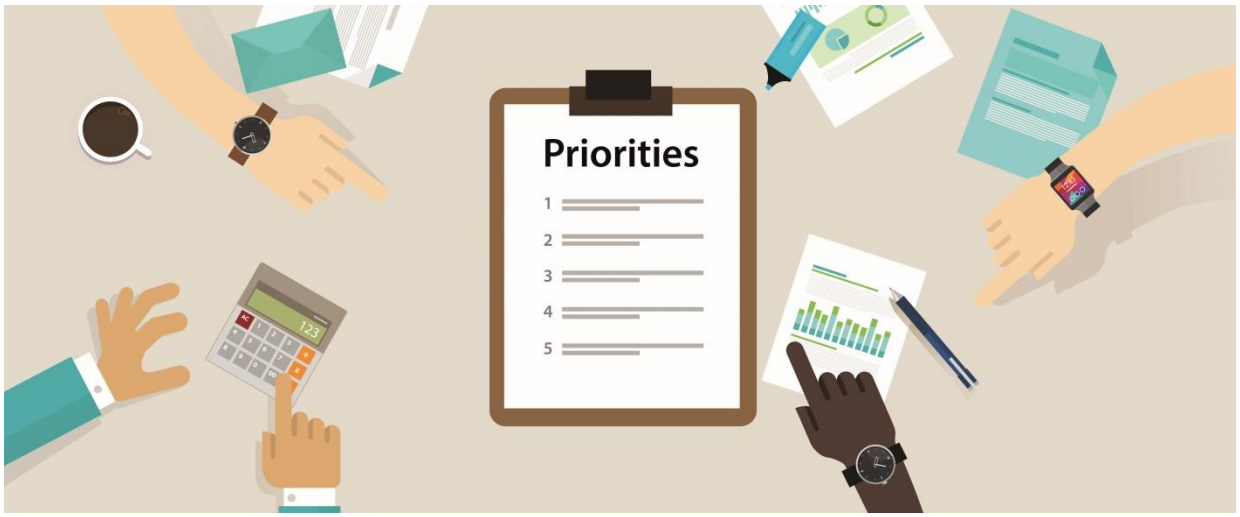
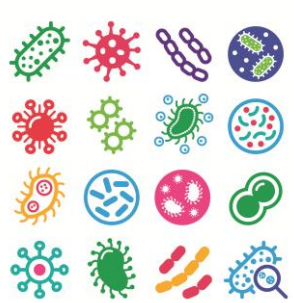
European Commission

Summary of the bilateral discussions between JRC and the Finnish and Dutch Authorities on national approaches for pest prioritization






Sánchez, B. ; Barreiro-Hurle, J.; Rodriguez-Cerezo, E. Soto-Embodas, I. (*JRC*)
Hannunen, S. (*Risk Assessment Research Unit - Finnish Food Safety Authority Evira)*
Schenk, M. (*National Plant Protection Organization - Netherlands Food and Consumer Product Safety Authority*)

March 2018

Joint Research Centre

CONTENTS

INTRODUCTION

During the presentation given by JRC at the Expert Group on *Plant Health Legislation – Discussion of the Delegated Act on Priority Pests* in Brussels on 16th of January 2018, two Member States (Finland - FI and Netherlands - NL) expressed a willingness to support JRC methodology by presenting their priority pest systems as an example of different approaches to deal with crop and forest hosts in one or more rankings. Two bilateral videoconference (VC) meetings were undertaken between JRC-Finland and JRC-Netherlands:

1. FI VC meeting was held at 8th February 2018 on "FinnPRIO: A Model for Ranking Invasive Plant Pests Based on Risk" (see FI EVIRA presentation in Annex I)
2. NL VC meeting was held at 15th February 2018 on "Pest Risk Ranking in the Netherlands" (see NVWA presentation in Annex II)

This document provides the list of participants and the minutes of the discussions undertaken during the two VC bilateral meetings. As requested by JRC both MS presentations were focused on: (i) an overview on how their model works but particular attention given on the impact assessment part (economic, social and environmental) and, (ii) how their approaches do to overcome the differences between crops and forestry hosts to make them comparable within the same priority system or ranking. The presentations are provided as annexes (see above). Regarding the impact assessment component (the equivalent to the ongoing JRC model), there are several similarities between the FinnPRIO, the NL Pest Risk Ranking and the JRC methodology. Particularly for the indicators selection (e.g., production loss) and how they can be estimated by combining semi-quantitative ratings scales (i.e., based on actual quantitative values and then normalised to scoring scales) and qualitative rates (e.g., yes/no questions). Nevertheless when it comes to the approaches tackling crop versus forest or tree hosts, FI includes all pests-hosts in the same ranking and NL split them by host type (crops, forest, ornamental). A potential explanation for the inclusion of all the pests-hosts in the FI priority pests system, rather than establishing a separate classification based on host affected, was the limited number of forest species in the ranking and the availability of data for ornamental trees related calculations.

The summaries of the two VC meetings come under the two main sections: (I) VC Meeting JRC D4 – FI EVIRA on Priority Pests and (II) VC Meeting JCR D4 – NL NVWA on Priority Pests.

I. VC MEETING JCR D4 – FI EVIRA ON PRIORITY PESTS

List of participants

Finland - EVIRA

- Salla Hannunen
- Sari Haikola
- Juha Tuomola

Seville - JRC D4

- Emilio Rodriguez-Cerezo
- Berta Sánchez

Minutes of the meeting

EVIRA presented the Finnish priority pest system FinnPRIO, a model for ranking invasive plant pests based on risk. During the presentation a discussion was held between EVIRA and JRC to learn from the Finnish experiences since JRC is preparing a methodology for ranking EU priority pests.

The structure and content of the EVIRA presentation, as requested by JRC, was mainly focused on

1. An overview on how the Finnish model works but specially attention given on the impact assessment part (economic, social and environmental).
2. How the FinnPRIO does to overcome the differences between crops and forestry groups to make them comparable within the same priority system or ranking.

The key messages presented in this bilateral meeting include:

- The FinnPRIo took about two years to be designed as a robust methodology to enable comparison of different pests. So far, about 240 pests have been assessed. Equal weights were given to economic and social/environmental factors in these assessments.
- The model comprised three principal components: i) probability of invasion, ii) impact of invasion and iii) manageability of invasion. The components are treated independently rather than interacting between them. However, some parameters obtained from one component can be integrated in the others. For example the distribution of invasion is used to determine direct economic losses as we do in the JRC approach. The uncertainty is

addressed by using stochastic ordering techniques with the whole probability distributions of the scores.

- Regarding the impact assessment component (the equivalent to the ongoing JRC model), there is similarity between the FinnPRIO and the JRC for priority pests in that both look at impacts in scenarios of maximum spread.
- The impact assessment component includes quantitative and qualitative evaluation. Direct economic impacts are based on quantitative evaluation with data from a national report (in Finnish) containing disaggregated data by species for both crops and forest species production. Subsidies are not taken into account for the estimations. Amenity trees data are not disaggregated by species but they were up-scaled from a detailed assessment in Helsinki on urban trees.
- To evaluate the indirect economic impacts, the environmental and the social impacts, only limited qualitative evaluation and expert knowledge are used.
- In the FinnPRIO model pests affecting crops and forestry hosts are comparable in the same ranking since there are not more than three different forestry species in Finland which make the comparison more manageable.
- Further, controllability (which is similar to the JRC indicator "difficulty of eradication") and preventability are considered separately from the impact assessment component in the FinnPRIO in order to inform risk managers about the viability of the different risk management options (i.e. prevention of invasions vs. eradication/containment). This way pests that are impossible to manage with a given management option (e.g. eradication after entry) can be given low priority for that management option, but high priority for other management options (e.g. prevention of entry).

II. VC MEETING JCR D4 – NL NVWA ON PRIORITY PESTS

List of participants

Netherlands – NVWA (Netherlands Food and Consumer Product Safety Authority)

- Martijn Schenk

Seville - JRC D4

- Jesus Barreiro-Hurle
- Berta Sánchez
- Iria soto Embodas

Minutes of the meeting

NVWA presented the pest risk ranking in the Netherlands, a model for ranking quarantine pests that are currently regulated or are candidates for regulation in the Netherlands. During the presentation a discussion was held between NVWA and JRC to learn from the Dutch experiences since JRC is preparing a methodology for ranking EU priority pests. NVWA also highlighted some comments to the JRC and EFSA methodology on priority pest identification as presented in the Expert Group meeting on 15 January 2018.

The NVWA presentation, as requested by JRC, was mainly focused on

1. An overview on how the Dutch system works but specially attention given on the assessment of impacts (economic, social and environmental).
2. How the Dutch system does to overcome the differences between crops and forestry groups to make them comparable within the same priority system or ranking.

The key messages presented in this bilateral meeting include:

- About 100 organisms have been assessed by using the pest risk ranking in the Netherlands (excluding e.g. quarantine organisms which are already present and those with a very low likelihood of establishment). The risk ranking was specifically assessing the situation in the Netherlands, so its aim was to identify those organisms that present the highest risk for the Netherlands.

- Impacts of the pests are considered in three domains (1) direct impact on crop production; (2) impact on natural areas; and (3) impact on exports.
- The methodology combined semi-quantitative ratings (E.g. production value being transposed into six classes) and qualitative rates with a rating guidance to assure that subjectivity in assessment by evaluators is minimized. The number of classes in the rating guidance was limited to four, five or six classes, and there is a considerable impact on the final ranking when the qualitative ranking for an indicator changes from one class to another. No systematic review of the reproducibility of the method was performed. Nevertheless, in the majority of cases experts agreed on the class (e.g. very unlikely *vs.* likely; negligible *vs*. low).
- The probability of introduction is assessed considering the likelihood of entry, the likelihood of transfer, the likelihood of establishment (as in ISPM11), and the likelihood to survive to eradication measures, taking into account the current regulations. In particular the last concept seems to measure the same concept as the difficulty of eradication indicator proposed by JRC, a pest with higher likelihood of survival to eradication in the NL method would be a pest with difficult eradication for JRC. The four dimensions that are combined to estimate the probability of introduction are summarised in a single value by using a matrix. This matrix plays the role of the weighting system in the JRC methodology. The NL matrix considers as rows the lowest value for likelihood of entry, likelihood of establishment and likelihood of transfer and as columns the likelihood to survive eradication. The higher the value of any of the two dimensions, the higher the ranking of the pest. This part of the methodology has been published in the EPPO Bulletin (DOI: 10.1111/epp.12354).
- The model for direct impact on crop production comprises three main components: one covering the estimated impact on production (crop losses and/or additional production costs), one covering the estimated long-term spread of the organism in the Netherlands (upon establishment), and one covering the production value of the crop. The scores for these components are multiplied, and then translated into a single (1-9) value. The potential effects component corresponds to the assessment of impacts as understood in the JRC proposal.
- Impact on natural areas considers plant health in forests, gardens, street plantings and parks, and thus covers both trees in natural areas and ornamental trees. This is measured using a single qualitative indicator ranking from 1 (less important) to 5 (most important). The

levels are described in a rating guidance to minimize subjectivity. The guidance combines the effects of spread capacity, host plant density and degree of damage caused by the pests.

- Impact on exports considers both extra-EU trade and exports of the Netherlands to other Member States. Three components are used, one covering the estimated long-term spread of the organism in the Netherlands (upon establishment) and one covering the export value of the crop. In addition, the third component considers the degree to which it is possible to guarantee the absence of the pest on consignments (including e.g. costs of treatment) to continue exports of a product. A limitation is that the number of countries to which the exports are directed have declared the pest as a quarantine pest was not taken into account.
- A more detailed description of the methodology can be found at the website of the NVWA (in Dutch)
- For each of the 100 pests a [1]1.5 page document is made explaining the evaluation procedure and data.
- Examples of the highest ranking organisms with regard to crop production in the Netherlands are *Bactericera cockerelli* (with *Ca.* Liberibacter solanacearum), *Rhagoletis pomonella*, *Anthonomus eugenii, Nacobbus aberrans, Anthonomus quadrigibbus, Conotrachelus nenuphar*, and *Carposina sasakii.*
- The impact on crop production and exports tended to align. Hence, organisms with a strong impact on production will have a strong impact on export (but with notable exceptions, such as *Xyllela fastidiosa*, which is expected to have a limited impact in the Dutch climatic conditions, but will have strong effect on exports). These impacts could have been combined straightforwardly into a single impact score. Due to the fact that economic impact of pests affecting trees is normally low in the Netherlands (limited wood production and hence negligible production value) compared to agricultural crops, two rankings have been made (impact on crop production and Impact on natural areas). Without a separate ranking for impact on natural areas, only pests affecting agricultural crops would have obtained high rankings. E.g. neither *Agrilus anxius*, *Agrilus planipennis* or *Ceratocystis fagacearum* ranks

[1] www.nvwa.nl/documenten/risicobeoordeling/plantenziekten/quarantainewaardige-organismen/methodiek/methodiek-korte-risicobeoordeling-van-fytosanitaire-gevaren

high according to the impact on crop production, whereas the impact on natural areas is estimated to be very high. This could be the case too using the JRC methodology; therefore a double list could overcome this limitation.

- An example of some pests of each category from the NVWA official report (in Dutch) that contains the results for the 100 pests evaluated will be sent to JRC by NVWA.

ANNEXES

ANNEX I: FinnPRIO: A Model for Ranking Invasive Plant Pests Based on Risk.

ANNEX II: Pest Risk Ranking in the Netherlands.

ANNEX I

FinnPRIO: A Model for Ranking Invasive Plant Pests Based on Risk

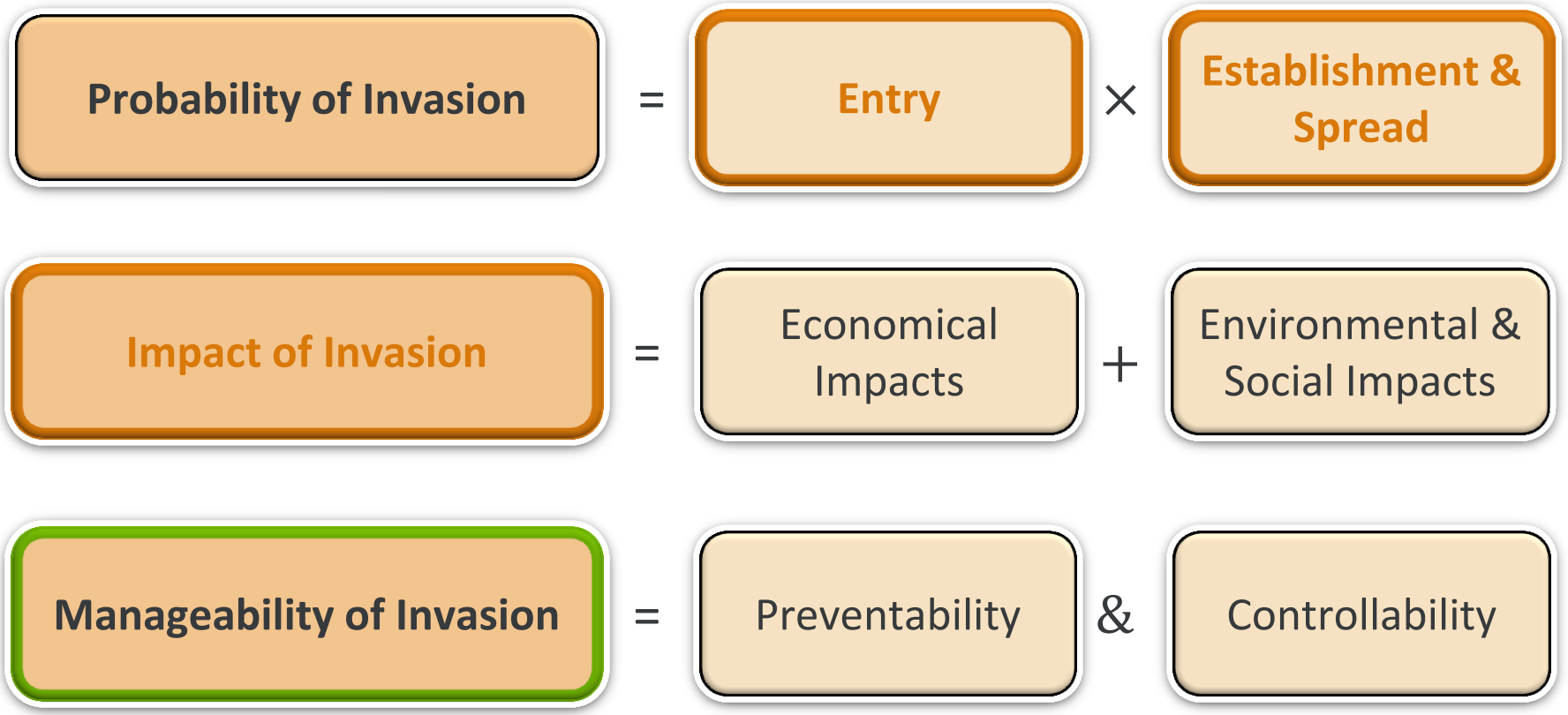
An overview of the model

&

specifics of the impact assessment section

8 February 2018, Salla Hannunen

Basic structure



Uncertainty - questions

FinnPRIO consists of **18 questions** with answer options yielding a different number of points

For each questions the **most likely**, **minimum** and **maximum** answer option is selected

These are used to define a PERT **probability distribution that describes the uncertainty of the answer**

Ranking the pests

a) Based on **summary statistics** (e.g. median, min, max) of the probability distributions of the section scores

b) Based on **the whole probability distributions** of the scores using stochastic ordering techniques

⇒ ordinal ranking or ranking that expresses also the distance between the ranked groups

Impact assessment

Q1 Direct **economic** impact

Q2 Indirect **economic** impacts

- *Q2.1* Impact on foreign trade
- *Q2.2* Vectoring for other pests
- *Q2.3* Impact on the profitability of a plant production sector

Q3 Direct **environmental** impact

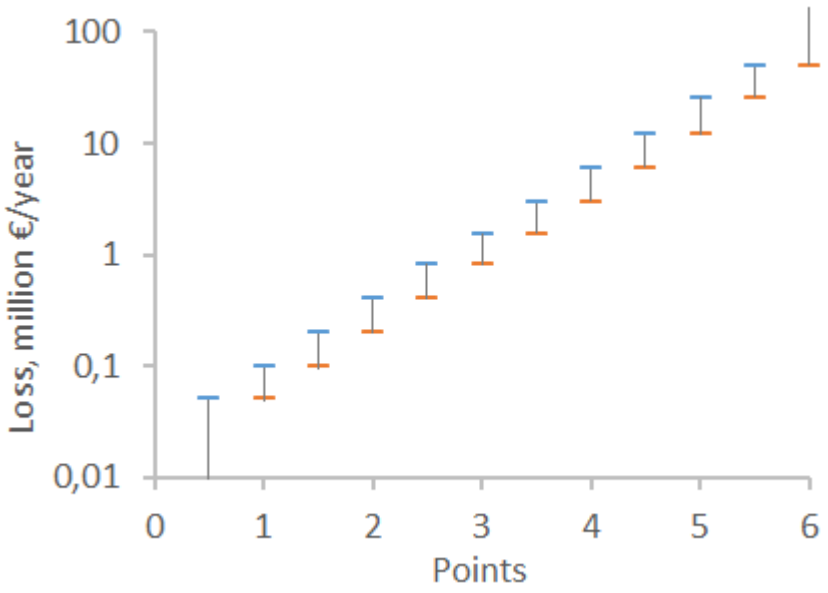
Q4 Other **environmental** and **social** impacts

- *Q4.1* Cultural impacts
- *Q4.2* Aesthetic impacts
- *Q4.3* Impact on plants that have an important, recognized position in the local culture

Impact question 1 (*Q1*)

How significant are the direct economic losses that the pest would cause?

a) It would not cause losses (0 points)
b) < 0.05 million € per year (0.5)
c) 0.05–0.1 million € per year (1)
d) 0.1–0.2 million € per year (1.5)
e) 0.2–0.4 million € per year (2)
f) 0.4–0.8 million € per year (2.5)
g) 0.8–1.5 million € per year (3)
h) 1.5–3 million € per year (3.5)
i) 3–6 million € per year (4)
j) 6–12 million € per year (4.5)
k) 12–25 million € per year (5)
l) 25–50 million € per year (5.5)
m) > 50 million € per year (6)



Impact question 1 (*Q1*)

Include crop losses, quality losses and control costs

Exclude cost of eradication measures required by the PH legislation

Crop and quality loss = the total value of the threatened crops in the threatened area (€) × the expected proportional crop loss

Control cost = the control cost per area (€/ha) × the total production area of the threatened crops in the threatened area (ha)

The total value of the threatened crops

Agricultural and horticultural crops by species (€/year) = crop (tons/year) × producer price (€/ton)

Forest trees by species (€/year) = round wood removals (m^3/year) × stumpage price (€/m^3)

Amenity trees in total (€): A detailed assessment for Helsinki, extrapolated based on the share of the urban population in Helsinki vs. the rest of the country

Production costs, value added or subsidies not taken into account

Estimates published in a report in Finnish

Most of the estimates published in English in an unofficial document

Impact question 2 (*Q2*)

Would the pest cause the following indirect economic impacts?

Q2.1 Would the pest impact **foreign trade**?

a) No (0 points)

b) Yes (1)

Q2.2 Is the pest a **vector** for other pests?

a) No (0)

b) Yes (1)

Q2.3 Would the pest have a significant impact on the **profitability of some plant production sector**?

a) No (0)

b) Yes (1)

Impact question 3 (*Q3*)

How much direct impact would the pest have on the natural ecosystems?

a) No impact (0 points)
b) Moderate impact (2)
c) Significant impact (4)
d) Very significant impact (6)

Impact question 3 (*Q3*)

No impact

- Host plants do not occur naturally in Finland
- Some wild species are hosts, but no damage has been observed in natural environments in the area of current distribution
- The pest could damage some parts of wild plants, but would not kill them, and would not hinder the functioning of the ecosystems

Moderate impact

- The pest could kill individual plants, but would not be likely to lead to a decrease in host populations, or hinder the functioning of the ecosystems

Significant impact

- The pest could cause a decrease in the plant populations, or hinder the functioning of the ecosystems

Very significant impact

- The pest could cause extinction or significant decrease of host species, or cause significant damages to the ecosystems

Impact question 4 (*Q4*)

Would the pest have the following environmental or social impacts?

Q2.1 **Cultural** impacts

a) No (0 points)

b) Yes (1)

Q4.2 Significant **aesthetic** impacts

a) No (0)

b) Yes (1)

Q4.3 An impact on **plants which have an important, recognized position in the local culture**

a) No (0)

b) Yes (1)

Impact questions

Q1 Direct economic impact **0–6 points** **MAGNITUDE**

Q2 Indirect economic impacts **0–3 points**

- *Q2.1* Impact on foreign trade
- *Q2.2* Vectoring for other pests
- *Q2.3* Impact on the profitability of a plant production sector

YES/NO

Q3 Direct environmental impact **0–6 points** **MAGNITUDE**

Q4 Other environmental and social impacts **0–3 points**

- *Q4.1* Cultural impacts
- *Q4.2* Aesthetic impacts
- *Q4.3* Impact on plants that have an important, recognized position in the local culture

YES/NO

Calculation of the impact score

- The impact score is calculated as a **sum** of the question scores
- Different **weights** can be given to economic and environmental/social impacts
- The score is normalized so that it gets values between 0 and 100

$$IMP = [w_1(Q1 + Q2) + w_2(Q3 + Q4)]/IMP_{max} \times 100$$

w_1 = the weighting coefficient of economic impacts

w_2 = the weighting coefficient of environmental/social impacts

$0 \leq w_1 \leq 1,\ w_1 + w_2 = 1$

IMP_{max} = the maximum score for the impact section

Controllability ≈ Difficulty of eradication

How difficult would it be to eradicate the pest from Finland?

a) Easy (0 points)
b) Rather difficult (2)
c) Very difficult (3)
d) Impossible (4)

How difficult would it be to survey the pest's occurrence in Finland?

a) Easy (0)
b) Rather difficult (1)
c) Very difficult (2)
d) Impossible (3)

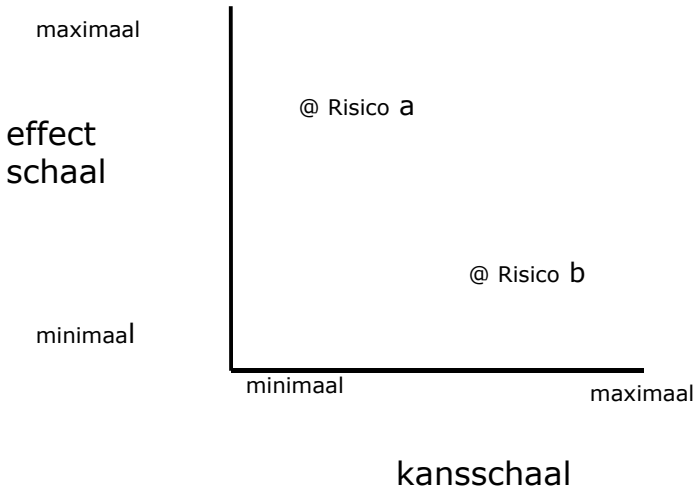
The maximum question score determines the controllability score

The higher the score, the less likely is successful eradication or containment

ANNEX II

Nederlandse Voedsel- en Warenautoriteit
Ministerie van Economische Zaken, Landbouw en Innovatie

Risk ranking van gereguleerde organismen (plantgezondheid)

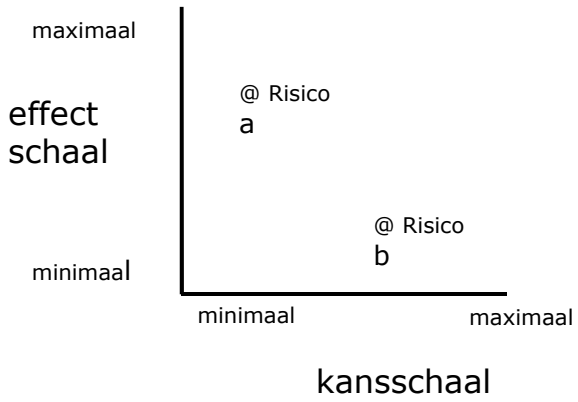


Dirk Jan van der Gaag
Gerard van Leeuwen
Antoon Loomans
Roel Potting
Ko Verhoeven

Risk ranking van de quarantaine-organismen

"Groslijst":

- EU Annex I + II Fytorichtlijn
- EU-noodmaatregelen
- Organismen op nominatie
- NL Quarantainewaardigen



- Ruim 250 organismen(groepen)

Selectie uit “groslijst”

Niet geselecteerd:

- Gevestigd in NL (kans van een geheel andere orde)
- Onduidelijke identiteit
- Vestiging onwaarschijnlijk
- (very) low impact effect volgende recente risicobeoordelingen (met name EFSA-opinies)
- Zeer kleine kans: pathways gesloten middels importverbod

Ca. 100 organismen(groepen) bleven over

Kans op introductie, definities

ISPM 11

Introduction = entry + establishment

Introductie (Introduction) = binnenkomen (entry)
+ vestigen (establishment)

NB “introduction” in sommige publicaties is gelijk aan “entry” zoals gedefinieerd in ISPM11

Klassen en rating guidance voor “kans”

- EPPO-PRA schema: 5 klassen
  - Very unlikely
  - Unlikely
  - Moderately likely
  - Likely
  - Very likely

  Geen rating guidance

- EFSA-RA schema: 5 klassen (gelijk aan EPPO), kwalitatieve beschrijving van kwalitatieve termen

Voorbeeld kwalitatieve beschrijving EFSA

Table 6: Probability of association with SGM and survival of the pests in SGM

Rating	Descriptors
Very unlikely	The association would be very unlikely because: • pests are not associated, or very rarely associated, with the SGM; or • pests are very unlikely to survive in the SGM
Unlikely	The association would be unlikely because: • pests are rarely associated with the SGM; or • pests are unlikely to survive in the SGM
Moderately likely	The association would be moderately likely because: • the pests are frequently associated with the SGM; or • the pests are sometimes able to survive in the SGM
Likely	The association would be likely because: • the pests are regularly associated with the pathway at the origin; or • the pests can survive in the SGM
Very likely	The association would be very likely because the pest: • the pests are usually associated with the pathway at the origin; or • the pests are very likely to survive in the SGM

Table 7: Effectiveness of the phytosanitary measures to reduce the probability of entry

Rating	Descriptors
Negligible	The probability of entry is not reduced by the measure
Low	The probability of entry is reduced to a limited extent by the measure
Moderate	The probability of entry is substantially reduced by the measure
High	The probability of entry is reduced to a major extent by the measure
Very high	The probability of entry is eliminated by the measure

Risk ranking door andere EU-lidstaten

- Verenigd Koninkrijk: plant health register
- Finland: FinnPRIO
- Frankrijk

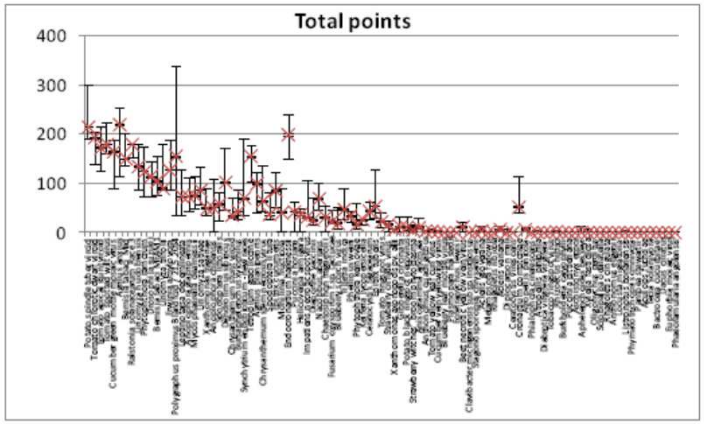


Figure 3. Total scores for 95 species that have been evaluated.

FinnPRIO

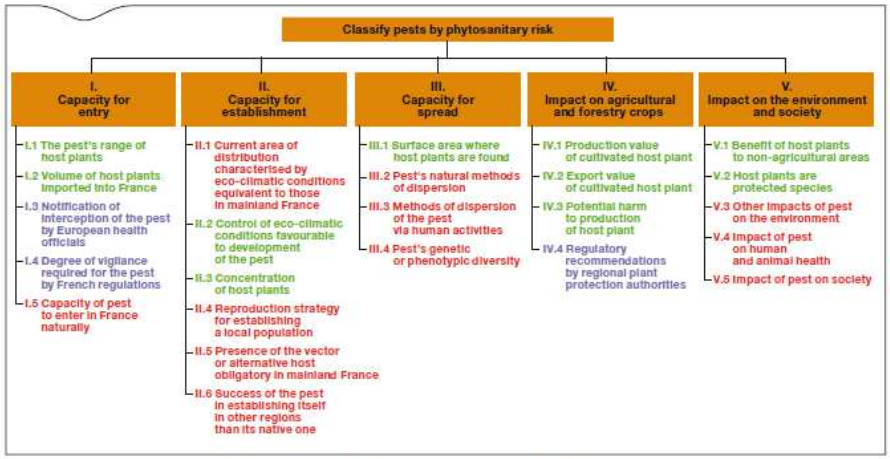


Figure 2. Diagram of metacriteria (orange blocks) and criteria (in colour) selected for the prioritisation method.
The red, green, and purple titles refer to the biology of the organism, host plants, and regulatory measures, respectively.

Methodologie-ontwikkeling: kans op introductie

Pathways identificeren en per pathway:

- P1: kans op associatie ondanks Fyto-eisen en importinspecties (komt binnen op plant/product)
- P2: kans op transfer
- P3: kans op vestiging bij gebruikelijke teeltmaatregelen
- P4: kans op overleven uitroeiactie

Per criterium: 4-5 niveau's + rating guidance

P(1-4): 6 niveau's

P1 –rating guidance

Score	Beschrijving met voorbeelden
1	Organismen waarvan de kans zeer klein is dat ze meekomen met de plant of het product vanwege één of meer van de volgende redenen: - Import van het product of de plant is verboden (uit gebieden waar het organisme voorkomt) - Er is geen import uit gebieden waar het organisme voorkomt - De planten of producten worden verhandeld op een moment dat ze gezien de biologie van het organisme in principe niet besmet kunnen zijn - De planten of producten worden dusdanig behandeld dat ze in principe niet besmet kunnen zijn (indien er aanwijzingen zijn dat de behandelingen niet afdoende zijn of onvoldoende worden toegepast, bijvoorbeeld bij verpakkingshout uit bepaalde landen, volgt automatisch een hogere score). - Andere maatregelen worden toegepast die als zeer effectief worden beoordeeld.
2	De plant of het product wordt geïmporteerd uit gebieden waar het organisme voorkomt en er zijn geen behandelingen die de aanwezigheid van het organisme (vrijwel) uitsluiten. In de afgelopen 10 jaar[1]: - zijn er geen intercepties en vondsten bekend in Nederland die konden worden gerelateerd aan de pathway, **en** - is er maximaal één vondst of interceptie bekend uit een andere EU-lidstaat die gelinked kan worden aan de pathway en zijn er verder geen aanwijzingen dat het organisme vaker meelift met de pathway in de EU. **NB** Bij afwezigheid van intercepties en pathway-gerelateerde vondsten kunnen er redenen zijn voor een score >2, bijvoorbeeld: - Organismen die niet gedetecteerd worden via de gebruikelijke visuele inspecties bij import, maar vermoedelijk wel regelmatig binnenkomen. - Organismen die vrij recent in de EU zijn geïntroduceerd en waarvan de verwachting is dat door natuurlijke uitbreiding van het verspreidingsgebied de kans op binnenkomen in Nederland via de pathway de komende 10 jaar sterk zal toenemen

Combineren van criteria

associatie bij aankomst (incl. volume)

transfer

Vestiging na transfer

- Kans op besmetting: minimum (P1,P2)
- Kans op een uitbraak: minimum (P1,P2,P3)

UK: "the likelihood is based on the minimum of the scores for entry and establishment."

Baker et al., 2014. EPPO Bulletin 44, 187-194

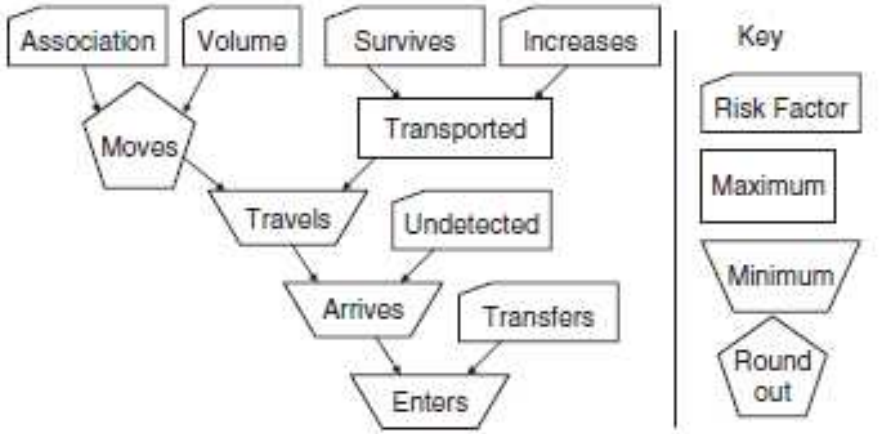


Fig. 7. The submodel hierarchy for each pathway of entry, modified from that used in the Prima phacie project. The basic attributes are the risk factors, each described by a scheme question. The utility functions are described in Fig. 1.

Holt et al., 2014. Risk Analysis 34, 1-16

Combineren van criteria

associatie

transfer

Vestiging na transfer

- Kans op besmetting: minimum (P1,P2)
- Kans op een uitbraak: minimum (P1,P2,P3)
- Kans overleven uitroeiactie (P4)
- Kans op introductie (P1-P4):

P4

MIN(P1,P2,P3)

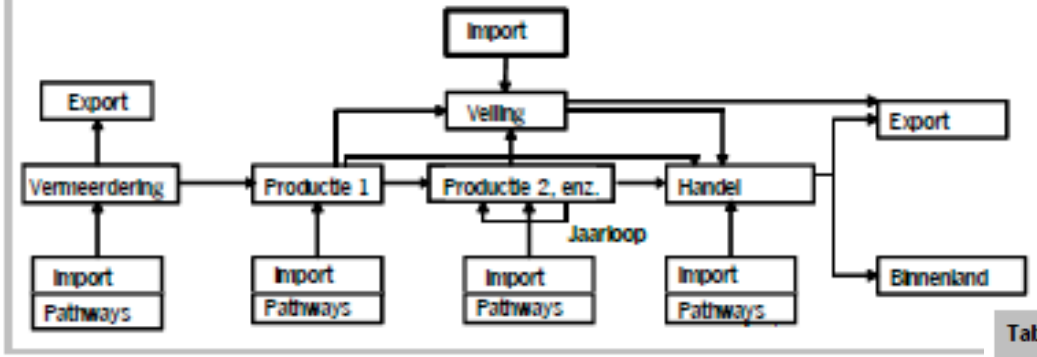
		Kans op overleven uitroeiactie			
		1	**2**	**3**	**4**
Kans op een uitbraak	**1**	1	1	2	3
	2	1	2	3	4
	3	2	2	4	5
	4	2	3	4	5
	5	3	3	5	6

Impact is separated into three impact scales:

- Effect on agricultural production
  (yield/quality reduction + addiational producer costs)
- Effect on natural areas
- Effect on export
  (including export to other EU-memberstates)

LEI-studie boomkwekerij: kans x kosten uitroeimaatregelen

Figuur 2.1 Keten voor de boomteelt met onderscheid naar teeltduur tot en met het tweede teeltjaar



Kans: o.b.v. aantal vondsten in afgelopen 5 jaar
Gevolgen: kosten bedrijven door overheidsmaatregelen

Tabel 3.3 Indeling van Q-organismen die in de bijlagen van de Fytorichtlijn zijn genoemd, ingedeeld op basis van kans en gevolg

Waarschijnlijk aantal vondsten per jaar	Categorieën van gevolg vondst		
	hoog	**middelmatig**	**laag**
Hoog	*Anoplophora chinensis*		*Erwinia amylovora* (bacterievuur) *Cryphonectria paras.* Plum pox virus *Xanthomonas arb. Pv pruni* *Xiphinema americ.*
Middelmatig		*Pseudomonas pruni* TRSV (Hemerocallis)	
Laag	*Anoplophora glabripennis* *Bursaphelenchus xylophilus (PWN)*	Apple prol. myc. *Bemisia tab.* Liriomyza Pear decl. Phyt.	Alle overige in bijlage 1 genoemde organismen

Bremmer et al. (2012) Analyse van fytosanitaire risico's in de boomkwekerij

Impact “NL-model”

Aparte scores voor:

- Teelt: oogstverliezen + kosten gewasbescherming
- Groene ruimte
- Export (incl. export naar andere EU-lidstaten)
- Uitroeimaatregelen: 2 klassen, bedrijf of gebied

Impact voor de teelt

- Effect per perceel (Ef) [1-5]
- Verwacht % besmette percelen (Verspreiding over NL) [1-4]
- Productiewaarde teelt (Pw) [1-6]

Na combinatie (Ef x V x Pw) en samenvoeging:

9 klassen.

Standaardopbrengswaarde en areaal (LEI,CBS)

CBS code	Omschrijving	SO (euro/eenheid)	Eenheid	Aantal	Omzet 2014 (euro)	Opmerking
Groep: Bloembollen en -knollen						
550	Iris	25500	ha	245	6.251.580	
578	Krokus	14100	ha	467	6.580.470	
561	Zantedeschia	36400	ha	216	7.878.416	
548	Dahlia	26400	ha	395	10.435.128	
559	Narcissen	10800	ha	1.684	18.191.520	
553	Gladiool	24900	ha	1.005	25.012.797	
562	Overige bol- en knolgewassen	18600	ha	2.370	44.078.838	
552	Hyacinten	37600	ha	1.482	55.705.528	
558	Lelies	36400	ha	5.215	189.842.744	
560	Tulpen	18300	ha	11.440	209.352.000	
CBS code	Omschrijving	SO (euro/eenheid)	Eenheid	Aantal	Omzet 2014 (euro)	Opmerking
Groep: Boomkwekerijgewassen en vaste planten, onder glas						
670	Vermeerdering en/of aantrekking	200500	ha	122	24.420.900	
672	Volledige teelt onder glas	456000	ha	348	158.546.640	
Groep: Boomkwekerijgewassen en vaste planten, open grond						
536	Trek- en besheester	26100	ha	171	4.469.364	

Kans en impact voor de teelt: NL vs VK

NL:

- Kans (1-6) (incl. kans op uitroeien)
- Impact - teelt (1-9)
- Impact – groene ruimte (1-5)
- Impact – export (1-9)

UK-risk rating:

- Likelihood (1-5) (excl. kans op uitroeien)
- Impact (1-5) (MAX(Economic, Social and Environmental impact), incl. export
- Value at risk (1-5)
- UK relative risk rating: likelihood x impact x value at risk (1-125)

Potentiële impact voor export

- Wg: Garantiestelling & biologie organisme [1-4]

Te veel werk voor elk organisme – product combinatie belangrijkste exportlanden en hun eisen te inventariseren

- V: Verwacht % besmette percelen (Verspreiding) [1-4]
- Pwe: Productiewaarde [1-6]

Rating guidance

Impact export = Wg x V x Pwe

Samenvoeging tot 9 klassen.

Impact voor de groene ruimte

Score	Beschrijving	Voorbeelden
1	Geen/nauwelijks zichtbare schade **of** geringe schade in combinatie met lage dichtheid gevoelige waardplanten	*Daktulosphaira vitifoliae* (tolerante onderstam)
2	Geringe schade en hoge dichtheid gevoelige waardplanten **of** duidelijke cosmetische schade maar lage dichtheid gevoelige waardplanten **of** lokale sterfte van planten maar zeer lage dichtheid aan gevoelige waardplanten.	*Scirrhia pini, Pseudomonas syringae* pv. *actinidiae* (kiwi niet in openbaar groen, lage dichtheid in particuliere tuinen)
3	Schade valt op, gevoelige waardplanten vrij algemeen, maar leidt over het algemeen niet tot sterfte van planten **of** lokaal sterven planten, maar omdat mate van verspreiding van organisme beperkt blijft door biologie, vrijwillige maatregelen en/of lage waardplantdichtheid, blijft impact voor heel Nederland beperkt.	*Phytophthora lateralis Cryphonectria parasitica* (lage waardplantdichtheid) *Cameraria ohridella,* Perenroest, echte meeldauw op eiken, *Ceratocystis platani* (plataan belangrijke stadsboom, maar besmettingen alleen lokaal)
4	Waardplanten algemeen, planten sterven af of verliezen sierwaarde en worden daarom vaak verwijderd of niet meer aangeplant. In vergelijking met (5) nog redelijk beheersbaar.	Buxusmot*, Anoplophora glabripennis, Cylindrocladium buxicola*
5	Zeer groot effect: waardplanten algemeen, planten sterven af en een groot deel van Nederland ondervindt op (termijn) jaarlijks schade. Lastig te beheersen.	*Agrilus planipennis,* Iepenziekte

Risicobeoordeling per organisme

Geen volledig literatuuronderzoek

Wel standaard:

- EPPO-Global database
- EPPO-datasheet
- EPPO-PQR
- EFSA/EPPO-PRA indien beschikbaar
- Productiewaarde teelt (LEI-CBS-cijfers)
- Evt. aanvullende literatuur, PRAs derden, …

Burkholderia caryophylli (Burkholder) Yabuuchi et al. (IIAII)

Aanwezig in de EU: nee (EFSA-PLHP, 2013). In het verleden is *B. caryophylli* wel gevonden in een aantal landen in de EU. Volgens EPPO-PQR komt het organisme in de EU nog voor in Italië met een "restricted distribution". Deze pest status is echter gebaseerd op gegevens van meer dan 20 jaar geleden en volgens de NPPO van Italië komt het organisme niet meer voor (EFSA-PLHP, 2013).

Belangrijkste waardplanten en gewassen t.b.v. inschatting impact:
- *Dianthus* L. (anjer)

Belangrijkste pathways:
1. Planten bestemd voor opplant van *Dianthus* L. met uitzondering van zaden

Scores voor risk ranking:

P1 (associatie met pathway): 1 (pathway 1)
In Nederland is er een vrijwillig certificeringsprogramma waaraan vermeerderingsbedrijven deelnemen (http://www.naktuinbouw.nl/onderwerp/naktuinbouw-elite; last access 22 April 2014). De EPPO-datasheet zegt: "the lack of recent publications on this organism and the disease it causes indicate that its importance is now very minor." De kans op associatie wordt om deze redenen als zeer klein ingeschat (score 1).

P2 (transfer): 5
De pathway is planten bestemd voor opplant.

P3 (kans op vestiging na transfer): 3
De bacterie kan zich op natuurlijke wijze niet verspreiden tussen bedrijven. *B. caryophylli* is een rhizosfeer bacterie. Verspreiding van plant naar plant is relatief traag en vind plaats via de grond (Gullino and Garibaldi, 1997). Via hygiënische maatregelen kunnen bedrijven de bacterie elimineren.

P4 (kans overleven uitroeiactie): 1
De bacterie is in het verleden succesvol uitgeroeid.

Niveau officiële uitroei- en inperkingsmaatregelen: bedrijf

Effect op perceelsniveau: 5
Geïnfecteerde planten gaan dood. Er zijn geen middelen beschikbaar tegen bacterieziekten.

Mate van verspreiding: 2
De verwachting is dat bij eventuele introductie, de verspreiding beperkt blijft omdat de bacterie niet op natuurlijke wijze bedrijven kan besmetten. Omdat anjer een kleine teelt is (15 ha in 2014), zal al wel snel meer dan 10% van de percelen/kassen besmet zijn (score 2: 10-25%).

Productiewaarde: 2 (snijbloemen)
De productiewaarde van anjer onder glas was ca. 7 miljoen euro in 2014.

Impact op groene ruimte: weinig relevant
Het organisme is vooral een bedreiging voor de glasteelt.

Export: 3
Relevant voor uitgangsmateriaal, maar de productiewaarde van uitgangsmateriaal van anjer is niet bekend. Garanties op basis van bedrijfsvrijheid en vrijwillige certificering. EPPO-datasheet: "the introduction of an EPPO-recommended certification scheme for carnation (OEPP/EPPO, 1991) provides a satisfactory alternative to such plant quarantine requirements."

Productiewaarde export: niet bekend (zie Export).

Referenties
EFSA-PLHP (2013) Scientific Opinion on the risk to plant health posed by Burkholderia caryophylli for the EU territory with the identification and evaluation of risk reduction options. EFSA Journal 2013; 11(1):3071. [91 pp.] oi:10.2903/j.efsa.2013.3071.
Gulino ML, Garibaldi A (1997) Carnation: the diseases of bacterial origin. Colture Protette, 26, 79–81.

Meestal ca. 1,5 pagina per organisme

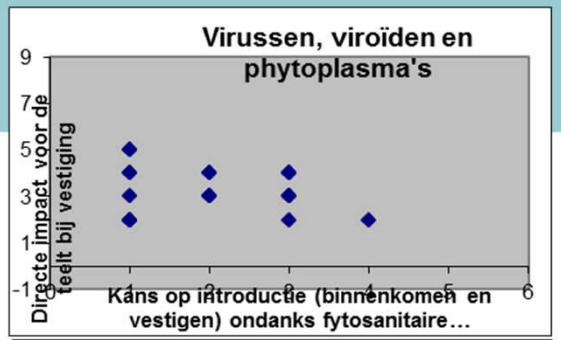
PSTVd: ca 4 pagina's

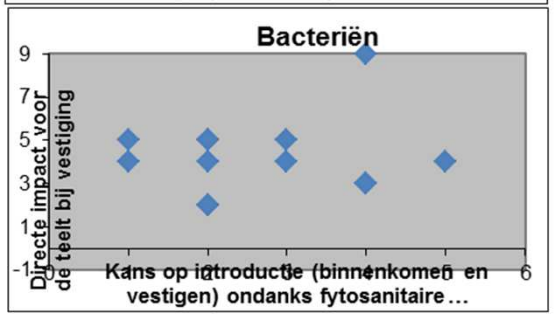
Rapport: Risk ranking van gereguleerde plantpathogenen en plaagorganismen

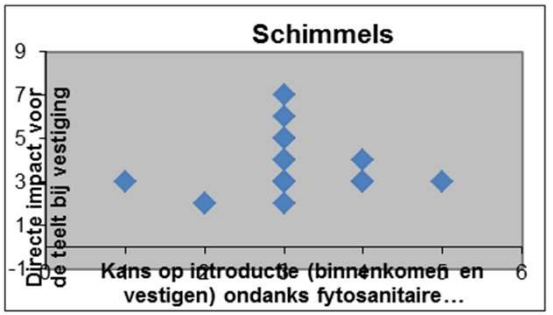
Inhoudsopgave

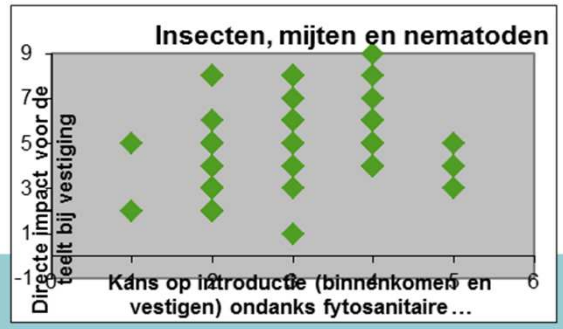
Algemeen beeld

- Virussen, viroïden, fytoplasma's
  - Relatief goed beheersbaar en uitroeibaar
- Bacteriën
  - CaLsol en Xf, vector, groot risico
- Nematoden
  - alleen B. xylophilus, Nacobbus aberrans
- Schimmels
  - Gesloten pathway voor meerdere soorten; die zijn niet beoordeeld
- Insecten en mijten
  - Organismen die lastig uitroeibaar zijn scoren hoog









Pathways

Pathway	**Aantal organismen waarbij de pathway als meest risicovol is beoordeeld**[1]
Planten bestemd voor opplant met uitzondering van zaden	64,0
Zaden	6,5
Vruchten (incl. vruchtgroenten)	11,7
Groenten	0,3
Snijbloemen	0,3
Houten verpakkingsmateriaal	3,0
Hout(snippers)	2,0
Meeliften	5,3
Overig	3,0

[1]Indien meerdere pathways gelijkwaardig werden beoordeeld is één punt gelijkelijk verdeeld over deze pathways.

Samenvatting en conclusies

- Reproduceerbaarheid methode niet systematisch onderzocht (niet anders dan bij reeds bestaande schema's)
- P1-P4: score 1 klasse hoger of lager kan relatief groot effect hebben
- Veel van de organismen met relatief hoog risico waren al in beeld (Surveys, communicatie, eliminatiescenario)
- Organismen waarbij kans op uitroeien klein is scoren relatief hoog; deze zijn niet altijd in beeld

JRC Mission

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing