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Pest survey card on *Ralstonia syzygii* subsp. *indonesiensis*

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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 *Ralstonia syzygii* subsp. *indonesiensis* is published and available online in the EFSA Pest Survey Card gallery at the following link and will be updated whenever new information becomes available: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/ralstonia-syzygii-indonesiensis

Ralstonia syzygii subsp. *indonesiensis* survey card

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 *Ralstonia syzygii* subsp. *indonesiensis* surveys. These are required to design statistically sound and risk-based pest surveys, in line with current international standards. *Ralstonia syzygii* subsp. *indonesiensis* is a separate taxonomic entity that was initially considered to be part of the *Ralstonia solanacearum* species complex. The pathogen is regulated as a Union quarantine pest and is currently not known to occur in the EU. *Ralstonia syzygii* subsp. *indonesiensis* can enter the plant through wounds, cracks or natural openings. Infected plants will eventually wilt. Potato and tomato are the recommended hosts for a detection survey, whereas other host species and solanaceous weeds should be included in delimiting surveys. Human-assisted spread is expected to play a major role in the spread of *Ralstonia syzygii* subsp. *indonesiensis*. In addition, movement of the pathogen over greater distances may take place via infested water. Although there is a high degree of uncertainty due to the limited availability of information on *R. syzygii* subsp. *indonesiensis*, this pathogen is expected to be able to establish itself in those areas of the EU where host crops are grown. Visual examination of plants and tubers should take place when temperatures are high and disease symptoms are most likely to be observed. Post-harvest examination of tubers and asymptomatic sampling can also be performed. Several PCR tests are available to detect and identify *R. syzygii* at the species level, but further data are needed to determine whether these or other tests are able to reliably differentiate the various subspecies of *R. syzygii*.

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 *Ralstonia syzygii* subsp. *indonesiensis* 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 *Ralstonia syzygii* subsp. *indonesiensis*

SURVEY QUESTION	SECTIONS	KEY INFORMATION
WHAT?	1. The pest and its biology	*Ralstonia syzygii* subsp. *indonesiensis* is a separate taxonomic entity that was previously considered to be part of the *R. solanacearum* species complex. The bacterium can enter the plant through wounds, cracks or natural openings. Infected plants will eventually wilt and allow the disease cycle to continue by returning the pathogen to the soil.

Ralstonia syzygii subsp. *indonesiensis* survey card

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WHERE?	2. Target population	The recommended hosts for detection surveys of *R. syzygii* subsp. *indonesiensis* in the EU are potato and tomato, while other host species and solanaceous weeds should be included in delimiting surveys. Epidemiological unit: a homogeneous area with at least one individual host plant (such as a field, hectare or NUTS area).
		Inspection unit: a single potato or tomato plant or potato tuber.
HOW?	3. Detection and identification	Recommended method: visual examination of host plants and tubers in the field, or post-harvest examination of tubers and asymptomatic sampling. Molecular methods are available to identify *R. syzygii* at the species level.
WHEN?		Surveys should take place when temperatures are high and disease symptoms are most likely to be observed.
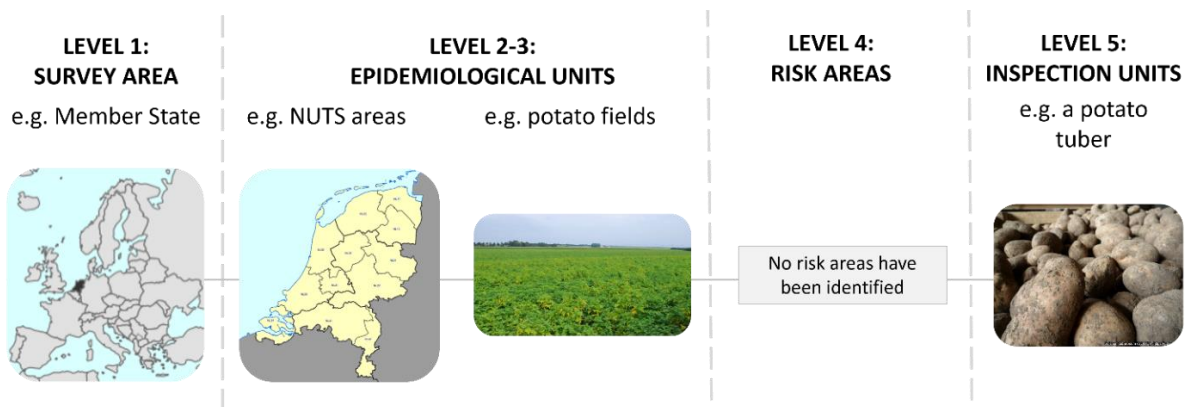
Figure 1: Example of the hierarchical structure of the target population for *Ralstonia syzygii* subsp. *indonesiensis* (Sources: Eurostat, 2022 (levels 1–2); Martijn Schenk (NVWA) (level 3); EPPO Global Database, courtesy of Muriel Suffert (level 5))

3   From survey preparation to survey design

Figure 2 shows the next steps after the survey preparation for designing statistically sound and risk-based detection and delimiting surveys of *Ralstonia syzygii* subsp. *indonesiensis*. Guidance on the selection of type of survey, related survey preparation and design, is provided in the EFSA general guidelines for pest surveys[1].
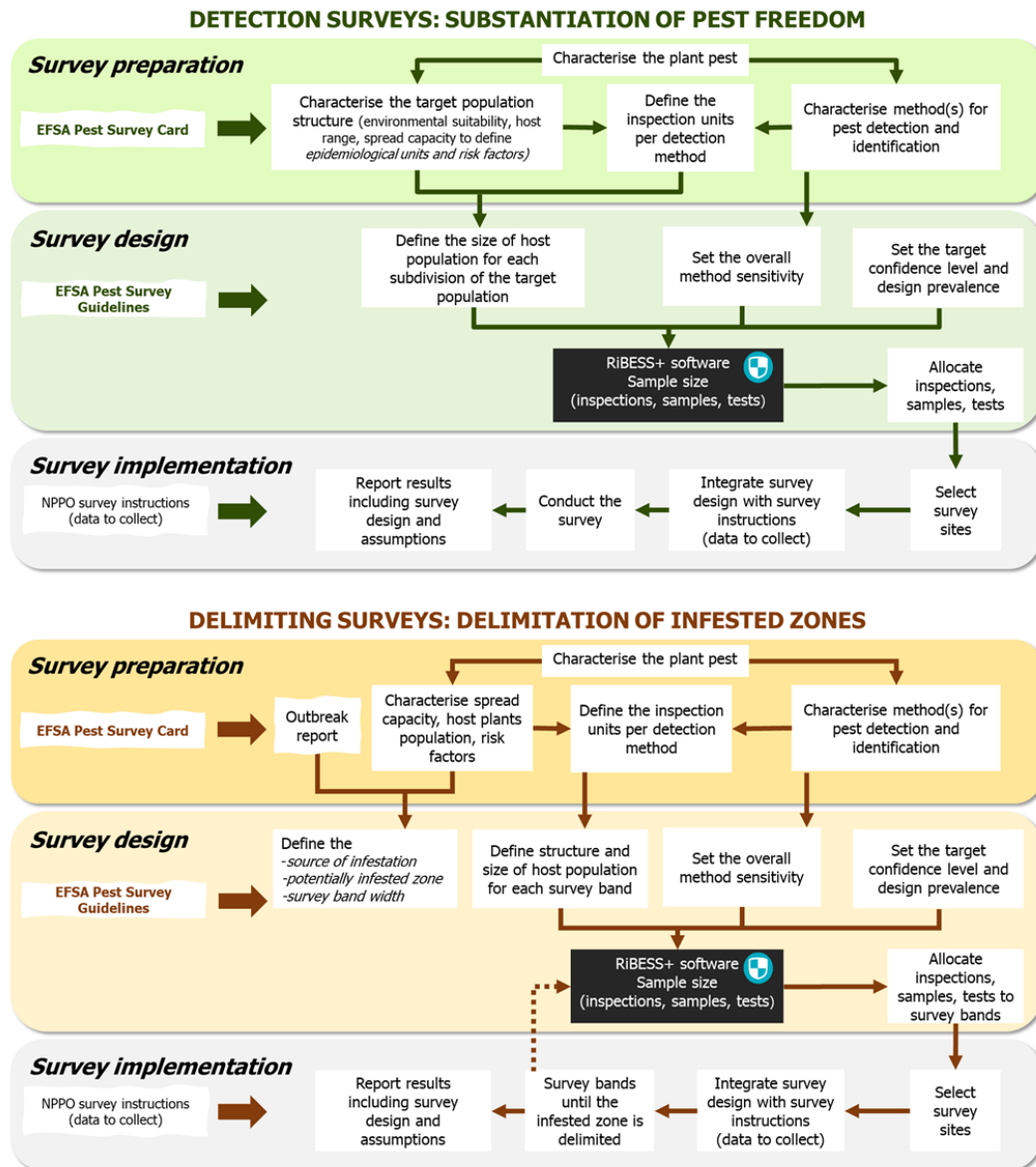
Figure 2: Steps required for the preparation, design and implementation of detection and delimiting surveys, in accordance with the methodology for statistically sound and risk-based surveillance[1]

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[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 *Ralstonia syzygii* subsp. *indonesiensis*: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/ralstonia-syzygii-indonesiensis

- Pest categorisation on *Ralstonia solanacearum* species complex: https://efsa.onlinelibrary.wiley.com/doi/full/10.2903/j.efsa.2019.5618

- Index of the EFSA Plant Pest Survey Toolkit: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/index

- EFSA Pest Survey Card gallery: https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/gallery

- Pest survey cards: what, when, where and how to survey? https://efsa.europa.eu/plants/planthealth/monitoring/surveillance/video-pest-survey-card

- The statistical tool RiPEST: https://r4eu.efsa.europa.eu/app/surveillance

- The RiPEST manual: https://zenodo.org/doi/10.5281/zenodo.8335472

- The statistical tool RiBESS+: https://r4eu.efsa.europa.eu/app/ribess

- The RiBESS+ manual: https://zenodo.org/doi/10.5281/zenodo.664465

- The RiBESS+ video tutorial: https://youtu.be/qYHqrCiMxDY