorização Integrada do Cardo – Queijo de Azeitão" [CEBAL]

27th – MED participated at *Noite Europeia dos Investigadores* with several activities:

- 15H | Introdução à Biologia de Campo | Introduction to Field Biology (projecto Life Lines)
- 15H30 | O Fantástico Mundo dos Cogumelos! (Celeste Silva)
- All day - online | Será a saliva responsável pelo nível de adesão à Dieta Mediterrânica? | Is saliva responsible for the adherence to the Mediterranean Diet? (Elsa Lamy)
- 15H30 | O Fantástico Mundo dos Cogumelos! (Celeste Silva)
- All day - online | Será a saliva responsável pelo nível de adesão à Dieta Mediterrânica? | Is saliva responsible for the adherence to the Mediterranean Diet? (Elsa Lamy)
- 19H | À caça de gambuzinos com biólogos | Hunting for gambuzinos with biologists
- All day - online | És(cola) Ciência – Uma aposta no sucesso escolar | És(cola) Ciência – Promoting school success. Vídeo de apresentação do Projeto
- LIFE LINES | Presentation video of the LIFE LINES Project
- All day – online | ZooQuiz. Elementar, meu caro Biólogo! | ZooQuiz. Elementary, my dear Biologist! (UBC)

30th – Initiative "Um dia com…" with Pedro Fevereiro, "InnovPlantProtect: um Laboratório Colaborativo (CoLab) para Inovar a proteção de Plantas [CEBAL]

DECEMBER

2nd – Workshop "Momento ótimo para a colheita das azeitonas" GESCERT Olive Project

9th - V Encontro de Estudantes de Doutoramento em Ambiente e Agricultura (EEDAA)

9th and 10th - SPARKLE Online Final Conference - SPARKLE Sustainable Precision Agriculture: Research and Knowledge for Learning how to be an agri-Entrepreneur

14th – Online Technical Seminar - LIFE for Citrus – Controlo de *Trioza erytreae* na Península Ibérica [MED – UALG]

10. ONGOING PROJECTS 2020

In 2020, MED had 96 projects - 35 International Projects in progress and 61 National Projects.
The funding of international projects was mainly from Interreg, Horizon 2020 and LIFE and ERASMUS+.
For the national projects, 9 were with FCT funding and the remainder were mainly funded by the operational groups – PDR2020.

PROJECTS FUNDED BY EUROPEAN COMISSION

	Title.	Start	End	Respons.	Programme	Total	Univ. Evora	Coordinator
1	BIOTRANS - Gestión integrada de la biodiversidad en el área transfronteriza	01/01/2018	31/12/2021	Outro Int.	INTERREG V A España Portugal (POCTEP)	2 259 020,51 €	100 000,00 €	Nuno Manuel Cabral de Almeida Ribeiro
2	BIOTRANS - Gestón Integrada de la Biodiversidad en el Área Transfornteteriza	01/04/2019	01/04/2023	Outro UE	INTERREG V A España Portugal (POCTEP)	3 012 027,35 €	100 000,00 €	Nuno Manuel Cabral de Almeida Ribeiro
3	Critical Thinking for Successful Jobs	01/09/2020	31/08/2023	Outro Int.	ERASMUS+ (KA2 – Cooperation for Innovation and the Exchange of Good Practices)	390 438,00 €	50 060,00 €	Rita Maria Payan Martins Pinto Carreira
4	Developing knowledge, policy recommendations and strengthening capacities on Water Management and Ecological security in the frame of the China Europe Water Platform (CEWP)_Lot 1	01/01/2018	31/12/2021	Outro UE	CEWP 2018-2020 (China-Europe Water Platform)	1 940 000,00 €	599 278,00 €	João Eduardo Morais Gomes Rabaça
5	DIVERCROP - Land system dynamics in the Mediterranean basin across scales as relevant indicator for species diversity and local food systems	23/03/2017	30/06/2021	Outro Int.	ARIMNET 2	57 380,00 €	57 380,00 €	Maria Helena Marques Enes Guimarães
6	ERB Facility - European Raptor Biomonitoring Facility	17/10/2017	16/10/2021	Outro Int.	Ações COST	20 000,00 €	5 000,00 €	Rui Nascimento Fazenda Lourenço

	Title.	Start	End	Respons.	Programme	Total	Univ. Evora	Coordinator
7	Horizontal Activities Program under the PI-Supported China Europe Water Platform (CEWP) Lot 5	01/01/2018	31/12/2021	Outro PT	CEWP 2018-2020 (China-Europe Water Platform)	1 580 000,00 €	437 225,00 €	João Eduardo Morais Gomes Rabaça
8	Hub IBeria Agrotech: creación de un ecosistema Plurirregional para la Agrodigitalización a través de los Digital Innovation Hub (DIH)	01/07/2018	31/12/2022	Outro UE	INTERREG V A España Portugal (POCTEP)	3 983 759,75 €	203 449,04 €	José Rafael Marques da Silva
9	IDERCEXA	01/07/2017	30/09/2020	Outro UE	INTERREG V A España Portugal (POCTEP)	500 000,00 €	53 333,33 €	Adélia Maria Oliveira Sousa
10	Innovative market based Trust for Energy Efficiency investments in industry	01/02/2016	31/01/2020	Outro Int.	H2020	1 409 995,00 €	164 369,00 €	Adélia Maria Oliveira Sousa
11	Interactive Soil Quality Assessment in Europe and China for Agricultural Productivity and Environmental Resilience	21/11/2014	31/12/2020	Outro Int.	H2020	6 015 000,00 €	400 000,00 €	Gottlieb Basch
12	LIAISON - Better Rural Innovation: Linking Actors, Instruments and Policies through Networks	01/05/2018	30/11/2022	Outro Int.	H2020	5 000 000,00 €	220 187,00 €	Maria Teresa Amado Pinto Correia
13	LIFE RELICT - Preserving Continental Laurissilva Relics	01/10/2017	30/09/2022	MED	LIFE	1 654 899,00 €	732 734,00 €	Carlos José Pinto Gomes
14	Linear Infrastructure Networks with Ecological Solutions (LIFE LINES).	01/08/2015	31/05/2021	MED	LIFE	5 540 485,00 €	3 324 303,00 €	
15	LIVESEED - Improve performance of organic agriculture by boosting organic seed and plant breeding efforts across Europe	01/01/2017	30/05/2021	Outro Int.	H2020	7 454 839,50 €	121 100,00 €	Birgit Arnholdt-Schmitt
16	Montado and Climate - A need to adapt	01/09/2016	01/09/2021	Outro PT	LIFE	3 439 746,00 €	72 544,00 €	Nuno Manuel Cabral de Almeida Ribeiro
17	MOVING: Moutanin Valorization through Interconnectedness and Green Growth	01/09/2020	31/08/2024	Outro Int.	H2020-EU.3.2.1.3. - Empowerment of rural areas, support to policies and rural innovation	5 996 748,75 €	377 062,50 €	Maria Teresa Amado Pinto Correia
18	NEWBIE - New Entrant netWork: Business models for Innovation, entrepreneurship and resilience in European agriculture	01/07/2017	01/07/2021	Outro UE	H2020	1 999 038,00 €	156 332,00 €	Maria Teresa Amado Pinto Correia
19	Next Generation Training on Intelligent Greenhouses (NEGHTRA)	01/11/2020	31/10/2023	Outro UE	ERASMUS+ (KA2 – Cooperation for Innovation and the Exchange of Good Practices)	980 348,00 €	59 354,00 €	Fátima de Jesus Folgôa Baptista
20	Pan-European Network for Climate Adaptative Forest Restauration and Reforestation	08/10/2020	07/10/2024	Outro Int.	Ações COST	0,00 €	0,00 €	Ana Cristina Andrade Gonçalves
21	PRODEHMON	01/10/2017	31/12/2020	Outro UE	INTERREG V A España Portugal (POCTEP)	500 000,00 €	80 000,00 €	Nuno Manuel Cabral de Almeida Ribeiro
22	Prospecion en ambientes subterraneos de compuestos bioactivos microbianos con uso potencial para la medicina, agricultura y medio ambiente.	01/01/2018	31/12/2021	Outro UE	INTERREG V A España Portugal (POCTEP)	900 000,00 €	190 826,10 €	Ana Teresa Fialho Caeiro Caldeira
23	Public Ecosystem Goods And Services from land management: Unlocking the Synergies	21/11/2014	31/12/2020	Outro Int.	H2020	2 000 000,00 €	70 000,00 €	Maria Teresa Amado Pinto Correia
24	Removal of As from water using innovative BIO-adsorbents produced from by products of the agro-industrial sector	01/09/2020	31/08/2023	Outro Int.	LIFE	1 800 452,00 €	2 666 440,00 €	Paulo Alexandre Mira Mourão
25	SABOR SUR	01/06/2017	30/06/2020	Outro UE	INTERREG V A España Portugal (POCTEP)	140 280,00 €	105 210,00 €	Elsa Cristina Carona de Sousa Lamy
26	SAGRI - Sustainable Agriculture	01/11/2016	29/02/2020	Outro Int.	ERASMUS + (SKILLS ALLIANCE FOR SUSTAINABLE AGRICULTURE)	1 037 917,00 €	89 260,00 €	Fátima de Jesus Folgôa Baptista
27	SALSA-Small farms, small food businesses and sustainable food security	01/12/2015	31/03/2020	MED	H2020-Desafio Societal 2	4 958 422,00 €	934 552,00 €	Maria Teresa Amado Pinto Correia

	Title.	Start	End	Respons.	Programme	Total	Univ. Evora	Coordinator
28	SFARM -Sustainable Farming	15/10/2017	14/10/2020	Outro Int.	ERASMUS + (SKILLS ALLIANCE FOR SUSTAINABLE AGRICULTURE)	997 715,00 €	75 133,00 €	Fátima de Jesus Folgôa Baptista
29	SHOWCASing synergies between agriculture, biodiversity and Ecosystem services to help farmers capitalisng on native biodiversity	01/11/2020	31/10/2025	Outro Int.	H2020-EU.3.2.1. - Sustainable agriculture and forestry	7 999 771,25 €	168 150,00 €	José Manuel Herrera Vega
30	SolACE - Solutions for improving Agroecosystem and Crop Efficiency for water and nutrient use	01/05/2017	30/04/2022	Outro Int.	H2020	6 000 000,00 €	91 018,00 €	Gottlieb Basch
31	SPARKLE - Sustainable Precision Agriculture	01/01/2018	31/12/2020	Outro Int.	ERASMUS + (SKILLS ALLIANCE FOR SUSTAINABLE AGRICULTURE)	775 566,00 €	71 655,00 €	José Rafael Marques da Silva
32	Strengthening social capital in rural communities for rural development	31/12/2020	30/12/2022	Outro Int.	ERASMUS+ (KA2 – Cooperation for Innovation and the Exchange of Good Practices)	197 913,00 €	30 004,00 €	Maria Teresa Amado Pinto Correia
33	SUSTAINOLIVE: Novel approaches to promote the SUSTAInability of OLIVE cultivation in the Mediterranean	01/06/2019	31/05/2023	Outro Int.	H2020	2 032 690,17 €	237 966,37 €	Maria Teresa Amado Pinto Correia,José Rafael Muñoz-Rojas Morenés
34	Tackling skills gap in the wildlife conservation sector - WildSkills EU	01/10/2020	31/03/2023	Outro Int.	UK Erasmus+ Key Action 2 Projects 2020	295 790,00 €	63 490,00 €	João Eduardo Morais Gomes Rabaça
35	The European Landscape Learning Initiative: Past and Future Environments and Energy Regimes shaping Policy Tools	01/04/2019	31/03/2023	Outro Int.	H2020	4 090 952,52 €	0,00 €	Maria Teresa Amado Pinto Correia

PROJECTS FUNDED BY NATIONAL PROGRAMS

	Title.	Start	End	Respons.	Programme	Total	Univ. Evora	Coordinator
36	Olive fly management through symbiosis-based strategies: looking for Trojan horse candidates	01/09/2018	31/08/2021	MED	Sistema de Apoio a Ações Coletivas	238 344,00 €	238 344,25 €	Tânia Mesquita Nobre
37	A Multifuncionalidade da Floresta - Potencialidade e Valorização dos Ecossistemas Florestais em Portugal	23/03/2018	06/03/2021	Outro PT	Sistema de Apoio a Ações Coletivas	10 000,00 €	6 000,00 €	Celeste Maria Martins Santos e Silva
39	AGIR: Avaliação da eficiência da áGua e energia em aproveitamentos hidroagRícolas	05/07/2017	31/01/2021	Outro PT	FEDER - PDR2020	467 194,44 €	59 448,90 €	Maria Madalena Vitório Moreira Vasconcelos
40	Agricultura Familiar: Conhecimento, Organização e Linhas Estratégicas	01/10/2019	18/01/2022	Outro PT	FEDER - PDR2020	42 763,52 €	14 074,00 €	Maria Teresa Amado Pinto Correia
41	Better equine production	23/09/2020	22/09/2022	Outro PT	Alentejo 2020	180 147,80 €	180 147,80 €	Elisa Maria Varela Bettencourt
42	BIOma - Integrated BIOeconomy Solutions for the Mobilisation of the Agro-Food Chain	01/07/2020	30/06/2023	Outro PT	POCI - SI - Sistema de Incentivos à Investigação e Desenvolvimento Tecnológico (SI I&DT)	8 338 017,00 €	162 127,00 €	Fátima de Jesus Folgôa Baptista
43	BIOPROTOMATE - Tomato Bioprotection Against Fusariose-Impact of Agronomic Practices	28/10/2020	27/10/2022	MED	Alentejo 2020	155 109,79 €	155 109,79 €	Isabel Maria de Oliveira Brito
44	Cistus/Túberas	04/04/2016	16/05/2020	MED	Sistema de Apoio a Ações Coletivas	251 706,80 €	251 706,80 €	Celeste Maria Martins Santos e Silva

	Title.	Start	End	Respons.	Programme	Total	Univ. Evora	Coordinator
45	CistusRumen	01/10/2016	30/06/2020	Outro PT	Sistema de Apoio a Ações Coletivas	697 581,00 €	118 154,00 €	Fernando Manuel Salvado Capela e Silva
46	Control of olive anthracnose through gene silencing and gene expression using a plant	15/10/2018	14/10/2021	MED	Sistema de Apoio a Ações Coletivas	235 904,00 €	227 782,00 €	Patrick José de Queiroz Materatski
47	Development of a new virus-based vector to control TSWV in tomato plants	15/10/2018	14/10/2021	MED	Sistema de Apoio a Ações Coletivas	232 154,00 €	223 404,00 €	Carla Marisa Reis Varanda
48	Early-life exposure to MYCOtoxins and its impact on health	01/10/2018	30/09/2021	Outro PT	Sistema de Apoio a Ações Coletivas	239 937,00 €	25 937,00 €	Elsa Maria Leclerc Duarte
49	ECOMONTADO XXI - A Agroecologia aplicada ao design do Montado Novo	01/01/2017	31/12/2021	Outro PT	FEDER - PDR2020	153 317,69 €	114 988,45 €	Maria Teresa Amado Pinto Correia
50	efficiency of NIR technology for evaluation of ripening and fruit quality	01/06/2016	30/06/2020	MED	Sistema de Apoio a Ações Coletivas	337 713,60 €	337 713,60 €	Ana Elisa de Mendonça Rato Barroso
51	FERTIPINEA	19/07/2017	23/12/2021	Outro PT	FEDER - PDR2020	474 810,32 €	61 452,00 €	Ana Cristina Andrade Gonçalves
52	From Molecularly Imprinted Polymers to MIP-based optical sensors: A "light-up" tool for the analysis of pesticide residues in olive oil	01/01/2020	01/01/2022	MED	Sistema de Apoio a Ações Coletivas	236 373,80 €	174 588,30 €	Raquel Marta Neves dos Santos Garcia
53	Gen-Res-Alent	01/01/2017	31/05/2020	Outro PT	Sistema de Apoio a Ações Coletivas	569 475,27 €	72 381,88 €	Sandra Maria da Silva Branco
54	GESTÃO INTEGRADA DA COBRILHA DA CORTIÇA (UnderCork)	02/11/2017	31/12/2021	Outro PT	FEDER - PDR2020	0,00 €	51 725,65 €	João Eduardo Morais Gomes Rabaça
55	Go BovMais - Melhoria da produtividade da fileira dos bovinos de carne	02/11/2017	31/12/2021	MED	FEDER - PDR2020	450 000,00 €	166 290,49 €	Manuel D'Orey Cancela D'Abreu
56	GO Cachena	29/11/2016	31/12/2021	MED	FEDER - PDR2020	429 397,81 €	70 061,00 €	Miguel Nuno Geraldo Viegas Santos Elias
57	GO SOIL	01/08/2018	31/12/2021	Outro PT	FEDER - PDR2020	485 000,00 €	22 257,85 €	João Manuel Pereira Ramalho Serrano
58	GOEfluentes - Efluentes de pecuária: abordagem estratégica à valorização agronómica/energética dos fluxos gerados na atividade agropecuária	30/11/2016	30/06/2020	Outro PT	FEDER - PDR2020	430 122,00 €	4 816,67 €	Vasco Manuel Fitas da Cruz
59	iCheese -Cynara Innovation for best Cheese	02/01/2018	30/04/2020	Outro UE	FEDER - PDR2020	156 156,04 €	53 409,36 €	Cristina Maria dos Santos Conceição
60	INOVMontado	01/07/2017	21/12/2020	Outro PT	FEDER - PDR2020	314 781,00 €	83 357,00 €	Maria Teresa Amado Pinto Correia
61	Interpretation Centre and Entrance Gates to the Serra de S. Mamede Natural Park (CI&PE_PNSSM)	01/10/2019	30/09/2021	Outro PT	Alentejo 2020	411 840,00 €	411 840,00 €	Celeste Maria Martins Santos e Silva
62	Metabolómica, ambiente e agricultura de regadio	01/03/2019	30/06/2020	MED	Alentejo 2020	37 903,02 €	34 013,27 €	Gottlieb Basch
63	Native Plants in the City - Rethinking Urban Green Spaces	01/01/2020	15/11/2020	MED	Programa de Conservação da Natureza e da Biodiversidade, do Ministério do Ambiente.	239 792,00 €	54 446,00 €	Carla Sofia Borges Pinto da Cruz Ferreira
64	Pine host chemistry and environmental factors driving the epidemiology of the pinewood nematode	01/10/2018	30/09/2021	Outro PT	Sistema de Apoio a Ações Coletivas	230 234,00 €	27 875,00 €	Manuel Galvão de Melo e Mota
65	Pine ENEMY - Exploring the NEmatode-MYcobiota interactions in PineWilt Disease	15/10/2018	14/10/2021	Outro PT	Sistema de Apoio a Ações Coletivas	322 920,00 €	116 411,75 €	Manuel Galvão de Melo e Mota
66	Poda mecanizada e colheita em contínuo de olivais de variedades portuguesas	10/01/2019	31/12/2021	MED	FEDER - PDR2020	336 231,09 €	195 548,87 €	António Fernando Bento Dias
67	Precision irrigation of cork in intensive production mode	01/01/2018	30/12/2021	MED	FEDER - PDR2020	469 895,75 €	387 830,14 €	Nuno Manuel Cabral de Almeida Ribeiro

	Title.	Start	End	Respons.	Programme	Total	Univ. Evora	Coordinator
68	Production of Rice with Low Arsenic Content	01/06/2016	30/06/2020	MED	Sistema de Apoio a Ações Coletivas	1 069,00 €	1 069,00 €	Carlos Alberto de Jesus Alexandre
69	Programa Ciência Viva - OCJFV 2020 Biomarcadores salivares: Diz-me a saliva que tens, dir-te-ei o que comes	30/08/2020	11/09/2020	MED	OCJF	316 306,50 €	80 000,00 €	Celeste Maria Martins Santos e Silva,Elsa Cristina Carona de Sousa Lamy
70	Programa de conservação e melhoramento genético da videira	01/01/2018	31/12/2021	Outro PT	Sistema de Apoio a Ações Coletivas	484 909,00 €	37 269,00 €	Augusto António Vieira Peixe
71	ProtecEstenfilio	01/01/2018	31/12/2021	Outro PT	FEDER - PDR2020	652 516,79 €	488 758,02 €	António Fernando Bento Dias
72	ProtIntegOlivalAlent	05/05/2016	04/02/2020	MED	Sistema de Apoio a Ações Coletivas	461 365,07 €	15 348,61 €	Fernando Manuel de Campos Trindade Rei
73	Regadio de Precisão	02/01/2017	31/12/2020	Outro PT	FEDER - PDR2020	184 668,60 €	156 968,31 €	Shakib Shahidian,João Manuel Pereira Ramalho Serrano
74	S4Agro - Sustainable solutions for the agribusiness sector	24/04/2020	23/04/2022	Outro PT	POCI - SI - Sistema de Incentivos à Investigação e Desenvolvimento Tecnológico (SI I&DT)	160,00 €	160,00 €	Miguel Nuno Geraldo Viegas Santos Elias
75	Salivary biomarkers:Tell me how much saliva you have, I'll tell you what you eat	01/06/2020	30/06/2021	MED	OCJF	467 000,00 €	67 484,39 €	Elsa Cristina Carona de Sousa Lamy
76	Segurança & Qualidade dos Produtos Cárneos Transformados	02/11/2017	31/12/2021	Outro PT	FEDER - PDR2020	483 915,00 €	52 875,00 €	Miguel Nuno Geraldo Viegas Santos Elias
77	SelectPorAl - SelectPorAl-selection and genomic improvement of productive characteristics of Alentejano Pig	01/06/2016	31/03/2020	Outro PT	Sistema de Apoio a Ações Coletivas	233 714,00 €	27 667,00 €	José Manuel Mota Ruivo Martins
78	SOIL4 EVER	01/10/2018	30/09/2021	Outro PT	Sistema de Apoio a Ações Coletivas	503 033,46 €	50 886,58 €	Carlos Alberto de Jesus Alexandre
79	Sown Pastures	29/11/2016	31/12/2021	Outro PT	FEDER - PDR2020	277 705,90 €	208 061,18 €	João Manuel Pereira Ramalho Serrano
80	Support to olive grove management and certification of vegetative material of national olive varieties	28/09/2020	27/09/2022	MED	POCI - SI - Sistema de Incentivos à Investigação e Desenvolvimento Tecnológico (SI I&DT)	257 211,02 €	91 781,69 €	Augusto António Vieira Peixe
81	Technology Transfer for Thistle Enhancement [CynaraTeC]	01/09/2020	30/08/2022	MED	Alentejo 2020	250 369,93 €	182 224,83 €	Cristina Maria dos Santos Conceição,Maria de Fátima Pereira Duarte Ricardo
82	Técnicas e tecnologia para valorização de subprodutos em olivicultura TECOLIVE	02/11/2017	31/12/2021	MED	FEDER - PDR2020	230 000,00 €	6 250,00 €	José Manuel Nobre de Oliveira Peça
83	The role of voles in agroecosystems: linking pest management to biodiversity conservation under environmental change	01/07/2018	31/07/2020	Outro PT	FEDER - PDR2020	199 316,06 €	199 316,06 €	Ricardo Miguel Miguéns Cardoso Cadete Pita
84	Transfer and Dissemination of Technical and Scientific Studies on Cork Oak Irrigation (Regacork TraDE)	01/10/2020	30/09/2022	MED	Alentejo 2020	233 641,00 €	18 587,00 €	Nuno Manuel Cabral de Almeida Ribeiro
85	TRUST - Social innovation sTRategies for sUSTainability transitions	01/09/2018	31/08/2021	Outro PT	Sistema de Apoio a Ações Coletivas	120 606,85 €	120 606,85 €	Maria Teresa Amado Pinto Correia
86	Use of NIR spectroscopy for rapid quality analysis in nuts (QualFastNut.)	16/10/2020	15/10/2022	MED	Alentejo 2020	781 581,66 €	486 006,67 €	Ana Elisa de Mendonça Rato Barroso
87	Valuation of varieties of Portuguese olive tree (OLEAVALOR)	01/06/2016	30/03/2020	MED	Sistema de Apoio a Ações Coletivas	309 497,88 €	85 153,45 €	Augusto António Vieira Peixe
88	Vegetação mediterrânica	01/10/2016	31/03/2020	MED	Sistema de Apoio a Ações Coletivas	483 915,00 €	52 875,00 €	Ludovina Neto Padre

PROJECTS FUNDED BY FCT

	Title,	Start	End	Respons,	Programme	Total	Univ, Evora	Coordinator
89	A sustainable landSCAPE plannig model for rural FIREs prevention	01/03/2019	28/02/2022	Outro PT	Desconhecido	38 044,00 €	16 352,00 €	Nuno Manuel Cabral de Almeida Ribeiro
90	Edible bait vaccine for rabbit haemorrhagic disease virus 2 (RHDV2) control in wild rabbits	01/10/2018	30/09/2021	MED	PTDC	239 980,00 €	15 110,00 €	Elsa Maria Leclerc Duarte
91	EROFIRE	01/04/2020	31/03/2023	MED	Projectos de Investigação Científica e Desenvolvimento Tecnológico no âmbito da Prevenção e Combate de Incêndios Florestais 2018	299 820,00 €	255 980,00 €	Nicásio Tomás Jiménez Morrillo
92	Exploiting benefitial associations with chickpea: the role of non-rhizobial endophytic bacteria in the rhizobia-legume symbiosis	01/10/2015	30/04/2020	MED	PTDC	141 762,00 €	141 762,00 €	Clarisse Cordeiro Brígido
93	Innovative Feeding Strategies for Sustainable Animal Production [CoLAB InovFeed]	22/07/2019	22/07/2024	Outro PT	Desconhecido	0,00 €	0,00 €	Miguel Nuno Geraldo Viegas Santos Elias
94	MED: Financiamento programático 2020-2023	01/01/2020	31/12/2023	MED	Projeto Plurianual	645 000,00 €	645 000,00 €	Maria Teresa Amado Pinto Correia
95	Monitoring of Olive infecing viruses in Tunisia and Portugal: Identification and characterization of new isolates	07/03/2019	06/03/2021	MED	Cooperação Transnacional	3 000,00 €	3 000,00 €	Carla Marisa Reis Varanda
96	Pluriannual Finance - MED	01/01/2020	31/12/2023	MED	Projeto Plurianual	2 720 900,00 €	2 176 720,00 €	Maria Teresa Amado Pinto Correia
97	Validating organic vs conventional seed production by calorespirometry - applying aa innovative service to promote regional plant growing and research capacities	01/06/2019	01/01/2021	MED	Cooperação Transnacional	2 500,00 €	2 500,00 €	Birgit Arnholdt-Schmitt

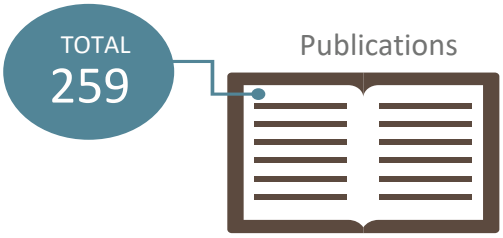
11. FUNDING

During the year 2020 MED received a total funding of around **3** million euros, shared between FCT, National and International sources and Pluriannual Funding from FCT by 1**9**,**1**%, 4**3**,**2**%, 23,1% and 1**4**,**6**%, respectively.

Through project funding and the base amount made available by the FCT, **MED** had available a total amount of EUR 3 099 367,80**.**

Receive Funding ICAAM 2020	
International Project Funding	715 657,27 €
National Project Funding	1 339 285,39 €
FCT Project Funding	**592 722,96 €**
R&D Unit Pluriannual funding 2020	**451 702,18 €**
TOTAL	3 099 367,80 €

12. PRODUCTION 2020



DESCRIPTION

Indexed Papers (ISI e Scopus)	Books and Books Chapters with referee
224	35

13. FULL LIST OF PUBLISHED PAPERS 2020

ARTICLES INDEXED IN WEB OF SCIENCE/SCOPUS

1. Abraham A, Schmidt V, Kaminski M, Stelzle D, De MR, Bustos J, Sahu PS, Garcia HH, Bobić B, Cretu C, Chiodini P, Deksne G, Dermauw V, Devleesschauwer B, Dorny P, Fonseca A, Gabriël S, Gómez-Morales MA, Kucsera I, Laranjo-gonzález M, Trevisan C, Vilhena M, Walker NF, Zammarchi L, Winkler AS. 2020. *Epidemiology and surveillance of human (neuro)cysticercosis in Europe: is enhanced surveillance required?.* Tropical Medicine & International Health 25:566-578. DOI:10.1111/tmi.13384

2. Afonso A, Gonçalves AC, Pereira DG. 2020. *Pinus pinea (L.) nut and kernel productivity in relation to cone, tree and stand characteristics.* Agroforestry Systems 94:2065-2079. DOI:10.1007/s10457-020-00523-4

3. Alagador D, Cerdeira JO. 2020. *Revisiting the minimum set cover, the maximal coverage problems and a maximum benefit area selection problem to make climate-change-concerned conservation plans effective.* Methods in Ecology and Evolution 11:1325-1337. DOI:10.1111/2041-210x.13455

4. Albuquerque A, Óvilo C, Núñez Y, Benítez R, López-Garcia A, García F, Félix MDR, Laranjo M, Charneca R, Martins JM. 2020. *Comparative Transcriptomic Analysis of Subcutaneous Adipose Tissue from Local Pig Breeds.* Genes 11:422. DOI:10.3390/genes11040422

5. Alegria, C, Roque, N, Albuquerque, T, Gerassis, S, Fernandez, P, Ribeiro, M. 2020. *Species Ecological Envelopes under Climate Change Scenarios: A Case Study for the Main Two Wood-Production Forest Species in Portugal.* Forests 11:880. DOI:10.3390/f11080880

6. Almeida A, Gomes M, Rabaça J, Ramos J. 2020. *Songbirds promote connectivity between riparian galleries and adjacent habitats.* Ecological Research. DOI:10.1111/1440-1703.12180

7. Almeida ABD, Concas J, Campos MD, Materatski P, Varanda C, Patanita M, Murolo S, Romanazzi G, Félix MDR. 2020. *Endophytic Fungi as Potential Biological Control Agents against Grapevine Trunk Diseases in Alentejo Region.* Biology 9:420. DOI:10.3390/biology9120420

8. Almeida MR, Alves-Pereira I, Lourenço D, Alves FR. 2020. *Effect of organic compost and inorganic nitrogen fertigation on spinach growth, phytochemical accumulation and antioxidant activity.* Heliyon 6:e05085. DOI:10.1016/j.heliyon.2020.e05085

9. Almeida SCV, Gomes DSM, Cabrita MJ. 2020. *Impact of SO2 and bentonite addition during fermentation on volatile profile of two varietal white wines.* LWT 133:109893. DOI:10.1016/j.lwt.2020.109893

10. Alves J, Santos A, Jorge P, Lafuente M. 2020. *Changes in physiological, haematological and biochemical parameters in police working dogs during a treadmill incremental exercise test.* Comparative Exercise Physiology 16:387-394. DOI:10.3920/cep200016

11. Alves J, Santos A, Jorge P, Lavrador C, Carreira L. 2020. *A Pilot Study on the Efficacy of a Single Intra-Articular Administration of Triamcinolone Acetonide, Hyaluronan, and a Combination of Both for Clinical Management of Osteoarthritis in Police Working Dogs.* Frontiers in Veterinary Science 7. DOI:10.3389/fvets.2020.512523

12. Alves J, Santos A, Jorge P, Lavrador C, Carreira LM. 2020. *Thermographic imaging of police working dogs with bilateral naturally occurring hip osteoarthritis.* Acta Veterinaria Scandinavica 62. DOI:10.1186/s13028-020-00558-8

13. Alves J, Santos A, Jorge P, Lavrador C, Carreira M. 2020. *The intra-articular administration of triamcinolone hexacetonide in the treatment of osteoarthritis. Its effects in a naturally occurring canine osteoarthritis model.* PLOS ONE 16(2):e0248082.

14. Alves JC, Santos A, Jorge P, Lavrador C, Carreira LM. 2020. *Clinical and diagnostic imaging findings in police working dogs referred for hip osteoarthritis.* BMC Veterinary Research 16. DOI:10.1186/s12917-020-02647-2

15. Alves JC, Santos AM, Jorge PI, Lafuente P. 2020. *A protocol for the determination of the maximal lactate steady state in working dogs (IF 1.201).* The Journal of Sports Medicine and Physical Fitness. DOI:10.23736/S0022-4707.20.10305-0

16. Alves, J, Santos, A, Jorge, P, Lavrador, C, Carreira, L. 2020. *A report on the use of a single intra-articular administration of autologous platelet therapy in a naturally occurring canine osteoarthritis model - a preliminary study.* BMC Musculoskeletal Disorders 21. DOI:10.1186/s12891-020-3140-9

17. Anjos O, Martínez CM, Caldeira I, Pedro SI, Eguía OP, Canas S. 2020. *Application of Functional Data Analysis and FTIR-ATR Spectroscopy to Discriminate Wine Spirits Ageing Technologies.* Mathematics 8:896. DOI:10.3390/math8060896

18. Anjos O, Caldeira I, Pedro S, Canas S. 2020. *FT-Raman methodology applied to identify different ageing stages of wine spirits. LWT - Food Science and Technology, 134, 110179..* LWT Volume 134:110179. DOI:10.1016/j.lwt.2020.110179

19. Anjos O, Caldeira I, Roque R, Pedro SI, Lourenço S, Canas S. 2020. *Screening of Different Ageing Technologies of Wine Spirit by Application of Near-Infrared (NIR) Spectroscopy and Volatile Quantification.* Processes 8:736. DOI:10.3390/pr8060736

20. Anjos, O, Canas,s. , Gonçalves,j. C, Caldeira, I. 2020. *Development of a Spirit Drink Produced with Strawberry Tree (Arbutus unedo L.) Fruit and Honey.* Beverages 2020, 6(2), 38. DOI:10.3390/beverages6020038

21. Araújo M, Naimi B. 2020. *Spread of SARS-CoV-2 Coronavirus likely constrained by climate.* medRxiv 2020.03.12.20034728 2020.03.12.20034728. DOI:10.1101/2020.03.12.20034728

22. Araújo MB, Mestre F, Naimi B. 2020. *Ecological and epidemiological models are both useful for SARS-CoV-2.* Nature Ecology & Evolution. DOI:10.1038/s41559-020-1246-y

23. Arnalte-Mur, L, Ortiz-Miranda, D, Cerrada-Serra, P, Martinez-Gómez, V, Moreno-Pérez, O, Barbu, R, Bjorkhaug, H, Czekaj, M, Duckett, D, Galli, F, Goussios, G, Grivins, M, Hernández, P, Prosperi, P, Šūmane, S. 2020. *The drivers of change for the contribution of small farms to regional food security in Europe.* Global Food Security 26:100395. DOI:10.1016/j.gfs.2020.100395

24. Arunkumar K, Raja R, Kumar VBS, Joseph A, Shilpa T, Carvalho IS. 2020. *Antioxidant and cytotoxic activities of sulfated polysaccharides from five different edible seaweeds.* Journal of Food Measurement and Characterization. DOI:10.1007/s11694-020-00661-4

25. Barreira AP, Amado C, Santos S, Andraz J, Guimarães MH. 2020. *Assessment and Determinants of the Quality of Life in Portuguese Cities.* International Regional Science Review016001762097961. DOI:10.1177/0160017620979611

26. Bernardino J, Bispo R, Martins R, Santos S, Moreira F. 2020. *Response of vertebrate scavengers to power line and road rights-of-way and its implications for bird fatality estimates.* Scientific Reports 10. DOI:10.1038/s41598-020-72059-7

27. Bernardino J, BR, Martins R, Santos, S, Moreira F. 2020. *Response of vertebrate scavengers to power line and road rights-of-way and its implications for bird fatality estimates.* Scientific Reports 10:15014.

28. Boutoub O, El-Guendouz S, Estevinho LM, Paula VB, Aazza S, El GL, Rodrigues B, Raposo S, Carlier J, Costa MC, Miguel MG. 2020. *Antioxidant activity and enzyme inhibitory potential of Euphorbia resinifera and E. officinarum honeys from Morocco and plant aqueous extracts.* Environmental Science and Pollution Research 28:503-517. DOI:10.1007/s11356-020-10489-6

29. Bovo S, Ribani A, Muñoz M, Alves E, Araujo JP, Bozzi R, Čandek-Potokar M, Charneca R, Di PF, Etherington G, Fernandez AI, García F, García-Casco J, Karolyi D, Gallo M, Margeta V, Martins JM, Mercat MJ, Moscatelli G, Núñez Y, Quintanilla R, Radović ?, Razmaite V, Riquet J, Savić R, Schiavo G, Usai G, Utzeri VJ, Zimmer C, Ovilo C, Fontanesi L. 2020. *Whole-genome sequencing of European autochthonous and commercial pig breeds allows the detection of signatures of selection for adaptation of genetic resources to different breeding and production systems.* Genetics Selection Evolution 52. DOI:10.1186/s12711-020-00553-7

30. Bovo S, Ribani A, Muñoz M, Alves E, Araujo JP, Bozzi R, Charneca R, Di PF, Etherington G, Fernandez AI, García F, García-casco J, Karolyi D, Gallo M, Gvozdanović K, Martins JM, Mercat MJ, Núñez Y, Quintanilla R, Radović ?, Razmaite V, Riquet J, Savić R, Schiavo G, Škrlep M, Usai G, Utzeri VJ, Zimmer C, Ovilo C, Fontanesi L. 2020. *Genome-wide detection of copy number variants in European autochthonous and commercial pig breeds by whole-genome sequencing of DNA pools identified breed-characterising copy number states.* Animal Genetics. DOI:10.1111/age.12954

31. Brás T, Paulino AF, Neves LA, Crespo JG, Duarte M. 2020. *Ultrasound assisted extraction of cynaropicrin from Cynara cardunculus leaves: Optimization using the response surface methodology and the effect of pulse mode.* Industrial Crops and Products 150:112395. DOI:10.1016/j.indcrop.2020.112395

32. Brás T, Rosa D, Gonçalves AC, Gomes AC, Alves VD, Crespo JG, Duarte M, Neves LA. 2020. *Development of bioactive films based on chitosan and Cynara cardunculus leaves extracts for wound dressings.* International Journal of Biological Macromolecules. DOI:10.1016/j.ijbiomac.2020.09.109

33. Bueno-Pallero F?, Blanco-Pérez R, Vicente-Díez I, Rodríguez MJA, Dionísio L, Campos-Herrera R. 2020. *Patterns of Occurrence and Activity of Entomopathogenic Fungi in the Algarve (Portugal) Using Different Isolation Methods.* Insects 11:352. DOI:10.3390/insects11060352

34. Camacho M, De AE, Mota M, Nobrega F, Vicente C, Rusinque L, Inácio M. 2020. *Potato Cyst Nematodes: Geographical Distribution, Phylogenetic Relationships and Integrated Pest Management Outcomes in Portugal.* Frontiers in Plant Science 11. DOI:10.3389/fpls.2020.606178

35. Camilo-Alves C, Dinis C, Vaz M, Barroso JM, Ribeiro NA. 2020. *Irrigation of Young Cork Oaks under Field Conditions—Testing the Best Water Volume.* Forests 11:88. DOI:10.3390/f11010088

36. Canas S, Cunha J, Eiras-Dias J. 2020. *Advances in Viticulture, Enology and Vitivinicultural Economy: Ciência e Técnica Vitivinícola 2020.* Ciência e Técnica Vitivinícola 35:176-178. DOI:10.1051/ctv/20203502176

37. Canas S, Danalache F, Anjos O, Fernandes T, Caldeira I, Santos N, Fargeton L, Boissier B, Catarino S. 2020. *Behaviour of Low Molecular Weight Compounds, Iron and Copper of Wine Spirit Aged with Chestnut Staves under Different Levels of Micro-Oxygenation.* Molecules 25:5266. DOI:10.3390/molecules25225266

38. Canas S, Trindade CS, Sun B, Naves P. 2020. *Phenolic compounds involved in pine wilt disease: HPLC-based method development and validation for their quantification.* Journal of Plant Biochemistry and Biotechnology. DOI:10.1007/s13562-020-00599-0

39. Cano OA, Musarella CM, Pinto GC, Quinto CR, Piñar FJ, Cano E. 2020. *Phytosociological Study, Diversity and Conservation Status of the Cloud Forest in the Dominican Republic.* Plants 9:741. DOI:10.3390/plants9060741

40. Cano-Ortiz A, Musarella C, Piñar FJ, Pinto GC, Quinto-Canas R, Del RS, Cano E. 2020. *Indicative Value of the Dominant Plant Species for a Rapid Evaluation of the Nutritional Value of Soils.* Agronomy 11:1. DOI:10.3390/agronomy11010001

41. Carmona-Cabezas R, Gómez-Gómez J, Gutiérrez DRE, Sánchez-López E, Serrano J, Jiménez-Hornero F. 2020. *Improving graph-based detection of singular events for photochemical smog agents.* Chemosphere 253:126660. DOI:10.1016/j.chemosphere.2020.126660

42. Carreira L, Castelo PM, Simões C, Capela ESF, Viegas C, Lamy E. 2020. *Changes in Salivary Proteome in Response to Bread Odour.* Nutrients 12:1002. DOI:10.3390/nu12041002

43. Casanova M, Branco S, Veiga I, Faísca P. 2020. *Stereological Estimation of Mean Nuclear Volume as a Prognostic Factor in Canine Mast Cell Tumours.* Journal of Comparative Pathology 174:144. DOI:10.1016/j.jcpa.2019.10.016

44. Castañeda-Loaiza V, Oliveira M, Santos T, Schüler L, Lima AR, Gama F, Salazar M, Neng NR, Nogueira J, Varela J, Barreira L. 2020. *Wild vs cultivated halophytes: Nutritional and functional differences.* Food Chemistry 333:127536. DOI:10.1016/j.foodchem.2020.127536

45. Castanheiro J, Vital J, Fonseca I, Ramos A. 2020. *Glycerol conversion into biofuel additives by acetalization with pentanal over heteropolyacids immobilized on zeolites.* Catalysis Today 346:76-80. DOI:10.1016/j.cattod.2019.04.048

46. Castruita-Esparza, G, Ángel BF, Blanco-Pérez, R, Dionísio, L, Aquino-Bolaños, T, Campos-Herrera, R. 2020. *Activity of Steinernema colombiense in plant-based oils.* Journal of Nematology e2020-72 | Vol. 52:1-12. DOI:10.21307/jofnem-2020-072

47. Ceron JJ, Lamy E, Martinez-Subiela S, Lopez-Jornet P, Capela ESF, Eckersall PD, Tvarijonaviciute A. 2020. *Use of Saliva for Diagnosis and Monitoring the SARS-CoV-2: A General Perspective.* Journal of Clinical Medicine 9:1491. DOI:10.3390/jcm9051491

48. Cires, E, Pinto-Cruz, C, Nava, H, Fernandez, J. 2020. *A new species from the temporary ponds of southwest Portugal: Helosciadium milfontinum.* Phytotaxa 456:49-62. DOI:10.11646/phytotaxa.456.1.3

49. Clemens B, Arakawa H, Baker C, Coghlan S, Kucheryavyy A, Lampman R, Lança M, Mateus C, Miller A, Nazari H, Pequeño G, Sutton T, Yanai S. 2020. *Management of anadromous lampreys: Common threats, different approaches.* Journal of Great Lakes Research. DOI:10.1016/j.jglr.2020.09.005

50. Coelho L, Borrero C, Bueno-Pallero F, Guerrero C, Fonseca F, Reis M, Avilés M, Dionísio L. 2020. *First Report of Curvularia trifolii Causing Curvularia Blight in Agrostis stolonifera in South of Portugal.* Plant Disease 104:292-292. DOI:10.1094/pdis-03-19-0517-pdn

51. Coelho L, Reis M, Guerrero C, Dionísio L. 2020. *Use of organic composts to suppress bentgrass diseases in Agrostis stolonifera.* Biological Control 141:104154. DOI:10.1016/j.biocontrol.2019.104154

52. Coelho, N, Gonçalves S, Romano A. 2020. *Endemic Plant Species Conservation: Biotechnological Approaches.* Plants 9:345. DOI:10.3390/plants9030345

53. Contreras-Aguilar M, Hevia M, Escribano D, Lamy E, Tecles F, Cerón J. 2020. *Effect of food contamination and collection material in the measurement of biomarkers in saliva of horses..* Research in Veterinary Science 129:90-95. DOI:10.1016/j.rvsc.2020.01.006

54. Contreras-Aguilar, M, Lamy, E, Escribano, D, Cerón J, Tecles, F, Quiles, A, Hevia, M. 2020. *Changes in Salivary Analytes of Horses Due to Circadian Rhythm and Season: A Pilot Study.* Animals 10:1486. DOI:10.3390/ani10091486

55. Correia PJ, Cota T, Pestana M. 2020. *Evaluation of Carob Tree Productivity during a 30-Year Period, in Relation to Precipitation and Air Temperature.* Environmental Processes 7:1221-1233. DOI:10.1007/s40710-020-00466-z

56. Costa A, Silva B, Jiménez-Navarro G, Barreiro S, Melguizo-Ruiz N, Rodríguez-Pérez J, Vasconcelos S, Beja P, Moreira F, Herrera J. 2020. *Structural simplification compromises the*

potential of common insectivorous bats to provide biocontrol services against the major olive pest Prays oleae. Agriculture, Ecosystems & Environment 287:106708. DOI:10.1016/j.agee.2019.106708

57. Costa FMDB, Ventura-Lucas MR, Izquierdo L, Deblitz C. 2020. *Competitiveness of Portuguese Montado Ewe Production Systems among the European Ewe Production Systems.* Agriculture 10:184. DOI:10.3390/agriculture10050184

58. Costa FMDB, Ventura-Lucas MR, Izquierdo L, Deblitz C. 2020. *The Montado/Dehesa Cow-Calf Production Systems in Portugal and Spain: An Economic and Resources' Use Approach.* Land 9:148. DOI:10.3390/land9050148

59. Cunha MV, Rosalino LM, Leão C, Bandeira V, Fonseca C, Botelho A, Reis AC. 2020. *Ecological drivers of Mycobacterium avium subsp. paratuberculosis detection in mongoose (Herpestes ichneumon) using IS900 as proxy.* Scientific Reports 10. DOI:10.1038/s41598-020-57679-3

60. Das G, Lim KJ, Tantengco OAG, Carag HM, Gonçalves S, Romano A, Das SK, Coy-barrera E, Shin H, Gutiérrez-grijalva EP, Heredia JB, Patra JK. 2020. *Cactus: Chemical, nutraceutical composition and potential bio-pharmacological properties.* Phytotherapy Research 35:1248-1283. DOI:10.1002/ptr.6889

61. Das G, Patra JK, Gonçalves S, Romano A, Gutiérrez-Grijalva EP, Heredia JB, Talukdar AD, Shome S, Shin H. 2020. *Galangal, the multipotent super spices: A comprehensive review.* Trends in Food Science & Technology 101:50-62. DOI:10.1016/j.tifs.2020.04.032

62. De AMT, Da RC, Viana-Junior A, Santos A, Passamani M, De AC. 2020. *The influence of population-control methods and seasonality on the activity pattern of wild boars (Sus scrofa) in high-altitude forests.* Mammalian Biology 100:101-106. DOI:10.1007/s42991-019-00003-y

63. Delgado A, Al-Hamimi S, Ramadan MF, Wit MD, Durazzo A, Nyam KL, Issaoui M. 2020. *Contribution of Tocols to Food Sensorial Properties, Stability, and Overall Quality.* Journal of Food Quality 2020:1-8. DOI:10.1155/2020/8885865

64. Dentinho M, Paulos K, Francisco A, Belo A, Jerónimo E, Almeida J, Bessa R, Santos-Silva J. 2020. *Effect of soybean meal treatment with Cistus ladanifer condensed tannins in growth performance, carcass and meat quality of lambs.* Livestock Science 236:104021. DOI:10.1016/j.livsci.2020.104021

65. Dias J, Lage P, Garrido A, Machado E, Conceição C, Gomes S, Martins A, Paulino A, Duarte MF, Alvarenga N. 2020. *Evaluation of gas holes in "Queijo de Nisa" PDO cheese using computer vision.* Journal of Food Science and Technology. DOI:10.1007/s13197-020-04621-0

66. Elamine Y, Anjos O, Estevinho L, Lyoussi B, Aazza S, Miguel M. 2020. *Effect of extreme heat processing on the Moroccan Zantaz' honey antioxidant activities.* Journal of Food Science and Technology 57:3323-3333. DOI:10.1007/s13197-020-04365-x

67. El-Guendouz S, Aazza S, Dandlen SA, Majdoub N, Lyoussi B, Raposo S, Gomes V, Bankova V, Popova M, Antunes D, Miguel MG. 2020. *Natural antioxidants in emulsions O/W*. Zeitschrift für Naturforschung C. DOI:10.1515/znc-2020-0003

68. El-Guendouz S, Lyoussi B, Miguel M. 2020. *Insight into the chemical composition and biological properties of Mediterranean royal jelly.* Journal of Apicultural Research1-20. DOI:10.1080/00218839.2020.1744241

69. El-Guendouz S, Machado A, Aazza S, Lyoussi B, Miguel M, Mateus M, Figueiredo A. 2020. *Chemical Characterization and Biological Properties of Royal Jelly Samples From the Mediterranean Area.* Natural Product Communications 15:1934578X2090808. DOI:10.1177/1934578x20908080

70. Elias M, Laranjo M, Potes M, Agulheiro-Santos A, Fernandes M, Garcia R, Fraqueza M. 2020. *Impact of a 25% Salt Reduction on the Microbial Load, Texture, and Sensory Attributes of a Traditional Dry-Cured Sausage.* Foods 9:554. DOI:10.3390/foods9050554

71. Ersoy Z, Scharfenberger U, Baho DL, Bucak T, Feldmann T, Hejzlar J, Levi EE, Mahdy A, Nõges T, Papastergiadou E, Stefanidis K, Šorf M, Søndergaard M, Trigal C, Jeppesen E, Beklioğlu M. 2020. *Impact of nutrients and water level changes on submerged macrophytes along a temperature gradient: A pan-European mesocosm experiment.* Global Change Biology. DOI:10.1111/gcb.15338

72. Esgalhado C, Guimarães H, Debolini M, Guiomar N, Lardon S, Ferraz DOI. 2020. *A holistic approach to land system dynamics – The Monfurado case in Alentejo, Portugal.* Land Use Policy 95:104607. DOI:10.1016/j.landusepol.2020.104607

73. Esgalhado C, Guimaraes M. 2020. *Unveiling Contrasting Preferred Trajectories of Local Development in Southeast Portugal.* Land 9:87. DOI:10.3390/land9030087

74. Espín, S, Andevski, J, Duke, G, Eulaers I, Gómez-Ramírez P, Thor HG, Helander B, Herzke D, L. BJV, Krone O, Lourenço REA. 2020. *A schematic sampling protocol for contaminant monitoring in raptors..* Ambio 50,:95–100 (2021).. DOI:10.1007/s13280-020-01341-9

75. Fandiño M, Vilanova M, Caldeira I, Silvestre JM, Rey BJ, Mirás-Avalos JM, Cancela JJ. 2020. *Chemical composition and sensory properties of Albariño wine: Fertigation effects.* Food Research International 137:109533. DOI:10.1016/j.foodres.2020.109533

76. Faria JM, Teixeira DM, Pinto AP, Brito I, Barrulas P, Alho L, Carvalho M. 2020. *Toxic levels of manganese in an acidic Cambisol alters antioxidant enzymes activity, element uptake and subcellular distribution in Triticum aestivum.* Ecotoxicology and Environmental Safety 193:110355. DOI:10.1016/j.ecoenv.2020.110355

77. Faria JMS, Rodrigues AM, Barbosa P, Mota M. 2020. *In Silico Screening of Agonist and Antagonist Natural Compounds from Reported Essential Oils against Bursaphelenchus xylophilus.* Chemistry Proceedings 3:31. DOI:10.3390/ecsoc-24-08386

78. FAUSTINO-ROCHA AI, Seixas F, Ferreira R, Silva J, Pires MJ, Fardilha M, Ginja M, Oliveira PA. 2020. *Ultrasonographic Follow-up of the Multistep Protocol for Prostate Cancer Induction in Wistar Rats.* In Vivo 34:1797-1803. DOI:10.21873/invivo.11974

79. Fernandes M, Pinto-Cruz C, Almeida E, Emídio M, Simões M, Gazarini L, Belo A. 2020. *Seed germination of six Iberian endemic species – a contribution to enhance plant*

conservation. Plant Biosystems - An International Journal Dealing with all Aspects of Plant Biology1-7. DOI:10.1080/11263504.2020.1845841

80. Ferreira CSS, Mourato S, Kasanin-Grubin M, Ferreira A, Destouni G, Kalantari Z. 2020. *Effectiveness of Nature-Based Solutions in Mitigating Flood Hazard in a Mediterranean Peri-Urban Catchment.* Water 12:2893. DOI:10.3390/w12102893

81. Ferreira V, Barreira A, Loures L, Antunes D, Panagopoulos T. 2020. *Stakeholders' Engagement on Nature-Based Solutions: A Systematic Literature Review.* Sustainability 12:640. DOI:10.3390/su12020640

82. Ferro MD, Lopes E, Afonso M, Peixe A, Rodrigues FM, Duarte MF. 2020. *Phenolic Profile Characterization of 'Galega Vulgar' and 'Cobrançosa' Portuguese Olive Cultivars along the Ripening Stages.* Applied Sciences 10:3930. DOI:10.3390/app10113930

83. Fraqueza M, Laranjo M, Elias M, Patarata L. 2020. *Microbiological hazards associated with salt and nitrite reduction in cured meat products: control strategies based on antimicrobial effect of natural ingredients and protective microbiota.* Current Opinion in Food Science. DOI:10.1016/j.cofs.2020.10.027

84. Fraqueza M, Laranjo, M, Alves S, Fernandes M, Agulheiro-Santos A, Fernandes M, Potes M, Elias M. 2020. *Dry-Cured Meat Products According to the Smoking Regime: Process Optimization to Control Polycyclic Aromatic Hydrocarbons.* Foods 9:91. DOI:10.3390/foods9010091

85. From M, Larsson PT, Andreasson B, Medronho B, Svanedal I, Edlund H, Norgren M. 2020. *Tuning the properties of regenerated cellulose: Effects of polarity and water solubility of the coagulation medium.* Carbohydrate Polymers 236:116068. DOI:10.1016/j.carbpol.2020.116068

86. Gago C, Antão R, Dores C, Guerreiro A, Miguel MG, Faleiro ML, Figueiredo AC, Antunes MD. 2020. *The Effect of Nanocoatings Enriched with Essential Oils on 'Rocha' Pear Long Storage.* Foods 9:240. DOI:10.3390/foods9020240

87. Galantinho A, Herrera JM, Eufrázio S, Silva C, Carvalho F, Alpizar-Jara R, Mira A. 2020. *Road verges provide connectivity for small mammals: A case study with wood mice (Apodemus sylvaticus) in an agro-silvo pastoral system.* Journal of Environmental Management 258:110033. DOI:10.1016/j.jenvman.2019.110033

88. Galli F, Grando S, Adamsone-Fiskovica A, Bjørkhaug H, Czekaj M, Duckett DG, Almaas H, Karanikolas P, Moreno-Pérez O, Ortiz-Miranda D, Pinto-Correia T, Prosperi P, Redman M, Rivera M, Toma I, Sánchez-Zamora P, Šūmane S, Żmija K, Żmija D, Brunori G. 2020. *How do small farms contribute to food and nutrition security? Linking European small farms, strategies and outcomes in territorial food systems.* Global Food Security 26:100427. DOI:10.1016/j.gfs.2020.100427

89. Galveias A, Arriegas R, Mendes S, Ribeiro H, Abreu I, Costa AR, Antunes CM. 2020. *Air pollutants NO2- and O3-induced Dactylis glomerata L. pollen oxidative defences and enhanced its allergenic potential.* Aerobiologia 37:127-137. DOI:10.1007/s10453-020-09676-2

90. Ganesan V, Raja R, Hemaiswarya S, Carvalho IS, Anand N. 2020. *Isolation and characterization of two novel plasmids pCYM01 and pCYM02 of Cylindrospermum stagnale.* Saudi Journal of Biological Sciences 27:535-542. DOI:10.1016/j.sjbs.2019.11.017

91. Garcia C, Savilaakso S, Sassen M, Stoudmann N, Verburg, R, Quétier, F, Araújo, M, Bastin J, Boutinot L, Dessard H, Dray A, Fernbach P, FS, Ghazoul J, Feintrenie L, Naimi B, Oszwald J, Pietsch S, Robinson B, Sist P, Sloman S, Sunderland T, Vermeulen C, Wilmé L, Wilson S, Waeber P. 2020. *To Bend the Curve of Terrestrial Biodiversity, Place Agency Centre Stage. Preprints 2020, 2020100609 (doi: 10.20944/preprints202010.0609.v1)..* Preprints 2020, 2020100609. DOI:10.20944/preprints202010.0609.v1

92. Garcia R, Carreiro E, Lima J, Gomes DSM, Costa FA, Cabrita M. 2020. *Assessment of Dimethoate in Olive Oil Samples Using a Dual Responsive Molecularly Imprinting-Based Approach.* Foods 9:618. DOI:10.3390/foods9050618

93. Garcia, C, Savilaakso, S, Verburg, R, Gutierrez, V, Wilson, S, Krug, C, Sassen, M, Robinson, B, Moersberger, H, Naimi, B, Rhemtulla, J, Dessard, H, Gond, V, Vermeulen, C, Trolliet, F, Oszwald, J, Quétier, F, Pietsch, S, Bastin, J, Dray, A, Araújo, M, Ghazoul, J, Waeber, P. 2020. *The Global Forest Transition as a Human Affair.* One Earth 2:417-428. DOI:10.1016/j.oneear.2020.05.002

94. Gaspar D, Trindade C, Usié A, Meireles B, Fortes A, Guimarães J, Simões F, Costa R, Ramos A. 2020. *Comparative Transcriptomic Response of Two Pinus Species to Infection with the Pine Wood Nematode Bursaphelenchus xylophilus.* Forests 11:204. DOI:10.3390/f11020204

95. Gomes L, Nobre T, Sousa A, Rei F, Guiomar N. 2020. *Hyperspectral Reflectance as a Basis to Discriminate Olive Varieties—A Tool for Sustainable Crop Management.* Sustainability 12:3059. DOI:10.3390/su12073059

96. González-del-pliego P, Scheffers BR, Freckleton RP, Basham EW, Bastos AM, Acosta-galvis A, Medina UC, Haugaasen T, Edwards D. 2020. *Thermal tolerance and the importance of microhabitats for Andean frogs in the context of land use and climate change.* Journal of Animal Ecology 89:2451-2460. DOI:10.1111/1365-2656.13309

97. Graça A, Santo D, Pires-Cabral P, Quintas C. 2020. *The effect of UV-C and electrolyzed water on yeasts on fresh-cut apple at 4 °C.* Journal of Food Engineering 282:110034. DOI:10.1016/j.jfoodeng.2020.110034

98. Granja-Soares J, Roque R, Cabrita M, Anjos O, Belchior A, Caldeira I, Canas S. 2020. *Effect of innovative technology using staves and micro-oxygenation on the odorant and sensory profile of aged wine spirit.* Food Chemistry 333:127450. DOI:10.1016/j.foodchem.2020.127450

99. Guarín A, Rivera M, Pinto-Correia T, Guiomar N, Šūmane S, Moreno-Pérez OM. 2020. *A new typology of small farms in Europe.* Global Food Security 26:100389. DOI:10.1016/j.gfs.2020.100389

100. Guerra R, Paulino AF, Castro MM, Oliveira H, Duarte MF, Duarte IF. 2020. Triple Negative Breast Cancer and Breast Epithelial Cells Differentially Reprogram Glucose and Lipid Metabolism upon Treatment with Triterpenic Acids. Biomolecules 10:1163. DOI:10.3390/biom10081163

101. Guerra R, Soares BI, Freire CSR, Silvestre AJ, Duarte MF, Duarte IF. 2020. Metabolic Effects of a Eucalyptus Bark Lipophilic Extract on Triple Negative Breast Cancer and Non-Tumor Breast Epithelial Cells. Journal of Proteome Research. DOI:10.1021/acs.jproteome.0c00559

102. Guerreiro RC, Jerónimo E, Luz S, Pinheiro HM, Prazeres AR. 2020. Cheese manufacturing wastewater treatment by combined physicochemical processes for reuse and fertilizer production. Journal of Environmental Management 264:110470. DOI:10.1016/j.jenvman.2020.110470

103. Gutiérrez-Gutiérrez C, Teixeira SM, Inácio ML, Eisenback JD, Mota M. 2020. Description of Longidorus bordonensis sp. nov. from Portugal, with systematics and molecular phylogeny of the genus (Nematoda, Longidoridae). Zoosystematics and Evolution 96:175-193. DOI:10.3897/zse.96.49022

104. Herrando-pérez S, Monasterio C, Beukema W, Gomes V, Ferri-yáñez F, Vieites DR, Buckley LB, Araújo MB. 2020. Heat tolerance is more variable than cold tolerance across species of Iberian lizards after controlling for intraspecific variation. Functional Ecology 34:631-645. DOI:10.1111/1365-2435.13507

105. Ilhéu M, Da SJ, Morais M, Matono P, Bernardo J. 2020. Types of dry-season stream pools: environmental drivers and fish assemblages. Inland Waters 10:516-528. DOI:10.1080/20442041.2020.1843931

106. Inácio ML, Camacho MJ, Serra C, Cordevile C, Cordeiro L, Andrade E. 2020. First Report of the Potato Cyst Nematode, Globodera rostochiensis, on Potato in the Azores, Portugal. Plant Disease 104:1874-1874. DOI:10.1094/pdis-07-19-1429-pdn

107. Issaoui M, Nesrine M, Flamini G, Delgado A. 2020. Enrichment of white flour with spices positively impacts safety and consumer acceptance of bread. International Journal of Food Science & Technology. DOI:10.1111/ijfs.14834

108. Issaoui M, Delgado AM, Caruso G, Micali M, Barbera M, Atrous H, Ouslati A, Chammem N. 2020. Phenols, Flavors, and the Mediterranean Diet. Journal of AOAC INTERNATIONAL 103:915-924. DOI:10.1093/jaocint/qsz018

109. Jara-Palacios, M, Gonçalves, S, Heredia, F, Hernanz, D, Romano, A. 2020. Extraction of Antioxidants from Winemaking Byproducts: Effect of the Solvent on Phenolic Composition, Antioxidant and Anti-Cholinesterase Activities, and Electrochemical Behaviour. Antioxidants 9:675. DOI:10.3390/antiox9080675

110. Jerónimo E, Cachucho L, Soldado D, Guerreiro O, Bessa RJB, Alves SP. 2020. Fatty Acid Content and Composition of the Morphological Fractions of Cistus Ladanifer L. and Its Seasonal Variation. Molecules 25:1550. DOI:10.3390/molecules25071550

111. Jerónimo E, Soldado D, Sengo S, Francisco A, Fernandes F, Portugal AP, Alves SP, Santos-Silva J, Bessa RJ. 2020. Increasing the α-tocopherol content and lipid oxidative stability of meat through dietary Cistus ladanifer L. in lamb fed increasing levels of polyunsaturated fatty acid rich vegetable oils (IF 3.483; Q1). Meat Science 164:108092. DOI:10.1016/j.meatsci.2020.108092

112. Jiménez-Gómez A, Saati-Santamaría Z, Kostovcik M, Rivas R, Velázquez E, Mateos PF, Menéndez E, García-Fraile P. 2020. Selection of the Root Endophyte Pseudomonas brassicacearum CDVBN10 as Plant Growth Promoter for Brassica napus L. Crops. Agronomy 10:1788. DOI:10.3390/agronomy10111788

113. Jiménez-Morillo NT, Palma V, Garcia R, Dias CB, Cabrita MJ. 2020. Combination of Stable Isotope Analysis and Chemometrics to Discriminate Geoclimatically and Temporally the Virgin Olive Oils from Three Mediterranean Countries. Foods 9:1855. DOI:10.3390/foods9121855

114. Jiménez-Morillo NT, Palma V, Garcia R, Pereira JA, Dias CB, Cabrita MJ. 2020. Multivariate geostatistical analysis of stable isotopes in Portuguese varietal extra virgin olive oils. Microchemical Journal 157:105044. DOI:10.1016/j.microc.2020.105044

115. Jiménez-Morillo NT, Cabrita MJ, Dias CB, González-Vila FJ, González-Pérez JA. 2020. Pyrolysis-compound-specific hydrogen isotope analysis (δ2H Py-CSIA) of Mediterranean olive oils (Q1 IF 4.248). Food Control 110:107023. DOI:10.1016/j.foodcont.2019.107023

116. Khubber S, Chaturvedi K, Taghi GSM, Cruz RM, Lorenzo JM, Gehlot R, Barba FJ. 2020. Non-conventional osmotic solutes (honey and glycerol) improve mass transfer and extend shelf life of hot-air dried red carrots: Kinetics, quality, bioactivity, microstructure, and storage stability. LWT 131:109764. DOI:10.1016/j.lwt.2020.109764

117. Laganà P, Coniglio MA, Fiorino M, Delgado AM, Chammen N, Issaoui M, Gambuzza ME, Iommi C, Soraci L, Haddad MA, Delia S. 2020. Phenolic Substances in Foods and Anticarcinogenic Properties: A Public Health Perspective. Journal of AOAC INTERNATIONAL 103:935-939. DOI:10.1093/jaocint/qsz028

118. Lamy, E, Santos, V, Barrambana, S, Simões, C, Carreira L, Infante, P, Capela ESF. 2020. Saliva Protein Composition Relates with Inter-individual Variations in Bread Sensory Ratings. Starch - Stärke2000052. DOI:10.1002/star.202000052

119. Lima AR, Castañeda-Loaiza V, Salazar M, Nunes C, Quintas C, Gama F, Pestana M, Correia PJ, Santos T, Varela J, Barreira L. 2020. Influence of cultivation salinity in the nutritional composition, antioxidant capacity and microbial quality of Salicornia ramosissima commercially produced in soilless systems. Food Chemistry 333:127525. DOI:10.1016/j.foodchem.2020.127525

120. Lopes M, Pierrepont C, Duarte CM, Filipe A, Medronho B, Sousa I. 2020. Legume Beverages from Chickpea and Lupin, as New Milk Alternatives. Foods 9:1458. DOI:10.3390/foods9101458

121. Louro R, Santos SC. 2020. Terfezia solaris-libera sp. Nov., A New Mycorrhizal Species within the Spiny-Spored Lineages. Open Access Journal of Mycology & Mycological Sciences 3. DOI:10.23880/oajmms-16000121

122. Lucena S, Coelho AV, Muñoz-Prieto A, Anjo SI, Manadas B, Capela ESF, Lamy E, Tvarijonaviciute A. 2020. Changes In The Salivary Proteome Of Beagle Dogs After Weight Loss. Domestic Animal Endocrinology106474. DOI:10.1016/j.domaniend.2020.106474

123. Luis ML, Correa OL. 2020. Colostrum as the speed up key for ruminant newborn: what do we know and should further characterize. Journal of Dairy, Veterinary & Animal Research 9(3):95–98. DOI:10.15406/jdvar.2020.09.00286

124. Machado A, Miguel M, Vilas-Boas M, Figueiredo A. 2020. Honey Volatiles as a Fingerprint for Botanical Origin—A Review on their Occurrence on Monofloral Honeys. Molecules 25:374. DOI:10.3390/molecules25020374

125. Machado R, Bayot R, Godinho S, Pirnat J, Santos P, De SN. 2020. LDTtool: A toolbox to assess landscape dynamics. Environmental Modelling & Software 133:104847. DOI:10.1016/j.envsoft.2020.104847

126. Machado R, Godinho S, Guiomar N, Gil A, Pirnat J. 2020. Using graph theory to analyse and assess changes in Mediterranean woodland connectivity. Landscape Ecology 35:1291-1308. DOI:10.1007/s10980-020-01014-8

127. Maciel DA, Silva VA, Alves HMR, Volpato MML, Barbosa JPRAD, Souza VCOD, Santos MO, Silveira HRDO, Dantas MF, Freitas AFD, Carvalho GR, Oliveira DSJ. 2020. Leaf water potential of coffee estimated by landsat-8 images. PLOS ONE 15:e0230013. DOI:10.1371/journal.pone.0230013

128. Magalhães S, Alves L, Medronho B, Romano A, Rasteiro M. 2020. Microplastics in Ecosystems: From Current Trends to Bio-Based Removal Strategies. Molecules 25:3954. DOI:10.3390/molecules25173954

129. Majdoub N, Kaab LBB, Vieira A, Faleiro M, EL-GUENDOUZ S, Miguel M. 2020. Zn treatment effects on biological potential of fennel bulbs as affected by in vitro digestion process. Food Science and Technology 40:60-67. DOI:10.1590/fst.34918

130. Marques, A, Moreira, F, Alcazar, R, Delgado, A, Godinho, C, Sampaio, H, Rocha, P, Sequeira, N, Palmeirim, J, Silva; J. 2020. Changes in grassland management and linear infrastructures associated to the decline of an endangered bird population. Scientific Reports 10, 15150 (2020).:15150 (2020).. DOI:10.1038/s41598-020-72154-9

131. Marquezin MCS, Chaves-Júnior SDC, Rasera I, Pacheco ERP, Gavião MBD, Lamy E, Castelo PM. 2020. Oral Health and Nutritional Characteristics of Adults With Morbid Obesity: A Multivariate Analysis. Frontiers in Nutrition 7. DOI:10.3389/fnut.2020.589510

132. Martínez-Cruz A, Fernandes A, Ciríaco L, Pacheco MJ, Carvalho F, Afonso A, Madeira L, Luz S, Lopes A. 2020. Electrochemical Oxidation of Effluents from Food Processing Industries: A Short Review and a Case-Study. Water 12:3546. DOI:10.3390/w12123546

133. Martins JM, Fialho R, Albuquerque A, Neves J, Freitas A, Nunes JT, Charneca R. 2020. Growth, blood, carcass and meat quality traits from local pig breeds and their crosses. animal 14:636-647. DOI:10.1017/s1751731119002222

134. Martins M, Santos C, Soares C, Santos C, Lima N. 2020. Gongronella eborensis sp. nov., from vineyard soil of Alentejo (Portugal). International Journal of Systematic and Evolutionary Microbiology 70:3475-3482. DOI:10.1099/ijsem.0.004201

135. Martins N, Jiménez-Morillo NT, Freitas F, Garcia R, Gomes DSM, Cabrita MJ. 2020. Revisiting 3D van Krevelen diagrams as a tool for the visualization of volatile profile of varietal olive oils from Alentejo region, Portugal (Q1 e 2, IF 4,916). Talanta 207:120276. DOI:10.1016/j.talanta.2019.120276

136. Martins, J, Fialho, R, Albuquerque, A, Neves, J, Freitas, A, Tirapicos NJ, Charneca, R. 2020. Portuguese Local Pig Breeds: Genotype Effects on Meat and Fat Quality Traits. Animals. DOI:10.3390/ani10050905

137. Melro E, Filipe A, Sousa D, Valente AJ, Romano A, Antunes FE, Medronho B. 2020. Dissolution of kraft lignin in alkaline solutions. International Journal of Biological Macromolecules 148:688-695. DOI:10.1016/j.ijbiomac.2020.01.153

138. Melro E, Filipe A, Valente AJ, Antunes FE, Romano A, Norgren M, Medronho B. 2020. Levulinic acid: A novel sustainable solvent for lignin dissolution. International Journal of Biological Macromolecules 164:3454-3461. DOI:10.1016/j.ijbiomac.2020.08.128

139. Menéndez E, Flores-Félix JD, Ramírez-Bahena MH, Igual JM, García-Fraile P, Peix A, Velázquez E. 2020. Genome Analysis of Endobacterium cerealis, a Novel Genus and Species Isolated from Zea mays Roots in North Spain. Microorganisms 8:939. DOI:10.3390/microorganisms8060939

140. Menéndez E, Pérez-Yépez J, Hernández M, Rodríguez-Pérez A, Velázquez E, León-Barrios M. 2020. Plant Growth Promotion Abilities of Phylogenetically Diverse Mesorhizobium Strains: Effect in the Root Colonization and Development of Tomato Seedlings. Microorganisms 8:412. DOI:10.3390/microorganisms8030412

141. Menéndez E, PA. 2020. Is the Application of Plant Probiotic Bacterial Consortia Always Beneficial for Plants? Exploring Synergies between Rhizobial and Non-Rhizobial Bacteria and Their Effects on Agro-Economically Valuable Crops. Life 2020 10(3):24. DOI:10.3390/life10030024

142. Mestre F, Pita R, Mira A, Beja P. 2020. Species traits, patch turnover and successional dynamics: when does intermediate disturbance favour metapopulation occupancy?. BMC Ecology 20. DOI:10.1186/s12898-019-0273-5

143. Mexia T, Antunes C, Nunes A, Mira A, Correia AI, Serrano A, Correia O. 2020. Beyond the green: assessing quarry restoration success through plant and beetle communities. Restoration Ecology 28:971-978. DOI:10.1111/rec.13122

144. Miguel M, Lourenço J, Faleiro M. 2020. Superparamagnetic Iron Oxide Nanoparticles and Essential Oils: A New Tool for Biological Applications. International Journal of Molecular Sciences 21:6633. DOI:10.3390/ijms21186633

145. Miguel MG, Da SCI, Farah L, Castro BF, Figueiredo AC. 2020. Effect of Essential Oils on the Release of TNF-α and CCL2 by LPS-Stimulated THP-1 Cells. Plants 10:50. DOI:10.3390/plants10010050

146. Miguel MG. 2020. Editorial to Special Issue—Anti-Inflammatory Activity of Natural Products. Molecules 25:1926. DOI:10.3390/molecules25081926

147. Mitrea-Calin M, Inácio ML, Cean M, Costache C, Rusinque L, Paraschiv M, Camacho MJ, Vieira P, Cristea S, Nóbrega F. 2020. First detection of Bursaphelenchus mucronatus (Nematoda: Aphelenchoididae) on Monochamus sutor (Coleoptera: Cerambycidae) in Romania (IF1,434; Q2). Forest Pathologye12578. DOI:10.1111/efp.12578

148. Mora RLC, Vicente C, Inacio MLS, Nóbrega F, Camacho MJ, Lima A, Ramos AP. 2020. First report of Pratylenchus penetrans (Nematoda: Pratylenchida) associated with Amaryllis, in Portugal. Plant Disease. DOI:10.1094/pdis-03-20-0524-pdn

149. Moraes MCDS, Sampaio E, Tenorio RS, Yoon H, Kwon B. 2020. Quantitative Kinetic Energy Estimated from Disdrometer Signal. The Journal of the Korea institute of electronic communication sciences 15:153-160. DOI:10.13067/JKIECS.2020.15.1.153

150. Moral FJ, Rebollo FJ, Serrano JM, Carvajal F. 2020. Mapping management zones in a sandy pasture soil using an objective model and multivariate techniques. Precision Agriculture. DOI:10.1007/s11119-020-09756-w

151. Narayanan M, Devarajan N, He Z, Kandasamy S, Ashokkumar V, Raja R, Carvalho IS. 2020. Assessment of microbial diversity and enumeration of metal tolerant autochthonous bacteria from tailings of magnesite and bauxite mines. Materials Today: Proceedings. DOI:10.1016/j.matpr.2020.07.652

152. Ndah HT, Probst L, Kaweesa S, Kuria P, Mkomwa S, Rodrigues P, Basch G, Uckert G, Sieber S, Knierim A, Zander P, Schuler J. 2020. Improving farmers' livelihoods through conservation agriculture: options for change promotion in Laikipia, Kenya. International Journal of Agricultural Sustainability 18:212-231. DOI:10.1080/14735903.2020.1746063

153. Nobre PR, Cardoso H, Ribeiro A, Peixe A, Cordeiro A. 2020. Somatic Embryogenesis from Mature Embryos of Olea europaea L. cv. 'Galega Vulgar' and Long-Term Management of Calli Morphogenic Capacity. Plants 9:758. DOI:10.3390/plants9060758

154. Nobre T. 2020. Monophagous olive moth and its bacterial microbiota: unveiling the holobiont towards pest management. Biocontrol Science and Technology 31:107-111. DOI:10.1080/09583157.2020.1842327

155. Nocera A, Ricardo DSJ, Canas S. 2020. Antioxidant activity and phenolic composition of wine spirit resulting from an alternative ageing technology using micro-oxygenation: a preliminary study.. Oeno One, 54:485-496. DOI:0.20870/oeno-one.2020.54.3.3114

156. Nocera A, Ricardo-da-Silva JM, Canas S. 2020. Antioxidant activity and phenolic composition of wine spirit resulting from an alternative ageing technology using micro-oxygenation: a preliminary study. OENO One 54:485-496. DOI:10.20870/oeno-one.2020.54.3.3114

157. Nogales A, Ribeiro H, Nogales-Bueno J, Hansen L, Gonçalves E, Coito J, Rato A, Peixe A, Viegas W, Cardoso H. 2020. Response of Mycorrhizal 'Touriga Nacional' Variety Grapevines to High Temperatures Measured by Calorespirometry and Near-Infrared Spectroscopy. Plants 9:1499. DOI:10.3390/plants9111499

158. Nogales-Bueno J, Feliz L, Baca-Bocanegra B, Hernández-Hierro JM, Heredia FJ, Barroso JM, Rato AE. 2020. Comparative study on the use of three different near infrared spectroscopy

recording methodologies for varietal discrimination of walnuts. Talanta 206:120189. DOI:10.1016/j.talanta.2019.120189

159. Nogales-Bueno, J, Baca-Bocanegra, B, Romero-Molina, L, Martínez-López, A, Rato, A, Heredia, F, Hernández-Hierro, J, Escudero-Gilete; M, González-Miret ML. 2020. Control of the extractable content of bioactive compounds in coffee beans by near infrared hyperspectral imaging. LWT 134:110201. DOI:10.1016/j.lwt.2020.110201

160. Nunes L, Raposo M, Meireles C, Pinto GC, Ribeiro N. 2020. Control of Invasive Forest Species through the Creation of a Value Chain: Acacia dealbata Biomass Recovery. Environments 7:39. DOI:10.3390/environments7050039

161. Nunes LJR, Raposo MAM, Gomes CJP. 2020. The Impact of Tourism Activity on Coastal Biodiversity: A Case Study at Praia da Cova Redonda (Algarve—Portugal). Environments 7:88. DOI:10.3390/environments7100088

162. Oliveira M, Campos M, Lamego L, Magalhães D, Menezes R, Oliveira R, Patanita F, Ferreira D. 2020. Canine and Feline Cutaneous Mast Cell Tumor: A Comprehensive Review of Treatments and Outcomes. Topics in Companion Animal Medicine 41:100472. DOI:10.1016/j.tcam.2020.100472

163. Ortiz, A, Parrini, S, Tejerina, D, Araújo, J, Čandek-Potokar, M, Crovetti, A, Garcia-Casco, J, González, J, Hernández-García, F, Karolyi, D, Margeta, V, Martins, J, Nieto, R, Petig, M, Razmaite, V, Sirtori, F, Lebret, B, Bozzi, R. 2020. Potential Use of Near-Infrared Spectroscopy to Predict Fatty Acid Profile of Meat from Different European Autochthonous Pig Breeds. Applied Sciences 10:5801. DOI:10.3390/app10175801

164. P. CG, Santos R, Fino A, Ferreira P, M. RF, Dias J. 2020. Evolution during Three Ripening Stages of Évora Cheese. Foods 9:1140. DOI:10.3390/foods9091140

165. Paço A, da-Silva J, Torres D, Glick BR, Brígido C. 2020. Exogenous ACC Deaminase Is Key to Improving the Performance of Pasture Legume-Rhizobial Symbioses in the Presence of a High Manganese Concentration. Plants 9:1630. DOI:10.3390/plants9121630

166. Paiva PEB, Cota T, Neto L, Soares C, Tomás JC, Duarte A. 2020. Water Vapor Pressure Deficit in Portugal and Implications for the Development of the Invasive African Citrus Psyllid Trioza erytreae. Insects 11:229. DOI:10.3390/insects11040229

167. Paixão, G, Esteves, A, Carolino, N, Pires, M, Payan-carreira, R. 2020. Evaluation of gonadal macroscopic and microscopic morphometry reveals precocious puberty in Bísaro pig. . DOI:10.1111/rda.13827

168. Patanita M, Campos M, Félix M, Carvalho M, Brito I. 2020. Effect of Tillage System and Cover Crop on Maize Mycorrhization and Presence of Magnaporthiopsis maydis. Biology 9:46. DOI:10.3390/biology9030046

169. Pazian M, Bacala E, Rei FT, Nobre T. 2020. Wolbachia is present in the European grapevine moth. Journal of Applied Entomology. DOI:10.1111/jen.12774

170. Pazian M, Nobre T, Blibech I, Rei FT. 2020. Hidden Genetic Variability, Can the Olive Moth Prays oleae (Lepidoptera: Yponomeutidae or Praydidae?) be a Species' Complex?. Insects 11:204. DOI:10.3390/insects11040204

171. Pereira AMF, Vilela RA, Titto CG, Leme-dos-Santos TMC, Geraldo ACM, Balieiro JCC, Calviello RF, Birgel JEH, Titto EAL. 2020. Thermoregulatory Responses of Heat Acclimatized Buffaloes to Simulated Heat Waves. Animals 10:756. DOI:10.3390/ani10050756

172. Pereira PF, Lourenço R, Mota PG. 2020. Two songbird species show subordinate responses to simulated territorial intrusions of an exotic competitor. acta ethologica. DOI:10.1007/s10211-020-00347-6

173. Pereira RMC, Paglia NC, Da RJWF, De SFRM, Lindino CA. 2020. Institutional and Legal Framework of the Brazilian Energy Market: Biomass as a Sustainable Alternative for Brazilian Agribusiness. Sustainability 12:1554. DOI:10.3390/su12041554

174. Pesce GR, Fernandes MC, Mauromicale G. 2020. Globe artichoke crop residues and their potential for bioethanol production by dilute acid hydrolysis. Biomass and Bioenergy 134:105471. DOI:10.1016/j.biombioe.2020.105471

175. Pinto P, Lourenço R, Mira A, Santos SM. 2020. Temporal patterns of bird mortality due to road traffic collisions in a Mediterranean region. Bird Study1-14. DOI:10.1080/00063657.2020.1779652

176. Piras S, Brazão J, Ricardo-da-Silva JM, Anjos O, Caldeira I. 2020. Volatile and sensory characterization of white wines from three minority Portuguese grapevine varieties. Ciência e Técnica Vitivinícola 35:49-62. DOI:10.1051/ctv/20203501049

177. Pires BA, Belo AD, Diamantino F, Rabaça JE, Merino S. 2020. Development of nestling blue tits (Cyanistes caeruleus) is affected by experimental addition of aromatic plants. Avian Biology Research175815592092107. DOI:10.1177/1758155920921075

178. Pita R, Morgado R, Moreira F, Mira A, Beja P. 2020. Roads, forestry plantations and hedgerows affect badger occupancy in intensive Mediterranean farmland. Agriculture, Ecosystems & Environment 289:106721. DOI:10.1016/j.agee.2019.106721

179. Plieninger T, Muñoz-Rojas J, Buck LE, Scherr SJ. 2020. Agroforestry for sustainable landscape management. Sustainability Science. DOI:10.1007/s11625-020-00836-4

180. Prazeres AR, Fernandes F, Luz S, Jerónimo E. 2020. Simple processes for contamination removal in cheesemaking wastewater: CaCO3, Mg(OH)2, FeSO4 and FeCl3. Journal of Environmental Chemical Engineering104034. DOI:10.1016/j.jece.2020.104034

181. Prazeres AR, Luz S, Fernandes F, Jerónimo E. 2020. Cheese wastewater treatment by acid and basic precipitation: Application of H2SO4, HNO3, HCl, Ca(OH)2 and NaOH. Journal of Environmental Chemical Engineering 8:103556. DOI:10.1016/j.jece.2019.103556

182. Primdahl J, Van EV, Pinto-Correia T. 2020. Rural Landscapes—Challenges and Solutions to Landscape Governance. Land 9:521. DOI:10.3390/land9120521

183. Raja R, Hemaiswarya S, Sridhar S, Alagarsamy A, Ganesan V, Elumalai S, Carvalho IS. 2020. Evaluation of Proximate Composition, Antioxidant Properties, and Phylogenetic Analysis of Two Edible Seaweeds. Smart Science 8:95-100. DOI:10.1080/23080477.2020.1795338

184. Ramos S, Pinto A, Cardoso M, Alexandre N, Bettencourt E, Monteiro S, Gama LT. 2020. Prevalence of Radiographic Signs of Osteoarthritis in Lusitano Purebred Horses. Journal of Equine Veterinary Science 94:103196. DOI:10.1016/j.jevs.2020.103196

185. Rani D, Mourato S, Moreira M. 2020. A Generalized Dynamic Programming Modelling Approach for Integrated Reservoir Operation (Q1 and IF 2.987). Water Resources Management. DOI:10.1007/s11269-020-02505-8

186. Raposo M, Quinto-Canas R, Cano-Ortiz A, Spampinato G, Pinto GC. 2020. Originalities of Willow of Salix atrocinerea Brot. in Mediterranean Europe. Sustainability 12:8019. DOI:10.3390/su12198019

187. Raposo M, Pinto GC, Nunes L. 2020. Selective Shrub Management to Preserve Mediterranean Forests and Reduce the Risk of Fire: The Case of Mainland Portugal. Fire 3:65. DOI:10.3390/fire3040065

188. Raposo M, Pinto-Gomes C, Nunes L. 2020. Intensive Agricultural Practices as Enhancers of the Dispersion of Invasive Species: Notification of the Observation of A Case with Robinia Pseudoacacia L. in Alentejo (Southern Portugal). Research in Ecology 2. DOI:10.30564/re.v2i3.2399

189. Ribeiro D, Planchon S, Leclercq C, Dentinho M, Bessa R, Santos-Silva J, Paulos K, Jerónimo E, Renaut J, Almeida A. 2020. The effects of improving low dietary protein utilization on the proteome of lamb tissues. Journal of Proteomics 223:103798. DOI:10.1016/j.jprot.2020.103798

190. Ribeiro DDSF, Keller KM, Soto-Blanco B. 2020. Ptaquiloside and Pterosin B Levels in Mature Green Fronds and Sprouts of Pteridium arachnoideum. Toxins 12:288. DOI:10.3390/toxins12050288

191. Rivera M, Guarín A, Pinto-Correia T, Almaas H, Mur LA, Burns V, Czekaj M, Ellis R, Galli F, Grivins M, Hernández P, Karanikolas P, Prosperi P, Sánchez Z. 2020. Assessing the role of small farms in regional food systems in Europe: Evidence from a comparative study. Global Food Security 26:100417. DOI:10.1016/j.gfs.2020.100417

192. Robinet C, Castagnone-sereno P, Mota M, Roux G, Sarniguet C, Tassus X, Jactel H. 2020. Effectiveness of clear-cuttings in non-fragmented pine forests in relation with EU regulations for the eradication of the pine wood nematode (Q1; IF 5.782). Journal of Applied Ecology. DOI:10.1111/1365-2664.13564

193. Rodrigues CM, Moreira M, Guimarães RC, Potes M. 2020. Reservoir evaporation in a Mediterranean climate: comparing direct methods in Alqueva Reservoir, Portugal. Hydrology and Earth System Sciences 24:5973-5984. DOI:10.5194/hess-24-5973-2020

194. Rodrigues L, Silverio R, Costa AR, Antunes C, Pomar C, Infante P, Amado F, Lamy E. 2020. Taste sensitivity and lifestyle are associated with food preferences and BMI in children

(IF 2.792). International Journal of Food Sciences and Nutrition1-9. DOI:10.1080/09637486.2020.1738354

195. Saavedra T, Gama F, Correia PJ, Da SJP, Miguel MG, De VA, Pestana M. 2020. A novel plant extract as a biostimulant to recover strawberry plants from iron chlorosis. Journal of Plant Nutrition 43:2054-2066. DOI:10.1080/01904167.2020.1766079

196. Salgueiro P, Prach K, Branquinho C, Mira A. 2020. Enhancing biodiversity and ecosystem services in quarry restoration – challenges, strategies, and practice. Restoration Ecology 28:655-660. DOI:10.1111/rec.13160

197. Salgueiro PA, Silva C, Silva A, Sá C, Mira A. 2020. Can quarries provide novel conditions for a bird of rocky habitats?. Restoration Ecology 28:988-994. DOI:10.1111/rec.13080

198. Salgueiro V, Silva C, Eufrázio S, Salgueiro P, Vaz PG. 2020. Endozoochory of a dry-fruited tree aids quarry passive restoration and seed soaking further increases seedling emergence. Restoration Ecology 28:668-678. DOI:10.1111/rec.13018

199. Santos-Silva J, Alves SP, Francisco A, Portugal AP, Almeida J, Fialho L, Jerónimo E, Bessa RJ. 2020. Effects of a high-fibre and low-starch diet in growth performance, carcass and meat quality of young Alentejana breed bulls. Meat Science 168:108191. DOI:10.1016/j.meatsci.2020.108191

200. Saraiva A, Presumido P, Silvestre J, Feliciano M, Rodrigues G, Silva POE, Damásio M, Ribeiro A, Ramôa S, Ferreira L, Gonçalves A, Ferreira A, Grifo A, Paulo A, Ribeiro AC, Oliveira A, Dias I, Mira H, Amaral A, Mamede H, Oliveira M. 2020. Water Footprint Sustainability as a Tool to Address Climate Change in the Wine Sector: A Methodological Approach Applied to a Portuguese Case Study. Atmosphere 11:934. DOI:10.3390/atmos11090934

201. Serrano J, Shahidian S, Moral F, Carvajal-Ramirez F, Marques DSJ. 2020. Estimation of Productivity in Dryland Mediterranean Pastures: Long-Term Field Tests to Calibration and Validation of the Grassmaster II Probe. AgriEngineering 2:240-255. DOI:10.3390/agriengineering2020015

202. Serrano J, Shahidian S, Marques DSJ, Moral F, Carvajal-Ramirez F, Carreira E, Pereira A, Carvalho M. 2020. Evaluation of the Effect of Dolomitic Lime Application on Pastures—Case Study in the Montado Mediterranean Ecosystem. Sustainability 12:3758. DOI:10.3390/su12093758

203. Serrano J, Shahidian S, Marques DSJ, Paixão L, Moral F, Carmona-Cabezas R, Garcia S, Palha J, Noéme J. 2020. Mapping Management Zones Based on Soil Apparent Electrical Conductivity and Remote Sensing for Implementation of Variable Rate Irrigation—Case Study of Corn under a Center Pivot. Water 12:3427. DOI:10.3390/w12123427

204. Serrano J, Shahidian S, Marques DSJ, Paixão L, Carreira E, Carmona-Cabezas R, Nogales-Bueno J, Rato A. 2020. Evaluation of Near Infrared Spectroscopy (NIRS) and Remote Sensing (RS) for Estimating Pasture Quality in Mediterranean Montado Ecosystem. Applied Sciences 10:4463. DOI:10.3390/app10134463

205. Serrano J, Shahidian S, Marques DSJ, Paixão L, Carreira E, Pereira A, Carvalho M. 2020. Climate Changes Challenges to the Management of Mediterranean Montado Ecosystem: Perspectives for Use of Precision Agriculture Technologies. Agronomy 10:218. DOI:10.3390/agronomy10020218

206. Silva L, Carrau, T, Vila-Viçosa, M, Musella, V, Rinaldi, L, Failing, K, Cortes, H, Taubert A, Hermosilla C. 2020. Analysis of potential risk factors of caprine coccidiosis. Veterinary Parasitology: Regional Studies and Reports 22:100458. DOI:10.1016/j.vprsr.2020.100458

207. Silva R, Pereira J, Rouxinol M, Patarata L. 2020. Sensory Changes and Listeria monocytogenes Behavior in Sliced Cured Pork Loins during Extended Storage. Foods 9:621. DOI:10.3390/foods9050621

208. Simões E, Saraiva M, Basch G, Pires AR, Rosa ?, Chaleta E. 2020. Hybrid Conceptual Model for Assessing Quality, Production and Satisfaction (SQual4Agri), in Agricultural Production Units, in Cape Verde. Sustainability 13:37. DOI:10.3390/su13010037

209. Sousa J, Rodrigues P, Basch G. 2020. Social categories and agency within a Conservation Agriculture framework in Laikipia, Kenya. International Journal of Agricultural Sustainability 18:554-566. DOI:10.1080/14735903.2020.1798179

210. Sousa-Guedes D, Ribeiro H, Vaz-Freire MT, Mira A, Sillero N. 2020. Ultrasonic device effectiveness in keeping rodents off the road. European Journal of Wildlife Research 66. DOI:10.1007/s10344-020-1361-8

211. Šūmane S, Ortiz MD, Pinto-Correia T, Czekaj M, Duckett D, Galli F, Grivins M, Noble C, Tisenkopfs T, Toma I, Tsiligiridis T. 2020. Supporting the role of small farms in the European regional food systems: What role for the science-policy interface?. Global Food Security100433. DOI:10.1016/j.gfs.2020.100433

212. Tavares C, Martins A, Miguel M, Carvalheiro F, Duarte L, Gameiro J, Figueiredo AC, Roseiro L. 2020. Bioproducts from forest biomass II. Bioactive compounds from the steam-distillation by-products of Cupressus lusitanica Mill. and Cistus ladanifer L. wastes. Industrial Crops and Products 158:112991. DOI:10.1016/j.indcrop.2020.112991

213. Tavares CS, Martins A, Faleiro ML, Miguel MG, Duarte LC, Gameiro JA, Roseiro LB, Figueiredo AC. 2020. Bioproducts from forest biomass: Essential oils and hydrolates from wastes of Cupressus lusitanica Mill. and Cistus ladanifer L.. Industrial Crops and Products 144:112034. DOI:10.1016/j.indcrop.2019.112034

214. Teixeira N, Pires MC, Ferreira P, P. CG, Santos R, M. RF, Dias J, Martins JC, Caeiro JJ. 2020. The Economic Impact of a New Type of Ripening Chamber in Traditional Cheese Manufacturing. Sustainability 12:6682. DOI:10.3390/su12166682

215. Tisenkopfs T, Adamsone-Fiskovica A, Kilis E, Šūmane S, Grivins M, Pinto-Correia T, Bjørkhaug H. 2020. Territorial fitting of small farms in Europe. Global Food Security 26:100425. DOI:10.1016/j.gfs.2020.100425

216. Tonin JM, Vieira CMR, Sousa FRM, Martines FJG. 2020. Conditional correlation and volatility between spot and futures markets for soybean and corn. Agribusiness 36:707-724. DOI:10.1002/agr.21664

217. Tonin JM, Fragoso RMDS. 2020. UNDERSTANDING RISK DISSEMINATION: AN OVERVIEW IN SOYBEAN AND CORN MARKETS. Revista de Economia e Agronegócio 18:1-23. DOI:10.25070/rea.v18i1.8644

218. Vairinhos J, Miguel M. 2020. Essential oils of spontaneous species of the genus Lavandula from Portugal: a brief review. Zeitschrift für Naturforschung C 75:233-245. DOI:10.1515/znc-2020-0044

219. Valerio F, Ferreira E, Godinho S, Pita R, Mira A, Fernandes N, Santos SM. 2020. Predicting Microhabitat Suitability for an Endangered Small Mammal Using Sentinel-2 Data. Remote Sensing 12:562. DOI:10.3390/rs12030562

220. Velada I, Cardoso H, Porfirio S, Peixe A. 2020. Expression Profile of PIN-Formed Auxin Efflux Carrier Genes during IBA-Induced In Vitro Adventitious Rooting in Olea europaea L.. Plants 9:185. DOI:10.3390/plants9020185

221. Yang J, Medronho B, Lindman B, Norgren M. 2020. Simple One Pot Preparation of Chemical Hydrogels from Cellulose Dissolved in Cold LiOH/Urea. Polymers 12:373. DOI:10.3390/polym12020373

**** Included after revision**

222. Joaquim G, Baptista FJ. 2020. Evaluation of the potential for producing vegetables in screenhouses in Mozambique. Acta Hortic. 1296. 1161-1167. DOI 10.17660/ActaHortic.2020.1296.147

223. Silva LL, Baptista F, Cruz VF, Silva JRM. 2020. Aumentar as competências dos agricultores para a prática de uma agricultura sustentável. Revista de Ciências Agrárias. 43 (2): 240-252. Doi: https://doi.org/10.19084/rca.19942

224. Machado RMA, Alves-Pereira I, Lourenço D & Ferreira RMA. 2020. Effect of organic compost and inorganic nitrogen fertigation on spinach growth, phytochemical accumulation and antioxidant activity. Heliyon. 6(9). e05085.

BOOKS AND BOOK CHAPTERS

B1. Alagador D. 2020. *New Paradigms for Modern Biogeography Conservation.* Encyclopedia of the UN Sustainable Development Goals1-18. DOI:10.1007/978-3-319-71065-5_131-1

B2. Basch, G, Teixeira, F, Duiker S. 2020. *Weed management practices and benefits in Conservation Agriculture systems.* Advances in Conservation Agriculture 2. DOI:10.19103/AS.2019.0049.04

B3. Batista T, Rodríguez FC, Carriço C, Pinto-Gomes C, Fernández-Pozo L, Gómez JMN, Martín GJ, Loures L, Cabezas J. 2020. *Benefits of a Spatial Data Infrastructure on the Sustainability of a*

Southwestern European Territory. Cross-Border Cooperation (CBC) Strategies for Sustainable Development1-29. DOI:10.4018/978-1-7998-2513-5.ch001

B4. Carro L, Menéndez E. 2020. *Knock, knock-let the bacteria in: enzymatic potential of plant associated bacteria.* Molecular Aspects of Plant Beneficial Microbes in Agriculture169-178. DOI:10.1016/b978-0-12-818469-1.00014-6

B5. Castanheiro, J, Pinto, A, Lopes, M, Santos, F. 2020. *Acetalization of glycerol over silicotungstic acid supported in silica.* in Wastes: Solutions, Treatments and Opportunities III:155-160.

B6. Dentinho TP, Damião P, Da CRM. 2020. *Migration and Regional Development in Timor-Leste.* New Frontiers in Regional Science: Asian Perspectives247-266. DOI:10.1007/978-981-10-0230-4_11

B7. Díez-Méndez A, Menéndez E. 2020. *Rhizobium Presence and Functions in Microbiomes of Non-leguminous Plants.* Soil Biology241-266. DOI:10.1007/978-3-030-51916-2_16

B8. Elias M, Laranjo M, Agulheiro SA, Potes M. 2020. *The Role of Salt on Food and Human Health.* Salt in the Earth. DOI:10.5772/intechopen.86905

B9. Goddard T, Basch G, Derpsch R, Hongwen L, Jin H, Karabayev M. 2020. *Institutional and policy support for Conservation Agriculture uptake.* Institutional and policy support for Conservation Agriculture uptake. DOI:3-190-9781786765840

B10. Gonçalves S, Mansinhos I, Romano A. 2020. *Neuroprotective Compounds from Plant Sources and their Modes of Action: An Update.* Plant-derived Bioactives417-440. DOI:10.1007/978-981-15-2361-8_19

B11. Goncalves S, Mansinhos I, RA. 2020. *Aromatic plants: A source of compounds with antioxidant and neuroprotective effects.* Oxidative Stress and Dietary Antioxidants in Neurological Disease444.

B12. Goncalves S, Mansinhos I, Romano A. 2020. *Neuroprotective Compounds from Plant Sources and their Modes of Action: An Update.* Plant-derived Bioactives Chemistry and Mode of Action Editors: Swamy, Mallappa Kumara (Ed.)417-440.

B13. Gonçalves S, Romano A. 2020. *Application of supercritical CO2 for enhanced oil recovery.* Green Sustainable Process for Chemical and Environmental Engineering and Science67-84. DOI:10.1016/b978-0-12-817388-6.00004-0

B14. Gonçalves, S, Mansinhos, I, Romano, A. 2020. *Aromatic plants: A source of compounds with antioxidant and neuroprotective effects.* Oxidative Stress and Dietary Antioxidants in Neurological Diseases155-173. DOI:10.1016/b978-0-12-817780-8.00011-6

B15. Gottlieb B, Teixeira F, W. DS. 2020. *Advances in Conservation Agriculture - Practice and Benefits. Volume 2.* II:498 pg. DOI:10.19103/AS.2019.0049.03

B16. Grando, S, Brunori, G, Pinto-Correia, T, Sutherland, L. 2020. *Small Farming and the Food System.* Innovation for Sustainability (Research in Rural Sociology and Development, Vol. 25), Emerald Publishing Limited,pp. 9-18. DOI:10.1108/S1057-192220200000025003

B17. Guedes D, Silva V, Lucas R, Tavares S, Infante P, Simões C, PC, Capela-Silva F, Lamy E. 2020. *Designing menus to shape consumers' perception of traditional gastronomy: does it work for the Portuguese Alentejo cuisine?.* Experiencing Food, Designing Sustainable and Social Practices._2nd International Food Design and Food Studies Conference 28-30 November 2019. Lisbon, Portugal. DOI:10.1201/9781003046097

B18. Issaoui M, Delgado AM, Iommi C, Chammem N. 2020. *Polyphenols and the Mediterranean Diet.* SpringerBriefs in Molecular Science. DOI:10.1007/978-3-030-41134-3

B19. Issaoui, M, Delgado, A, Iommi, C, Chammem, N. 2020. *Polyphenols and the Mediterranean Diet.* .

B20. Jerónimo E, Dentinho MT, Guerreiro O, Francisco A, Soldado D, Alves SP, Santos-Silva J, Bessa RJB. 2020. *Cistus ladanifer L. in Ruminant Diets – A Sustainable Approach to Improve the Feed Nutritional Value and the Quality of Edible Products.* Advances in Animal Health, Medicine and Production128-160. DOI:10.1007/978-3-030-61981-7_7

B21. Kassam A, Friedrich T, Reicosky D, Calegari A, Marquez-Garcia F, Basch G, Et A. 2020. *Advances in Conservation Agriculture Volume 1: Systems and Science (Burleigh Dodds Series in Agricultural Science).* Burleigh Dodds Science Publishing 1:602.

B22. Keller, V, Herrando, S, Vorisek, P, Franch, M, Kipson, M, Milanesi, P, Martí, D, Antonio M, Klvanová, A, Kalyakin, M, Bauer, H, Foppen, R. 2020. *Red-billed Leiothrix (Leiothrix lutea). 2020..* 689.

B23. Lamy, E, Torregrossa, A, Castelo, P, Capela ESF. 2020. *Saliva in Ingestive Behavior Research: Association with Oral Sensory Perception and Food Intake.* Saliva in Health and Disease23-48. DOI:10.1007/978-3-030-37681-9

B24. Machado R, Serralheiro R. 2020. *Salt stress alleviation through fertilization in fruit crops.* Fruit Crops465-480. DOI:10.1016/b978-0-12-818732-6.00033-2

B25. Miller D, -Sang ?O, Brown I, Muñoz-Rojas J, Wang C, Donaldson-Selby G. 2020. *Landscape Modelling and Stakeholder Engagement: Participatory Approaches and Landscape Visualisation.* Modelling Nature-based Solutions19-55. DOI:10.1017/9781108553827.002

B26. Parkavi K, Rathinam R, Arunkumar K, Coelho A, Hemaiswarya S, S. CI. 2020. *Recent Insights Into Algal Biotechnology: An Update Using Text Mining Tool.* Encyclopedia of Marine Biotechnology3632.

B27. Pinto A, Lopes M, Dordio A, Castanheiro J. 2020. *Bioaugmentation an effective strategy to improve the performance of biobeds: a review.* Agrochemicals Detection, Treatment and Remediation207-240. DOI:10.1016/b978-0-08-103017-2.00009-x

B28. Pinto A, Teixeira D, Caldeira A, Rodrigues S. 2020. *Biodegradation of pesticides by adapted fungi. Potential use on biopurification systems?.* Agrochemicals Detection, Treatment and Remediation1-23. DOI:10.1016/b978-0-08-103017-2.00001-5

B29. Pinto-Correia T. 2020. *Geographies of the South. The Study of the Rural Landscape in Portugal: Southern Unicity in Patterns and Changing Functions.* Springer Geography145-165. DOI:10.1007/978-3-030-49464-3_7

B30. Quinto-Canas R, Cano-Ortiz A, Raposo M, Piñar FJ, Cano E, Barbosa N, Pinto GC. 2020. *Cork Oak Vegetation Series of Southwestern Iberian Peninsula: Diversity and Ecosystem Services.* New Metropolitan Perspectives1279-1290. DOI:10.1007/978-3-030-48279-4_119

B31. Rui M, Ricardo PS. 2020. *Salt stress alleviation through fertilization in fruit crops.* FRUIT CROPS Diagnosis and Management of Nutrient Constraints.

B32. Tatiana K, Mauro R, Carlos JG, Rui AC, José MG, Luis L, Hermenegildo C, José C, Luis F, José MNG, Sérgio ANL, Patrícia CCE. 2020. *Interactions Between Surrounding Landscape Biodiversity and Intermittent Rivers in Mediterranean Environments - Case Study of the Caia River Project: Exploring Ecosystems Services (ES): Intermittent Rivers and Ephemeral Streams (IRES), and the Natural and Agriculture Landscapes..* In book: ESPACIOS Y SOCIEDADES EN TRANSFORMACIÓNPublisher:.

B33. Tvarijonaviciute A, Martinez-Subiela S, Lopez-Jornet P, Lamy E. 2020. *Saliva in Health and Disease.* Saliva in Health and Disease.

B34. Tvarijonaviciute A, Martínez-Subiela S, López-Jornet P, Lamy E. 2020. *The Future of Saliva as an Analytical Sample.* Saliva in Health and Disease321-326. DOI:10.1007/978-3-030-37681-9_15

B35. Tvarijonaviciute A, Lucena S, Capela ESF, Lamy E. 2020. *Salivary Biomarkers in the Diagnosis and Monitoring of Metabolic and Endocrine Diseases.* Saliva in Health and Disease153-176. DOI:10.1007/978-3-030-37681-9

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Lénia Isabel Alfaiate Rodrigues	PhD	Research fellow
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Raja Rathinam	PhD	Researcher
Raquel Rodríguez Solana	PhD	Researcher
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António Pedro de Avelar Gonçalves Santos	PhD	Assistant Professor
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Carlos José Pinto Gomes	PhD	Assistant Professor
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Luiz Carlos Gazarini	PhD	Assistant Professor
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José Alexandre Varanda Andrade	PhD	Assistant Professor
Manuel Rijo	PhD	Assistant Professor
Maria Madalena Vitório Moreira Vasconcelos	PhD	Assistant Professor
Paulo Alexandre Justo Fernandez	PhD	Assistant Professor
Ricardo Paulo Serralheiro	PhD	Professor, Retired
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José Manuel Nobre de Oliveira Peça	PhD	Assistant Professor
José Pedro Pestana Fragoso de Almeida	PhD	Assistant Professor
José Rafael Marques da Silva	PhD	Assistant Professor
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