



Increase and transfer knowledge to producers about good practices for the management of pests and diseases in Stone Pine (*Pinus pinea* L.)

Introduction

The stone pine is mainly planted for the production of the pine cones, more specifically for the production of pine nuts, since it's the most profitable way to explore this species. However, in the last years the producers and industry have been witnessing the decline in cone production and in the yield of pine nuts per cone.

The main objective of this project was to develop strategies of integrated management of pests and diseases, with emphasis in *Leptoglossus occidentalis* H. creating new ways of detection, damage assessment and control methods. The life cycle of the pest and the stages of development of the pine cone were also studied. The results were gathered in chapters available online and printed in "Technical handbook - Good practices for the management of pests and diseases of pine cones and pine nuts." ("Manual técnico - Boas práticas para a gestão de pragas e doenças da pinha e pinhão"), "Damage in pine cones - How to identify the organism?" ("Danos nas pinhas - Como identificar o agente?"), "Fungal diseases in stone pine - New threats" ("Doenças fúngicas em pinheiro manso - Novas ameaças"), "Western conifer seed bug" ("Sugador de pinhas"), and "Pine cone moth" ("Lagarta da pinha").

This chapters were freely distributed to forest owners associations and diverse entities related forestry, which allows the information to reach the landowner.

Lessons learned

The success of this project was achieved because of the hard work done by the researcher team, the availability of the landowners to participate in the project and the expressed concern of the private companies. The practical knowledge of the forest owners was reported and tested in trials, which opened new "doors" for future experiments.

All the results of the studies and research were summarized which allowed the creation of different scientific articles, in this way sharing the results with the academic and scientific community. The creations of handbooks, easily available to the landowners, allows them to have a simple way for a primary identification of sanitary problems in their forests, most of the times being able to identify the specie. It

also gives the landowners the methods to control and fight the dispersion and the adverse effects of the pests and diseases.



Figure 1. Published work related to the project.

For further information contact

mrbranco@isa.ulisboa.pt

The information presented in this factsheet was developed by the FOREST4EU partner, drawing on the innovations and knowledge generated by the indicated operational group with their explicit authorization.

Further information

<https://www.unac.pt/index.php/id-i/grupos-operacionais-accao-1-1-pdr2020/pinhao>



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info@forest4eu.eu