Introduction

• Pest Risk Assessment (PRA) is the principle mechanism for assessing the risk of a plant pest to an endangered area and providing evidence for base-related regulation.
• To overcome the limitations of the currently available qualitative PRA schemes, two existing schemes were adapted to incorporate recent developments in plant health risk assessment research with regard to transparency and consistency in assessing the risk, and efficiency in evaluating risk reduction options. Both methods were tested against five case study plant pests.
• We report here: a) the two adapted schemes developed, b) the results from their application to 1) Compilation of Pest Datasheet

Methods

PHASE 1: INFORMATION GATHERING AND DATA ASSEMBLY FOR CASE STUDY PEST

1) Compilation of Pest Datasheet (format based on CABI Crop Protection Compendium): summary of the current state of scientific knowledge for the pest.
2) Systematic Literature Reviews (SLR) on particular aspects of the pest, relevant to the assessment of the risk and the evaluation of risk reduction options.

Table 1: Features of the risk assessment schemes used

PHASE 2: TESTING TWO RISK ASSESSMENTS METHODS AGAINST CASE STUDY PEST

The features of the two schemes (Method 2b, Method 4b) are described in Table 1. The possible pathways of entry were identified. For Ac, three major pathways were analysed (Fig. 2).

Results

Evaluation of the risk of Ac for EU, using Methods 2b and 4b, without applied measures:

Discussion & References

• Method 2b and 4b have been improved to account for uncertainty and consistently combine elements of risk in order to evaluate pest risk in a qualitative framework.
• Further research is required to refine the methods.

For the case study pest Ac:

- Both Method 2b and 4b give an overall pest risk profile with much uncertainty. For Method 2b, the risk is towards the lower end of the scale, while for Method 4b the risk is actually medium to high.
- Taking into account the major impacts reported where outbreaks of Ac have occurred, but which are normally only reported in a small area, a medium risk by Ac seems a reasonable output and is in line with assessors opinion.
- As (mineralization of PRA adapted) shifts the likelihood of entry of Ac to become less likely.
- RRO indices can be visualized by comparing bar charts, expressed as a percentage as a change and expressed as a new index, although much information is lost.

Testing two plant pest risk assessment schemes to support risk management decisions for the European Union: methodology used, data collection process and results obtained from application on a case study pest: Acidovorax citrulli.

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Abstract

Within the frame of an EFSA-funded project (Prima Phaice), two existing qualitative plant pest risk assessment schemes were adapted and converted into Bayesian Belief Networks to better align with the EFSA plant health sentiment and support risk management decisions for the European Union. The two schemes were referred to as Method 2b and Method 4b and based on an EPPO scheme and USDA scheme, respectively. In both methods, the risk elements were described using a qualitative verbal scale with five categories (very low, low, moderate, high, very high). They were combined using a Matrix model in Method 2b or a Bayesian Belief Network with conditional probability tables in Method 4b. Furthermore, Method 2b had three predefined rating levels (low, medium, high) of uncertainty, while Method 4b allowed full flexibility in assigning such ratings. For each plant, risk reduction options (RROs) were identified and their effectiveness was evaluated by comparing the likelihood that results with or without them in place. The methodology used on data collection and assembly, the application of the two adapted schemes to the case study pest: Acidovorax citrulli and the evaluation of RROs for this pathogen are presented.