

PEST SURVEY CARD SUMMARY

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Pest survey card on *Elsinoë australis*, *E. citricola* and *E. fawcettii*

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Abstract

This document provides the conclusions of the pest survey card that was prepared in the context of the EFSA mandate on plant pest surveillance (M-2020-0114) at the request of the European Commission. The full pest survey card for *Elsinoë australis*, *E. citricola* and *E. fawcettii* is published and available online in the EFSA Plant Pest Survey Cards Gallery at the following link and will be updated whenever new information becomes available: <https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/elsinoe-australis-citricola-fawcettii>

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Keywords: citrus scab, plant pest, pest detection, risk-based surveillance, *Sphaceloma australis*, *Sphaceloma fawcettii*, Union quarantine pest

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Figure 1: © Eurostat, 2018 (levels 1–2), © Plant Health Service of Generalitat Valenciana (GVA) (level 4, up), © Antonio Vicent, IVIA (levels 3, 4 bottom, 5).

1. Introduction

This pest survey card was prepared in the context of the EFSA mandate on plant pest surveillance (M-2020-0114), at the request of the European Commission. Its purpose is to guide the Member States in preparing data and information for *Elsinoë australis*, *E. citricola* and *E. fawcettii* surveys. These are required to design statistically sound and risk-based pest surveys, in line with current international standards. The fungi *E. australis*, *E. citricola* and *E. fawcettii* are clearly defined taxonomic entities causing scab on citrus. *Elsinoë australis*, *E. citricola* and *E. fawcettii* are Union quarantine pests. The import of citrus plants is prohibited while general requirements are in place for the import of citrus fruit, which are the main pathway for entry of these pests into the EU. *Elsinoë australis* and *E. fawcettii* produce ascospores in the leaf litter and conidia on lesions in plant tissues that can be disseminated by rain splash and wind, but dispersal distances are not known. Mild temperatures and wetness are necessary for infection and lesions appear after four to six days. The commercial citrus species most relevant for the EU are susceptible to these three fungi. Due to the wide availability of host species and climatic suitability, all citrus-growing areas in the EU are considered potentially suitable for their establishment. Long-distance spread is likely to occur through the movement of infected plant material. To increase the likelihood of detecting the three fungi, visual examination of symptoms should be preferentially conducted in autumn before the harvest period. Symptoms caused by *E. australis*, *E. citricola* and *E. fawcettii* are non-specific, so visual examination should be followed by molecular tests to identify the pests. Based on the analyses of the information on the pest–host plant system, the various units that are needed to design a survey should be defined and tailored to the situation in each Member State.

2. The survey preparation

Table 1 addresses the key questions that are relevant for preparing a pest survey. First, the plant pest needs to be characterised in terms of its life cycle and biology. Then, the structure and size of the target population needs to be characterised and these analyses should be tailored to the situation in each Member State. Figure 1 gives examples of the components of a target population for *Elsinoë australis*, *E. citricola* and *E. fawcettii* and is not necessarily exhaustive. Finally, the detection process needs to be characterised in terms of the sequence of detection and identification methods required for the survey.

Table 1: Preparation of surveys for *Elsinoë australis*, *E. citricola* and *E. fawcettii*

Survey question	Section	Key information
What?	1. The pest and its biology	The fungi <i>Elsinoë australis</i> , <i>E. citricola</i> and <i>E. fawcettii</i> produce asexual spores (conidia) on lesions in citrus fruit, leaves and twigs which can be dispersed by rain and wind. Mild temperatures and wetness (4–24 h wetting at 23–27°C) are necessary for infection. Lesions on plant tissues appear four to six days after infection.
Where?	2. Target population	<i>Elsinoë australis</i> , <i>E. citricola</i> and <i>E. fawcettii</i> affect the most relevant commercial citrus species in the EU. Epidemiological unit: individual homogeneous area that contains at least one individual host plant (e.g. orchard, hectare, NUTS area).

		<p>Risk areas: areas with citrus plants near nurseries, garden centres, packing houses, outdoor fruit-drying facilities, fresh fruit markets and neglected orchards.</p> <p>Inspection unit: individual citrus plant.</p>
How?	3. Detection and identification	<p>Recommended method: visual examination of symptoms on citrus leaves, fruit and twigs followed by laboratory testing. Two main approaches are available for the identification of <i>E. australis</i> and <i>E. fawcettii</i> in symptomatic plant tissues: i) isolation and culturing followed by molecular tests; and ii) molecular tests applied directly on lesions. <i>E. citricola</i> can be identified only by isolation and culturing followed by molecular tests.</p>
When?		<p>Visual examination and sampling should preferably be conducted in autumn before the harvest period.</p>

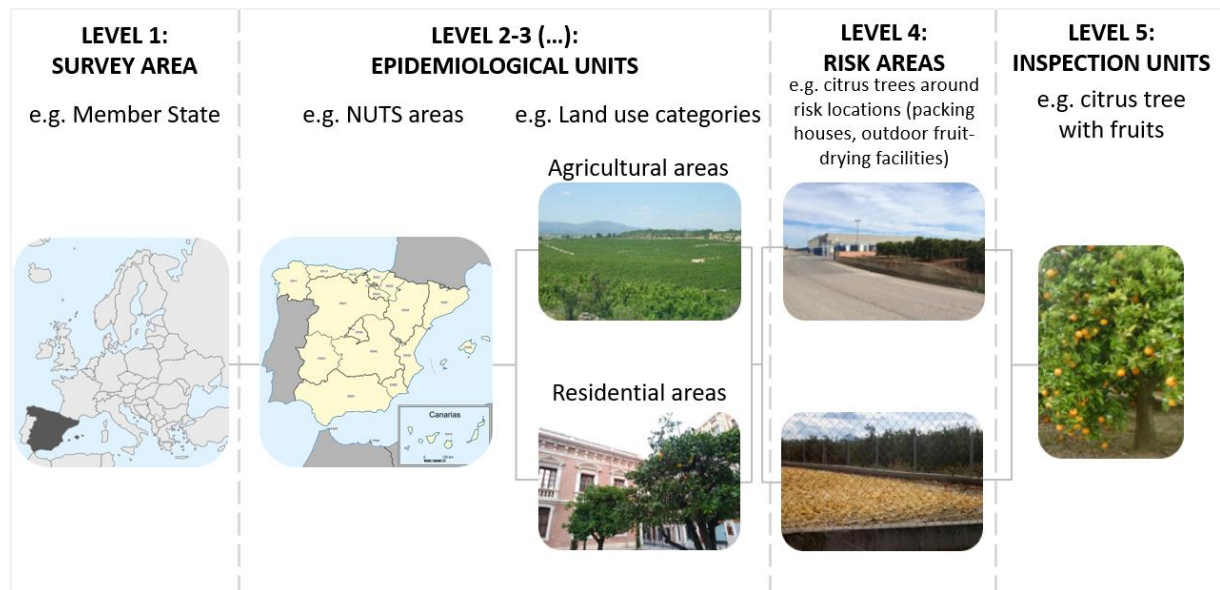


Figure 1: Example of hierarchical structure of the target population for *Elsinoë australis*, *E. citricola* and *E. fawcettii* in the EU (Images: Eurostat, 2018 (levels 1–2), Plant Health Service of Generalitat Valenciana (GVA) (level 4, up), Antonio Vicent, IVIA (levels 3, 4 bottom, 5))

3. From survey preparation to survey design

Figures 2 shows the next steps after the survey preparation for designing statistically sound and risk-based detection and delimiting surveys of *Elsinoë australis*, *E. citricola* and *E. fawcettii*. Guidance on the selection of type of survey, related survey preparation and design, is provided in the EFSA general guidelines for pest surveys¹.

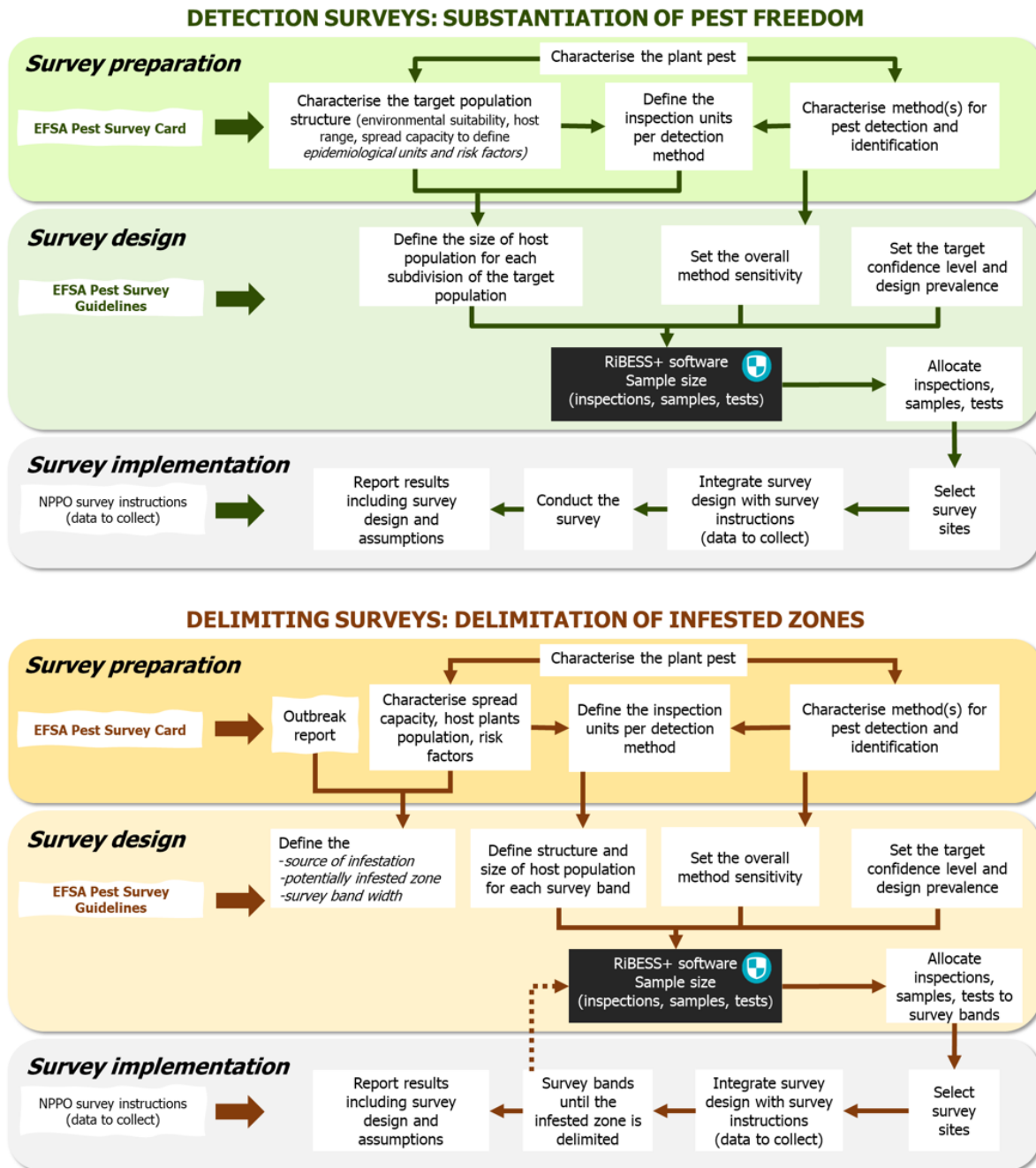


Figure 2: Steps required for the preparation, design and implementation of detection and delimiting surveys, in accordance with the methodology for statistically sound and risk-based surveillance¹

¹ EFSA (European Food Safety Authority), Lázaro E, Parnell S, Vicent Civera A, Schans J, Schenk M, Cortiñas Abrahantes J, Zancanaro G and Vos S, 2020. General guidelines for statistically sound and risk-based surveys of plant pests. EFSA supporting publication 2020:EN-1919. 65 pp. doi:10.2903/sp.efsa.2020.EN-1919 <https://efsa.onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2020.EN-1919>

Relevant EFSA outputs

- General guidelines for statistically sound and risk-based surveys of plant pests: <https://efsa.onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2020.EN-1919>
- Pest survey card on *Elsinoë australis*, *E. citricola* and *E. fawcettii*: <https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/elsinoe-australis-citricola-fawcettii>
- Index of the EFSA Plant Pest Survey Toolkit: <https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/index>
- Plant pest survey cards gallery: <https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/gallery>
- Pest survey cards: what, when, where and how to survey? <https://www.youtube.com/watch?v=kHANmRDex8>
- The statistical tools RiBESS+: <https://r4eu.efsa.europa.eu/app/ribess>
- The RiBESS+ manual: <https://zenodo.org/record/2541541#.Ys7G5HZByUn>
- The RiBESS+ video tutorial: <https://youtu.be/qYHqrCmxDY>