

2014 Activities Plan

CITAB



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***Transition in preparation for the 2015-2020
Strategic Programme***

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CITAB
CENTRE FOR THE RESEARCH AND TECHNOLOGY OF AGRO-ENVIRONMENTAL AND BIOLOGICAL SCIENCES

1 Introduction

CITAB's mission is to create opportunities and technological development and reduce environmental impacts via better use of natural resources for stakeholders in Agri-food and Forestry chains. CITAB adopts a multi disciplinary approach to produce research outputs of excellence and continues to strive to improve and promote integrated research initiatives both nationally and internationally.

The 2014 Activity Plan outlines the start of CITABs transition towards a more streamlined structure in anticipation of the 2015-2020 Strategic Programme. This is part of CITABs ongoing strategy to achieve an FCT classification of "Excellent" and build sustainable links for developing cohesive, integrated research initiatives in accordance with key public and private sector stakeholder needs.

The transition is built upon previous strategic planning concerning consolidation of research strategies, internationalisation and improving critical mass. CITABs resulting significant growth in scientific critical mass and integrated members, highlights the qualitative scientific progress that has been made and the growing dynamism of the unit which has attracted researchers from various national institutions that feel they identify with CITABs strategy.

This transition will allow CITAB to implement and carry out its 2015-2020 Strategic Programme, which will focus research into two thematic lines with fewer more streamlined, efficiently managed tasks. The thematic lines ***Sustainability of Agri-food and Forestry Ecosystems in a changing environment*** and ***Technology & innovation in Agri-food and Forestry chains*** meet CITAB's vision to provide scientific, technological and innovative knowledge based on multidisciplinary and complementarity to meet stakeholder needs and challenges in agri-food and forestry value chains.

By consulting stakeholders and analyzing their needs to better understand the principle problems/constraints they face, CITAB will be able to provide suitable yet innovative answers, carried out through multidisciplinary research tasks and through fundamental research set out in strategically focused thematic lines, that result in more competitive value chains, a better and sustainable environment and to a systemic knowledge society.

This will boost sector competitiveness and sustainability, contribute to the national economy, increase agricultural ecosystem efficiency, lead to more efficient and sustainable exploitation of natural resources and allow development of new integrated opportunities to improve the provision of ecosystem services.

CITAB's newsletter and dedicated press officer will continue to divulge activities to actual and potential international stakeholders and partners. Bids for participation in Horizon 2020 projects and consortia are under development over 2014. Two more bids for FCT funded International Doctoral Programmes have also been submitted.

The 2014 CITAB cycle of conferences and Outreach activities for 2014 will continue to ensure that CITAB researchers work together to divulge the centre's activities and capture the interest of potential young scientists in regional secondary schools.

2 Major Objectives

The listed objectives for 2014 represent a transition to a more streamlined structure in order to implement the 2015-2020 Strategic Programme (SP) based upon foundation planning and activities from previous years:

- Submit proposals for International Doctoral Programmes to the FCT funded Doctoral Programme.
- Start of the FCT funded International Doctoral Programme “Agrichains – from fork to farm”
- Submitting syllabi for international doctoral programmes with national and international research centres, universities and stakeholders.
- Strengthening of major research areas via:
 - Continued efforts to increase interdisciplinarity within and between CITAB’s Groups and internationalisation:
 - Implementation of the 2015-2020 Strategic Programme with ;
 - Development of and participation in Horizon 2020 proposals in key areas that are compatible with the Thematic Strands of the 2015-2020 Strategic Programme and consortia formed in 2013;
 - Procuring new contacts and strengthening existing international links, in particular with Brazil, China and India.
- Preparation for Research Unit external evaluation.
- Continued collaboration with key stakeholders;
- Development of planned, strategic outreach activities aimed to capture the interest of young scientists and promote civic responsibility.

3 Transition to the 2015-2020 Strategic Programme

3.1 Building on a solid foundation and growing critical mass

The CITAB Strategic Programme (SP) is the result of significant scientific development since the unit was founded 6 years ago from the merger of 3 existing research units at UTAD. The merger anticipated national policy guidelines requesting a reduction in the duplication of research effort and also included the accession of a Research Group at the University of Minho which has since has become a CITAB research pole of with considerable scientific relevance.

CITAB's significant increase in integrated members represents a notable growth in scientific critical mass, qualitative scientific progress and growing dynamism. This has attracted researchers from various national institutions that feel they fit into CITABs strategy. The greater critical mass allows CITAB to strive towards other goals and become a leader in the scientific areas it develops research in.

Evolution of CITAB's organizational structure was also important in parallel with this progress. CITAB has bucked the national trend of disperse, disjointed Thematic Strands by focusing future goals into only 2 Thematic Strands and simultaneously reinforcing the critical mass of each one.

3.2 Objectives and Aims

The major objective of the 2015-2020 Strategic Programme (SP) is to contribute to resolving societal and private sector (such as small and medium enterprises or SMEs) problems related with agriculture and forestry production chains and their impact on the natural environment. This will be done by balancing scientific excellence with benefits and consequences across multiple dimensions that embrace environmental science and socioeconomic needs. The SP will be based on a multidisciplinary approach that addresses both benchmark science and the human dimension of issues.

The CITAB External Scientific Advisory Committee and Stakeholder Consultation Commission have been consulted during the SP development process. We believe this unique and innovative approach sets CITAB apart from other national Research Units. By defining the scope of research and the critical mass necessary to meet objectives, we have now focused CITABs vision on producing innovative scientific and technological knowledge that answers stakeholder needs in order to makes Agri-food and Forestry chains more competitive and sustainable.

As well as our mission to create opportunities for stakeholders to innovate scientifically and technologically in agri-food and forestry chains, strategic project research will also contribute to environmental sustainability. The concept behind this strategic project is a turning point for CITAB and a landmark in the centre's evolution, where scientific and technological interests in the centre's fields of expertise are determined by regional and national demand but simultaneously contribute to international scientific development and collaboration.

With a multidisciplinary team, including researchers in technological development, that interact with other research areas, and based on the concept of Agri-food and Forestry production chains and how they interact with the environment and environmental sustainability, a set of scientific objectives has been created (scientific production, patents, national and international projects, creation of international doctoral programmes, participation in international scientific organizations, international partnerships with Brazil, increasing the number of research fellows and scholarships) and outreach activities, allowing knowledge transfer to both the broader business community and society. This action is a major objective of CITAB, which is properly supported by a management structure and staffed with skilled technicians who ensure the success of these actions. This has allowed, particularly over the past year, increasing feedback from society in general and stakeholders in particular.

The SP is built upon strong challenges, research priorities and objectives, drawn up by consulting stakeholders, public institutions and private and public associations in the agriculture and forestry production sectors.

The SP has also been developed in line with the objectives of the 2014-2020 National Programme for Rural Development (PDR), the Portugal 2020 national strategy for improving competitiveness and internationalization of economic activities and the international Horizon 2020 programme.

By developing the SP in tandem with key national and international strategies, CITAB will reinforce its relevance in the development and implementation of national and international policies and obtain additional finance to support tasks that will contribute to meeting SP objectives.

3.3 Structure of the 2015-2020 Strategic Programme

CITAB is an applied research unit. CITAB strategic project areas have been defined following individual consultations with stakeholders, focusing CITAB activities on external demand and allowing CITAB research teams to respond to market challenges.

Research priorities to meet SP objectives have been defined to be economically efficient, environmentally compatible and driven by sustainable socioeconomic paradigms.

Given the wide range of areas that agriculture and forestry production chains affect, the SP will focus research efforts into two strongly multidisciplinary Thematic Strands (TS) that build on existing areas of acknowledged expertise to meet specific goals within the broader objectives set out above. Each TS will comprise a number of tasks:

TS1 - SUSTAINABILITY OF AGRI-FOOD AND FORESTRY ECOSYSTEMS IN A CHANGING ENVIRONMENT

- 1.1 Integrated monitoring of climate and environmental impacts: adaptation and mitigation strategies;
- 1.2 Conservation strategies and ecological modelling: recovering and improving sustainability in Agri-food and Forestry ecosystems and ecosystem services.

TS2 - TECHNOLOGY & INNOVATION IN AGRI-FOOD AND FORESTRY CHAINS FOR A MORE COMPETITIVE BIO ECONOMY

- 2.1 Technological innovation and processes;
- 2.2 Bio-based products and waste research;
- 2.3 Towards valorization of agro-food co-products

The proposed TS are based on the natural and rational identification of two research topics, taking into account national and regional needs to boost capacity and fill gaps in science. The TS have been validated by CITAB's Stakeholder Committee, the Scientific Advisory Committee, and Scientific Council.

3.3.1 SUSTAINABILITY OF AGRI-FOOD AND FORESTRY ECOSYSTEMS IN A CHANGING ENVIRONMENT (TS1)

The TS will address how impacts affect agri-food and forestry chains systems as well as biodiversity and ecosystems they house to develop effective measures that contribute to sustainable strategy development, planning and decision making.

Agri-food and forestry production chain (AFFPC) activities affect the surrounding environment, impacting water resources, CO₂ emissions, energy consumption, soil quality and ecosystems and reducing ecosystem services. However, the productive and competitive sustainability of these sectors is also affected by large scale environmental change, such as climate change (CC).

The TS addresses the complexity of this topic and the necessity for focused multidisciplinary research, in collaboration with stakeholders, to address the balance between a demand for a sustainable AFFPC and environmental change caused by anthropogenic intervention and their environmental impacts.

Task 1.1 - Integrated monitoring of climate and environmental impacts: adaptation and mitigation strategies

Recent-past climate and environmental change, accompanied by the development of new analytical and modelling technologies, highlight the urgent need to meet societal challenges and create a new paradigm in planning and sustainable management strategies.

This task will develop integrated monitoring systems with stakeholders, based on climatic, environmental, biological and chemical elements, complemented with innovative engineering solutions, to develop cost-effective, environmentally sustainable and eco-innovative adaptation and mitigation measures.

This task will be highly interdisciplinary, using different field, laboratory and computational advanced analysis techniques, scaling and modelling tools and testing novel potential indicators of environmental change.

The 3 aims of the task are:

- ☺ to develop and apply new analytical technologies;
- ☺ to understand climatic and environmental forcing on target terrestrial and aquatic systems under current conditions;
- ☺ to assess climate and environmental change impacts under future scenarios in order to develop, test and implement appropriate mitigation and adaptation measures e.g. restoration measure and cultivar re-planning to adapt to projected changes in bioclimatic conditions.

Results will guarantee sustainability in AFFPC activities and their co-products and contribute to maintain, or restore, quality in associated ecosystems, thereby contributing towards sustainability in the provision of natural resources and ecosystem services. Results from this task will bring important added-values to science, environment and socio-economic sectors.

Task 1.2. Conservation strategies and ecological modelling: recovering and improving sustainability in agri- food and forestry ecosystems and ecosystem services

Effective integrated management measures to recover and maintain sustainable AFFPC, ecosystems and natural resources must be based on sound science to provide information on how impacts from different sources and spatiotemporal levels drive both present day and future patterns of change. This is essential for informed decision making and planning.

This task uses a multidisciplinary R&D approach, linking data outputs from monitoring and characterization of systems to modelling methods. Model output will be used to develop accurate decision support tools for public and private sector stakeholder management and planning. Task researchers are recognized experts in multivariate analyses and modelling of impacts of habitat and land use change on the terrestrial and aquatic environment, ecosystem services and the characterization of agri- food and forestry systems.

Multidisciplinary, stakeholder need based research will develop and apply techniques for species preservation, pest control and promote aquatic and terrestrial biodiversity in agri-food and forestry chain associated ecosystems. Modern technology methods will be developed and implemented such as novel hyperspectral image and computational intelligence techniques and decision spatial support systems.

This task draws on knowledge and considerable experience of CITAB researchers in the development of innovative technologies to increase efficiency and system resilience and facilitate interaction between services providers and consumers to protect and enhance ecosystem services. More specifically, researchers will develop, test and apply spatiotemporally dynamic predictive analytical tools to understand how natural and anthropogenic change affects ecosystem integrity. Models will be developed using

information such as remote data and data from monitoring programmes describing changes in indicators of environmental gradients in ecosystems.

Developed predictive tools will be used to model future scenarios for land use planning, management of natural resources, biodiversity, services and goods as well as the rehabilitation of degraded environments. These will be developed in collaboration with stakeholder from different sectors such as energy, water and environment, administrative authorities, national and regional agro-forestry producer associations).

3.3.2 TECHNOLOGY AND INNOVATION IN AGRO-FOOD AND FORESTRY CHAINS FOR A MORE COMPETITIVE BIOECONOMY TS2-

The TS is strictly linked to Research and Innovation Strategies for Smart Specialisation (RIS3) policy. It will develop new innovative approaches and uses to develop and apply updated processes and technologies to agro-forestry resources (crops and food products, biological materials and agri-food residues).


The TS aims to give an economic added-value to the agri-forestry ecosystems, and agri-food and forestry products and co-products to boost regional and national economic growth. This will directly involve sector stakeholders throughout the three vertically structured task chain based on multidisciplinary research with researchers from CITAB's three groups (EI, BE, SAC).

The major goal of the TS and its 3 tasks is to present studies with firm solutions. We go beyond the characterization of materials, particularly in Task 2.3 where a recently built and equipped bioterium will be used to perform *in vivo* assays to develop innovative solutions. By adopting this procedure, we will generate valid products and compounds of bioactivities to encourage regional investment in new products to diversify and strengthen the regional economy and provide a model for other regions. With this working paradigm we will go beyond the basic level of research, not only assessing the biological potential of products but also to evaluate their real biological effectiveness, which we believe to be an asset in this task and true to the values of an applied research centre such as CITAB

Task 2.1 - Innovative technologies and processes

This task focuses on the economic growth, optimization and development of innovative technological inputs to assure more competitive agri-food and forestry production chains. Oriented by recent and updated EU agro-forestry policy, task 2.1 will develop innovative approaches and methods to stimulate the development of new production methods.

The major objective will be to increment food and forestry crop productivity, reduce agricultural practice management costs and increase profit by developing technical studies at different but interconnected levels (BE, SAC) to

-  increase the productivity and yield of crops and forestry resources through physiological and best management tools;

- ☺ produce new technological applications, including management software prediction, spectral imaging applied to food crops and forestry and mechanical testing of products in order to predict maturation stages, growth rates, harvest periods, water and cycle nutrients or fertilizers management, disease or plague occurrences, product quality, among others parameters; (iv) identify key intervention points in resources to optimize production and thus identify potentially suitable species, varieties and rootstocks;
- ☺ characterize vegetation and quality assessment to optimize physiological responses to climate conditions. Finding will show us how to produce with innovative methods, providing optimized solutions for current and future stakeholders by boosting competitiveness and income. This will contribute to sustainable economic income for regional stakeholders which obviously extend findings to national level. Agro-forestry ecosystems are also a concern since they are affected by production effectiveness/efficiency and handling of agri-food and forestry residues which have economic and environmental impacts. This is addressed in Task 2.2.

Task 2.2 - Bio-based products and waste research

This task will answer questions arising from Task 2.1 findings by studying the potential of agri-food and forestry residues (AFFR), native flora and aromatic and medicinal plants (AMP) to develop new products with high bio-based value. Researchers from BE and SAC will develop processes to create products with both biological and innovative industrial value. This task will study the use of AFFR for the production of materials with industrial applications such as transformation and structural characterization studies (BE) and physical and chemical property studies (BE and SAC).

The study of AFFR and AMP applications will be supported by the extraction, purification and isolation of highly bioactive compounds (SAC) using updated and case-to-case protocols to assess biochemical and biological activity and toxicologically and phytotherapeutically validate extracts, fractions or compounds. Findings will be used to produce and characterize extracts or compounds for the next set of experiments which will include assessment of potential as biopesticides to combat plant and crop pathogens in integrated production or biological agriculture (SAC and EI); evaluation of antibacterial activity; anti-aging, anti-inflammatory, anti-cancer, anti-ischemic and neuroprotective properties (SAC).

The final area of the task will determine the safety of extracts/fractions and validate their pharmacological/nutraceutical properties. The toxicological/pharmacological properties of extracts and fractions will be assessed using appropriate in vitro (biochemical and cellular) methods. The findings from this task will directly contribute to Task 2.3 research development.

Task 2.3 - Towards valorization of agro-food co-products

Task 2.3 research (SAC) will evaluate in situ the biological value of extracts and purified compounds, obtained in Task 2.2. Important biological effects of natural and purified products will be assessed through identification in plasma of animal models and the development of metabolomic approaches using mass spectrometry. Toxicity and

pharmacokinetic evaluation and modulation will be performed (SAC and EI) in order to present validated and consolidated data to stakeholders, other key researchers and competent authorities for approval and recognition of co-products. Animal models (rats, mice, rabbits, zebrafish, *C. elegancy* and *Drosophila melanogaster*) will be used to validate results.

Although care must be taken when extending results of animal studies to humans, such findings will help to understand and clarify the mechanisms of action and develop acceptable studies in humans and increase safety or efficacy. All projects will be pre-approved by UTAD and UMinho ethics committees and the Portuguese food and veterinary authority.

Particular attention will be paid to animal welfare, using the minimal practicable number of animals in studies.

These 3 integrated and sequential tasks will create focused stakeholder led research, based on efficient sharing human resources (EI, BE, SAC), knowledge and experience. Our exclusivity in relation to other Research Centers, is related with this interconnection and that we present ourselves to actual or future stakeholders as a Centre with concrete, reliable and applicable data based upon a whole investigative process, rather present only studies and evaluations, which can be made by different individual researchers or other Centres.

3.4 Dissemination & Image

CITAB will continue to promote its Cycle of Conferences on transversal themes under development within both CITAB's and consortium members' areas of expertise. Target audiences will include the academic community, actual and potential key stakeholders and the private sector. Contributions and keynote talks will be given by CITAB and consortium members and invited experts. Some of the thematic areas will cover technologies applied to Agro-Industry and to wood materials, biomarkers and bio-indicators, conservation of endangered species, climate change and carbon dioxide capture by forest stands, agro-food residues and co-products with added biological value, food security and environmental sustainability.

CITAB will increase the outreach activities for secondary schools through a yearly program of talks aimed to promote science and research activities, and to engage the students in the Unit activities as possible.

	2014 Seminars/Conferences/Workshops	Work Groups	Date
1	XIV Portuguese Conference on Fracture (PCF 2014)	BE	6-7 February
2	Cycle of Conferences DAgro & CITAB <i>“Douro: Past, Present and Future”</i>	SAC	12 February
3	Seminar <i>“Geodiversity, Geotourism, Climate Change and Health Promotion”</i>	BE	11-13 April
4	III Seminar on Biomechanics, Health and Sustainable Environment: Health Co-benefits of Climate Change Mitigation – the ADAPTA CLIMA II project	BE - EI	14-15 May
5	Technical Workshop in Almond	SAC	23 May
6	62 nd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA2014)	CITAB-UMinho Pole	31 st August – 4 th September
7	3 rd International Conference on Ecohydrology, Soil and Climate Change	SAC	10-12 September
8	<i>“Wood Music”</i>	BE	October
9	I Portuguese-Galician Meeting on Ecological and Environmental Statistics (EES2014)	BE	6-8 November
10	<i>“Food, sustainable intensification and the environment: an integrated approach”</i>	BE, EI & SAC	November
11	3 rd National Symposium on Fruit Culture	SAC	4-5 December

CITAB will consolidate its communication office, which is responsible for the divulgation of the Unit and its researchers' activities on different levels and for different target audiences, from the general public, partners and institutions to stakeholders and industry. CITAB is expecting an increasing level of awareness for CITAB activities and its impact on society, reaching more and more different sectors of the scientific community, students and the population.

4 Cooperation

4.1 Internal

CITAB continues to promote internal cooperation with ExCo members meeting and encouraging dialogue with CITAB researchers who make suggestions on actual and potential activities which are transmitted to the Board. This dialogue helps to define adequate policies for the centre.

Regular meetings (4 times a year) between working group coordinators and ExCo members are meeting on a monthly basis to discuss, organize and implement research, outreach and dissemination activities, solve problems and promote integration.

The development and teaching of advanced courses and the international Doctoral programmes during 2014 will also promote greater internal cohesion as CITAB members work together to develop syllabi based on areas with high levels of expertise and critical mass.

4.2 National

The formation of the national consortium during 2013 and the development of 3 doctoral programmes constitute a major step towards strengthening national and international cooperative actions and gaining critical mass.

CITAB continues to aim for increasing cooperation with national research centres via joint applications for funding, MSc and PhD thesis supervision. In an effort to improve interaction and better divulge national collaborative actions, CITAB will implement a new regulation that will oblige visiting national scientists to give a public talk on their research while working at or visiting CITAB.

4.3 International

CITAB researchers will continue to actively participate in international conferences, management, scientific meetings and technical visits develop contact with important foreign researchers and acquire expertise through visits to foreign (mobility).

CITAB will expand cooperative research work initiatives, through funding initiatives such as the Horizon 2020 programme. CITAB submitted or collaborated in 4 international doctoral programmes based on strong areas of expertise and collaboration with invited national and international research centres and universities:

4.3.1 International Doctoral Programmes

Emerging Technologies applied to Agriculture, Forestry and Environment

Proponent: CITAB; Coordinator: Pedro Melo Pinto

Partners: UM, University of Natural Resources and Life Sciences, Vienna (BOKU), Universidad Publica de Navarra (UPNA) e Universitat Politècnica de València (UPV)

PhD granted by: UTAD e BOKU

Agro-Environmental Sustainability and Ecosystem Services

Proponent: CITAB; Coordinator: Rui Cortes

Partners: U Minho, Universidade Estadual da Paraíba (UEP), Czech University of Life Sciences (CULS), Universidad de León (ULE)

PhD granted by: UTAD e UM

Biology of Plants

Proponent: U Porto; Coordinator: Maria da Conceição Lopes Vieira dos Santos

Partners: CESAM/UA, IBMC/UP, CIBIO/UP, CITAB/UTAD, UA, UM

PhD granted by: UA, UM e UP

Science, Technology and Management of the Sea

Proponent: U Aveiro

Coordinator: Henrique José de Barros Brito Queiroga

Partners: CESAM/UA, UM, UTAD, U of Santiago de Compostela (USC), U of

Coruna (UDC), Consejo Superior de Investigaciones Científicas (CSIC),

CITAB/UTAD, U of Vigo (UVIGO), Instituto Español de Oceanografía (IEO),

Instituto de Oceanografía da Universidade de São Paulo (IOUSP), School of

Biology, University of St Andrews (Sb), Station Biologique de Roscoff Université

Pierre et Marie Curie (SBRUPMC)

PhD granted by: UA, UM e UTAD.

4.4 Anchor Institutes

Biosystems Engineering

Cooperative Wine Institute (ICV), France

Dept of Biokinetics, Sport and Leisure Sciences, University of Pretoria, Pretoria, South Africa

Institut de Mécanique et d'Ingénierie de Bordeaux, France

Instituto de Ciencias de la Vid y del Vino, Spain

Instituto Dalle Molle di Studi sull'Intelligenza Artificiale University of Manno, Switzerland (IDSIA)

Polytechnic University of Madrid (UPM), Spain

SOING, Italy

INRA, Orleans (Unité Amélioration Génétique et Physiologie Forestières)

Universidad Complutense de Madrid, Spain

INSA de Lyon, LaMCos, France

University of Southampton, UK

École Nationale Supérieure des Mines de Saint Étienne, France

Technical University of Munich, Germany

Universidad de La Rioja, Spain

University of Exeter – United Kingdom

University of Navarra (UPNA), Spain

Ecointegrity

Botany Department, U.of Salamanca, Spain

Center for Genome Regulation, U. de Chile, Chile

Center for Macroecology, Evolution and Climate Department of Biology, U. of Copenhagen, Denmark

Centro Ibérico de Restauração Fluvial (CIREF), Spain.

Department of Biology and Botanical Garden, Fribourg, Switzerland

Euskal Herriko Unibertsitatea U.del Pais Vasco, Bilbao, Spain

Institute of Ecosystem Study, National Research Council, Verbania Pallanz, Italy

Lehrstuhl für Aquatische Systembiologie, Technische Universität München, Germany

Universidad Complutense de Madrid, Spain

Universidade de Castilla la Mancha, Toledo, Spain

Universidade Estadual de Paraíba, (UEPB), Brasil

Universidade Federal de Minas Gerais (UFMG), Brasil

University of Dronten, ALMERE Holland

University of Santiago de Compostela, Spain

University of Wageningen, Holland

Sustainable Agro-food Chains

Biotechnical Faculty of University of Slovenia

Indian Institute of Technology, India

Institute for Geophysics and Meteorology, Uf Cologne, Germany

ISVV, Bordeaux, France

Laboratory of Plant Raw Materials Processing and Agricultural Storage, U of Szczecin, Poland

University of California, Davis, USA

University of Copenhagen, Denmark

University of Crete, Greece

University of Reading, United Kingdom

University of Verona, Italy

University of Santiago de Compostela, Spain.

University of Salamanca, Spain

Technische Universität Dresden, Germany

Department of Plant Sciences, University of California, USA

UMR Ecophysiologie et Génomique Fonctionnelle de la Vigne, U Bordeaux - France

CENTRO DE INVESTIGACIÓN FORESTAL, SPAIN

Centre for Forestry and Climate Change, UK

Department of Applied Physics, U of Santiago de Compostela, Spain

INRA - Centre de Bordeaux / UMR TCEM, France

Escuela Politécnica Superior, Soil Science and Agricultural Chemistry, U Santiago de Compostela, Spain

Institute for Crop and Soil Science, Federal Research Centre for Cultivated Crops, Germany

4.5 Stakeholders

Biosystems Engineering

Stakeholders listed for BE 2014 research activities include Iberia HealthCare Systems, Instituto de Ciencias de la Vid y del Vino (Spain), Symington Family Estates, UAVision, Instituto dos Vinhos do Douro e do Porto, I P (IVDP, IP), Grupo Avanza and the Douro Alliance.

Ecointegrity

El researcher have strong ties with key public stakeholders such as CCDR – Norte, Labalec - Energias de Portugal (EDP), the National Forest Authority (AFN), the National Civil Protection Authority, the Agência Portuguesa do Ambiente (APA) and North Region Water Authority, Vila Real Municipal Council, Mira Municipal Council, Figueira da Foz Municipal Council. Associação para o Desenvolvimento da Viticultura Duriense (ADVID), Associação de Agricultores para Produção Integrada de Frutos de Montanha (AAPIM).

Private stakeholders include Águas do Algarve S.A., forestry industry end users (Grupo Portucel, Soporcel), SME's (Gestão Integrada de Fogos Florestais, S.A.) and organizations dealing with environmental impact assessment and ecosystem rehabilitation and renewable energy sources (PROFICO Ambiente, Prosistemas, Ecosfera, Energia Verde and Energiekontor – Parques Eólicos Unipessoal, Lda). Sogevinus Quintas S.A, Companhia Geral da Agricultura das Vinhas do Alto Douro, S.A. (Real Companhia Velha).

Sustainable Agro-food Chains

Research activities within this group will continue via close cooperation with stakeholders from different sectors of the agro-food industry. Links with stakeholders include joint participation in projects, transfer of know-how transfer, dissemination of results, development of new products and developing technological solutions.

Listed stakeholders for 2014 are: The “Amândio Galhano” Viticulture Station (EVAG) of the Comissão de Viticultura da Região dos Vinhos Verdes (CVRVV), Associação para o Desenvolvimento da Viticultura Duriense (ADVID), Associação dos Olivicultores de Trás-os-Montes e Alto Douro (AOTAD), BioBaga – Estarreja, Mirtilusa - Sociedade de Produtores Horto-Frutícolas - Sever do Vouga, Regiefrutas, Sogrape, Unidade de Investigação e Desenvolvimento - Departamento de Alimentação e Nutrição - Instituto Nacional de Saúde Doutor Ricardo Jorge, Frulact, NEIKER-Tecnalia, Queijos Lagos e Sabores e Ambientes Serra da Estrela, Associação Nacional de Criadores de Ovinos da Serra da Estrela (ANCOSE).

5 Human resources

CITAB will maintain the number of MSc, PhD and postdoctoral students carrying out their studies at the centre. We continue to actively encourage foreign students and researchers, in particular from Brazil, China and India, to carry out their studies at the centre.

6 Summary of metrics of scientific production for 2014

Expected scientific production for 2014:

Item	2014
Books	4
ISI Publications	150
Publications in national journals	20
Oral communications in international conferences	40
Oral communications in national conferences	30
Reports	5
Organisation of seminars and conferences	5
Doctoral theses	10
Masters theses	45
Patents	2

7 2014 Budget

Item	%	2014
Human Resources	15	16,508 €
Missions	45	49,523 €
Consultants	7	7.704 €
Services	15	16,508 €
Patent registration	3	3,300 €
Overheads	10	11,005 €
Equipment	5	5,503 €
Total	100	110.051,00 €