

# VALITEST Closing Assembly

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## Analysis of demand for testing and impact

WP4

Glyn Jones / Barbara Agstner / Femke van den Berg

Fera Science Ltd



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# Objectives - WP4 Analysis of demand for testing and impact

## **Objective 1 (pre-TPS round 2):**

To support plant health policies by engaging with stakeholders to ascertain views on and demand for existing tests and operating procedures as well the attributes that lead to adoption for future tools.

## **Objective 2 (second part of the project – focus of the presentation):**

Assess the end markets for tests including their potential market (e.g. reduction in yield losses) and nonmarket (e.g. reductions in woodland losses) impacts.

# Objective 1 - Test/pest selection

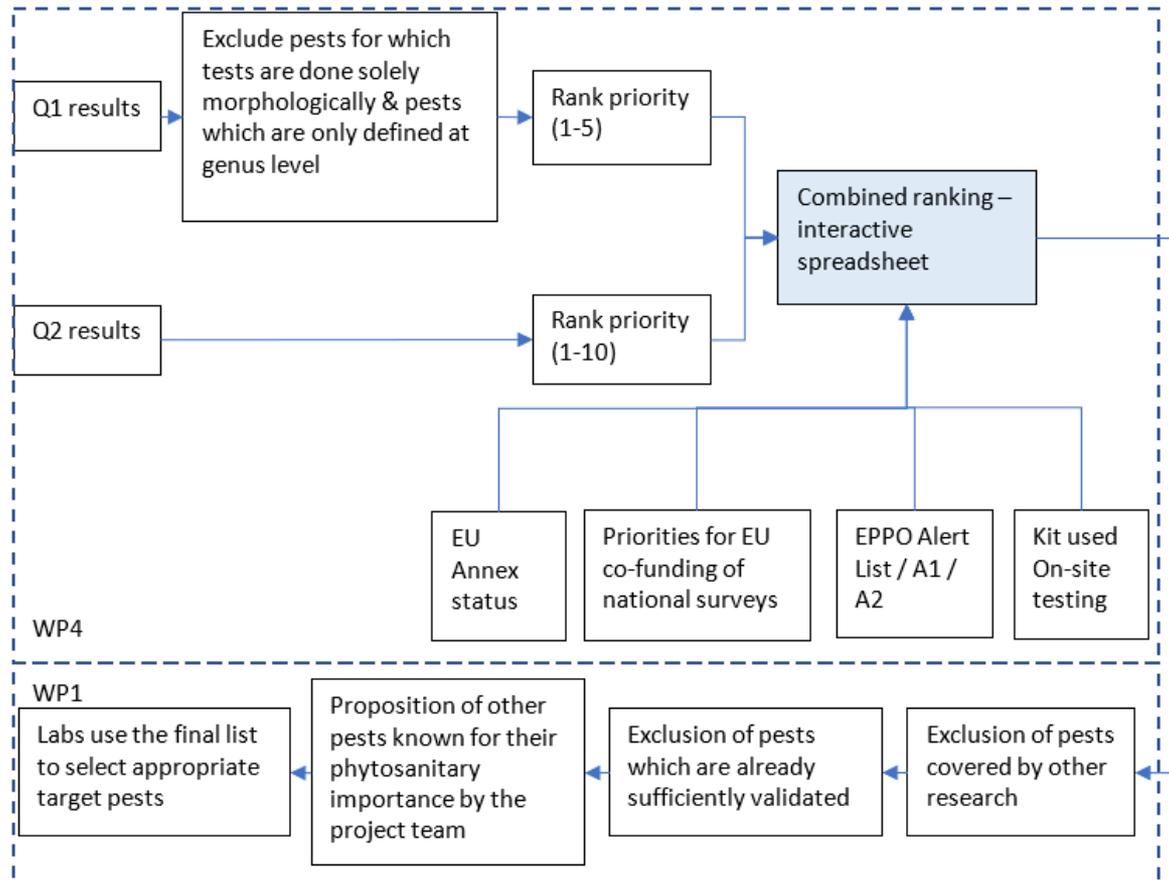


Figure 1. Prioritisation Framework

# Objective 2 - Risk manager workshop

- Workshop on communication processes around test selection between risk managers and diagnostic laboratories
- Interviews & paper exercises (follow up from workshop)
- Webinar presenting initial outcomes around communication
- To be completed during the project extension
  - Additional interviews & paper exercises based on interest expressed during webinar
  - Further analysis of workshop recording & exercise responses
  - Compare workshop responses with outputs from the framework developed to evaluate the value of diagnostics test validation
  - Potentially write a publication based on the outcomes

## Objective 2 – Framework to evaluate the benefits of validation

# Case study – early detection

To determine the demand for testing and validation, we want to know:

- What are essential performance / validation criteria?
- How good does a test / testing programme need to be?
- How is information about performance criteria / test requirements exchanged between inspectorate and lab?



Develop a framework to:

- Determine **programme wide** performance
- Determine testing costs
- Determine impact costs of false positives and false negatives

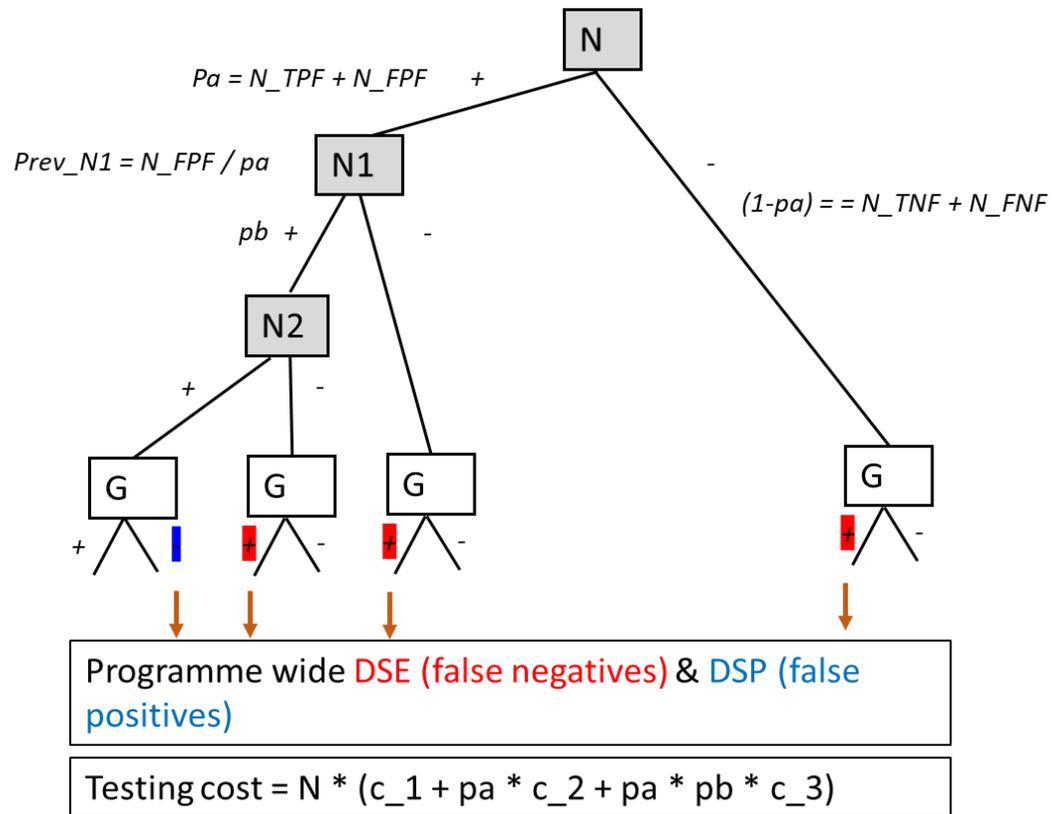
# Program performance and costs

Test 1

Test 2

Test 3

TRUE infection status



# Impact costs

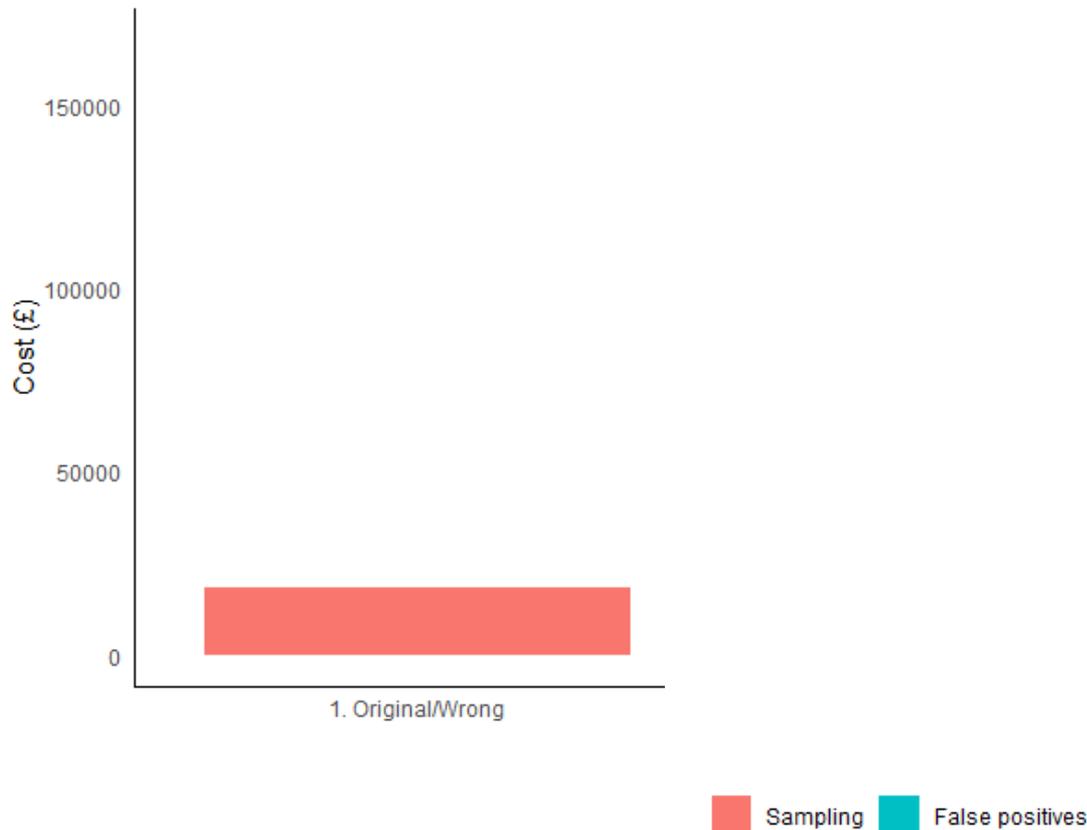
- FPs result in an unnecessary spend
  - Each sample returning a positive test programme result would instigate action (e.g. confirmatory testing)
  - Framework assumed fixed FP cost, but can easily be adjusted
  - Total cost FPs =  $(1 - \text{prev}) * (1 - \text{DSP}) * N * c_{\text{FP}}$
- FNs result in higher prevalence at first detection
  - $\text{prev} = -\ln(1 - x/100) * (* r \text{ freq} / (\text{DSE} * N))$

# Evaluating demand for testing and validation

- Framework currently allows user to assess
  - What budget should be allocated to achieve upper threshold of prevalence at first detection?
  - Is there an additional benefit for validation or verification of test performance?
  - When is it beneficial to invest in test performance improvement? – target improved performance

# Value of validation framework – example result

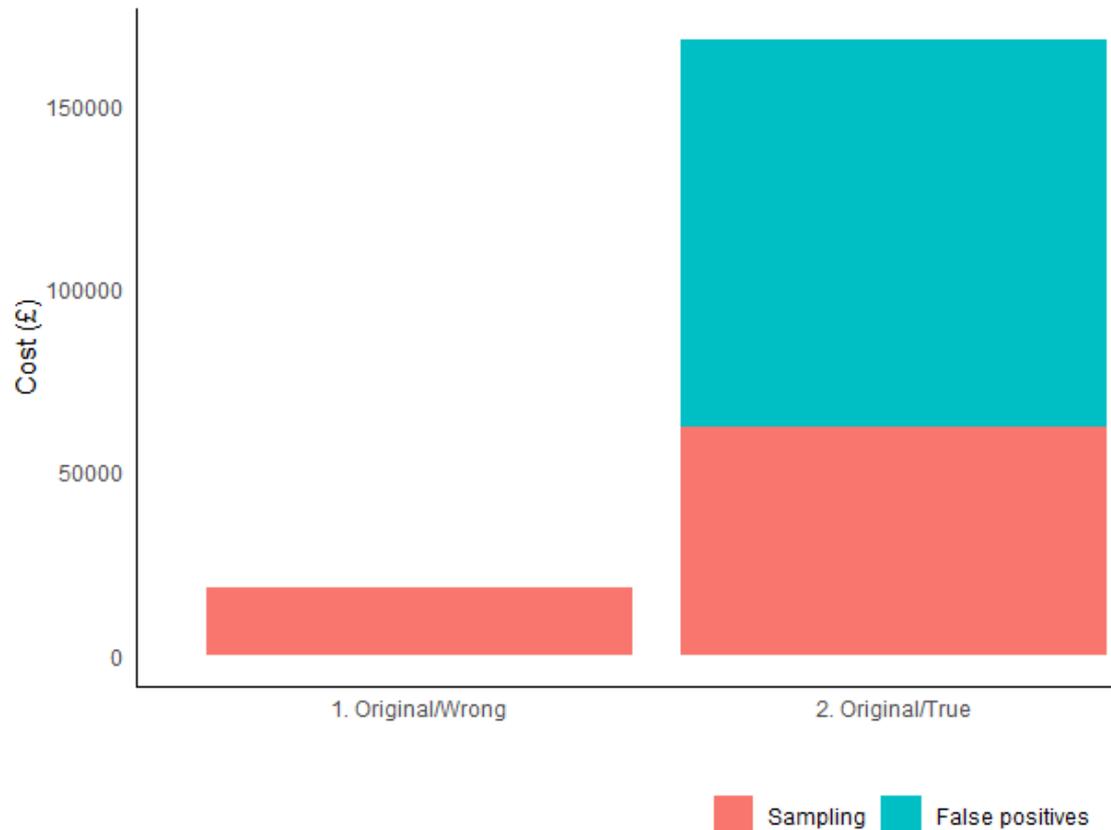
Total sampling programme cost of detecting the disease at 1% prevalence (at 95% confidence)



What budget should be allocated to achieve upper threshold of prevalence at first detection?

# Value of validation framework – example result

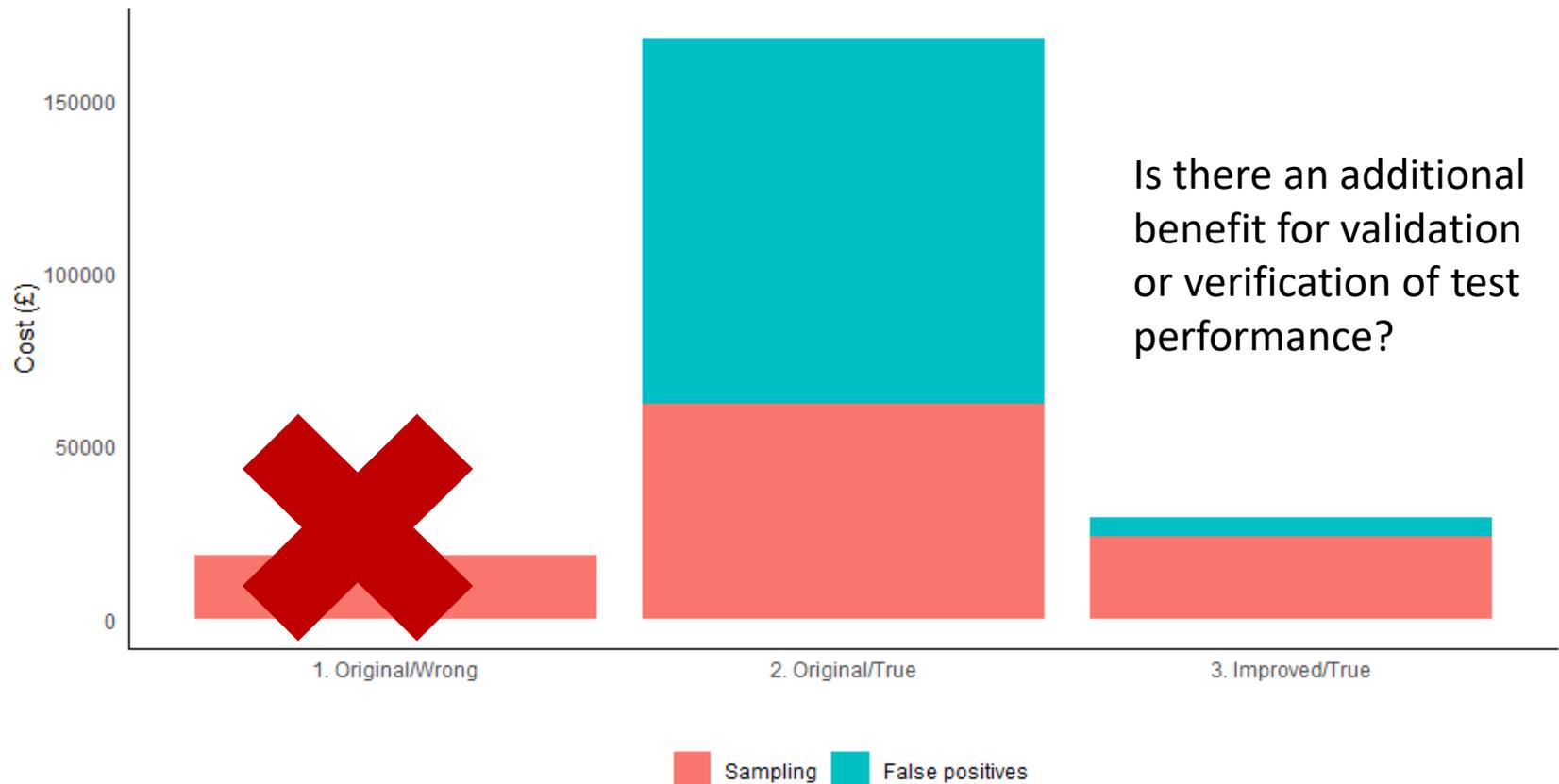
Total sampling programme cost of detecting the disease at 1% prevalence (at 95% confidence)



What budget should be allocated to achieve upper threshold of prevalence at first detection?

# Value of validation framework – example result

Total sampling programme cost of detecting the disease at 1% prevalence (at 95% confidence)



# Impact beyond the project

- Co-design/development to ensure end-user focus
- Webinar highlighting the importance of communication between risk managers & laboratories
- Framework can...
  - ...contribute to updating EPPO standards related to validation & verification
  - ...be used as a training/information tool highlighting the importance of validation and communication
  - ...inform discussions on test performance needs & trade offs
  - ...be used to help design sampling plans, budgets,...
  - Next steps(?): Can be developed into a user-friendly tool
- Two publications (to be completed)

# Thank you for your attention!

E-mail: [glyn.jones@fera.co.uk](mailto:glyn.jones@fera.co.uk)



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