MANAGEMENT OF FARMING, FOOD AND FORESTRY SYSTEMS & VALORIZATION OF THE TERRITORY

Forest management and fire prevention
Parallel Thematic Session
MANAGEMENT OF FARMING, FOOD AND FORESTRY SYSTEMS & VALORIZATION OF THE TERRITORY
Forest management and fire prevention

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INDEX

AGRIFORVALOR .......................................................... 5
Aliens and Flames ....................................................... 6
FitoMicorrizas - Mycorrhizae Plants Production .......... 7
G(i) PIN - Integrated management of pine grove/Pine wood nematode Bursaphelenchus xylophilus ..................... 8
GOTECFOR - Technology for the mobilization and use of Forest Biomass in agro-industry ............................................ 9
New aspects of micropropagation of fruit and other deciduous trees .......................................................... 10
OakRegeneration - The reassessment of regeneration strategies in the Mediterranean scattered-oak woodlands .................. 11
OUI-GEF - Innovative tools for collaborative forest management ........ 12
SHORT-ROTATION COPPICE - an opportunity for future regional bio-refineries? ...................................................... 13
Horizon 2020: AGRIFORVALOR: Bringing added value to agriculture and forest sectors by closing the research and innovation divide

Practical problem

There is a gap between research and innovation regarding valorisation of agriculture and forestry biomass side streams. AGRIFORVALOR will close it by creating multi-actor innovation partnership networks.

Partners

Names:

Steinbeis 2I GmbH (DE); Institute of Technology Tralee (IE); Universiteit Gent (BE); Sichting Wageningen Research (NL); Agencia Andaluza del Conocimiento (ES); Bay Zoltan Alkalmazott Kutatasi Közhasznu Nonprofit Kft (HU); Growabric (BE); Cooperativas Agro-Alimentarias de Andalucía (ES); Asociacion de Empresas Forestales y Paisajisticas de Andalucía (ES); Gabinete de Iniciativas Europeas Sa (ES); Teagasc - Agriculture and Food Development Authority (IE); Faermeoiri Aontuithe NA H-Eireann Iontaobhata Lbg (IE); Ibec Limited*Irish Business and Employers Confederation (IE); Nemzeti Agrarkutatasi es Innovacioskozpont (HU); Lenduletben Az Agro-Biotech Vallalkozas-Sejesztesert; Innovativ Non-Profit Alapitvany (HU); Pilze- Nagy Kft. (HU)

Project

Objectives:

Valorise biomass side streams from agriculture and forestry by facilitating knowledge transfer through "Innovative design hubs". These will enable and support farmers and foresters to exploit existing research results on valorisation techniques and will facilitate bio-industry application and business model development.

Expected results:

• Research and innovation agenda on agriculture and forest biomass side streams at regional and EU level;
• new operational groups for EIP AGRI;
• 3 new business models;
• interactive online side stream value tool;
• hands-on end-user material.

Results so far/first lessons:

• Interactive online side stream value tool;
• compendium on research and innovation results;
• innovation partnership groups in the hubs on specific topics;
• training materials.
• Project website: http://www.agriforvalor.eu

Who will benefit:

Farmers, foresters, (bio) industry, researchers and policy makers.

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Supported by:

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement Nº 696394
Practical problem

Acacia dealbata and Hakea sericea are two important fire-adapted invasive plant species in Portugal. Prescribed fire is a fuel-management technique used to prevent forest fires. Unaware use of fire can promote plant invasions but an informed use may help solving this problem.

Partners

Type: Research /Teaching
Name: Instituto Politécnico de Coimbra

Type: Agri Association
Name: Associação Florestal do Baixo Vouga; Associação Florestal do Pinhal

Type: Agri enterprise
Name: GreenCion Lda; SFERA Ultimate Lda; Silvokoala Lda; Vumba SA

Project

Objectives:
To study the two-way relationships between fire and the two target invasive species. To develop best-practices to use fire as a fuel-management tool in invaded areas and as an ecosystem-management tool to control plant invasions. To disseminate the obtained knowledge among stakeholders.

Expected results:
Advanced knowledge on the fire ecology of invasive plants. A characterization of fuel models associated with the two species. A characterization of fire behaviour in invaded areas. The possibility of forecasting the risk of invasion in burned areas. A guide of best practices for the use of fire in invaded areas, to be distributed among managers and other stakeholders.

Results so far/first lessons:
There was a preliminary assessment of potential areas for the establishment of experimental plots.

Who will benefit:
Forest managers and forest owners.
Forest companies and service suppliers.
Training and teaching institutions.
Operational Group: FitoMicorrizas - Mycorrhizae Plants Production.

FitoMicorrizas - Produção de plantas micorrizadas.

Practical problem

Wild mushrooms production presents two main problems:
- the need of new processes to optimize mycorrhization rates and selection of species with added value and tolerance to climatic changes;
- an inadequate monitoring process to improve efficiency and quality of the final products.

Partners

Type: Research/Teaching
Name: Instituto Politécnico de Coimbra

Type: Agri Association
Name: Cooperativa Agrícola de Alfândega da Fé CRL

Type: Other Company
Name: Voz da Natureza,Lda.; Greenclon,Lda.

Type: Other Association
Name: Associação BLC3 - Campus de Tecnologia e Inovação

Project

Objectives: FitoMicorrizas main goal is to achieve new strategies for native resources valorization, presenting new solutions to increase production efficiency of mycorrhizal plants and wild mushrooms, improving its management and aiming at the sustainability of forest systems with high environmental value.

Expected results: FitoMicorrizas initiative will develop an optimized micorrhization methodology through the selection of added value forestry species and native fungi strains. A support guide will be designed for production and maintenance of mycorrhizal forest plants, allowing the creation of a producers group, which will receive an added value co-product and higher quality forest plants, increasing their profit.

Results so far/first lessons:
Castanea and Arbutus unedo plants were mycorrhized with T. borchii and L. deliciosus and were established in field trials. These symbioses increase the resilience of plants to the climatic changes and stresses, such as water and nutrients uptake and the inherent increase of plants vigor and resistance to diseases, allowing the creation of a product with an add value for forest producers.

Who will benefit: Forest owners, their associations, sectors linked (cork) and also the mycological sector.
**Operational Group:**

GI (PIN) – Integrated management of pine forest / Pinewood nematode
GI (PIN) – Gestão Integrada do Pinheiro Bravo / Nemátode da Madeira do Pinheiro

**Practical problem**

At present, there are several obstacles to the containment of pinewood nematode (PWN), *Bursaphelenchus xylophilus*, which contribute to the progression of pine wilt disease (PWD) and the consequent loss of economic value for forest landowners and for the pine industry.

**Partners**

**Type:**
- **Name:** Agri association
  - FNAF – Federação Nacional das Associações de Proprietários Florestais; Associação para a Valorização da Floresta de Pinho – Centro PINUS

- **Name:** Agri enterprise
  - Florgénese, Lda.; FLOPONOR – Florestas e Obras Públicas do Norte, S.A

- **Research/Teaching**
  - Instituto Nacional de Investigação Agrária e Veterinária, I.P.; Instituto da Conservação da Natureza e das Florestas, I.P.; Universidade de Coimbra

- **Other enterprise**
  - FIREMAP

**Project**

**Objectives:**

This project aims to overcome the constraints caused by PWD, combining new forms of forest management, fight, methods of early detection of infected trees and decrease their impact, control the natural dispersion of the insect vector (*Monochamus galloprovincialis*), reduce costs of disease control actions and contribute to restore the confidence of landowners for the maintenance, plantation and management of new areas of maritime pine.

It is also intended to analyze the types of trees that can be infected, the influence of forest fires on the natural dispersion of PWN, to evaluate the emergence and flight of the vector under different climatic conditions, to minimize the risk of forest operations during their flight period and to create zones of active containment where it is possible to act more effectively to avoid the dispersion of PWN to the non-infected pine forests.

**Expected results:**

Specific strategic plan to contain the disease;
Management practices appropriate to improve the phytosanitary status of the pine forest;
Methods of early assessment of potentially infected trees;
Assessment of the risk, distance and duration of attractiveness of pine forest areas covered by fire;
Calculation of the risk of PWN infection in pine trees of different ages and dimensions or in decline due to other biotic and abiotic agents;
Evaluation of the emergency period and vector flight in different climatic conditions.

**Results so far/first lessons:**

This project relies on public funding, which approval is recent, making it impossible to present preliminary data.

**Who will benefit:**

The forest owners are the direct beneficiaries, as well as public entities of research and indirect administration of the State and financial agents that intervene in the valorization of the sector of the maritime pine.

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Supported by:

Start: January/2017
End: December/2020

Budget: 444,857 €
Operational Groups:
GOTECFOR - Technology for the mobilization and use of Forest Biomass in agro-industry.
GOTECFOR - Tecnologia para a mobilização e aproveitamento de Biomassa Florestal na agroindustria.

Practical problem
The main problem is the lack of economically viable solutions that allow agro industries to reduce energy costs for heating. This operation will act in the optimization of forest biomass mobilization; adequacy the equipment for this purpose; optimization of the burning processes of forest biomass.

Partners
Type: Name:
Agri association Forestis - Associação Florestal de Portugal
Research/Teaching INESCTEC - Instituto de Engenharia de Sistemas e Computadores, Tecnologia e Ciência; INEGI - Instituto de Ciência e Inovação em Engenharia Mecânica e Engenharia Industrial
Agri enterprise Floresta Jovem, Lda; Sérgio Domingos Azevedo Alves

Project
Objectives: Promoting integral management of forest resources and valuing residual products; Increase the productivity of agroforestry activities; Reduce costs of productive activities in protected crops (heating needs); Promote the use of more efficient and safer machinery in the forest Portuguese context.

Expected results: Prototype of a software to optimize the forest biomass supply chain; Operational model for the use of biomass applied to a real case; Organizational models for the mobilization of forest biomass; An innovation roadmap for forestry machines for Portuguese industry. It is expected to influence the capacity of the sector, increasing the level of competitiveness and efficiency of production processes.

Results so far/first lessons: The existence of a wide variety of operational conditions, as well as the type of forest biomass that is available in our forests, many of which do not have a current use (like shrubs), are demanding a higher requirement in the analysis of the starting point. On the other hand, the aspects related to the processing of forest biomass in the field are critical to the viability of its use.

Who will benefit: Forest producers, forestry sector service providers, agroindustry and biomass plants will be the main beneficiaries.

Start: January/2017
End: June/2020
Budget: 316.375 €

Contact: Ricardo Marinho
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Operational Group:
New aspects of micropropagation of fruit and other deciduous trees
Neue technologische Ansätze zur effektiven Vermehrung von Obst- und anderen Laubgehölzen

Practical problem
There is a demand for fast growing trees producing high value timber. Selected clones (e.g. cherry trees) have to be tested for their superior quality. Micropropagation, which is the only tool to produce these trees, is a labour-intensive method and needs to be optimized by a new technology.

Partners
Type: Name:
Tree and horticultural nursery companies Baumschulen Oberdorla GmbH Vogtei; TM Zierpflanzen GmbH Mühlhausen
Forest research stations Staatsbetrieb Sachsenforst Pirna; ThüringenForst Gotha
Advisory service Arand Unternehmensberatung Mühlhausen

Project
Objectives:
Propagation of selected clones of cherries and aspen for field trials.
Field trials to demonstrate the superior quality of the clones.
Optimization of different steps in micropropagation by using multiwell culture trays and application of LED illumination for growth stimulation.

Expected results:
Forest owners become convinced to plant fast growing superior trees by field trials.
Efficiency of micropropagation is increased by higher propagation rates.
Work during greenhouse transfer and acclimatization is reduced by using new culture trays for rooting the cuttings.
Work peak is reduced by storage of rooted plantlets.
Changed culture parameters are estimated in order to adapt the technology.

Results so far/first lessons:
About 120 clones of fast growing trees selected by tree breeding stations were established in vitro and a first set of plantlets were produced. Forest trials of registered clones were just planted.
Tissue culture trays developed for the propagation of fern plants were adopted to cherry tree clones. Trays filled with different materials were tested in combination with different LED illumination.

Who will benefit:
Forest owners, forest research stations which have no facilities for micropropagation and companies working on micropropagation.

Contact: Hardy Dembny
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Supported by:
Operational Group:

OakRegeneration - The reassessment of regeneration strategies in the Mediterranean scattered-oak woodlands.

Practical problem

The lack of successful (long-term) natural tree regeneration is recognized as a major problem on Mediterranean scattered-oak woodlands. There is a pressing need to improve woodlands management practices to properly regenerate oaks.

Partners

Type: Research/Teaching
Name: INIAV - Instituto Nacional de Investigação Agrária e Veterinária, I.P.

Agri association

ANSUB - Associação de Produtores Florestais do Vale do Sado; AFLOSOR - Associação de Produtores Agro-Florestais da Região de Ponte de Sor; ACHAR - Associação de Agricultores de Chameca; ADPM - Associação para o Estudo e Defesa do Património Natural e Cultural do Concelho de Mértola

Agri enterprise

CL - Companhia das Lezírias, S.A.; EDIA - Empresa de Desenvolvimento e Infraestruturas do Alqueva, S.A.; Herdade do Paúl - Sociedade de Gestão Rural, Unipessoal Lda; Anta de Cima - Sociedade Agrícola Unipessoal Lda; Pedro Sacadura Teixeira Cabral Duarte da Silveira; César Sacadura Mexia de Almeida; Carlos Frederico Abecassis do Amaral Neto; Sociedade Agrícola do Casal das Pombas, S.A.

Project

Objectives:

The reassessment of regeneration strategies in the Mediterranean scattered-oak woodlands by:
Detecting and making use of trees natural regeneration hotspots and;
Creating conditions to favor a successful natural oak regeneration process, on appropriate areas.

Expected results:

Understanding on oak natural regeneration dynamics in Mediterranean scattered-oak woodlands;
Growing knowledge about planning and managing scattered-oak woodlands to naturally regenerate;
Being able to prescribe with certainty management practices to increase the success of oak natural regeneration;
Increasing oak natural regeneration hotspots areas in Mediterranean scattered-oak woodlands.

Results so far/first lessons:

Operational Group.

Who will benefit:

Forest owners and managers;
Farm policy makers;
Society as a whole.

Contact: Augusta Costa
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Operational Group:
OUI-GEF : Innovative tools for collaborative forest management
OUI-GEF - Outils innovants pour une gestion concertée des forêts : de la superposition des usages au projet territorial

Practical problem
The OUI-GEF Operational Group aims at developing technical and organizational innovations that help building territorial forest strategies. In a context of increasing pressure on wood resources, it should promote a sustainable management that ensures a diversity of ecosystem services.

Partners
Type: Research institutes
Name: IRSTEA Mountain Ecosystems and Mountain Territories Development Research Units; ESPACE (Aix Marseille University, Avignon University, Sophia Antipolis University and CNRS) and EDYTEM (Savoie Mont Blanc University and CNRS) mixed research units.

Type: Forest management organisations
Name: Office National des Forêts (ONF); Institut de Développement Forestier (IDF); Centre Régional de la Propriété Forestière (CRPF)

Type: Regional authorities
Name: Natural Regional Parks (Chartreuse, Massif des Bauges and Pilat)

Project
Objectives:
- Develop innovative methods to assess forest structure parameters.
- Develop operational tools to assess ecosystem services.
- Foster a common culture on forests and forestry at a local scale, by a fair sharing of knowledge that promotes collaborative forest planning and local development.

Expected results:
- Thematic maps on forest parameters and ecosystem services (wood production, protection against natural hazards, forest maturity).
- Comprehensive analysis of existing local wood supply chains to diagnose their sustainability.
- Multifunctional set of indicators to assess the quality of logging operations.
- Shared base of metadata including complementary data sources for forest projects development.

Results so far/first lessons:
- Protection against snow avalanches and rockfalls thematic maps.
- Field methodology to quickly assess forest maturity at a local scale.
- Shared multifunctional set of indicators to assess the quality of logging operations.
- Census and first diagnostic of local wood supply chains.
- Analysis of data and data fluxes involved in a collaborative local forest development project.

Who will benefit:
Forest managers, local development structures (i.e regional parks) and wood transformation industries.

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Supported by:
Operational Group:
SHORT-ROTATION COPPICE: an opportunity for future regional bio-refineries?
Les taillis à courte rotation : une opportunité pour les futures bioraffineries régionales ?

Practical problem
Lack of agronomic reference about the feasibility, the yield and the quality of the short-coppice rotation (with Acacia, Eucalyptus and, in some location, poplar, willow) under Mediterranean climate in France and also on marginal lands.

Partners
Type: Forestry cooperative
Name: Alliance forestière
Type: Multi production cooperative
Name: Arterris
Type: Development farmers organisation
Name: Chambres d'agriculture de l'Aude et des Pyrénées-orientales
Type: Research and technical institute
Name: FCBA-Forêt bois cellulose ameublement

Project
Objectives:
Increase knowledge on the productivity of some short-coppice rotations which could be interesting in Mediterranean conditions.
Elaboration of factsheets on the species: agronomy, yield, quality, inc. economic aspects.
Create a network of trials covering the regions varied climate conditions and soils.

Expected results:
For Robinier (Acacia), Eucalyptus, poplar, willow: yield, agronomy, harvest, costs.
To give advice on the opportunity (or not) to have those species in the rotation and how to integrate them (guidelines).
To incentivize future local bio-refineries to use these species if they are productive.
Knowledge transfer.

Results so far/first lessons:
As the last harvest has been made at the end of July 2017, the results of the quality of the products are not available yet.
We need to have both yield but also - and it’s the most important - the quality of those products.

Who will benefit:
Farmers.

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