ERADICATION DECISION SUPPORT

When preventive measures fail to intercept potentially dangerous organisms, eradication measures can be the best option to prevent an accumulation of deleterious effects and economic impacts. The main goal of this study was to identify which factors affect the success of an eradication program so that guidelines for the eradication of PnPs can be established. Using those results, the following decision support tool provide information on the expected eradication chance.

Target audience:
forest managers, forest owners, nurseries, scientists, policy makers

Contact:
sofiabranco@isa.ulisboa.pt

Content of the tool:

When **facing an unknown organism** dealing damages to trees, this tool can be useful to determine the risk of establishment or the eradication success if control methods are implemented. The tool act as a **decision tree with dichotomous pathway**. The end user is invited to answer to basic questions describing its situation and the identified organism and will get as result the **eradication success rate**, depending on the number of cases with available information.

INPUTS

2 Categories of organisms addressed: **pathogens or arthropods**

2 Situations regarding the introduction process

OUTPUTS

The organism <u>has not</u> spread from the imported material

- ➔ Probability of establishment % (the eradication success rate is 100%)
- ➔ Histogram with the number of cases

The organism <u>has</u> spread from the imported material

- ➔ Probability of eradication success %
- ➔ Histogram with the number of cases

Scientific background:

Researchers team involved: This study was led by the Instituto Superior de Agronomia (ISA) with input from ISA and INRAE

Set of data used

Data set of eradication attempts against pests and pathogens of woody plants in Europe from 1945 to date (853 cases, the larger database ever analyzed on the topic).
Data on eradication campaigns were obtained from online databases:

- EPPO Global Database
- GERDA Global Eradication and Response Database available for public consultation
- scientific and grey literature
- National and Region Plant Protection Organizations (NNPOs and RPPOs)

	Arthropods	Pathogens	Total
Number of eradication attempts	160	447	607
Number of interception incursions	159	87	246
Number of species	45	32	77

Method

Factors influencing eradication success of both arthropods and pathogens were analysed separately by Generalized Linear Mixed Models, a statistical modelling aiming to predict the probability that species became established and then the probability of successful eradication.
The main factors were:

- Extension of the infected area
- Control options
- Characteristics of the environment/location of the outbreak (closed areas, e,g, greenhouses, open field, urban areas)
- Biological traits of the species and the host trees

A scientific paper is in preparation: Sofia Branco et al., “Review of eradication attempts against pest and pathogens of woody plants in Europe”.

Further development:

Many eradication programs are still ongoing and could be used to update the model