



CEBAS

CENTRO DE EDAFOLOGÍA Y
BIOLOGÍA APLICADA DEL SEGURA



REPORT
2018 - 2021

Design, layout and editing: Efraín Carrillo López, Luis Arroyo Ferrer, Alberto Caballero Martínez.

Dynamization Service.

Centro de Edafología y Biología Aplicada del Segura (CEBAS).

Consejo Superior de Investigaciones Científicas (CSIC).

June, 2022.

Centro de Edafología y Biología
Aplicada del Segura
CEBAS-CSIC



CEBAS-CSIC












REPORT

2018-2021

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JUAN JOSÉ ALARCÓN CABAÑERO

Director CEBAS-CSIC

As Director of the CEBAS, it is my pleasure to write few introductory lines in this scientific report that aims to reflect the evolution of our Centre over the years included in our last Strategic Action Plan (2018-2021).

One of the main objectives of our Centre is the generation of knowledge, and over the last four years we have been able to increase both the quality and quantity of our publications, evidenced by the quality indicators of the articles published and from the high number of researchers included in the main lists of excellence. But we could hardly have reached these important scientific milestones if we had not been competitive in obtaining research funds at the regional, national and international levels. In turn, we have transferred a good part of our knowledge through the generation of patents and the signing of contracts with the business sector. Besides, we have maintained our work of disseminating science and training new researchers.

We have achieved all these challenges during an historical time that we will never forget, marked by a pandemic that has required us to reinvent our way of acting and where it has been shown that the main strength of CEBAS-CSIC is our scientific, technical and administrative staff.

May this message serve to show my congratulations and personal gratitude to each of my CEBAS colleagues who have managed to maintain the prestige of the Institute, and even increase our excellent scientific activity, during a period of maximum social and labor difficulty generated by the coronavirus crisis.

CEBAS



Founded in 1954 in Murcia, the Segura Center for Edaphology and Applied Biology (CEBAS) is a research center belonging to the State Agency for the Higher Council for Scientific Research (CSIC), whose headquarters are currently located on the Espinardo Campus of the University of Murcia.

CEBAS is a multidisciplinary center whose research work revolves around three specific interrelated areas: Food Science and Technology, Agricultural Sciences and Natural Resources.

The scientific knowledge generated at CEBAS is key to the development of actions and policies for sustainability, economic and social development in semi-arid areas

CEBAS objectives

- Expand the frontier of knowledge through quality basic research.**
- Promote innovation through collaboration with companies and industry.**
- Study the anthropogenic and climate change impacts on natural resources, promoting their efficient use.**
- Develop more productive plant varieties, resistant to viruses and adapted to abiotic stresses.**
- Evaluate the microbiological safety of foods and develop functional foods.**

ADMINISTRATION AND MANAGEMENT



Juan José Alarcón Cabañero

DIRECTOR

Research Professor.
PhD in Biology from the University of Murcia (1992).
CEBAS' director since 2012.



Vicente Martínez López

DEPUTY DIRECTOR

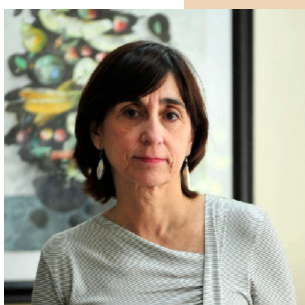
Research Professor.
PhD from the University of Murcia (1986).



Ana Allende Prieto

DEPUTY DIRECTOR

Research Professor.
PhD in Food Science and Technology from the Polytechnic University of Cartagena (2003).

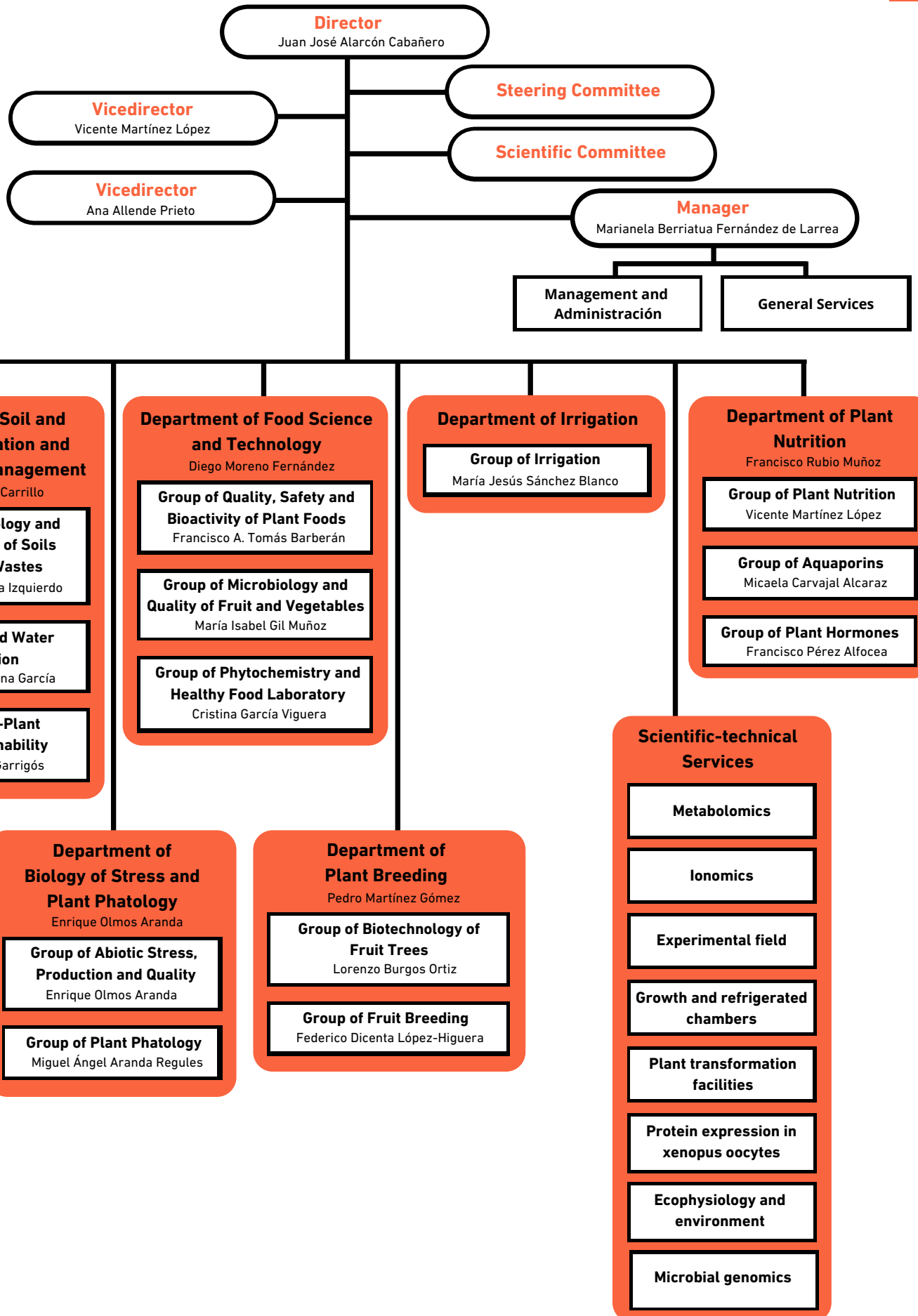


Marianela Berriatua Fernández de Larrea

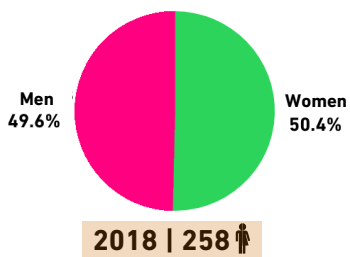
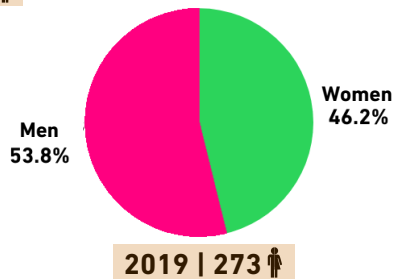
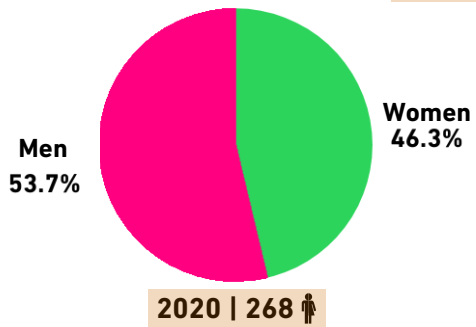
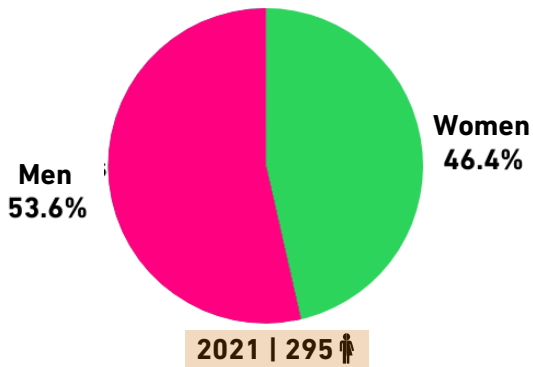
MANAGER

Civil servant, Civil Administrators of the State (1992).
Manager since 2001.

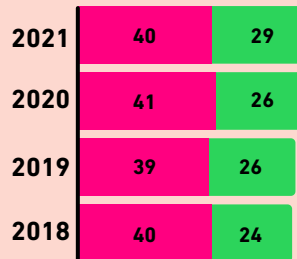
ORGANIGRAM



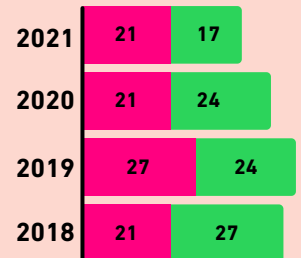
STAFF EVOLUTION



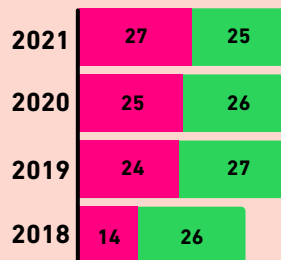
Researchers



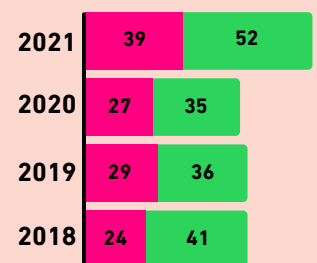
Postdoctoral Researchers



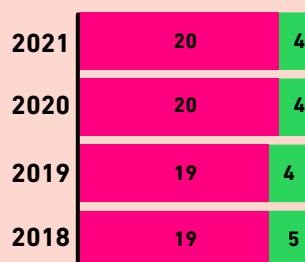
PhD Students



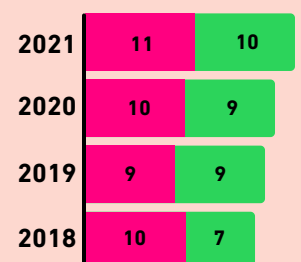
Technicians



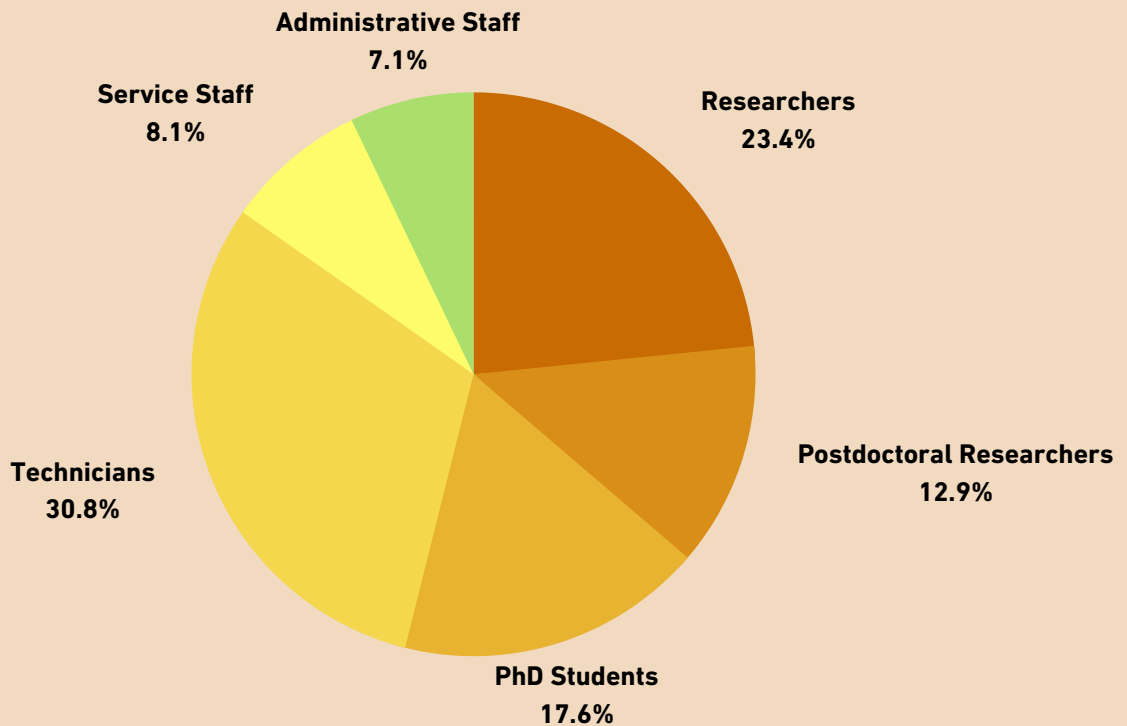
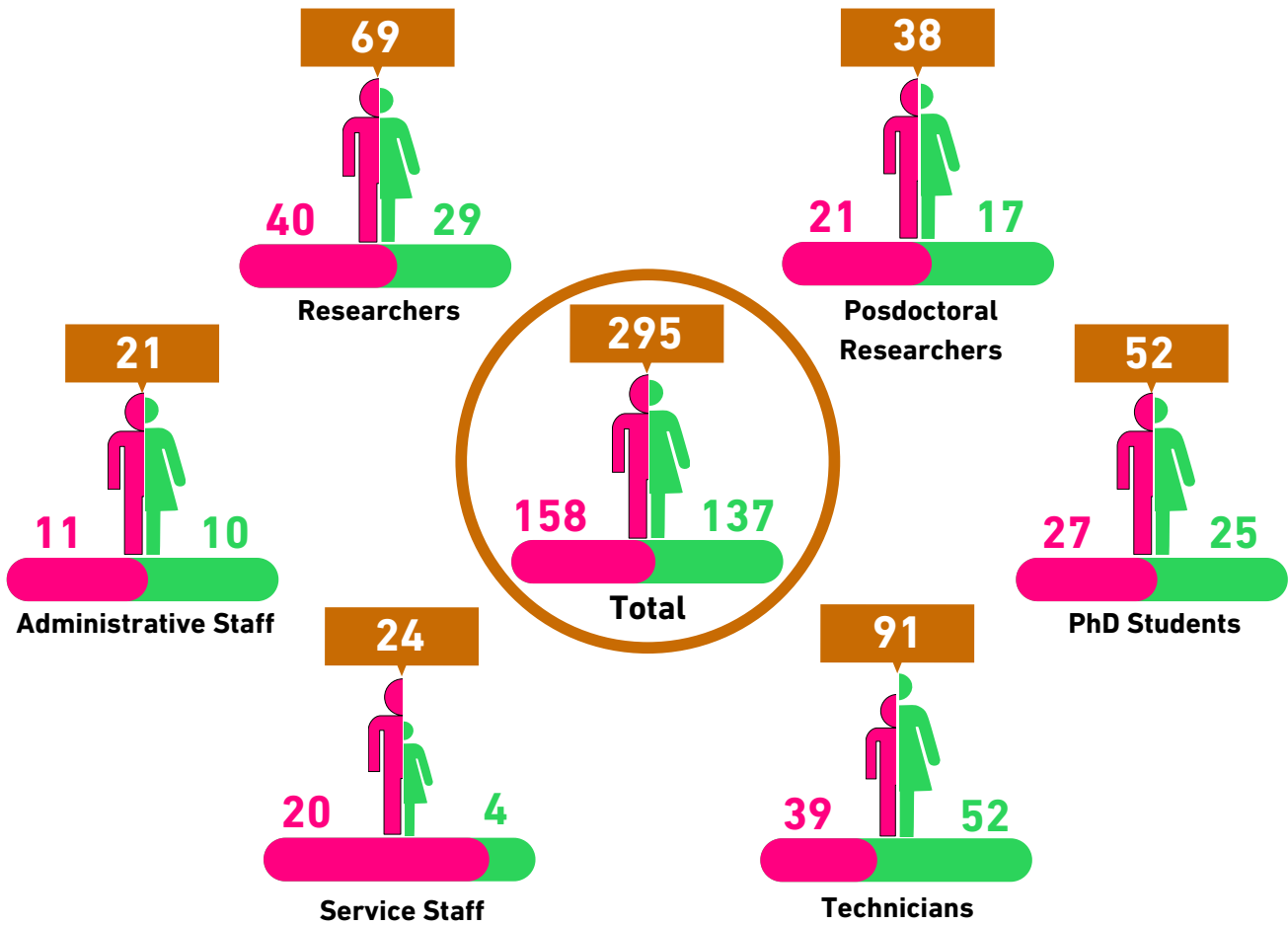
Service Staff



Administrative Staff



HUMAN RESOURCES 2021



SCIENTIFIC EXCELLENCE



SCIENTIFIC EXCELLENCE

Groups of Scientific Excellence of the Region of Murcia

- **Irrigation**
- **Fruit Breeding**
- **Abiotic Stress, Production and Quality**
- **Enzymology and Biorremediation of Soils and Organic Wastes**
- **Quality, Safety and Bioactivity of Plant Foods (including the three groups for the Department of Food Science and Technology)**

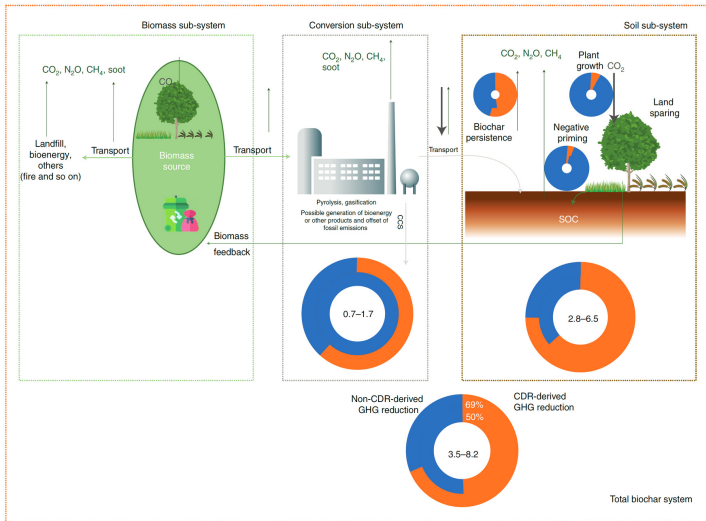
Five groups of CEBAS have been recognized as Groups of Scientific Excellence at the regional level thanks to their scientific and technical capacity, their competitiveness and the international impact of their research, their ability to successfully participate in national and international programs and to respond to social and economic challenges, as well as their knowledge transfer leadership in these areas.

RDI Units Associated

- **Irrigation in Mediterranean Agriculture** - Valencian Institute of Agricultural Research
- **Food Quality and Risk Assessment** - Polytechnic University of Cartagena
- **Fruit Growing** - Murcian Institute of Agricultural and Environmental Research and Development
- **Fertigation, Fruit & Vegetable Quality** - Murcian Institute of Agricultural and Environmental Research and Development
- **Environment and Forest Resources** - University of Castilla - La Mancha
- **Soils of Arid Ecosystems and Global Change** - University Rey Juan Carlos

Our leadership and cooperation work within the national agri-food sector has been demonstrated by the integration of six units associated with CEBAS belonging to two research centers (IMIDA and IVIA) and three universities (UPCT, UCLM and URJC). These association formulas have allowed us to temporarily and flexibly articulate scientific collaborations between the CEBAS research staff and that of the external entities integrated in these units.

SCIENTIFIC EXCELLENCE



Nature Geoscience (2021)

Biochar in climate change mitigation

J. Lehmann, A. Cowie, C.A. Masiello, C. Kammann, D. Woolf, J.E. Amonette, M.L. Cayuela, M. Camps-Arbestain, T. Whitman

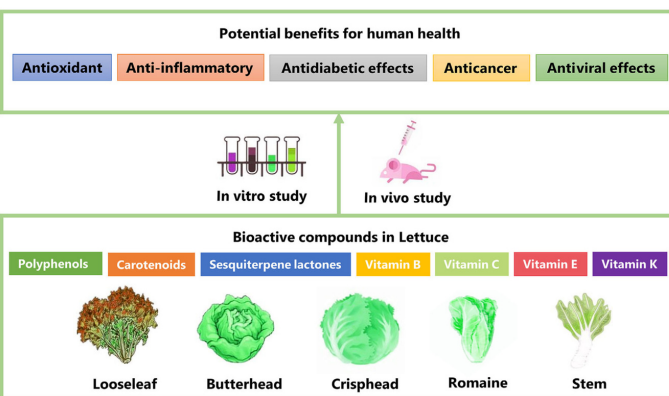
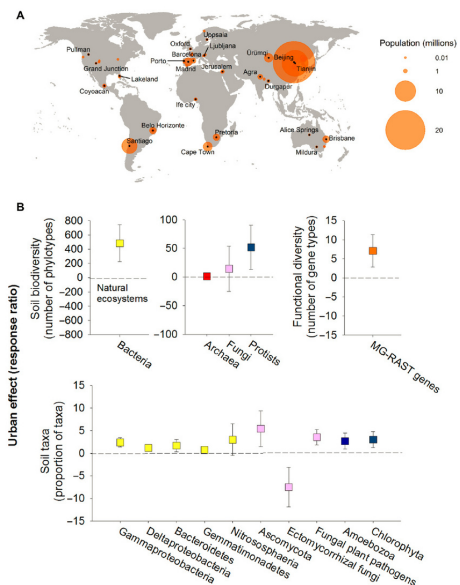
Nature Geoscience (2021) 14: 883-892. IF: 16,91
<https://doi.org/10.1038/s41561-021-00852-8>

Science Advances (2021)

Global homogenization of the structure and function in the soil microbiome of urban greenspaces

M. Delgado-Baquerizo, D.J. Eldridge, Y.R. Liu, B. Sokoya, J.T. Wang, H.W. Hu, J.Z. He, F. Bastida, J.L. Moreno, A.R. Bamigboye, J.L. Blanco-Pastor, C. Cano-Diaz, ...

Nature Communications (2019) 7(28):abg5809. IF: 14,14
<https://doi.org/10.1126/sciadv.abg5809>



Comprehensive Reviews In Food Science and Food Safety (2021)

Bioactive compounds in lettuce: Highlighting the benefits to human health and impacts of preharvest and postharvest practices

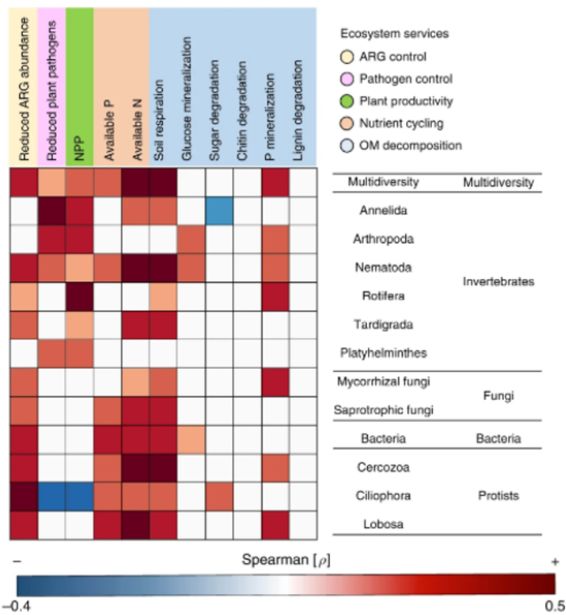
X. Yang, M.I. Gil, Q.C. Yang, F.A. Tomás-Barberán

Comprehensive Reviews In Food Science and Food Safety (2021) 21(1):4-45. IF: 12,24

<https://doi.org/10.1111/1541-4337.12877>



SCIENTIFIC EXCELLENCE

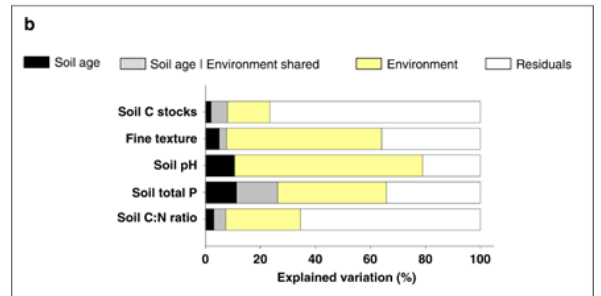
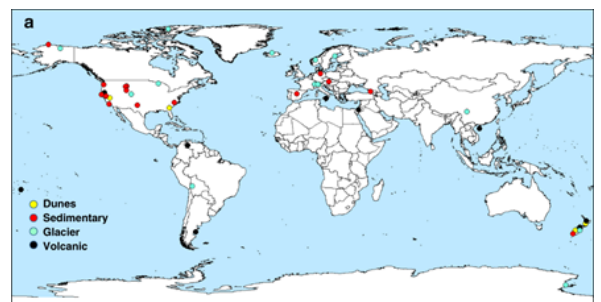


Nature Ecology & Evolution (2020)

Multiple elements of soil biodiversity drive ecosystem functions across biomes

M. Delgado-Baquerizo, P.B. Reich, C. Trivedi, D.J. Eldridge, S. Abades, F.D. Alfaro, F. Bastida, ...

Nature Ecology & Evolution (2020) 4(2):210–220. IF: 15,46
<https://doi.org/10.1038/s41559-019-1084-y>

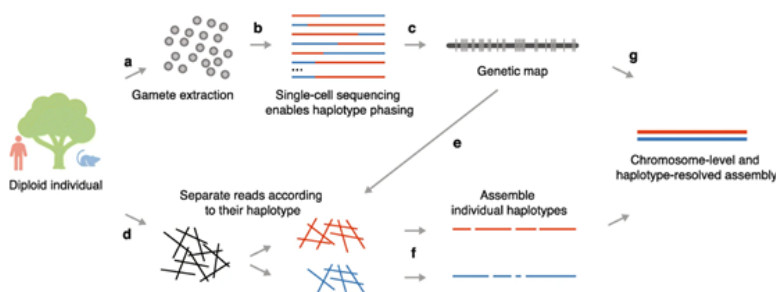


Nature Communications (2020)

The influence of soil age on ecosystem structure and function across biomes

M. Delgado-Baquerizo, P.B. Reich, R.D. Bardgett, D.J. Eldridge, H. Lambers, D.A. Wardle, S.C. Reed, C. Plaza, G.K. Png, S. Neuhauser, A.A. Berhe, S.C. Hart, H. Hu, J. He, F. Bastida...

Nature Communications (2020) 11: 4721. IF: 14,91
<https://doi.org/10.1038/s41467-020-18451-3>



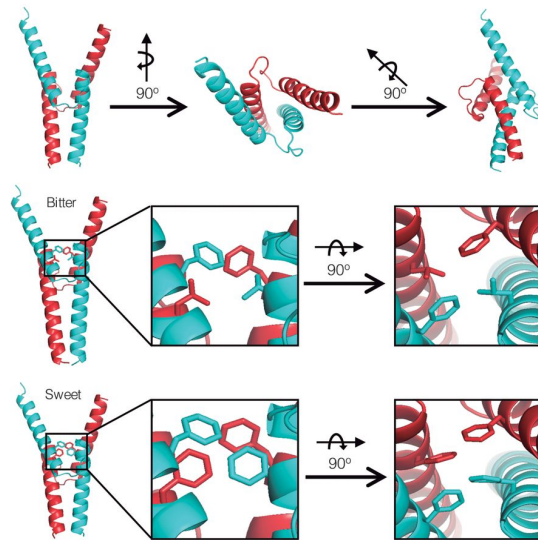
Genome Biology (2020)

Gamete binning: chromosome-level and haplotype-resolved genome assembly enabled by high-throughput single-cell sequencing of gamete genomes

J.A. Campoy, H. Sun, M. Goel, W.B. Jiao, K. Folz-Donahue, N. Wang, M. Rubio, C. Liu, C. Kukat, D. Ruiz, B. Huettel, K. Schneeberger

Genome Biology (2020) 21: 306. IF: 13,58
<https://doi.org/10.1186/s13059-020-02235-5>

SCIENTIFIC EXCELLENCE



Science (2019)

Mutation of a bHLH transcription factor allowed almond domestication

R. Sánchez-Pérez, S. Paván, R. Mazzeo, C. Moldovan, R. Aiese Cigliano, J. Del Cueto, F. Ricciardi, C. Lotti, L. Ricciardi, F. Dicenta, R. L. López-Marqués, B. Lindberg Møller

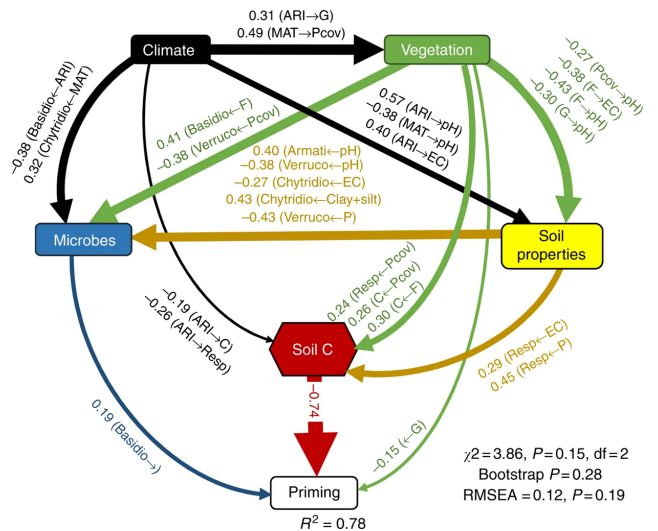
Science (2019) 364(6445): 1095-1098. IF: 41,84
<https://doi.org/10.1126/science.aav8197>

Nature Communications (2019)

Global ecological predictors of the soil priming effect

F. Bastida, C. García, N. Fierer, D.J. Eldridge, M.A. Bowker, M. Delgado-Baquerizo

Nature Communications (2019) 10:3481. IF: 12,12
<https://doi.org/10.1038/s41467-019-11472-7>



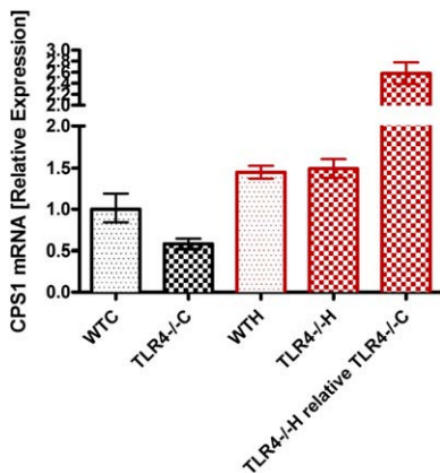
The Plant Journal (2019)

Research Highlight: A tour across Europe to investigate mesophyll conductance under stress

M.J. Clemente, J. Gago, P. Diaz-Vivancos, A. Bernal-Vicente, E. Miedes, P. Bresta, G. Liakopoulos, A. Fernie, J.A. Hernández, J. Flexas

The Plant Journal (2019) 99(6):1031-1046. IF: 6,41
<https://doi.org/10.1111/tpj.14437>

SCIENTIFIC EXCELLENCE



Journal of Hepatology (2018)

Regulatory T cells modulate the concentration of short chain fatty acids and the Th function in response to induced bacterial traslocation episodes...

O. Juanola, I. Gómez-Hurtado, P. Piñero, R. García-Villalba, A. Marín, E. Caparrós, F.T. Rodrigo, P. Zapater, J.M. González-Navajas, F. Tomás-Barberán, R. Francés

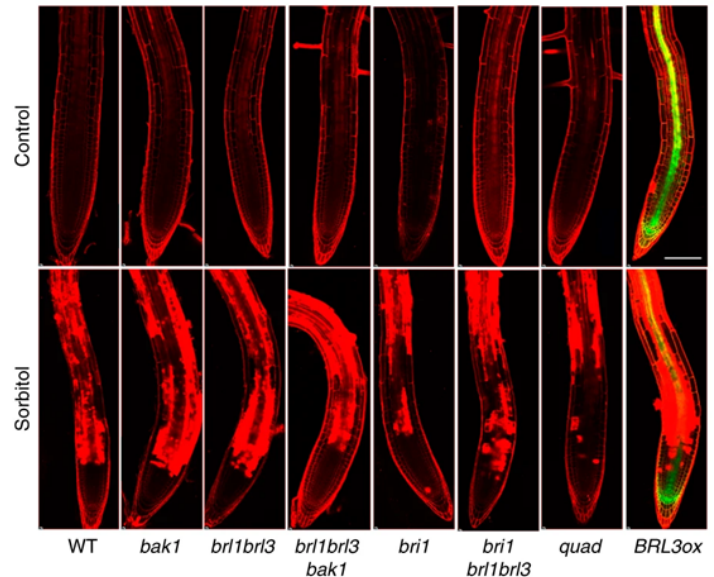
Journal of Hepatology (2018) 68(4):s463. IF: 18,95
[https://doi.org/10.1016/s0168-8278\(18\)31172-3](https://doi.org/10.1016/s0168-8278(18)31172-3)

Nature Communications (2018)

Overexpression of the vascular brassinosteroid receptor BRL3 confers drought resistance without penalizing plant growth

N. Fábregas, F. Lozano-Elena, D. Blasco-Escámez, T. Tohge, C. Martínez-Andújar, A. Albacete, S. Osorio, M. Bustamante, J. L. Riechmann, T. Nomura, T. Yokota, A. Conesa, F. Pérez-Alfocea, A. R. Fernie, A. I. Caño-Delgado

Nature Communications (2018) 9:4680. IF: 14,92
<https://doi.org/10.1038/s41467-018-06861-3>

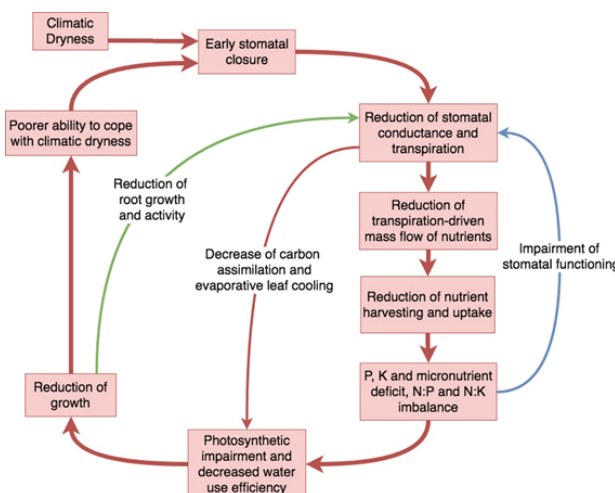


Global Change Biology (2018)

The “isohydric trap”: A proposed feedback between water shortage, stomatal regulation, and nutrient acquisition drives differential growth and survival of European pines under climatic dryness

D. Salazar-Tortosa, J. Castro, P. Villar-Salvador, B. Viñegla, L. Matías, A. Michelsen, R. Rubio, J. I. Querejeta

Global Change Biology (2018) 24(9):4069-4083. IF: 8,88
<https://doi.org/10.1111/gcb.14311>



A close-up photograph of a person wearing a blue lab coat and blue nitrile gloves, holding a clear glass Erlenmeyer flask filled with a vibrant blue liquid. The person's hand is positioned in the center of the frame, with the flask tilted slightly. In the background, a laboratory setting is visible, featuring a microscope on the left, a petri dish with a small amount of yellow substance, and various other glassware and equipment on a lab bench. The lighting is bright and clinical, creating a professional and scientific atmosphere. The overall color palette is dominated by blues and whites, with the blue liquid in the flask being a focal point.

SCIENTIFIC-TECHNICAL SERVICES

SCIENTIFIC AND TECHNICAL SERVICES



METABOLOMICS

The mission of the metabolomics service is the scientific study of chemical processes involving metabolites. This unit brings a service to all the areas of the center in which research related to metabolites and their modifications due to different factors are being performed. To study the metabolome and its changes, the service has state-of-the-art equipment for analytical instrumentation, sample preparation and data processing. The metabolomics service provides resources to identify, characterize and quantify different classes of metabolites (1st and 2nd) in target and untargeted metabolomics studies. The unit offers advice and scientific and technical support in order to select the most appropriate analytical methods.



IONOMICS

The ionomics service focuses on the identification, characterization and quantification of different types of ions using innovative mass detection techniques. This unit brings services to all areas of the center, as well as to other centers and universities in other parts of Spain and abroad, where research related to ions and their modifications due to different factors is being performed. The ionomics unit has developed innovative techniques that allow the simultaneous quantification of multiple mineral elements present in different types of samples (water, soil, plant, etc.). The service has state-of-the-art analytical instrumentation, sample preparation and data processing equipment. The unit offers advice and scientific and technical support in order to select the most appropriate analytical methods.

SCIENTIFIC AND TECHNICAL SERVICES



EXPERIMENTAL FIELD "LA MATANZA"

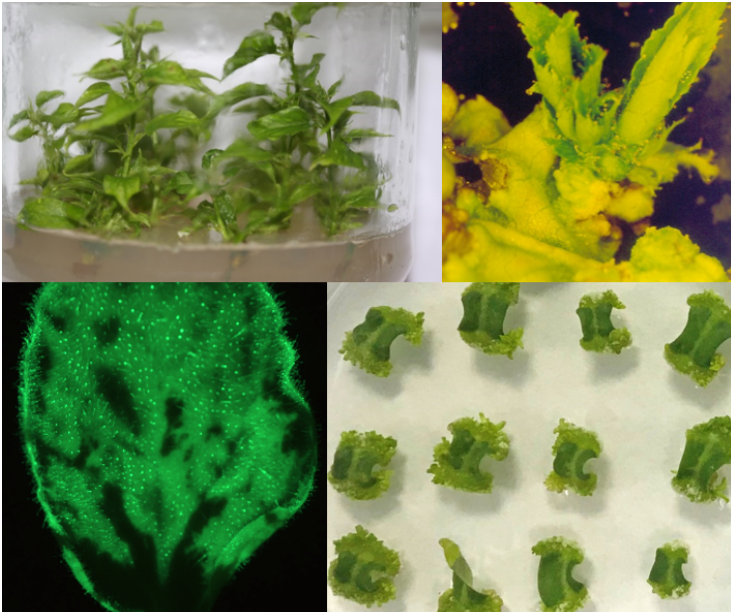
The Service of the Experimental Farm is located in the district of Santomera and has 32 ha. The purpose of this unit is to serve as support for research on agronomic issues that allow deepening into the biology of plants. This unit provides services to all areas of the center, in which research related to nutrition, pathology, water needs and plant breeding is being performed, as well as all types of studies focusing on ecology and natural resources. The farm has crops in the open field, as well as numerous highly technical greenhouses that have climate control systems (shade screen, zenithal opening of windows, cooling system, etc) and automated irrigation. The service also includes support for the control and maintenance of the experiments (agricultural practices, phytosanitary treatments, harvesting, etc.).



GROWTH AND REFRIGERATED CHAMBERS

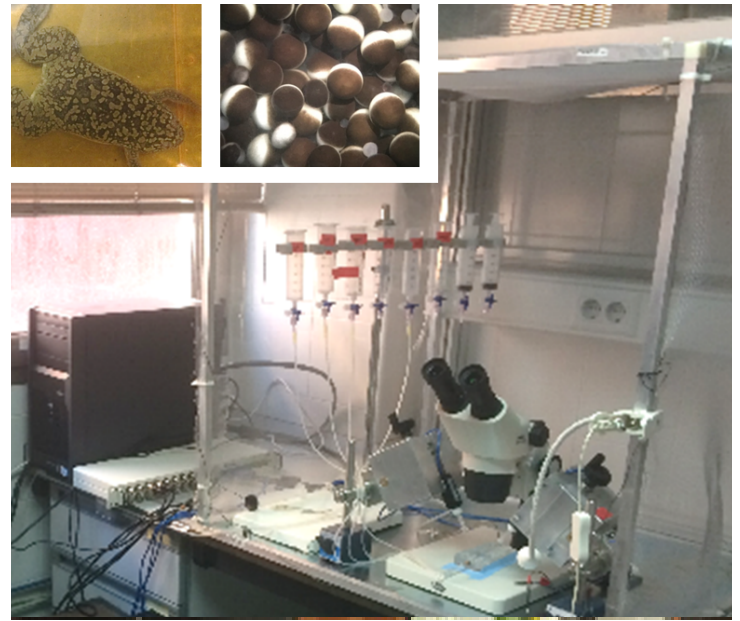
The controlled growth chamber service supports plant research, both basic and applied, through the rental of growth and refrigeration chambers that allow experiments to be performed under controlled conditions. Currently, the center has fourteen growth chambers that have automated and programmable systems to establish specific light and temperature regimes. This service is of great interest to the center since there is a great demand for these infrastructures in all the research projects carried out at the CEBAS-CSIC. The unit also offers an advisory service on the operation and programming of the cameras for correct operation.

SCIENTIFIC AND TECHNICAL SERVICES



PLANTS TRANSFORMATION FACILITIES

The plant genetic transformation service carries out fundamental work that allow the validation of identified genes to determine their function. Genetic transformation techniques are currently in high demand to produce transgenic plants of different species, both herbaceous and woody, that can meet the needs of those research groups that want to generate transformed plants and do not have the knowledge and/or the appropriate facilities to produce them. The service has areas for the preparation of media, experimentation and in vitro seeding, as well as the equipment and reagents necessary to develop the protocols that are being performed in the Unit. The members of the service have the necessary knowledge to carry out micro-propagation techniques, as well as cultivation in growth chambers.



PROTEIN EXPRESSION IN XENOPUS OOCYTES

The protein expression in *Xenopus* oocytes service uses biotechnology to assist several CEBAS-CSIC research groups working in proteomics. *Xenopus laevis* oocytes have a large protein synthesis capacity and allows the expression and characterization of proteins from different organisms, in particular, proteins from plants. Moreover, they are easy to handle in the lab (1 mm diameter) and they can express any protein of interest by injecting the mRNA that encodes it. This system is compatible with protein-protein interaction studies, subcellular localization, biochemical assays, protein purification and functional characterization (for example, by electrophysiology).

SCIENTIFIC AND TECHNICAL SERVICES



ECOPHYSIOLOGY AND ENVIRONMENT

The ecophysiology service provides support to all lines of research focused on the physiological mechanisms that underlie the ecological observations of plants, through the study of different ecological factors related to the growth, reproduction, survival, abundance or geographical distribution of plants. . This service has innovative equipment to measure variables related to photosynthesis (stomatal conductance, CO₂ assimilation, mesophyll conductance to CO₂, transpiration, photosynthesis fluorescence, etc.) and remote sensing (hyperspectral, thermographic and RGB images in plots) . This unit provides service to all areas of the center, as well as to other centers and universities in other parts of Spain.



MICROBIAL GENOMICS

This service was created in 2020 to establish a microbiological surveillance in wastewater that can be used as an epidemiological indicator, detecting the circulation of pathogenic microorganisms in the population. Initially, the activity was focused on the detection and quantification of SARS-CoV-2 in wastewater as well as new variants, but now covers the detection and quantification of many other human pathogens. This unit provides services to all areas of the center, as well as to other centers, universities and companies in other parts of Spain that require this type of analysis. Specifically, the Microbial Genomics Service focuses on the detection of other pathogenic microorganisms of public health relevance such as Listeria monocytogenes, Salmonella spp. and pathogenic Escherichia coli, as well as their indicators. In addition, mass sequencing methods have been developed for the detection of new SARS-CoV-2 variants in wastewater, using Oxford Nanopore Technology (ONT).

RESEARCHING GROUPS

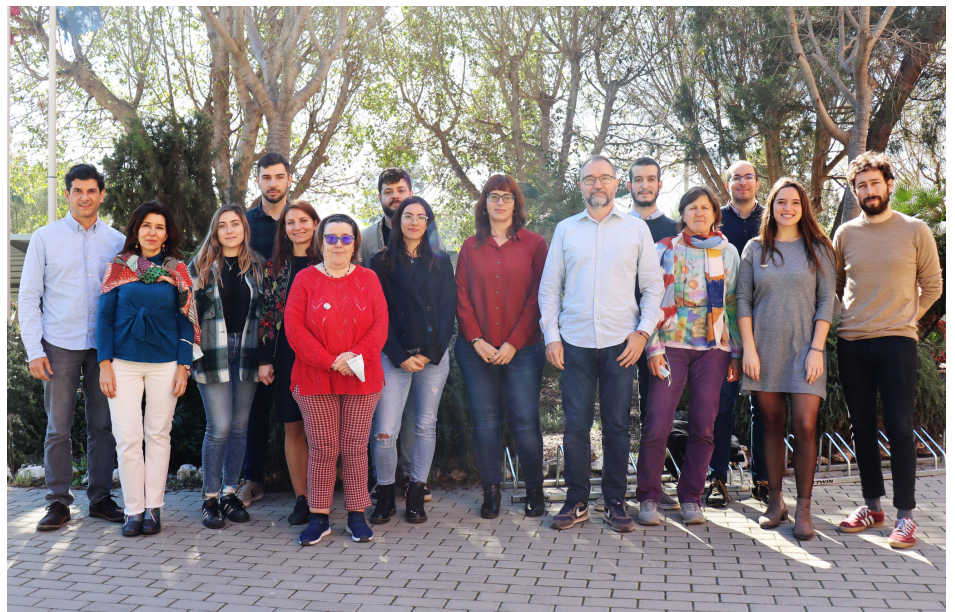


DEPARTMENT OF STRESS BIOLOGY AND PLANT PATHOLOGY



ABIOTIC STRESSES, PRODUCTION AND QUALITY

PLANT PATHOLOGY



ABIOTIC STRESSES, PRODUCTION AND QUALITY



The group focuses its activity on the study of biological processes related to characterization, selection, conservation and quality of species of agronomic interest in Mediterranean conditions, from agronomic response and fruit quality and conservation, to the identification of antioxidant metabolic pathways and functional analysis of genes.

Main research lines

- Identification, selection and characterization of horticultural species for tolerance to abiotic stresses, fruit development and quality.
- Molecular, biochemical and genetic mechanisms involved in fruit ripening, conservation and quality.
- Identification, characterization and use of antioxidant systems to obtain safe and healthy food products.
- Plant cell biology under nutritional stress conditions.

Group Staff

Bolarín Jiménez, María Carmen - Research Professor

Sevilla Valenzuela, Francisca - Research Professor

Olmos Aranda, Enrique - Senior Researcher

Jiménez Hurtado, Ana María - Senior Researcher

Fernández García, Nieves - Tenured Researcher

Flores Pardo, Francisco Borja - Tenured Researcher

Martí Ruiz, María Carmen - Tenured Researcher

Ortega Pastor, Encarnación - Tenured Researcher

Egea Sánchez, María Isabel - "Ramón y Cajal" Researcher

Morales Pérez, María Belén - High qualified technician

Ballesta De Los Santos, Manuel - Postdoctoral researcher

De Brasi Velasco, Sabrina Analía - PhD student

Estrada Fortes, Yanira - PhD student

Cano Yelo, Desiré - Staff hired on projects

García Martínez, Olaya - Staff hired on projects

Botía García, María - Staff hired on projects

Correa Rueda, Sandra Cristina - Staff hired on projects

Román García, Inmaculada - Staff hired on projects

PLANT PATHOLOGY



The group's mission is focused on generating knowledge to develop and implement strategies for the control of plant viruses that lead to the sustainable production of healthy and high-quality food. Different activities are carried out in relation to the epidemiology and use of genetic resistance for virus control. To this end, approaches from classical plant pathology are integrated with others from ecology, molecular and cellular biology and biotechnology.

Main research lines

- Use of genetic resistance as a tool for the control of phytopathogenic viruses:
 - Identification and characterization of new sources of resistance.
 - Analysis of resistance mechanisms.
 - Development and application of molecular markers to support the introgression of resistance traits.
 - Cloning of resistance genes.
 - Development and use of "omics" tools to improve resistance.
 - Virus variability analysis in relation to resistance durability.
- Analysis of the cellular and molecular bases of the compatible interaction between virus and host plant.
- Development of fast, cheap, reliable and easy-to-execute diagnostic methods for plant viruses.
- Epidemiology and evolutionary ecology of viruses.

Group Staff

Aranda Regules, Miguel Ángel - Research Professor

Sánchez Pina, María Amelia - Senior Researcher

Gómez López, Pedro - Tenured Researcher

Truniger Rietmann, Verónica - Tenured Researcher

Gosálvez Bernal, Blanca - High qualified technician

Donaire Segarra, Livia - Postdoctoral researcher

Méndez López, Francisco Eduardo - Postdoctoral researcher

Alcaide Cabello, Cristina - PhD student

De Moya Ruiz, Celia - PhD student

Gea Caballero, Esperanza - PhD student

Pechar, Giuliano Sting - PhD student

Rabadán Manzanera, Pilar - PhD student

Rodríguez Úbeda, Jesús Emmanuel - PhD student

Ortiz Hernández, Noelia - Staff hired on projects

Valle Barea, Fátima - Staff hired on projects

DEPARTMENT OF SOIL AND WATER CONSERVATION AND ORGANIC WASTE MANAGEMENT



SOIL ENZIMOLOGY AND BIORREMEDICATION AND ORGANIC WASTES

SOIL AND WATER CONSERVATION



SUSTANIABILITY OF SOIL- PLANT SYSTEMS



SOIL ENZIMOLOGY AND BIORREMIEDIATION AND ORGANIC WASTES



The group focuses its research on the conservation and recovery of degraded soils, and on the mechanisms that influence soil degradation processes, defining strategies for carbon fixation. This activity is carried out through multidisciplinary approaches that include the study of biodiversity and microbial activity present in the soil, the development of organic amendments to fix carbon in the soil and the analysis of organic matter content. All this allows the development of strategies for the recovery of degraded soils, soil decontamination, soil protection and conservation, and reuse of organic waste from agro-industrial and urban origin.

Main research lines

- Development of strategies to improve knowledge about the mechanisms that govern the degradation and recovery processes of soils in semi-arid conditions.
- Soil microbial biodiversity (structural, functional and genetic biodiversity). Microbial activity through respiration of microbial populations, and various enzymatic activities.
- Use of organic amendments derived from organic waste of urban, agricultural or animal origin as a strategy to combat soil degradation processes, fixing carbon and contributing to reduce the greenhouse effect.
- Valorization of compost for its use in agriculture: improvement of its biopesticide and biostimulant effect, possibilities against new crops.

Group Staff

García Izquierdo, Carlos Javier - Research Professor

Hernández Fernández, María Teresa - Research Professor Ad honorem

Ros Muñoz, Margarita M. - Senior Researcher

Sánchez Monedero, Miguel Ángel - Senior Researcher

Pascual Valero, José Antonio - Senior Researcher

Bastida López, Felipe - Senior Researcher

Moreno Ortego, José Luis - Tenured Researcher

Cayuela García, María Luz - Distinguished Researcher

Chocano Vaño, Carmen - High qualified technician

Coll Almela, María Dolores - High qualified technician

Huéscar Martínez, José Manuel - High qualified technician

Ruíz Navarro, Antonio - Postdoctoral researcher

Siles Martos, José Antonio - Postdoctoral researcher

Sánchez García, María - Postdoctoral researcher

Castejón Del Pino, Raúl - PhD student

Chacón Paco, Francisco. - PhD student

JavierHernández Lara, Alicia - PhD student

Vera Ayala, Alfonso - PhD student

Bernal Gómez, Francisco - Staff hired on projects

Bernal Molina, Paula - Staff hired on projects

Costa López, Miguel - Staff hired on projects

Romero Bonache, María - Staff hired on projects

Cuartero Moñino, Jessica - Staff hired on projects

García Díaz, Celia - Staff hired on projects

Giménez Martínez, Almudena - Staff hired on projects

Hernández Castillo, Marta - Staff hired on projects

Hernández Hernández, Daniel - Staff hired on projects

Hurtado Navarro, María - Staff hired on projects

Martín de la Fuente Barceló, Alba - Staff hired on projects

Mora Guirao, Lucía - Staff hired on projects

Ondóño Tovar, Sara - Staff hired on projects

Patiño García, María - Staff hired on projects

SOIL AND WATER CONSERVATION



The group's mission is focused on the scientific study of the functioning and dynamics of soil, water and vegetation resources in Mediterranean ecosystems. Research is carried out on land and water degradation, conservation and restoration, using a multidisciplinary approach. This research contributes to define planning and management methods for semi-arid areas based on the sustainable use of resources, the recovery of degraded resources and the prevention of negative impacts derived from global change. It establishes the scientific bases and criteria for implementing new methodologies in the management, resource use and sustainable development of semi-arid Mediterranean areas.

Main research lines

- Impact of climate change and changes in land use on hydrogeomorphological processes and biogeochemical cycles of carbon and nutrients in natural and agricultural Mediterranean ecosystems.
- Sustainable use and management of Mediterranean agricultural and natural ecosystems for the adaptation and mitigation of climate change.
- Restoration of soils and plant cover in Mediterranean ecosystems.

Group Staff

Albaladejo Montoro, Juan - Research Professor Ad honorem

Castillo Sánchez, Víctor - Research Professor

Martínez-Mena García, María - Senior Researcher

Querejeta Mercader, José Ignacio - Senior Researcher

Boix Fayos, Carolina - Tenured Researcher

De Vente, Joris - Tenured Researcher

Díaz Pereira, Elvira - Tenured Researcher

González Barberá, Gonzalo - High qualified technician

Espinosa Tolinós, Josefa - High qualified technician

Almagro Bonmatí, María - Postdoctoral researcher

Eekhout, Joris P.C. - Postdoctoral researcher

Martínez López, Javier - Postdoctoral researcher

Prieto Aguilar, Iván - Postdoctoral researcher

Muñoz Gálvez, Francisco Javier - PhD student

Luján Soto, Raquel - PhD student

García Martínez, Eloísa - Staff hired on projects

SUSTANIABILITY OF SOIL-PLANT SYSTEMS



The group's mission is focused on the development of soil conservation and recovery technologies through the use of biofertilizers and other beneficial microorganisms together with the recycling of organic wastes. For this purpose, studies are carried out on the preparation and evaluation of organic amendments through co-composting of wastes and by-products, which allow improving soil characteristics and the survival of plants and their symbiont microorganisms in degraded and/ or cultivated areas. On the other hand, the group works with phytoremediation technologies for soils contaminated with heavy metals, which, combined with the application of organic amendments and growth-promoting microorganisms, allow the regeneration of degraded and contaminated soils.

Main research lines

- Recovery of soils contaminated by heavy metals and metalloids through phytoremediation.
- Study of the chemical forms of trace elements in the soil, their solubility and bioavailability.
- Use of organic and inorganic waste and by-products of the agri-food industry, for the preparation of fertilizers and amendments that allow the recovery of contaminated and degraded soils.
- Biological technologies for the recycling of organic waste and its recovery in the soil-plant system.
- Organic waste management in the circular economy: application of zero waste policies and the conversion of waste into resources.
- Mycorrhizae in agricultural and forestry production systems.
- Development of biofertilizers from growth-promoting microorganisms for use in organic farming.
- Soil microbiome: taxonomic and functional diversity.

Group Staff

Roldán Garrigós, Antonio - Research Professor

Bernal Calderón, María Pilar - Research Professor

Caravaca Ballester, Fuensanta - Tenured Researcher

Clemente Carrillo, Rafael - Tenured Researcher

Campoy Cervellera, Manuel - High qualified technician

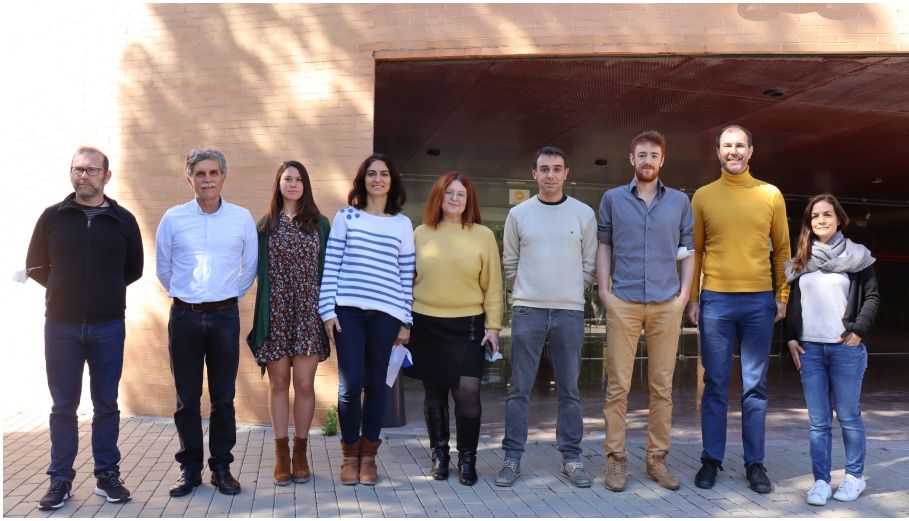
Gómez Lacalle, Rafael - Postdoctoral researcher

Álvarez Robles, María José - PhD student

Molina Carrillo, Asunción - Staff hired on projects

Álvarez Alonso, Cristina Aurora - Staff hired on projects

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY



**QUALITY, SAFETY
AND BIOACTIVITY OF
PLANT FOODS**

**MICROBIOLOGY
AND QUALITY OF
FRUIT AND
VEGETABLES**



**PHYTOCHEMISTRY AND
HEALTHY FOOD**

QUALITY, SAFETY AND BIOACTIVITY OF PLANT FOODS



The main activity of the group focuses on research on the connection between plant food constituents and the maintenance of human health, in order to generate healthy, safe and quality foods derived from fruits and vegetables, convenient and attractive for consumption. For this purpose, the biological activity of food constituents and their potential use in the development of functional and nutraceutical foods are evaluated, and technologies and procedures are developed to guarantee the quality and safety of attractive and convenient foods for the consumer. In addition, the productive sector is supported with the scientific-technological knowledge necessary for the production of these foods.

Main research lines

- Scientific and Technological development of safe and healthy plant-derived food.
- Evaluation of the effect of different factors (agronomic, genetic and technological) on the phytochemicals content and bioavailability.
- Development of functional ingredients and foods based on bioactive and bioavailable polyphenols.
- Phytochemicals biological activity evaluation; in vitro (cell cultures) and in vivo (animal models and clinical studies).
- Effect of phytochemicals and their metabolites on human gene expression.

Group Staff

Tomás Barberán, Francisco A. - Research Professor

Espín De Gea, Juan Carlos - Research Professor

Gil Izquierdo, Ángel - Senior Researcher

García Conesa, María Teresa - Tenured Researcher

González Sarrías, Antonio - Tenured Researcher

Selma García, María Victoria - Tenured Researcher

Giménez Bastida, Juan Antonio - "Marie Curie" Researcher

Beltrán Riquelme, David - High qualified technician

García Villalba, Rocío - Postdoctoral researcher

Ávila Gálvez, María Ángeles - PhD student

Cortés Martín, Adrián - PhD student

Iglesias Aguirre, Carlos Eduardo - PhD student

Polia, Franck - PhD student

Salazar Orbea, Gabriela Lorena - PhD student

Vicente Martínez, Jesús - PhD student

Frutos Lisón, María Dolores - Staff hired on projects

Pérez Novas, Irene - Staff hired on projects

Martínez Blázquez, José Alberto - Staff hired on projects

Conesa Valverde, Irene - Staff hired on projects

MICROBIOLOGY AND QUALITY OF FRUIT AND VEGETABLES



The main activity of the group is focused on the identification of the possible causative factors of microbiological contamination along the entire production chain of fruit and vegetable products. For this purpose, the group uses different methods of detection and quantification of pathogenic microorganisms, conventional and molecular of high specificity, such as the incorporation of new generation sequencing techniques (NGS). Another objective of this research group is the prevention of the presence and accumulation of disinfection by-products such as trihalomethanes, haloacetic acids and chlorates.

Main research lines

- Identification of microbiological and chemical contamination risks during production, processing and preservation of plant foods.
- Detection and quantification of human pathogenic microorganisms and their connection with risk factors in primary production and processing.
- Development, application and evaluation of new post-harvest technologies and processing operations to preserve quality and safety throughout the supply chain.
- Identification of factors related to transient and persistent contamination of *L. monocytogenes* in fruit and vegetable processing lines.
- Water-based epidemiology to monitor emerging pathogens (e.g., SARS CoV-2) as an early warning system to implement control measures to reduce risk.

Group Staff

Gil Muñoz, María Isabel - Research Professor

Allende Prieto, Ana - Research Professor

Truchado Gambao, María Del Pilar - "Ramón y Cajal" Researcher

Tudela Fernández, Juan Antonio - High qualified technician

Marín Fernández, Alicia - High qualified technician

Hernández Acosta, Natalia - High qualified technician

Albolafio Deltell, Sofía - PhD student

Gómez Galindo, María Isabel - PhD student

Montiel Riquelme, Francisco - PhD student

Moreno Candel, Macarena - Staff hired on projects

Andujar Villajos, Silvia - Staff hired on projects

Cascales Pérez, Jenifer - Staff hired on projects

Abellán Gómez, Ginés - Staff hired on projects

Férez Rubio, José Antonio - Staff hired on projects

Sánchez Nieto, Esperanza - Staff hired on projects

PHYTOCHEMISTRY AND HEALTHY FOOD

Cristina García Viguera, Group Leader



The main research activity of the group is focused on the design and development of new healthy, safe and wholesome foods of plant origin, as well as on the determination of the impact of their consumption on human health. For this purpose, we start from fresh products, or their by-products, and establish the interaction between their bioactive constituents and the factors responsible for their level of expression, as well as the alternatives for their fresh or processed consumption. Likewise, different methodologies are developed to obtain the phytochemical profile and biological effects of foods. On the other hand, the group also focuses on the study of new technologies and processing procedures that guarantee the quality and bioactivity of the original raw materials.

Main research lines

- Development of new healthy/functional plant foods with a high content of bioactive compounds associated with inflammation (cardiovascular, intestinal), neurodegeneration and oxidative stress.
- Revaluation of by-products and second quality fruits and vegetables to obtain functional ingredients.
- Optimization of controlled cultivation conditions to improve the quality of new fresh foods and increase their concentration in bioactive metabolites.
- Determination of industrial and domestic processing conditions to preserve these compounds.
- Study the effect on health through in vitro and ex vivo studies of bioaccessibility, bioavailability and bioactivity of phytochemical compounds in foods and ingredients.
- Methodological development and applications of metabolomics for the study of bioactive compounds, from food or after ingestion, by means of chromatographic and -OMICS techniques, of the latest generation.

Group Staff

García Viguera, Cristina - Research Professor

Moreno Fernández, Diego - Senior Researcher

Domínguez Perles, Raúl - Tenured Researcher

Medina Escudero, Sonia - "Ramón y Cajal" Researcher

Agulló García, Vicente - Postdoctoral researcher

Guijarro Real, Carla - Postdoctoral researcher

Sánchez Bravo, Paola - Postdoctoral researcher

Abellán Victorio, Ángel - PhD student

Costa Pérez, Antonio - PhD student

Hernández Prieto, Diego - PhD student

Salar Giménez, Francisco - PhD student

PLANT BREEDING DEPARTMENT



FRUIT BREEDING

BIOTECHNOLOGY OF FRUIT TREES



FRUIT BREEDING



The main activity of the group is focused on obtaining new improved varieties of fruit trees of the Prunus genus (apricot, almond and plum), which provide added value to those already cultivated in terms of quality, productivity, sustainability and resistance to pests and diseases. For this purpose, classical breeding strategies are integrated with studies on floral biology, development and use of molecular markers, physiology and biochemistry of agronomic traits, as well as genomics and bioinformatics applied to fruit tree improvement. We also work on the study of winter dormancy, varietal adaptation in a context of climate change and modeling of phenology in fruit trees.

Main research lines

- Prunus (apricot, almond and Japanese plum) breeding.
- Genomics and bioinformatics applied to the improvement of fruit trees.
- Reproductive biology.
- Resistance to virosis and drought in fruit trees.
- Fruit quality and post-harvest analyses.
- Physiology and biochemistry of agronomic traits.
- Phenology Modeling.

Group Staff

Dicenta López-Higuera, Federico - Research Professor
Egea Caballero, José - Research Professor Ad honorem
Martínez Gómez, Pedro - Research Professor
Egea Larrosa, José Alberto - Tenured Researcher
Rubio Angulo, Manuel - Tenured Researcher
Ruíz González, David - Tenured Researcher
Sánchez Pérez, Raquel - Tenured Researcher
Martínez García, Pedro José - "Ramón y Cajal" Researcher
Cremades Rosado, María Teresa - High qualified technician

Salazar Martínez, Juan Alfonso - Postdoctoral researcher
Guillamón Guillamón, Jesús - PhD student
Mas Gómez, Jorge - PhD student
Nicolás Almansa, María - PhD student
Ballesta Abellán, Pablo - Staff hired on projects
García Campayo, Mari Carmen - Staff hired on projects
Jurado Mañogil, Carmen - Staff hired on projects
López Alcolea, Jesús - Staff hired on projects
Martínez García, Pablo - Staff hired on projects
Rodríguez Rodríguez, José - Staff hired on projects
Moreno Marin, Antonio - Staff hired on projects
Gómez Ramos, Inés - Staff hired on projects

BIOTECHNOLOGY OF FRUIT TREES



The main activity of the group is focused on obtaining fruit plants better adapted to biotic and abiotic stresses, as well as to gain knowledge about the mechanisms underlying the resistance processes. To achieve this goal, the group develops different biotechnological technologies such as in vitro culture and plant transformation, as well as physiological and biochemical studies on the plant responses to environmental stress conditions. Additionally, we work on the development of biotechnological approaches that allow the production and conservation of pathogens-free plant genetic resources.

Main research lines

- Production of virus and viroid-free Prunus plants by biotechnological approaches.
- Transformation of European plum and apricot trees to produce plants resistant to bacteria and viruses.
- Production of transformed plants without marker genes.
- Use of environmentally friendly treatments to increase tolerance to environmental stresses in plants.
- Physiological and biochemical responses of plants under environmental stress conditions.
- Phytoremediation of saline soils.
- Interplay plant hormones/redox state/sugar metabolism during the dormancy process.
- Salicylic acid metabolism and its effects on flower bud dormancy.

Group Staff

Burgos Ortiz, Lorenzo - Research Professor

Alburquerque Ferrando, Nuria - Senior Researcher

Hernández Cortés, José Antonio - Senior Researcher

Díaz Vivancos, Pedro - Tenured Researcher

Piqueras Castillo, Abel - Tenured Researcher

Bremaud, Lydia Roseline - High qualified technician

Acosta Motos, José Ramón - Postdoctoral researcher

Barba Espín, Gregorio - Postdoctoral researcher

Pérez Caselles, Cristian - PhD student

Jurado Mañogil, Carmen - Staff hired on projects

IRRIGATION DEPARTMENT

IRRIGATION



IRRIGATION



The group's mission is focused on generating knowledge on plant ecophysiology and the optimization of water use in Mediterranean agrosystems. For this purpose, plant water requirements, water-soil-plant-environment connections, and plant response to different deficit irrigation strategies and to the use of saline water are studied.

Main research lines

- Soil-plant-atmosphere water relationships.
- Deficit irrigation strategies.
- Efficient irrigation management through the use of sensors.
- Use of unconventional water for irrigation.
- Plant ecophysiology. Environmental stresses.
- Nursery cultivation techniques.

Group Staff

Alarcón Cabañero, Juan José - Research Professor
Intrigliolo Molina, Diego S. - Senior Researcher
Nicolás Nicolás, Emilio - Senior Researcher
Ruiz Sánchez, María Carmen - Senior Researcher
Sánchez Blanco, María Jesús - Senior Researcher

Conesa Saura, M. Rosario - Postdoctoral researcher
Pérez Álvarez, Eva - Postdoctoral researcher
Ramírez Cuesta, Juan Miguel - Postdoctoral researcher
Romero Trigueros, Cristina - Postdoctoral researcher
Gómez Bellot, María José - Postdoctoral researcher
Parra Gómez, Margarita - Postdoctoral researcher
Ponce Robles, Laura - Postdoctoral researcher
Rubio Asensio, José S. - Postdoctoral researcher
Bañón Gómez, Daniel - PhD student
Bayona Gambín, José María - PhD student
Díaz López, Marta - PhD student
Lorente Pagán, Beatriz - PhD student
Mira-García, Ana Belén - PhD student

Nortes Tortosa, Pedro Antonio - Tenured Researcher
Ortuño Gallud, María Fernanda - Tenured Researcher
Vera Muñoz, Juan - Tenured Researcher
Pedrero Salcedo, Francisco - "Ramón y Cajal" Researcher
Conejero Puente, Wenceslao - High qualified technician

Albacete Caravaca, Jorge - Staff hired on projects
Correa Calvo, David - Staff hired on projects
García García, Antonio - Staff hired on projects
González Gómez, Laura - Staff hired on projects
Guerra Alcázar, Diego - Staff hired on projects
Hortelano García, David - Staff hired on projects
Martínez Meroño, Rosa María - Staff hired on projects
Nicolás Agustín, Isabel - Staff hired on projects
Parra González, Andrés - Staff hired on projects
Ruiz García, José Luis - Staff hired on projects
Sánchez Iglesias, María - Staff hired on projects
Sanz Caballer, Felipe - Staff hired on projects
Yeves Carrascosa, Antonio - Staff hired on projects

PLANT NUTRITION DEPARTMENT



PLANT NUTRITION

AQUAPORINS



PLANT HORMONES

PLANT NUTRITION



This group focuses on providing the knowledge, methods and plant material for optimizing the use of water resources and fertilization, minimizing the environmental impact and increasing the competitiveness and sustainability of agricultural activity in the Mediterranean agro-system. For this purpose, the mechanisms that regulate the entry and transport of water and nutrients in plants are studied, as well as the mechanisms that regulate the production and transport of photoassimilates that allow establishing criteria to obtain new varieties that produce high quality fruits and vegetables.

Main research lines

- Application of new technologies in protected crops. "Smart Farming".
- Citrus response to salinity.
- Molecular aspects of nutrient absorption.

Group Staff

Martínez López, Vicente - Research Professor
Rivero Vargas, Rosa María - Senior Researcher
Rubio Muñoz, Francisco - Senior Researcher
García Sánchez, Francisco - Senior Researcher
Nieves Cordones, Manuel - "Ramón y Cajal" Researcher
Mestre Ortuño, Teresa - High qualified technician

Camejo López, Daymi - Postdoctoral researcher
Díaz Mula, Huertas María - Postdoctoral researcher
Simón Grao, Silvia - Postdoctoral researcher
Alfosea Simón, Francisco Javier - PhD student
Amo Pérez, Jesús - PhD student
Carmona Bayonas, Juan - PhD student
Frutos Tortosa, Antonio - PhD student
López de la Calle, María - PhD student
Martínez Martínez, Almudena - PhD student
Pardo Hernández, Miriam - PhD student
Alfosea Simón, Marina - Staff hired on projects
Ferrer-Egea Navarro, Juan - Staff hired on projects
García Martí, María - Staff hired on projects
Riquelme Sánchez, María - Staff hired on projects
Rodríguez López, Alberto - Staff hired on projects

Martí Guillén, José Manuel - Staff hired on projects
Martínez Alonso, Alberto - Staff hired on projects
Martínez Lorente, Sara - Staff hired on projects
Mengual Pérez, Ignacio - Staff hired on projects
Navarro Pérez, Valeria - Staff hired on projects
Navarro Zapata, Ulises - Staff hired on projects
Romero Reyes, Salvador - Staff hired on projects
Sánchez Pérez, Antonio - Staff hired on projects
Villaescusa Illán, David - Staff hired on projects
Yáñez Soriano, Adrián - Staff hired on projects

AQUAPORINS



The group's research is based on the study of water transport mechanisms under abiotic stress conditions. The involvement of aquaporins in the passage of water across the plasma membrane, protein regulation, gene expression and specificity in the passage of water under conditions of environmental changes are mainly the basis of our research. All these will allow us to optimize water uptake by plants, to use aquaporins as markers of stress resistance and to determine the water needs of plants in response to climate change. On the other hand, biochemical and biophysical characterization of membranes allows the study of industrial applications.

Main research lines

- Crop adaptation to climate change.
- Plant water uptake and transport: aquaporins.
- Aquaporins proteomic and genomic approach in response to abiotic stress.
- Proteins and lipids nanotechnology for industrial application.

Group Staff

Carvajal Alcaraz, Micaela - Research Professor

Bárzana González, Gloria - Postdoctoral researcher

García Gómez, Pablo - Postdoctoral researcher

López Zaplana, Álvaro - PhD student

Nicolás Espinosa, Juan - PhD student

Quirante Moya, Francisco José - PhD student

García Ibáñez, Paula - PhD student

Yepes Molina, Lucía - PhD student

Martínez Alonso, Alberto - PhD student

Olmos Ruiz, Rafael - Staff hired on projects

Ortiz Delvasto, Nidia Edith - Staff hired on projects

García Gómez, Pablo - Staff hired on projects

PLANT HORMONES



This group focuses on developing knowledge, methods and plant material to increase crop stability against abiotic stresses (e.g. salinity, water and nutritional deficit), as well as optimizing the use of water resources and fertilizers, minimizing the environmental impact and increasing the competitiveness and sustainability of agricultural activity in the Mediterranean agrosystem. For this purpose, special attention is paid to the processes regulated by the main phytohormones that favor plant adaptability and productivity, and to the interaction with pollinating insects, as natural phenotypers of optimal source-sinker connections.

Main research lines

- Optimization of source-sink and root-aerial part relationships against abiotic stresses.
- Development of rootstocks to increase productivity, resilience and quality of horticultural crops.
- Phenotyping and natural selection of plants through analysis of ecosystem interactions with pollinating insects.

Group Staff

Pérez Alfocea, Francisco - Research Professor

Martínez Andújar, Cristina - Postdoctoral researcher

Martín Rodríguez, José Ángel - Postdoctoral researcher

Sánchez Prudencio, Ángela - Postdoctoral researcher

Martínez Melgarejo, Purificación - PhD student

Ormazabal Oria, Maialen - PhD student

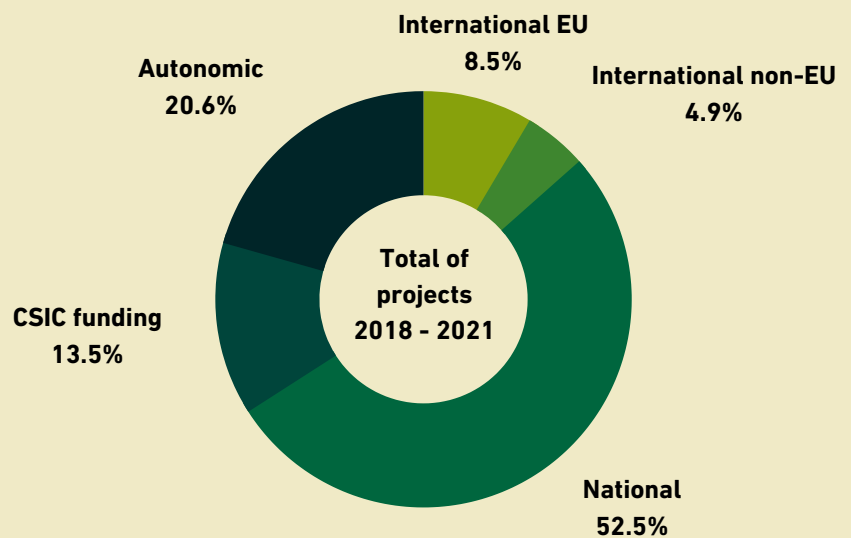
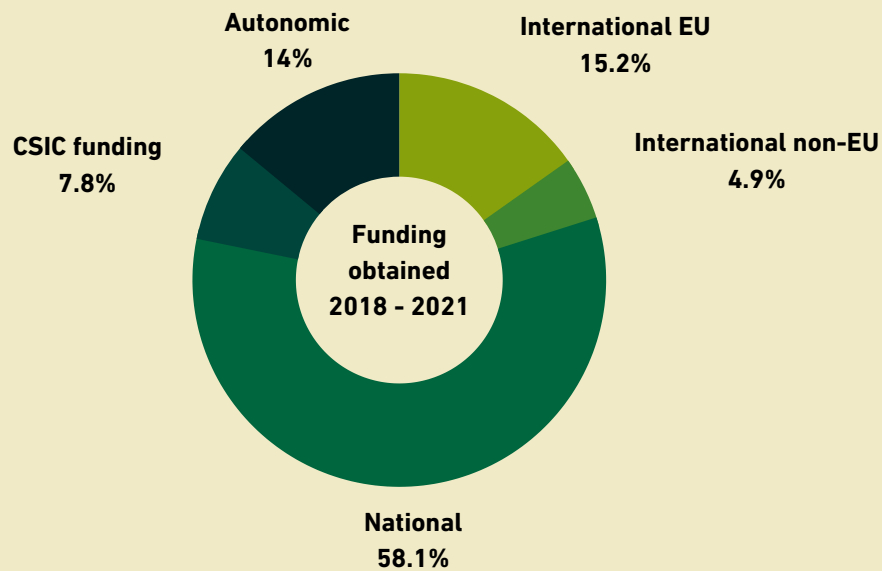
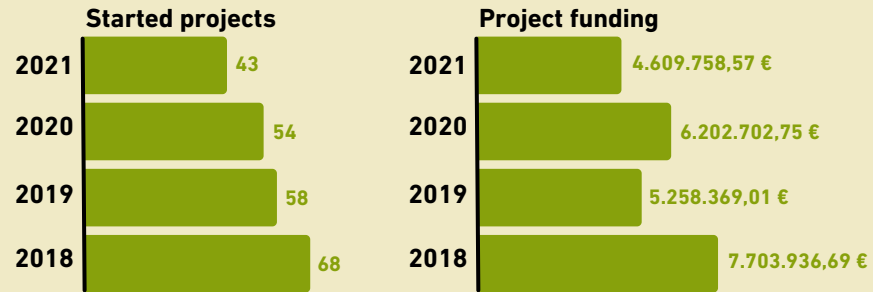
R+D PROJECTS AND CONTRACTS



PROJECTS

“ In the last 4 years, the centre has obtained close to 24M€ in funding from public calls

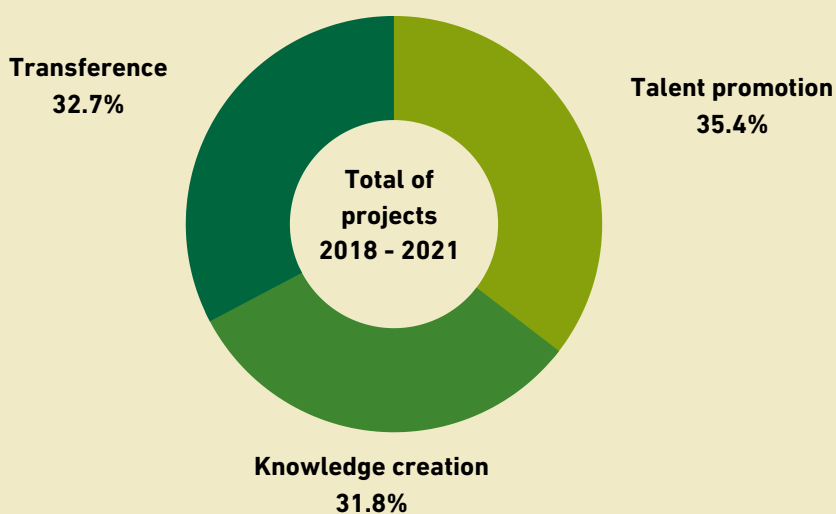
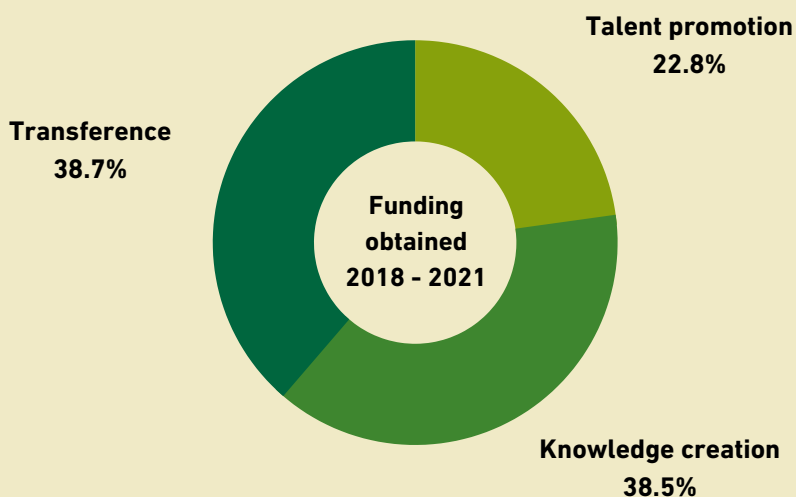
“ CEBAS activity is consolidated through its participation in a wide variety of projects at regional, national and international level, both European and non-European



PROJECT TYPES

“ More than 22% of the aid received has been devoted to the promotion and recruitment of scientific talent

“ In the last 4 years, more than 70 projects of each type were launched



NATIONAL PROJECTS

Knowledge creation

Optimización de la eficiencia en el uso del nitrógeno en la vid bajo déficit hídrico y estrés salino (AGL2017-83738-C3-3-R)

Responsible researcher: Diego S. Intrigliolo Molina.
Duration: 01/01/2018 - 30/06/2022.

Obtención y validación de compost como biofertilizante, inductor de resistencia a fitopatógenos y de cualidades saludables en el marco de una producción intensiva sostenible (AGL2017-84085-C3-1-R)

Responsible researcher: José Antonio Pascual Valero.
Duration: 01/01/2018 - 31/12/2020.

Mejora genética del almendro (AGL2017-85042-R)

Responsible researcher: Federico Dicenta López-Higuera.
Duration: 01/01/2018 - 31/12/2020.

Fertilidad edáfica y comunidades microbianas en suelos de agroecosistemas semiáridos irrigados con agua desalinizada: interacción con enmiendas orgánicas (AGL2017-85755-R)

Responsible researcher: José Luis Moreno Ortego.
Duration: 01/01/2018 - 30/06/2021.

Mejora genética del albaricoquero (AGL2017-86627-R)

Responsible researcher: David Ruiz González.
Duration: 01/01/2018 - 31/12/2020.

Epidemiología y caracterización de las virosis transmitidas por pulgón en cucurbitáceas: efecto de las infecciones mixtas en la diversidad genética de las poblaciones (AGL2017-89550-R)

Responsible researcher: Pedro Gómez López.
Duration: 01/01/2018 - 30/06/2021.

Desarrollo de estrategias para introducir resistencia al virus de la sharka y estudio de los mecanismos moleculares y bioquímicos de la dormancia en Prunus (RTA2017-00011-C03-02)

Responsible researcher: Lorenzo Burgos Ortiz.
Duration: 01/01/2018 - 30/06/2021.

Regulación redox por Tiorredoxina (trxo1) en plantas: implicación en ciclo celular, señalización hormonal y estrés salino. (BFU2017-86585-P)

Responsible researcher: Ana María Jiménez Hurtado.
Duration: 01/01/2018 - 31/12/2021.

Implicaciones de la proteína Della en la respuesta al estrés salino en solanum lycopersicum (BFU2017-87644-P)

Responsible researcher: Enrique Olmos Aranda.
Duration: 01/01/2018 - 31/12/2020.

NATIONAL PROJECTS

Knowledge creation

Valoración nutrimental de fitoprostano y fitofuranos de alimentos vegetales oleosos y su relación con la salud humana (AGL2017-83386-R)

Responsible researcher: Ángel Gil Izquierdo.
Duration: 01/01/2018 - 31/12/2020.

Descifrando la interacción entre ABA, ROS y el nitrógeno bajo condiciones de estreses abióticos combinados mediante aproximaciones fisiológicas, bioquímicas y moleculares. (PGC2018-095731-B-I00)

Responsible researcher: Rosa María Rivero Vargas.
Duration: 01/01/2019 - 31/12/2022.

Estrategias de manejo del riego y técnicas de cultivo para mejorar la eficiencia en el uso de agua salinas en especies aromáticas y/o ornamentales (RTI2018-093997-B-I00)

Responsible researchers: María Jesús Sánchez Blanco; María Fernanda Ortuño Gallud.
Duration: 01/01/2019 - 31/12/2021.

Análisis de la variación y del control genético de las fisiopatías postcosecha en melocotonero usando herramientas genómicas (RTI2018-094176-R-C32)

Responsible researcher: Pedro José Martínez García.
Duration: 01/01/2019 - 30/06/2022.

Regulación epigenética de la resistencia a Plum pox virus (sharka) inducida en melocotonero mediante injerto de almendro y su aplicación como patrón intermedio (RTI2018-095556-B-I00)

Responsible researcher: Pedro Martínez Gómez.
Duration: 01/01/2019 - 30/06/2022.

Análisis de las funciones de las proteínas de la cápsida y1 del bloque triple de genes en el ciclo del virus del mosaico del pepino dulce (PEPMV) (RTI2018-097099-B-I00)

Responsible researcher: Miguel Ángel Aranda Regules.
Duration: 01/01/2019 - 31/03/2022.

Selección y caracterización fisiológica y agronómica de portainjertos de tomate para uso eficiente de nutrientes (RTI2018-099113-B-I00)

Responsible researcher: Francisco Pérez Alfocea.
Duration: 01/01/2019 - 31/12/2021.

Nuevas tendencias en la fitorrecuperación de suelos contaminados por elementos traza hacia un modelo de economía circular (RTI2018-100819-B-I00)

Responsible researcher: María Pilar Bernal Calderón.
Duration: 01/01/2019 - 31/12/2022.

NATIONAL PROJECTS

Knowledge creation

Optimización de las propiedades redox de biochars para disminuir las emisiones de gases de efecto invernadero y favorecer la degradación de contaminantes emergentes (RTI2018-099417-B-I00)

Responsible researcher: Miguel Ángel Sánchez Monedero.
Duration: 01/01/2019 - 30/06/2022.

Mecanismos explicativos del éxito de las plantas invasoras. Cambios en la diversidad funcional del microbioma rizosférico y modificación de las redes mutualistas (RTI2018-094731-B-I00)

Responsible researcher: Antonio Roldán Garrigós.
Duration: 01/01/2019 - 31/12/2022.

Riego deficitario de precisión basado en indicadores de suelo y planta en cultivos leñosos con aguas de distinta calidad (PID2019-106226RB-C21)

Responsible researchers: Emilio Nicolás Nicolás; María Carmen Ruiz Sánchez.
Duration: 01/01/2020 - 31/12/2023.

Incremento del uso eficiente del K+ en cultivos: identificación de nuevos sistemas de transporte de K+ y de redes de regulación fundamentales para la nutrición de K+ de las pl (PID2019-106649RB-I00)

Responsible researcher: Francisco Rubio Muñoz.
Duration: 01/06/2020 - 31/05/2023.

Regulación del calcio y especies reactivas de oxígeno para mejorar la tolerancia a estrés abiótico y la calidad de fruto en tomate (PID2019-110833RB-C33)

Responsible researcher: María Isabel Egea Sánchez.
Duration: 01/06/2020 - 31/05/2023.

Diversidad funcional de estrategias de uso de agua y nutrientes por las plantas en ecosistemas mediterráneos y secos (PID2019-107382RB-I00)

Responsible researcher: José Ignacio Querejeta Mercader.
Duration: 01/06/2020 - 31/05/2023.

Soluciones basadas en la naturaleza para mitigar los impactos devastadores del clima extremo y el cambio climático (PID2019-109381RB-I00)

Responsible researcher: Joris de Vente.
Duration: 01/06/2020 - 31/05/2023.

Estrategias frontera mediante trasplantes fecales: Metabotipos de polifenoles asociados a la microbiota intestinal, riesgo cardiometabólico y deterioro cognitivo (MetaboGUT) (PID2019-103914RB-I00)

Responsible researcher: Juan Carlos Espín de Gea.
Duration: 01/06/2020 - 31/05/2023.

Modelización del procesado y efectos saludables de bebidas de cítricos-maqui. Influencia de endulzantes (PID2019-104212RB-I00)

Responsible researcher: Cristina García Viguera.
Duration: 01/06/2020 - 31/05/2024.

NATIONAL PROJECTS

Knowledge creation

Identificación de factores e implementación de procedimientos de intervención para el control de listeria monocytogenes en frutas y hortalizas listas para el consumo (PID2019-104931RB-I00)

Responsible researcher: María Isabel Gil Muñoz.
Duration: 01/06/2020 - 31/05/2023.

Adaptación del almendro a nuevos entornos: predicción de la función del genoma mediante un enfoque multiescala (PID2020-118008RB-C21)

Responsible researcher: Raquel Sánchez Pérez.
Duration: 01/09/2021 - 31/08/2025.

El papel de los residuos minerales y orgánicos en la disponibilidad de fósforo y en la fertilidad de suelos mediterráneos: mecanismos microbianos asociados (PID2020-114942RB-I00)

Responsible researcher: Felipe Bastida López.
Duration: 01/09/2021 - 31/08/2025.

Mejora genética del albaricoquero (PID2020-116780RB-I00)

Responsible researcher: David Ruiz González.
Duration: 01/09/2021 - 31/08/2023.

Demostrando y evaluando prácticas agrícolas sostenibles para optimizar servicios ecosistémicos en sistemas de secano (PID2020-119825RB-I00)

Responsible researcher: María Martínez-Mena García.
Duration: 01/09/2021 - 31/08/2024.

Estudio de la conexión entre la homeostasis ROS/RNS y la red de señalización circadiana: más allá del nivel genético (PID2020-119989GA-I00)

Responsible researcher: María Carmen Martí Ruiz.
Duration: 01/09/2021 - 31/08/2024.

Subproductos de brócoli como fuente dietética de compuestos bioactivos para la prevención de la enfermedad inflamatoria intestinal: glucosinolatos vs isotiocianatos (PID2020-120660RA-I00)

Responsible researcher: Raúl Domínguez Perles.
Duration: 01/09/2021 - 31/08/2024.

Riego de precisión sostenible en cítricos y frutales de hueso con aguas de diferente calidad. (PRECIFRUT) (AGL2016-77282-C3-1-R)

Responsible researchers: Emilio Nicolás Nicolás; María Carmen Ruiz Sánchez.
Duration: 01/01/2017 - 31/12/2019.

Transference

Nanotecnologías de encapsulación de nutrientes y sus aplicación en fertilización foliar (RTC-2017-6544-2)

Responsible researcher: Micaela Carvajal Alcaraz.
Duration: 01/01/2018 - 31/12/2021.

NATIONAL PROJECTS

Transference

PROTECTDRIP: Desarrollo de un nuevo sistema de riego localizado con capacidad de inhibir sosteniblemente las actuaciones de insectos y roedores que impiden la aplicación controlada de agua y nutrientes (RTC-2017-5894-2)

Responsible researcher: Juan José Alarcón Cabañero.
Duration: 01/07/2018 - 30/06/2021.

SEEDCOAT BIO: Film-coating biológico de semillas, una nueva forma de fitomejora sostenible (RTC-2017-5910-2)

Responsible researcher: María Teresa Hernández Fernández.
Duration: 01/05/2018 - 30/06/2021.

ABOD: Biotecnología para generar fertilizantes duales sobre el sistema suelo-planta (RTC-2017-5912-2)

Responsible researcher: María Teresa Hernández Fernández.
Duration: 01/05/2018 - 30/04/2021.

FERTINAGRO: Fertilizantes foliares para potenciar la fijación biológica de nitrógeno en la filosfera (RTC-2017-5911-2)

Responsible researcher: Vicente Martínez López.
Duration: 01/05/2018 - 30/06/2021.

Desarrollo y aplicación de nuevas tecnologías de control de fisiopatías en el cultivo de melón, brócoli y pack choi (RTC-2017-6119-2)

Responsible researcher: Micaela Carvajal Alcaraz.
Duration: 01/01/2018 - 31/12/2021.

PHERTILIZER: Sistema circular para la recuperación y valoración agronómica del fósforo (RTC-2017-6049-2)

Responsible researcher: Diego Intrigliolo Molina.
Duration: 01/07/2018 - 31/05/2022.

TIGRE: Tecnologías de última generación para la identificación, caracterización e introgresión de nuevas resistencias a virus en pepino (RTC2019-007376-2)

Responsible researcher: Miguel Ángel Aranda Regules.
Duration: 01/01/2020 - 31/12/2023.

TOMABIOTIC: Minimización en la huella hídrica del cultivo del tomate bajo condiciones de estrés abiótico (RTC2019-007179-2)

Responsible researcher: Juan José Alarcón Cabañero.
Duration: 01/05/2020 - 30/04/2023.

BIOBORO: Formulación de nuevos productos Bioestimulantes con extractos de algas para el cultivo de cítricos y hortícolas regados con aguas no convencionales (RTC2019-006954-2)

Responsible researcher: Francisco García Sánchez.
Duration: 01/09/2020 - 29/12/2023.

REGIONAL PROJECTS

Knowledge creation

Especies frutales de hueso con la ayuda de herramientas moleculares. (19879/GERM/15)

Responsible researcher: Federico Dicenta López-Higuera.
Duration: 01/01/2016 - 31/12/2021.

Frutas y Hortalizas: Papel en calidad y efectos en la salud humana. (19900/GERM/15)

Responsible researcher: Francisco Tomás Barberán.
Duration: 01/01/2016 - 31/12/2021.

Suelos degradados: el uso de enmiendas orgánicas exógenas para la restauración del suelo, y su implicación en la c dinámico y comunidades microbianas. (19896/GERM/15)

Responsible researcher: Carlos Javier García Izquierdo.
Duration: 01/01/2016 - 31/12/2021.

Gestión sostenible del agua en los sistemas agrícolas mediterráneos (19903/GERM/15)

Responsible researcher: Juan José Alarcón Cabañero; María Jesús Sánchez Blanco.
Duration: 01/01/2016 - 31/12/2021.

Análisis funcional de los sistemas antioxidantes y redox en la tolerancia al estrés abiótico de las plantas cultivadas: nuevas perspectivas para sus aplicaciones agronómicas y sus potenciales beneficios para la salud humana. (19876/GERM/15)

Responsible researcher: Francisca Sevilla Valenzuela.
Duration: 01/01/2016 - 31/12/2021.

Obtención de herramientas moleculares para aumentar la absorción de K⁺ en las raíces de tomate (20806/PI/18)

Responsible researcher: Francisco Rubio Muñoz.
Duration: 01/04/2019 - 30/09/2022.

Desarrollo de ingredientes alimentarios con efecto anti-inflamatorio mediante elicitación con luces led de brotes de crucíferas (20855/PI/18)

Responsible researcher: Diego Moreno Fernández.
Duration: 01/04/2019 - 30/09/2022.

Recuperación de variedades tradicionales de tomate para su cultivo en condiciones salinas: optimización del balance entre producción y calidad del fruto (20845/PI/18)

Responsible researcher: Borja Flores Pardo.
Duration: 01/04/2019 - 30/09/2022.

Modulación de la microbiota intestinal y producción biotecnológica de urolitinas bioactivas para universalizar los beneficios de la granada: nutrición personalizada para la prevención del riesgo cardiovascular (20880/PI/18)

Responsible researcher: María Victoria Selma García.
Duration: 01/04/2019 - 30/09/2022.

REGIONAL PROJECTS

Knowledge creation

Optimización de las relaciones fuente-sumidero mediante insectos polinizadores en tomate (20907/PI/18)

Responsible researcher: Francisco Pérez Alfocea.
Duration: 01/04/2019 - 30/09/2022.

El potencial de depósitos sedimentarios como sumideros de carbono: factores y mecanismos que favorecen su preservación en cuencas de drenaje. Implicaciones para su gestión (DECADE) (20917/PI/18)

Responsible researcher: Carolina Boix Fayos.
Duration: 01/04/2019 - 30/09/2022.

Estudio del mecanismo de traducción del genoma viral de CABYV y generación de plantas genéticamente resistentes (20800/PI/18)

Responsible researcher: Veronica Ruth Truniger Rietmann.
Duration: 01/04/2019 - 31/03/2022.

Strategics (RIS3Mur)

Invernaderos 4.0 para la producción de superalimentos. (2I18SAE00060)

Responsible researcher: Vicente Martínez López.
Duration: 23/07/2018 - 31/12/2022.

Programa integral para la mejora de la calidad de la uva y el vino ante los nuevos escenarios derivados del cambio climático. (2I18SAE00061)

Responsible researcher: Diego Intrigliolo Molina.
Duration: 19/07/2018 - 31/12/2022.

Cultivo ecológico de Quinoa en la Región de Murcia y sus aplicaciones en la industria agroalimentaria y cosmética. (2I18SAE00057)

Responsible researcher: Enrique Olmos Aranda.
Duration: 23/07/2018 - 31/12/2021.

Desarrollo de soluciones biotecnológicas para la gestión ecosostenible de subproductos y residuos generados en la industria de la espuma de poliuretano. (2I18SAE00058)

Responsible researcher: José Antonio Pascual Valero.
Duration: 23/07/2018 - 31/12/2022.

CERON03 MARMENOR: Agricultura sostenible con vertido cero de nitrato en el Mar Menor (2I20SAE00081)

Responsible researcher: Micaela Carvajal Alcaraz.
Duration: 29/09/2020 - 30/06/2022.

DIRELMIVID: Digitalización de sistemas de regeneración de aguas con garantía de eliminación de compuestos de interés clínico relacionados con el COVID-19 (2I20SAE00078)

Responsible researcher: Juan José Alarcón Cabañero.
Duration: 30/12/2020 - 30/06/2022.

INTERNATIONAL PROJECTS

EU Framework Programme

SHui: Soil Hydrology research platform underpinning innovation to manage water scarcity in European and Chinese cropping systems

Responsible researcher: Juan José Alarcón Cabañero.
Duration: 01/09/2018 - 31/08/2022.

COASTAL: Collaborative lAnd Sea inTegration pLatform

Responsible researcher: Joris de Vente.
Duration: 01/05/2018 - 30/04/2022.

DIVERFARMING: Crop diversification and low-input farming across Europe: from practitioners' engagement and ecosystems services, to increased revenues and chain organization

Responsible researcher: Carolina Boix Fayos.
Duration: 01/05/2017 - 30/04/2022.

EJP SOIL: Towards climate-smart sustainable management of agricultural soils

Responsible researcher: Carlos Javier García Izquierdo.
Duration: 01/02/2020 - 31/01/2025.

SOMMIT: SUstainable Management of soil Organic Matter to Mltigate Trade-offs between C sequestration and nitrous oxide, methane and nitrate losses

Responsible researcher: Felipe Bastida López.
Duration: 01/12/2020 - 31/01/2024.

SCALE: Strategies for connected landscape elements to reduce water erosion

Responsible researcher: Gonzalo González Barberá.
Duration: 01/12/2020 - 31/01/2024.

MINOTAUR: Modeling and mapping soil biodiversity patterns and functions across Europe

Responsible researcher: Felipe Bastida López.
Duration: 01/12/2021 - 30/11/2024.

AGROECOseqCological strategies for an efficient functioning of plant soil biota interactions to increase sequestration

Responsible researcher: Margarita Ros Muñoz.
Duration: 01/11/2021 - 31/10/2024.

EOM4SOIL External organic matters for climate mitigation and soil health

Responsible researcher: José Antonio Pascual Valero.
Duration: 01/11/2021 - 31/10/2024.

Black to the future: biochar and compost as soil amendment

Responsible researcher: Miguel Ángel Sánchez Monedero.
Duration: 01/01/2021-31/12/2022.

INTERNATIONAL PROJECTS

EU Framework Programme

ERASMUS + NEGHTRA: Next Generation Training on Intelligent Greenhouses

Responsible researcher: Francisco García Sánchez.

Duration: 01/11/2020 - 31/10/2023.

PolyBiota: ePolyphenols and Gut Microbiota interaction in Cardiovascular Health

Responsible researcher: Juan Antonio Giménez Bastida.

Duration: 01/11/2020 - 31/10/2023.

PhenolAc: Enhancing research and innovation capacity of TUBITAK MRC Food Institute on dietary polyphenols and bioavailability/bio efficacy

Responsible researcher: Antonio González Sarrías.

Duration: 01/12/2020 - 30/11/2022.

4PRIMA: Partnership for Research and Innovation in the Mediterranean Area

Responsible researcher: Diego S. Intrigliolo Molina.

Duration: 01/05/2016 - 28/02/2018.

Other EU projects

ENI PROSIM: promoting sustainable irrigation management and non-conventional water use in the Mediterranean

Responsible researcher: Juan José Alarcón Cabañero.

Duration: 01/09/2019 - 31/08/2022.

ENI CEOMED: employing circular economy approach for Organic Fraction of Municipal Solid Waste (OFMSW) management within the Mediterranean countries

Responsible researcher: María Pilar Bernal Calderón.

Duration: 01/09/2019 - 31/12/2022.

Interreg MED Greenhouses: green growth through the capitalization of innovative Greenhouses

Responsible researcher: Juan José Alarcón Cabañero.

Duration: 01/02/2018 - 31/07/2019.

LIFE POREM: poultry manure-based bio activator for better soil management through bioremediation

Responsible researcher: Carlos Javier García Izquierdo.

Duration: 01/10/2018 - 30/09/2021.

LIFE DRAINUSE: Re-utilization of drainage solution from soilless culture in protected agriculture. From open to close system

Responsible researcher: Vicente Martínez López.

Duration: 01/09/2015 - 31/12/2018.

LIFE IRRIMAN: implementation of efficient irrigation management for sustainable agriculture

Responsible researcher: Juan José Alarcón Cabañero.

Duration: 01/09/2014 - 31/12/2018.

INTERNATIONAL PROJECTS

Other EU projects

EU-FORA: microbial risk assessment

Responsible researcher: Ana Allende Prieto.
Duration: 01/09/2018 - 01/10/2019.

PRIMA ZeroParasitic: Soluciones innovadoras y sostenibles para los 'jopos': prevención y enfoques integrados de gestión de plagas para superar el parasitismo en los sistemas de cultivo mediterráneos

Responsible researcher: Francisco Pérez Alfocea.
Duration: 01/11/2019 - 31/10/2022.

PRIMA PRECIMED: Precision irrigation management to improve water use efficiency in the Mediterranean region

Responsible researcher: María Fernanda Ortuño Gallud.
Duration: 01/10/2019 - 30/09/2022.

PRIMA HaloFarMs: Desarrollo y optimización de sistemas agrícolas basados en halófitos en suelos mediterráneos afectados por sal

Responsible researcher: José Antonio Hernández Cortés.
Duration: 01/10/2020 - 30/09/2023.

PRIMA Adaptación de las plantaciones frutales mediterráneas. Aproximación multidisciplinar para la selección de frutales resilientes en la región Mediterránea

Responsible researcher: David Ruiz González.
Duration: 01/06/2020 - 31/05/2023.

PRIMA IRRIWELL: A novel plant-based approach to estimate irrigation water needs of orchards for an optimal water management

Responsible researcher: Emilio Nicolás Nicolás.
Duration: 01/07/2021 - 30/06/2024.

LIFE AMIA: Innovative combination of WWT technologies for water reuse: anaerobic-aerobic, microalgae and AOP processes

Responsible researcher: Carlos Javier García Izquierdo.
Duration: 01/09/2019/ - 31/12/2022.

LIFE AGROPAPER: Towards to zero plastic soil management agricultural practices

Responsible researcher: Carlos Javier García Izquierdo.
Duration: 01/09/2020 - 31/12/2023.

LIFE GEOCARBON: Carbon Farming Geolocation Support by Establishing a Spatial Soil Database Management System

Responsible researcher: José Antonio Pascual Valero.
Duration: 01/10/2021- 31/03/2023.

INTERNATIONAL PROJECTS

Other EU projects

LIFE AgRemS03il: Agrochemical remediation of farm soils by combining solarization and ozonation techniques

Responsible researcher: Emilio Nicolás Nicolás.
Duration: 01/07/2018 - 30/06/2022.

LIFE DRY4GAS: Waste Water sludge solar DRYING FOR energy recovery through gasification

Responsible researcher: Emilio Nicolás Nicolás.
Duration: 01/07/2017 - 31/12/2022.

Other non-EU international projects

Establishment of operating standards for produce wash systems through the identification of specific metrics and test methods

Responsible researcher: Ana Allende Prieto.
Duration: 01/01/2017 - 31/12/2018.

Significance of sanitizers used to maintain quality of process wash water on formation of viable but non-cultivable (VBNC) foodborne bacteria, and conditions needed for their survival and resuscitation in fresh produce

Responsible researcher: Ana Allende Prieto.
Duration: 01/01/2019 - 01/08/2021.

Are Californian almond cultivars and rootstocks susceptible to PPV and can almonds be a host for the spread of Sharka in California?

Responsible researcher: Manuel Rubio Angulo.
Duration: 01/07/2020 - 30/06/2024.

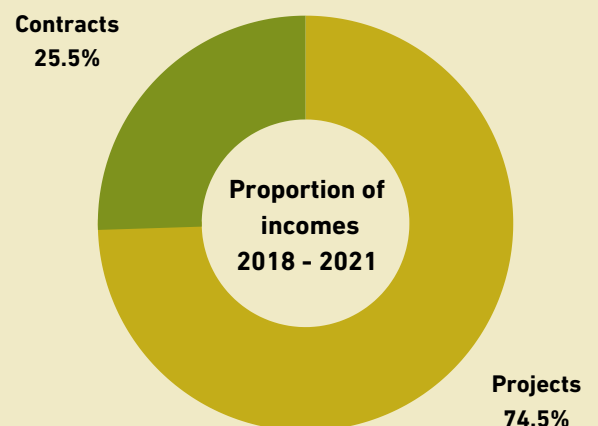
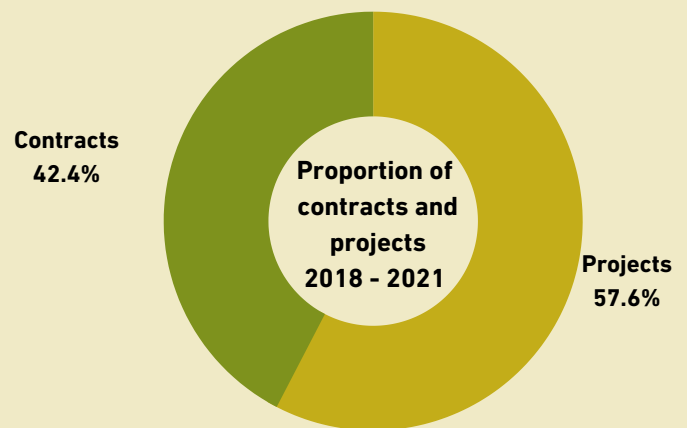
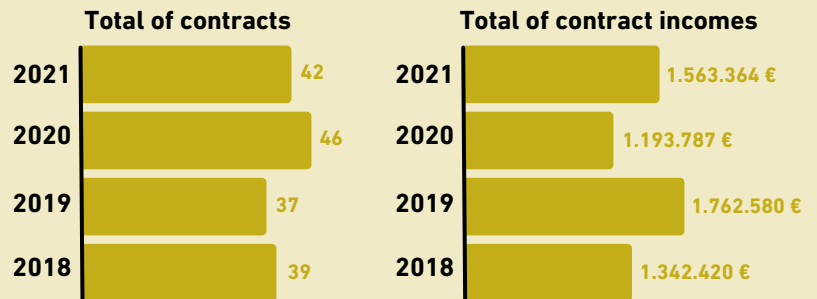
HORT49: discovery of genetic variation in related self-fertile species of almond

Responsible researcher: Pedro José Martínez García.
Duration: 01/07/2020 - 30/06/2024.

R+D CONTRACTS

“ 42,4% of the centre's scientific activity is carried out within the framework of transfer contracts, strengthening public-private collaboration

“ A quarter of the centre's funding comes from public-private partnership initiatives



INTELLECTUAL PROPERTY RIGHTS

Patents

Composition and procedure to increase the glucosinolate content in adult plants of the genus Brassica

Responsible researcher: Micaela Carvajal Alcaraz.

Application number: 201830674. Co-ownership with SAKATA SEED IBERICA, S.L.U. (50%).

Low intake cesium and parthenocarpy plants

Responsible researcher: Francisco Rubio Muñoz.

Application number: EP20382218.

Primera vacuna de diseño computacional contra el SARS-CoV-2

Responsible researcher: Idelfonso Martínez de la Fuente.

Application number: 2020/30467. Co-ownership with the University of the Basque Country UPV (52,5%).

Mutated gene conferring virus resistance. Plants resistant to Infection by pepino mosaic virus

Responsible researcher: Miguel Ángel Aranda Regules.

Application number: 2021/30569. Co-ownership with ABIOPEP (78%).

Extracción de péptidos y glucosinolatos de material vegetal del género Brassica y uso de los mismos en aplicaciones cosméticas

Responsible researcher: Micaela Carvajal Alcaraz.

Application number: 2021/31081. Co-ownership with Frutas Peyfi, S.L. (50%).

Industrial secrets

DryStock One: Protocolo de obtención patrones francos de almendro resistentes a secano

Responsible researcher: Federico Dicenta López-Higuera.

Application number: 124654Z/2021.

Protocolo para la obtención de palitos de brocolí de cuarta gama

Responsible researcher: Cristina García Viguera.

Application number: 2725/2021. Co-ownership with the University Miguel Hernández (UMH, 80%).

Formulation of citrus and aronia juice and other red fruits

Responsible researcher: Cristina García Viguera.

Application number: 6402/2017.

Algorithm for calculating irrigation doses in horticultural crops

Responsible researcher: Diego S. Intrigliolo Molina.

Application number: 4020/2017. Co-ownership with the Polytechnic University of Cartagena (UPCT, 10%). Graduate of Hispatec Group Business Informatics.

INTELLECTUAL PROPERTY RIGHTS

Utility models

Cámara de experimentación portátil con iluminación LED de espectro modulable y unidad de control micro programable

Responsible researcher: José Antonio Hernández Cortés.
Application number: 2021/30517.

Device for soil revegetation

Responsible researcher: María Pilar Bernal Calderón.
Application number: U201831081.

Dispositivo de degradación mediante ozono

Responsible researchers: Felipe Bastida López; Emilio Nicolás Nicolás; Juan José Alarcón Cabañero; Pedro Antonio Nortes Tortosa; Cristina Romero Trigueros.
Application number: U202031755.

Cultivars released

Apricot tree (*Prunus armeniaca* L.) variety CAPRICH0

Responsible researcher: David Ruiz González.
Application number: 2019/3177. Trademark protection in Europe.

Apricot tree (*P. armeniaca* L.) variety CEBASRED

Responsible researcher: David Ruiz González.
Application number: 2017/2703. Protected as a trademark in Europe, Turkey, Morocco, Tunisia, South Africa, Chile, and the United States. Licensed to: Grinn Ike, De Simone Pasquale Antonio, Irgeler Tarim, Verben Nursery, Semillas Batlle.

Plum tree (*P. salicina* L.) variety LUCÍA MYRTEA

Responsible researcher: David Ruiz González.
Application number: 2020/2972. Trademark protection in Europe.

Plum tree (*P. salicina* L.) variety VICTORIA MYRTEA

Responsible researcher: David Ruiz González.
Application number: 2020/2973. Trademark protection in Europe.

Apricot tree (*P. armeniaca* L.) variety PRIMOROSA

Responsible researcher: David Ruiz González.
Application number: 2017/2704. Protected as a trademark in Europe, Turkey, Morocco, and Tunisia. Licensed to Verben Nursery.

Apricot tree (*P. armeniaca* L.) variety DESEO

Responsible researcher: David Ruiz González.
Application number: 2019/3154. Protected as a trademark in Europe.

Almond tree (*P. dulcis* Mill.) variety MAKAKO

Responsible researcher: Federico Dicenta López-Higuera.
Application number: 2017/1535. Protected as a trademark in Morocco, Tunisia, Argentina, Chile, the United States, Turkey, Greece, Italy, Australia, South Africa, and Canada. Licensed to: Productora S.A., Verben Nursery, Agromillora Australia, Azienda Agricola Iocoli Vivai, Irgeler Tarim, Agromillora California, Vitroplant Italia, Az. Agr. Vivai Piante Fortunato Luca, Az. Agr.

PRODUCTION OF PLANT MATERIAL

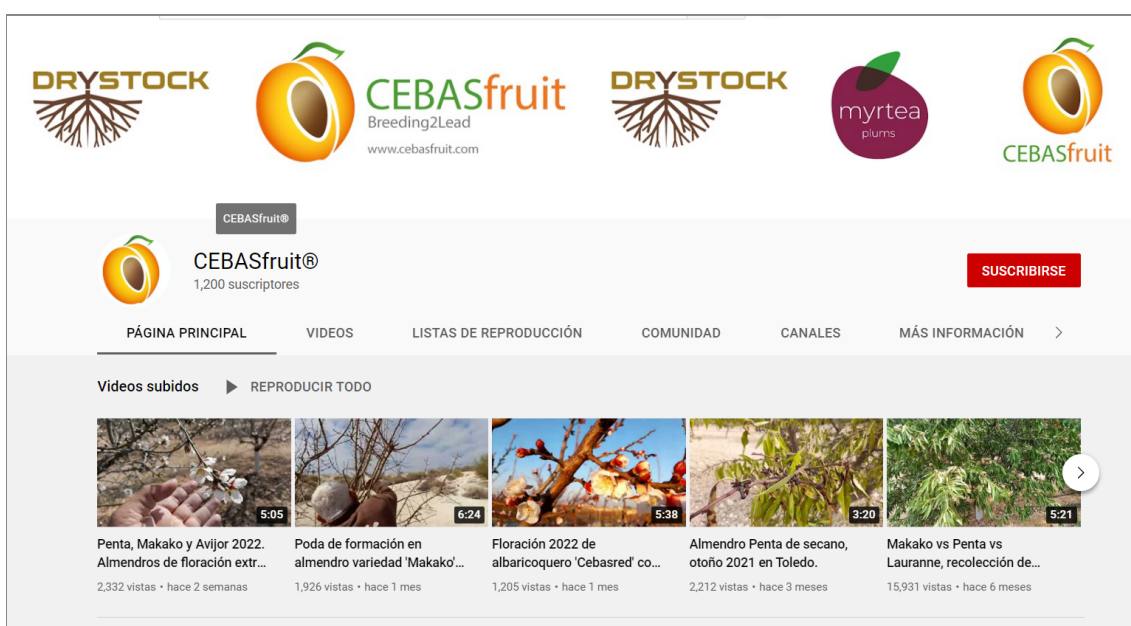
New Plant Varieties and Certified Plant

The Group of Fruit Breeding has a Plant Material Service for the provision of the new varieties obtained in our improvement programs to the sector.

Within this service, it is worth mentioning the facilities for the certification of the varieties, located in the Finca Tres Caminos (Santomera, Murcia) of the CEBAS-CSIC.

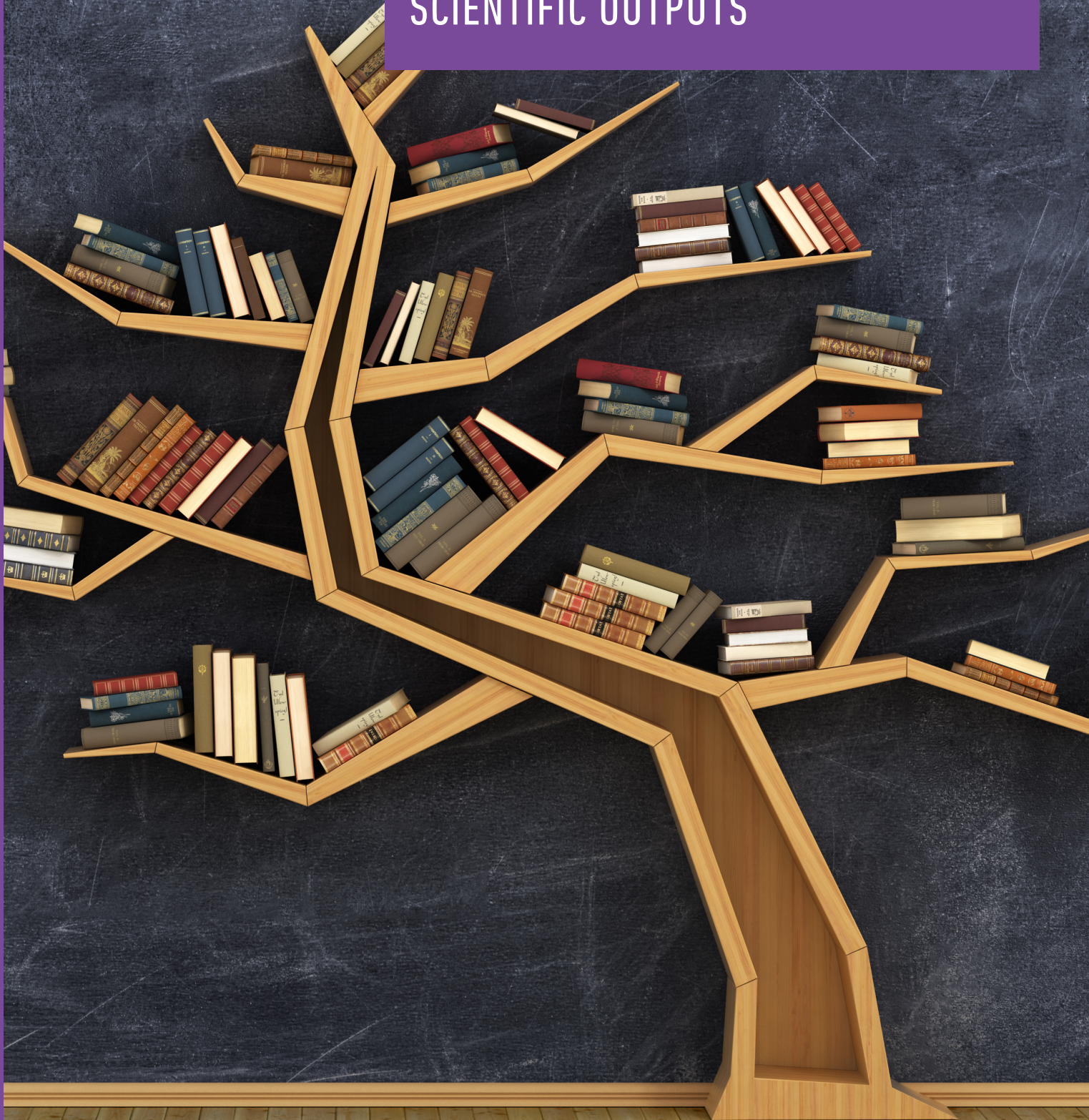
This process is supervised by the Plant Health Service of the Ministry of Agriculture of Murcia and certified by the Technical Unit of Nursery Plants, of the Center for Plant Health and Certification of Zaragoza.

More than 500,000 buds leave this service annually for Spanish and foreign nurseries and producers in more than 10 countries.



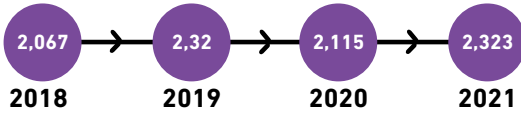
Video Title	Duration	Views	Time
Penta, Makako y Avjor 2022. Almendros de floración extr...	5:05	2,332 vistas	hace 2 semanas
Poda de formación en almendro variedad 'Makako'...	6:24	1,926 vistas	hace 1 mes
Floración 2022 de albaricoquero 'Cebasred' co...	5:38	1,205 vistas	hace 1 mes
Almendro Penta de secano, otoño 2021 en Toledo.	3:20	2,212 vistas	hace 3 meses
Makako vs Penta vs Lauranne, recolección de...	5:21	15,931 vistas	hace 6 meses

SCIENTIFIC OUTPUTS

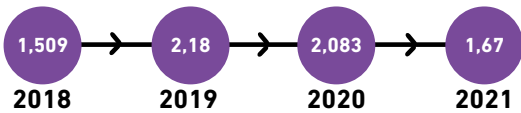


IMPACT INDICATORS

Average number of Spanish affiliations in publications



Average number of international affiliations in publications

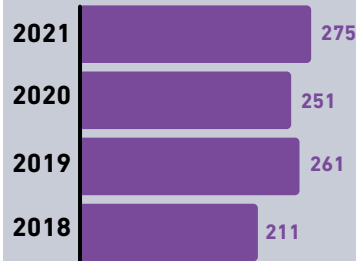


Most frequent scientific areas

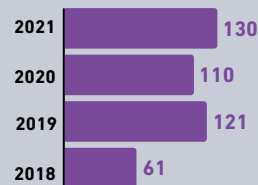


Scientific Output

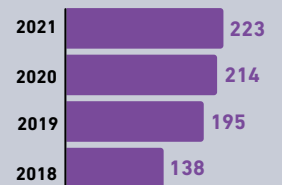
Overall articles



First Decile (D1)

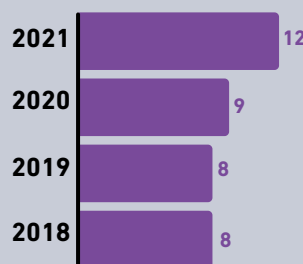


First Quartile (Q1)*

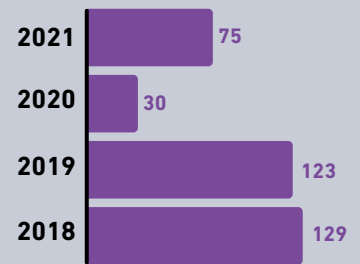


*Including D1 articles

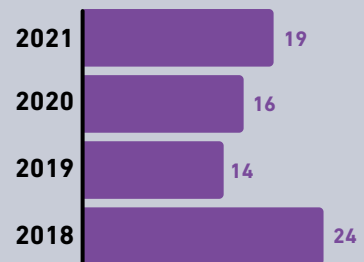
Doctoral theses



Congresses



Book and book chapters



Source: Scopus SJR

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Villano, D; Masoodi, H; Marhuenda, J; García-Viguera, C; Zafrilla, P. Stevia, sucralose and sucrose added to a maqui-Citrus beverage and their effects on glycemic response in overweight subjects: A randomized clinical trial. *Lwt-food Science and Technology*, 144 (111173) (2021), 10.1016/j.lwt.2021.111173.

HIGH IMPACT ARTICLES (D1) 2021

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Zielinska, D; Zielinski, H; Laparra-Llopis, JM; Szawara-Nowak, D; Honke, J; Giménez-Bastida, JA. Caffeic acid modulates processes associated with intestinal inflammation. *Nutrients*, 13 (554), pp. 1 - 15 (2021), 10.3390/nu13020554.

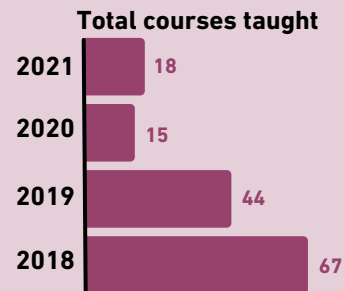
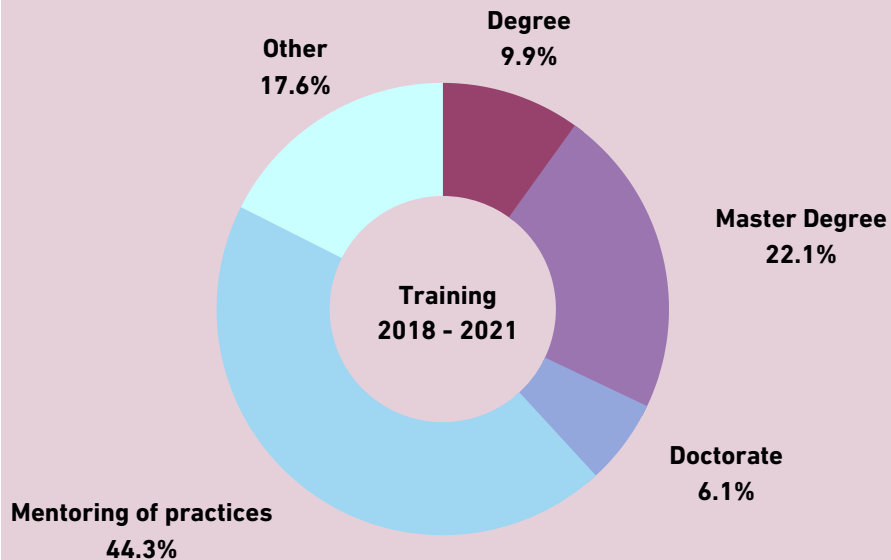
TRAINING



TRAINING

“CEBAS researchers carry out extensive training in different programmes and at different academic levels

“Participation in training activities was affected due to the COVID-19 pandemic



COLLABORATING EDUCATIONAL INSTITUTIONS



Cadi Ayyad University of Morocco

Czech University of Life Sciences of Prague



IES Juan Carlos I of Murcia

IES Margarita Salas of Madrid



IES Miguel de Cervantes de Murcia

Catholic University San Antonio of Murcia



Complutense University of Madrid

University of Alicante



University of Catania

University of Granada



University of Murcia

COLLABORATING EDUCATIONAL INSTITUTIONS



University of Seville

University of Trás-os-Montes e Alto Douro



eman ta zabal zazu



UPV EHU

University of Basque Country

Polytechnic University of Cartagena



University of Tuscia

University of Foggia



University Miguel Hernández of Elche

University of Wageningen



University of Saskatchewan (Saskatoon, SK)

Wroclaw University of Environmental and Life Science



COLLABORATING EDUCATIONAL INSTITUTIONS



[Bar-Ilan University](#)



[The Hebrew University of Jerusalem](#)



[University of Copenhagen](#)

[University of York](#)



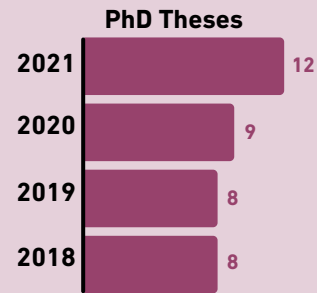
[University of California - Davis](#)



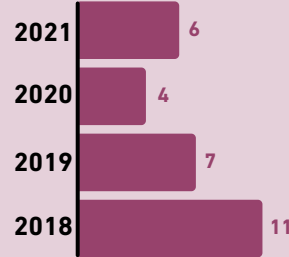
ACADEMIC PROJECTS

“37 PhD trained at CEBAS have defended their theses in the last 4 years

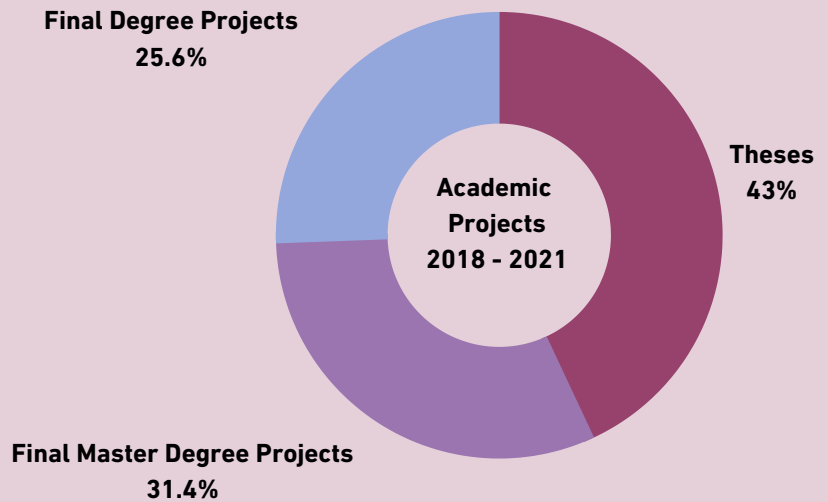
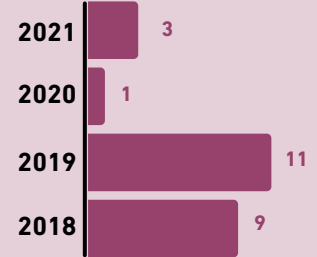
“CEBAS researchers supervise academic work of all kinds in the different universities with which it collaborates



Final Master Degree Projects



Final Degree Projects



DEFENDED DOCTORAL THESES

Year 2018

Association mapping of some pomologic traits in grape (*Vitis vinifera* L.) by using ISSR and Retrotransposon markers

Author: Mitra Razi.

Directors: M. E. Amiri, R. Darvishzadeh; H. Dolatibaneh; Pedro Martínez Gómez.

Caracterización fenotípica, fisiológica y molecular de la respuesta a salinidad y sequía en tomate cultivado (*Solanum lycopersicum*) y silvestre (*S. pennellii*)

Author: Irene Albaladejo Carrasco.

Directors: María Isabel Egea Carrasco; Francisco Borja Flores Pardo.

Estudio de viabilidad del uso de agua regenerada y riego deficitario controlado en cítricos

Author: Cristina Romero Trigueros.

Directors: Emilio Nicolás Nicolás; Pedro Nortés Tortosa.

Evaluación de riesgos microbiológicos asociados al agua de riego durante la producción de hortalizas de hoja

Author: Luana Tomici.

Directors: Ana Allende Prieto; María Isabel Gil Muñoz.

Field practices for adapting Mediterranean viticulture to climate change

Author: Ignacio Buesa Pueyo.

Directors: Ramón Castel Sánchez; Alberto García Prats; Diego S. Intrigliolo Molina.

Qualidade microbiológica da água de irrigação e seu impacto sobre a segurança na produção de alfaces

Author: Luana Tombini Decol.

Directors: Eduardo Cesar Tondo; Ana Allende Prieto.

Rhizosphere microbiota during invasion processes by exotic plant in semiarid ecosystems

Author: Gema Rodríguez Caballero.

Directors: María Fuensanta Caravaca Ballester; Antonio Roldán Garrigós.

Role of phytoprostanes and phytofurnas for the protection and defense of rice (*Oryza sativa* L.) against oxidative stress caused by abiotic agents and technological practices

Author: María Pincirolì.

Directors: Ángel Gil Izquierdo; Raúl Domínguez Perles; Mariana Garbi.

DEFENDED DOCTORAL THESES

Year 2019

Análisis estructural y funcional de la proteína de la cápsida del virus del mosaico del pepino dulce

Author: Francisco Eduardo Méndez López.

Director: Miguel Ángel Aranda Regules.

Bases genéticas y moleculares de la época de floración en almendro

Author: Ángela Sánchez Prudencio.

Directors: Pedro Martínez Gómez; Federico Dicenta López-Higuera.

Detección y caracterización de virus epidemiológicamente relevantes en cultivos de tomate y cucurbitáceas

Author: Covadonga Torre Guardiola.

Directors: Miguel Ángel Aranda Regules; Jesús Agüero González; Yolanda Hernando Saiz.

Determination of gene expression in the resistance to Plum pox virus (sharka) induced in peach by "Garrigues" almond grafting

Author: Azam Nikbakht Dehjordi.

Director: Pedro Martínez Gómez.

Estudio de la regulación de los sistemas implicados en la absorción y translocación de potasio en Arabidopsis thaliana L. y Solanum lycopersicum L.

Author: Reyes Rodenas Castillo.

Directors: Francisco Rubio Muñoz; Vicente Martínez López.

Función de la tioredoxina (TRXo1) mitocondrial y nuclear: avances en su implicación en señalización y estrés salino

Author: Antonio María Sánchez Guerrero.

Directors: Francisca Sevilla Valenzuela; Ana María Jiménez Hurtado.

UPLC-QTOF-MS-Untargeted metabolomics to explain enzymatic browning of fresh-cut lettuce

Author: Carlos Javier García Hernández-Gil.

Directors: María Isabel Gil Muñoz; Francisco A. Tomás Barberán.

Cyanogenic glucosides in legumes and a fruit tree. Multiplicity of functions in secondary as well as in primary plant metabolisms

Author: Alexandra Bianca Maimann.

Directors: Birger Lindberg Møller; Raquel Sánchez Pérez.

DEFENDED DOCTORAL THESES

Year 2020

Análisis genómico y transcriptómico de caracteres ligados a la calidad del fruto en albaricoquero

Author: Beatriz Ester García Gómez.

Directors: David Ruiz González; Pedro Martínez Gómez.

Aspectos agronómicos y fisiológicos asociados a la tolerancia a la combinación de estreses abióticos en plantas de tomate

Author: María García Martí.

Directors: Antonio Cerdá Cerdá; Rosa María Rivero Vargas; Vicente Martínez López.

Contribución al desarrollo de sistemas inteligentes de monitorización y control de microclimas lumínicos basados en el internet de las cosas y en las nuevas tecnologías SSL

Author: Cristóbal Javier Solano Navarro.

Directors: Juan Suardiáz Muro; José Antonio Hernández Cortés; Gregorio Barba Espín.

Edición de genes de tomate que codifican potenciales factores provirales para el virus del mosaico del pepino dulce

Author: Pascual Rodríguez Sepúlveda.

Directors: Livia Donaire Segarra; Yolanda Hernando Saiz; Miguel Ángel Aranda Regules.

Efectos del riego deficitario con aguas salinas en la producción y composición de la uva y la calidad del vino

Author: Alejandro Martínez Moreno.

Directors: Diego S. Intrigliolo Molina; Rocío Gil Muñoz; Ramón López Urrea.

Estudio de los principales componentes químicos no volátiles, asociados a la calidad del cacao de Ecuador, como herramienta en la certificación de origen

Author: Ivan Rodrigo Samaniego Maigua.

Directors: Cristina García Viguera; Pedro Miguel Mena Parreño.

Polifenoles de la dieta frente al cáncer de mama: estudios metabólicos y moleculares en pacientes, animales y modelos celulares

Author: María de los Ángeles Ávila Gálvez.

Directors: Juan Carlos Espín de Gea; Antonio González Sarrías.

Virus del mosaico del pepino dulce (PepMV): Desarrollo de un vector viral e identificación de un mutante de tomate de pérdida de susceptibilidad

Author: Fabiola Ruiz Ramón.

Directors: Miguel Ángel Aranda Regules; Mari Paz Bretó Monfort.

Construyendo materia orgánica en suelos degradados bajo clima semiárido, mediante el uso de enmiendas orgánicas

Author: María Dolores Coll Almela.

Directors: Carlos Javier García Izquierdo; María Teresa Hernández Fernández.

DEFENDED DOCTORAL THESES

Year 2021

Efecto de una nueva bebida rica en compuestos bioactivos para modular el metabolismo energético en adultos con sobrepeso

Author: Vicente Agullo García.

Directors: Cristina García Viguera; Raúl Domínguez Perles.

Estudio de la tolerancia a la inundación, salinidad y toxicidad por boro en tres variedades de granado (Punica granatum L.)

Author: Antonio Olmo Vega.

Director: Francisco García Sánchez.

Evaluación de los efectos de las estrategias de remediación de suelos agrícolas en la comunidad microbiana del suelo y en la agro-fisiología del tomate

Author: Marta Díaz López.

Directors: Emilio Nicolás Nicolás; Felipe Bastida López.

Participatory monitoring and evaluation of regenerative agriculture. From local knowledge and impacts to large-scale adoption

Author: Raquel Luján Soto.

Director: Joris de Vente.

Relevance of biochar properties for the emission of greenhouse gases in agricultural soils

Author: María Blanca Pascual de Vega.

Director: Miguel Ángel Sánchez Monedero.

Absorción de agua y nutrientes y respuesta fisiológica de plantas halófitas y glicofitas bajo condiciones de estrés salino

Author: Agatha Agudelo Sánchez.

Director: Micaela Carvajal Alcaraz.

Caracterización de la absorción de K⁺ en Arabidopsis Thaliana L. y Solanum Lycopersicum L.: Regulación de Athak5, papel de Slhak5 e identificación de nuevos sistemas de absorción de K⁺

Author: Alberto Lara Hurtado.

Director: Francisco Rubio Muñoz.

Elagitaninos de la dieta como herramienta para estudiar la variabilidad interindividual en el metabolismo de polifenoles

Author: Adrián Cortés Martín.

Director: Juan Carlos Espín de Gea.

Evaluación del potencial como biocombustibles de especies desarrolladas en suelos contaminados

Author: Donatella Grippi.

Director: Rafael Clemente Carrillo.

DEFENDED DOCTORAL THESES

Year 2021

Impacto de concentraciones ambientalmente relevantes de nanopartículas de plata en la comunidad microbiana del suelo

Author: Gabriela Montes de Oca Vásquez.

Directors: José Luis Moreno Ortego; Felipe Bastida López.

Micro/nanoencapsulación de compuestos bioactivos de calafate (*Berberis microphylla*) y evaluación in Vitro de su potencial anti-neurodegenerativo

Author: María Eugenia Romero Román.

Director: Cristina García Viguera.

Obtención de un extracto de cacao y café con alto contenido de compuestos bioactivos

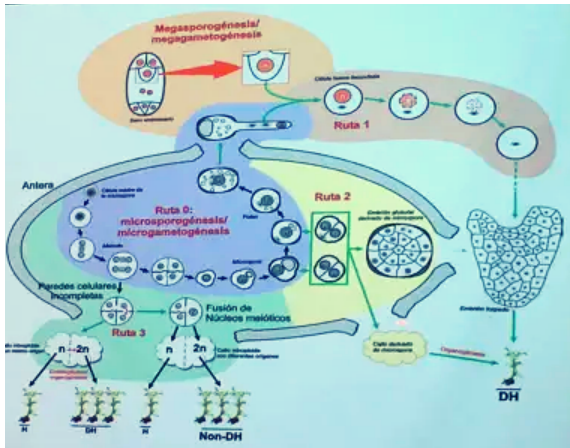
Author: Elly Vanessa Acosta Otalvaro.

Director: Cristina García Viguera.

A photograph of a diverse group of people seated in a meeting or workshop. The individuals are dressed in professional attire, including blouses, jackets, and suits. Some are looking towards the right, while others are engaged in conversation. A microphone is visible in the foreground, held by a person whose hands are partially visible. The background shows a window with blinds. A teal-colored rectangular overlay is positioned in the upper right quadrant of the image, containing the text 'EVENTS AND WORKSHOPS' in white, uppercase, sans-serif font.

EVENTS AND WORKSHOPS

EVENTS AND WORKSHOPS



BioMur Forum Seminar: Plants without a mother (yes, plants can)

Talk about the cellular and molecular bases of this experimental phenomenon and its various biotechnological applications within the field of plant breeding. (Nuria Alburquerque Ferrando, Lorenzo Burgos Ortiz).

Date: May 2018.
Place: CEBAS, Murcia.

Week of Science and Technology in Murcia

CEBAS-CSIC is present at these annual events with a large stand made up of several sections in which different scientific dissemination workshops are presented that bring science and technology closer to society.

Dates: November 2018 and November 2019.
Place: Murcia.



Celebration of the annual editions of the IDIES Project

The IDIES project is an educational project of initiation to research that began in 2014 at CEBAS-CSIC, in which students from the 1st year of the baccalaureate in research participate.

Dates: October 2018, October 2019 and November 2021.
Place: CEBAS, Murcia.

EVENTS AND WORKSHOPS



Conference IWA of water reuse and salinity management

Conference on water reuse and salinity management ,organized by CEBAS CEBAS-CSIC and the IWA Association , to address how to cope with water scarcity in coastal areas and arid and semi-arid climate induced by the climate change.

(Juan José Alarcón Cabañero, Francisco Pedrero Salcedo).

Date: June 11-15, 2018.

Place: Murcia.

Technical Conference: Challenges in the production and marketing of almonds and peaches

Almond tree varieties adapted to the climatic conditions of western Andalusia.

(Federico Dicenta López-Higuera).

Date: February 21-22, 2018.

Place: Seville.



Innovations in business models for sustainable landscape restoration

Training course as part of the ENABLE (Erasmus+) educational project, in collaboration with the Rotterdam School of Business, the United Nations University in Iceland, the Commonland Foundation and the University of Nova Lisboa.

(Joris de Vente, Carolina Boix Fayos, María Martínez-Mena García, Javier Martínez López, Joris P.C. Eedkhout, Pedro Pérez Cutillas).

Date: since 2019.

Course access: <https://buff.ly/3KLS3y4>

EVENTS AND WORKSHOPS



Course: The colour of plant-based foods: when attraction turns into benefit

Promoted by the Menéndez Pelayo International University.
(Cristina García Viguera).

Date: July 8-10, 2019.

Place: Santander.

Workshop on the Cultivation of Apricot and Peach Trees in areas with warm winters and low availability of irrigation water

(José Antonio Hernández Cortés, David Ruiz González).

Date: November 16-30, 2021.

Place: Cieza.



III and IV National Congress on Stone Fruit

CEBAS participates in the organization of the National Congress on Stone Fruit, which is held every two years in Murcia.

(Group of Fruit Breeding).

Dates: March 2019 and November 2021.

Place: Murcia.



EVENTS AND WORKSHOPS



II International Scientific-Technical Conference IMIB-UMU/CEBAS-CSIC: Diet, microbiome and immunity in cancer and metabolic diseases

Glucosinolates Presentation: Analytics and Bioactivity.
(Diego Moreno Fernandez).

Date: March 25, 2021.

Place: Virgen de la Arrixaca Hospital, Murcia.

Formation course on Sustainable Use Policies for agroforestry production in Spain in relation to other EU countries and the world

Co-organized by the Soil and Water Erosion and
Conservation group.

(V́ctor Castillo Śnchez, coordinator).

Date: November 22-23, 2021.

Place: Menéndez Pelayo International University, Seville.



Microbiome 2

The soil and its microorganisms, key to intelligent agriculture.
(Carlos Javier Garcia Izquierdo).

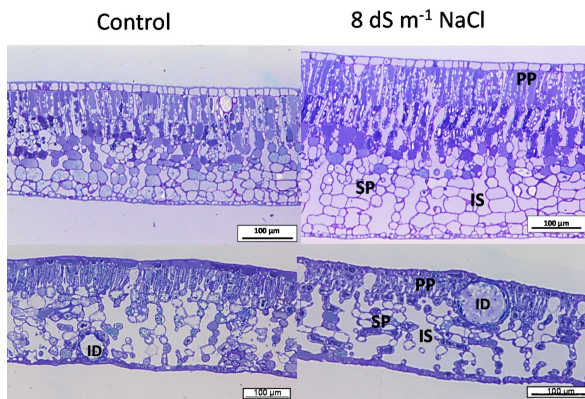
Date: November 3-4, 2021.

Place: Cartagena.



AWARDS AND GRANTS

AWARDS AND GRANTS



Best Publication Award in Agronomy Magazine

Plant responses to salt stress: adaptive mechanisms.

José Ramón Acosta-Motos, María Fernanda Ortuño Gallud, Agustina Bernal-Vicente, Pedro Díaz-Vivancos, María Jesús Sánchez-Blanco, José Antonio Hernández Cortés.

Date: 2018.

Entity: Agronomy Editorial Office, Switzerland.

Award Agro La Verdad "Azada de Oro"

CEBAS received the 4th Award from the agri-food sector of the Region of Murcia in the category of Research and Innovation, as recognition of its relevant contribution to the agri-food industry of the Region of Murcia.

Date: 2018.

Entity: Newspaper La Verdad of the Region of Murcia.



Medals of the "Spanish Almond Board-Almendrave"

José Egea Caballero and Federico Dicenta López-Higuera received in 2019 the Medals of the Spanish Almond Board-Almendrave for their excellent track record in science, specially in the research at national and international level in the breeding of the almond, and for having made CEBAS an international reference in the generation of new almond varieties.

Date: 2019.

Entity: Spanish Almond Board-Almendrave.

AWARDS AND GRANTS



Juan José Alarcón Cabañero, Academician of the Academy of Sciences of the Region of Murcia

Juan José Alarcón Cabañero was appointed Academician of the Academy of Sciences of the Region of Murcia with a speech entitled "Water as a Motive Force for Plants".

Date: 2020.

Entity: Academy of Sciences of the Region of Murcia.

CEBAS researchers in the ranking of the 2% most cited 2020, 2021

26 and 29 CEBAS researchers appear in the list of the most cited researchers in 2020 and 2021, respectively.

11 and 13 researchers appear in the list of the most cited researchers throughout their career in 2020 and 2021, respectively.

Dates: November 2020, October 2021.

Entity: PLOS Biology, Elsevier



ELSEVIER



International ranking: "Highly-cited researchers" 2018, 2019, 2020, 2021

Francisco A. Tomás Barberán, Juan Carlos Espín de Gea, María Victoria Selma García and Antonio González Sarrías were included in the top 1% of the most cited researchers in these 4 years.

Dates: 2018, 2019, 2020, 2021.

Entity: Clarivate Analytics.

AWARDS AND GRANTS



Award Leonardo Da Vinci of the BBVA Foundation for Researchers and Cultural Creators

Raquel Sánchez Pérez won one of the Leonardo Da Vinci grants, awarded by the BBVA Foundation, to develop the project AUSTRAL: Journey to the past to change the future of fruit trees in the face of climate change.

Fecha: 2020.

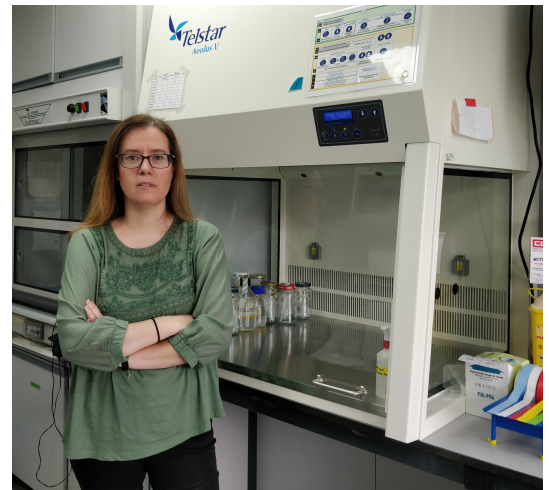
Entidad: Fundación BBVA.

XX National Competition for the Award of Grants for Research in Life and Matter Sciences

María del Carmen Martí Ruiz won the XX National Competition for the awarding of Grants for Research in Life and Matter Sciences of the Areces Foundation, with her research project: Study of the connection between ROS/RNS homeostasis and the circadian signalling network: beyond the genetic level.

Date: 2020.

Entity: Fundación Ramón Areces.



Leading member of R&D&I in the Region of Murcia

During the Ris3Mur anual event, Carlos Javier García Izquierdo was recongnized as a leading member of R&D&I in the Region of Murcia.

Date: 2021.

Entity: Government of the Region of Murcia.



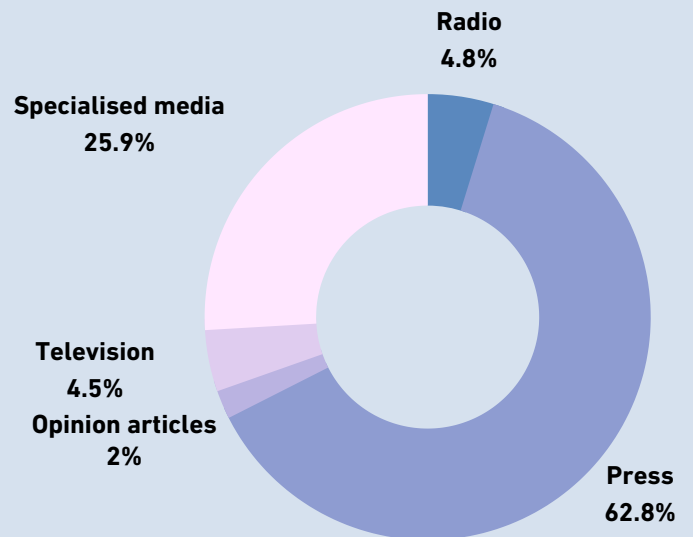
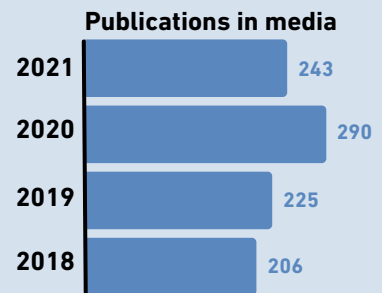
COMMUNICATION AND DISSEMINATION



MEDIA IMPACT

“CEBAS has consolidated its presence in the media during these 4 years

“Media of different formats communicate the centre's scientific activity to the society



Ortón

Collaborating company in communication, dissemination and divulgation of science activities

FOLLOW US AND STAY TUNED!

Keep up to date with the centre's news through our institutional profiles on Twitter and LinkedIn. There you will find information about the latest publications by our researchers, news about the projects in which our researchers are involved, interviews, and even information about the latest calls for project proposals.



(*) followers up to 31/12/2021



(*) followers up to 31/12/2021

COMMUNICATION ANNUAL REPORTS

ENERO-DICIEMBRE 2018 

215 alumnos en el sexto IDIES

ESTA EDICIÓN SE HA DUPLICADO EL TOTAL DE PROYECTOS

ÉXITO DEL CONGRESO IWARESA
150 INVESTIGADORES DE 16 PAÍSES

ENTRE LOS MÁS CITADOS DEL MUNDO
SEGÚN EL 'HIGHLY CITED RESEARCHERS'

LA PRESIDENTA DEL CSIC VISITA EL CEBAS
SE ENTREVISTÓ CON NUESTRA PLANTILLA

COMUNICACIÓN 2018



Difusión en los medios

A lo largo del año 2018 el plan de comunicación que ha implantando la Dirección del Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC), con el objetivo de acercar la actividad investigadora de la institución a la sociedad, ha dado como resultado 206 menciones en los principales medios de comunicación, entre noticias, artículos de opinión,

Más de 200 menciones en los medios de comunicación, entre noticias, videos y artículos

ENERO-DICIEMBRE 2019 

Estudio sobre el agua desalinizada

ANÁLISIS DE DAÑOS EN LOS CULTIVOS MEDITERRÁNEOS

EL GENOMA COMPLETO DE LA ALMENDRA, EN 'SCIENCE'

215 ALUMNOS APENDEN A INVESTIGAR EN EL VI CONGRESO IDIES

COMUNICACIÓN 2019



Difusión en los medios

A lo largo del año 2019 el plan de comunicación que ha implantando la Dirección del Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC), con el objetivo de acercar la actividad investigadora de la institución a la sociedad, ha dado como resultado 225 menciones en los principales medios de comunicación, entre noticias, artículos de opinión, videos y podcasts. Respecto a los resultados obtenidos en 2018, las noticias

El CEBAS ha sido mencionado en 225 noticias publicadas en los medios de comunicación, entre radio, TV, prensa y artículos

¡Access!



ENERO-DICIEMBRE 2020 

El CEBAS opta a ser centro Severo Ochoa

SOLICITADA LA ACREDITACIÓN ANTE EL MINISTERIO

COVID: DETECCIÓN EN AGUAS RESIDUALES
PROYECTO PIONERO DE PREDICCIÓN

TECNOLOGÍA PARA LOCALIZAR ALMENDRA AMARRA
DESARROLLAN UNA APP CAPAZ DE GEOLOCALIZAR ESTOS FRUTOS

LA BIODIVERSIDAD, CLAVE PARA LOGRAR ECOSISTEMAS SANOS
ESTUDIO INTERNACIONAL PUBLICADO EN 'NATURE ECOLOGY & EVOLUTION'

COMUNICACIÓN 2020



Difusión en los medios

El año 2020 ha sido especialmente fructífero en cuanto a la difusión de información sobre la actividad investigadora del Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC). A lo largo del pasado año, marcado por la pandemia de la Covid-19, el plan de comunicación que implantó la Dirección del CEBAS-CSIC, con el objetivo de acercar la actividad investigadora de la centro a la sociedad, ha dado como

El CEBAS ha sido mencionado en 290 noticias publicadas en los medios de comunicación, entre radio, TV, prensa y artículos

ENERO-DICIEMBRE 2021 

Proyecto AP-WASTE
DEGRADAR PLÁSTICOS AGRÍCOLAS CON EL USO DE INSECTOS Y LOMBRICES

DOS NUEVAS VARIEDADES DE CIRUELA ROJA 'LUCÍA MYRTICA' Y 'VICTORIA MYRTICA'

EL SARS COV-2 Y LAS AGUAS RESIDUALES
HEBRAMIENTA PARA LA DETECCIÓN DE BROTES Y NUEVOS VIRUS

USOS AGRÍCOLAS DEL SUELO PARA MITIGAR EL CAMBIO CLIMÁTICO
ENFARCADO EN EL EUROPEAN JOINT PROGRAMME EJP-SOIL

COMUNICACIÓN 2021



Difusión en los medios

El año 2021 supuso la consolidación de la difusión de información sobre la actividad investigadora del Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC). El plan de comunicación que implantó la Dirección del CEBAS-CSIC, con el objetivo de acercar la actividad investigadora de la centro a la sociedad, ha dado como resultado 243 menciones en los principales medios de comunicación, entre noticias,

El CEBAS ha sido mencionado en 243 noticias publicadas en los medios de comunicación, entre radio, TV, prensa y artículos

WOMEN IN CEBAS



8 de marzo: Día Internacional de la Mujer

**La huella de Margarita Salas
en el CEBAS-CSIC**

¡Access!



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CENTRO DE EDAFOLOGÍA Y
BIOLOGÍA APLICADA DEL SEGURA