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**Project Name** | +PINHÃO – Integrated management of biotic agents associated with loss of stone pine seeds production

**Project Code** | PDR2020-101-031185

**Main Purpose** | Develop diagnostic and monitoring processes to determine the impact of pests on pine cones and seeds production, in particular the seed bug *Leptoglossus occidentalis*

**Intervention Region** | Portugal

**Beneficiary Entity** | ISA - Instituto Superior de Agronomia (Project leader)

**Partners** |

- UNAC - União da Floresta Mediterrânica
- Anta de Cima – Sociedade Agrícola, Unipessoal Lda.
- Companhia das Lezírias S.A.
- Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa
- Florgénese – Produtos e Serviços para a Agricultura e Florestas Unipessoal Lda.
- Herdade da Abegoaria – Sociedade Agrícola Lda.
- ICNF – Instituto da Conservação da Natureza e das Florestas I.P.
- INIAV – Instituto Nacional de Investigação Agrária e Veterinária I.P.
- Pedro Miguel Belo Ramos Courinha Martins
- Pedro Sacadura Teixeira Cabral Duarte da Silveira
- Sociedade Agrícola Monte da Sé Lda.
- Viveiros da Herdade da Comporta – Produção de Plantas Ornamentais Lda.

**Approval date** | 2017/12/06

**Starting Date** | 2018/02/01

**Date of the conclusion** | 2021/06/30

**Total Eligible Cost** | 123.771,31€

**European Union financial support** | 74.262,81€

**National Public Financial Support** | 18.565,73€

## Expected results

- Characterization at regional level of pine cone production cycles and the patterns of temporal evolution;
- Quantification of damages caused by *Leptoglossus occidentalis* (*L. occidentalis*) and other pests with implications for the loss of pine cones and seeds, in order to determine economic levels of attack in integrated management processes;
- Identification of phenological stages at risk and definition of phenological stages of the plant to be protected by preventive or control measures;
- Identification of potential auxiliary biotic agents in the control of *L. occidentalis*;
- Strategies to prevent the transmission of diseases by *L. occidentalis*;
- Development of traps for monitoring and capture of *L. occidentalis* and *Dioryctria mendacella* with potential interest in control strategies;
- Strategies for preventive forestry and good practices suitable for the prevention of biotic agents;
- Warning system against harmful biotic agents of pine cones – SAFEPINEA.

## Divulcation and Activities

- Update of the page dedicated to the project on the UNAC website: <http://www.unac.pt/index.php/id-i/grupos-operacionais-accao-1-1-pdr2020/pinhao>
- Disclosure of the project on the Rede Rural Nacional (RRN) website: <https://inovacao.rederural.gov.pt/2/67-gestao-integrada-de-agentes-bioticos-associados-a-perda-de-producao-do-pinhao-pinhao>
- Exhibition on the Agro-Global 2018 – exhibitor ISA | September | Valada do Ribatejo [http://www.unac.pt/images/Poster\\_Agro\\_global\\_Set2018.pdf](http://www.unac.pt/images/Poster_Agro_global_Set2018.pdf)
- AGRO INOVAÇÃO 2018 - Cimeira Nacional de Inovação na Agricultura, Florestas e Desenvolvimento Rural | 29 de October 2018 | Oeiras <https://inovacao.rederural.gov.pt/2/67-gestao-integrada-de-agentes-bioticos-associados-a-perda-de-producao-do-pinhao-pinhao>
- Regional workshop of RRN Regadio X Pinheiro manso | November 2019 [http://www.unac.pt/images/01\\_AGRI\\_CIMEIRA-GO-Floresta\\_PINH%C3%83O\\_compressed.pdf](http://www.unac.pt/images/01_AGRI_CIMEIRA-GO-Floresta_PINH%C3%83O_compressed.pdf)
- Publication of the paper “The stone pine, *Pinus pinea* L., a new highly rewarding host for the invasive *Leptoglossus occidentalis*” in NeoBiota. <https://neobiota.pensoft.net/article/30041/login.php>