



Netherlands Food and Consumer
Product Safety Authority
Ministry of Economic Affairs

Pest risk ranking in the Netherlands

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Ranking pests

Likelihood of introduction (entry + establishment) taking into account current regulations

- Current situation (including official requirements and eradication measures)
- Identify gaps in official regulations

Potential effects

- Direct effects on crop production (yield losses + control costs)
- Effect on the environment (including gardens, parcs, nature areas,..)
- Export

Method for pests that are not (yet) present



Likelihood of introduction

Identification of most important pathways

For each pathway:

P1: probability of arrival [1-5]

P2: probability of transfer [1-5]

P3: probability of establishment [1-5]

P4: probability to survive eradication measures [1-4]

Rating guidance for each score level



Rating guidance P1- P4

P1 (arrival)

Rating levels are mainly based on the number of interceptions, pathway-linked findings and current regulations on the pathways

P2, P3, P4 (transfer, establishment, eradication)

Rating levels include descriptions of various situations that may occur and which were ranked

Details of rating guidance in: Van der Gaag et al. EPPO Bulletin (in press)



Rating levels P2: probability of transfer

Different situations ranked. Examples:

1. Produce – greenhouse pests



2. Produce – insects able to establish outdoors - development into adult unlikely

3. Produce – insects able to establish outdoors - development into adult likely;

Produce packed at greenhouse location – greenhouse pests

4. Wood packaging material – Coleoptera; hitchhiking insects

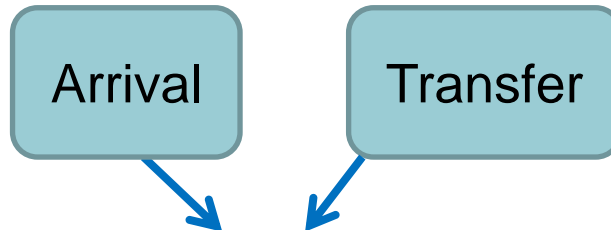


5. Plants for planting other than seeds – all pests and pathogens



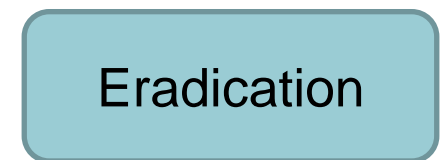
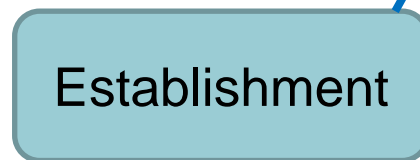


Likelihood: combination of scores



– Infestation: $\min(P1, P2)$, [1-5]

– Outbreak/introduction without official eradication measure:
 $\min(P1, P2, P3)$, [1-5]



– Introduction despite official measures: $\min(P1, P2, P3) * P4$, [1-6]



Introduction despite official eradication measures

Combination of $\text{MIN}(P1, P2, P3)$ and $P4$:

		Probability to survive official eradication measures			
		1	2	3	4
Probability of introduction without official measures	1	1	1	2	3
	2	1	2	3	4
	3	2	2	4	5
	4	2	3	4	5
	5	3	4	5	6



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Potential impacts

- Direct impact on crop production:
3 parameters, [1-9]
- Impact on the environment
1 parameter, [1-5]
- Export
3 parameters, [1-9]



Potential impact for crop production

Crop production, 3 parameters

- Effect at field level [1-5]
- Percentage of fields that becomes infested each year [1-4]
- Economic value of the crop [1-6]

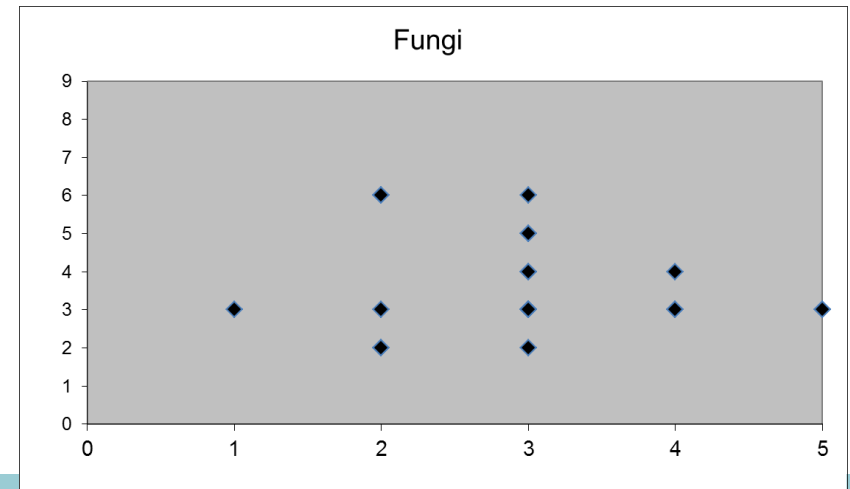
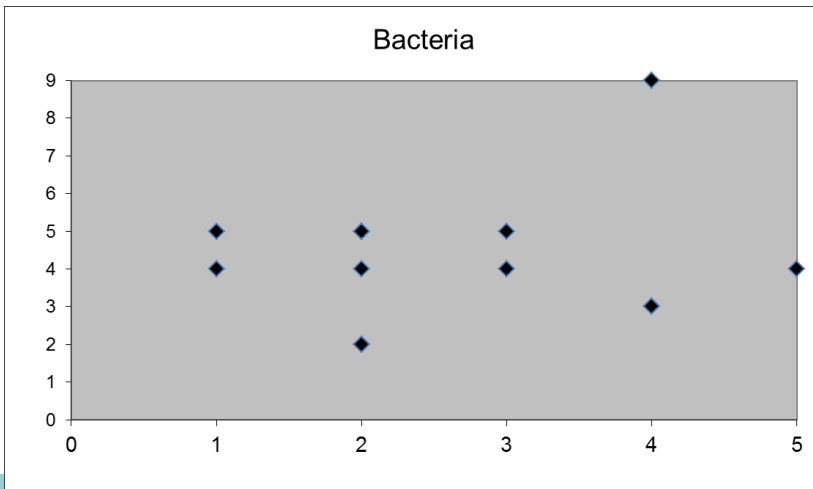
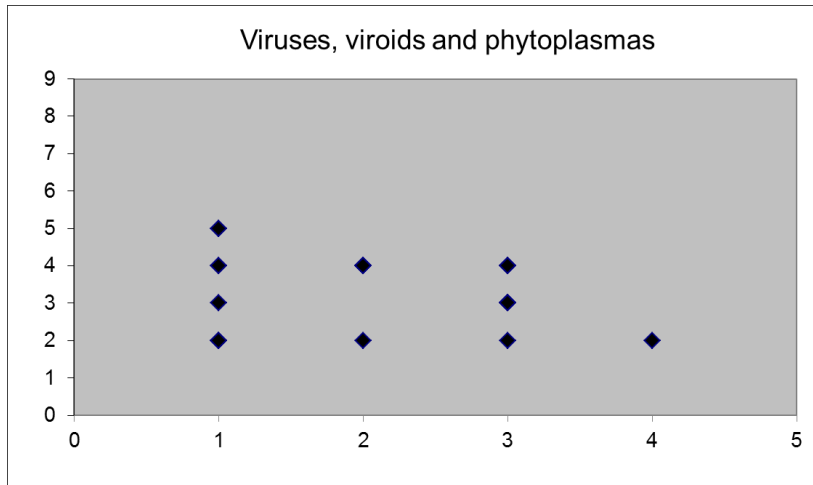
Combination of scores:

- $(weight\ factor \times Effect) \times \%fields \times value$
- Number of score levels reduced to 9 by combination of multiplication scores



Results: ca.100 pests regulated or candidate for regulations

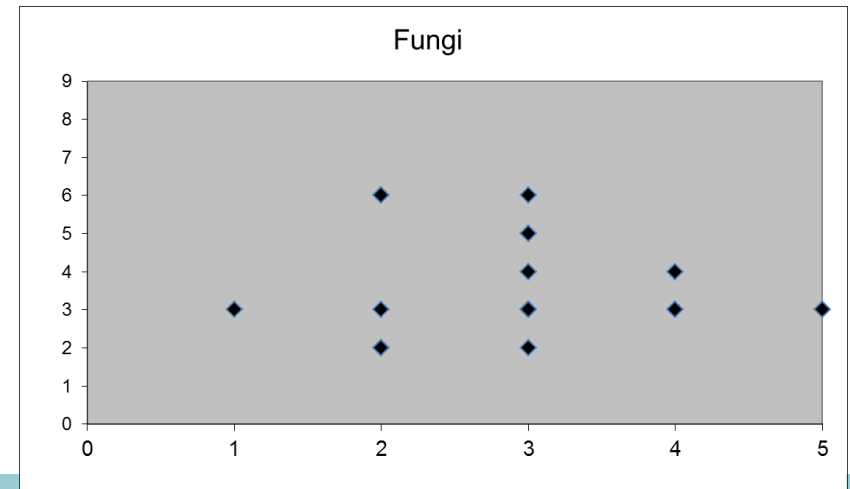
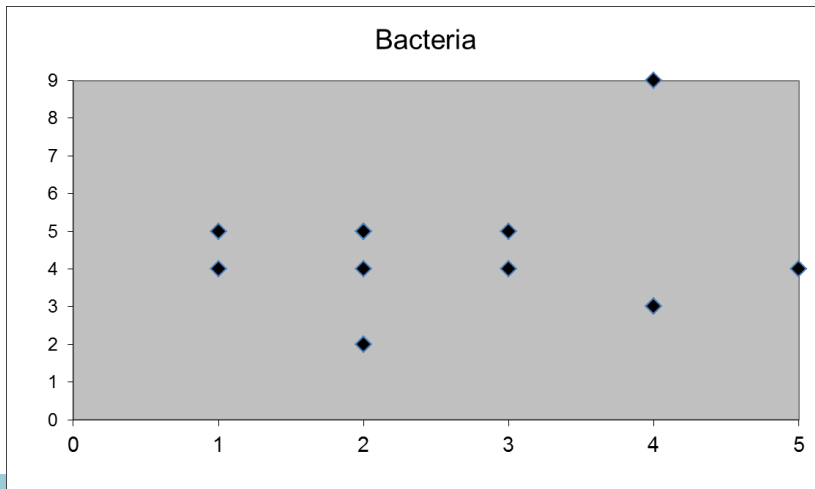
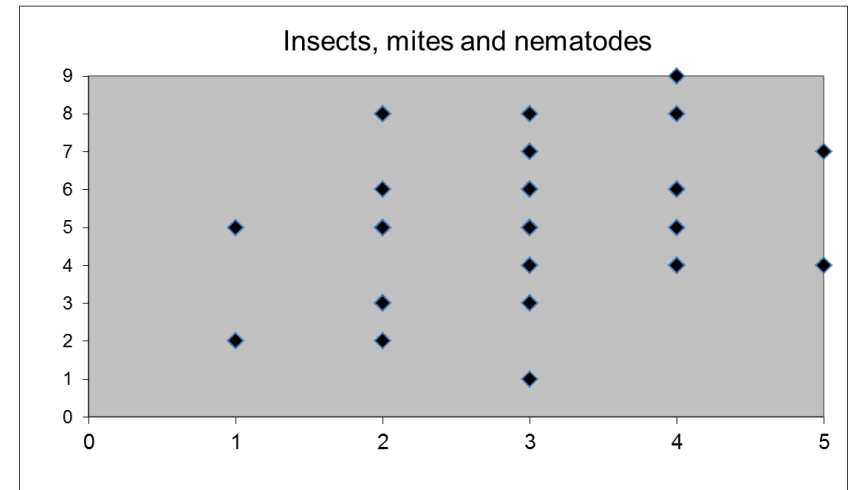
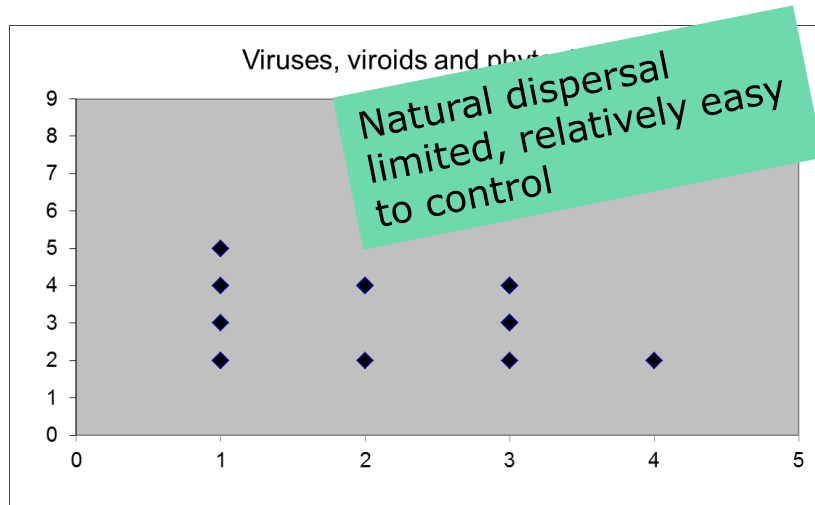
Direct impact on crop cultivation





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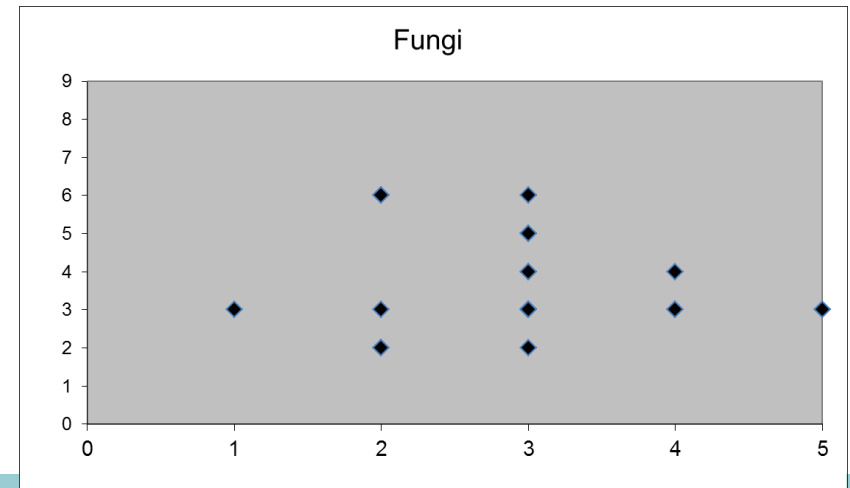
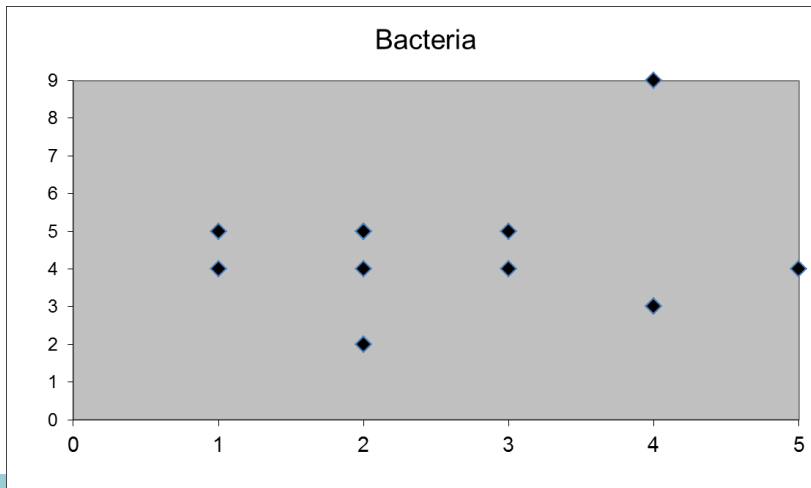
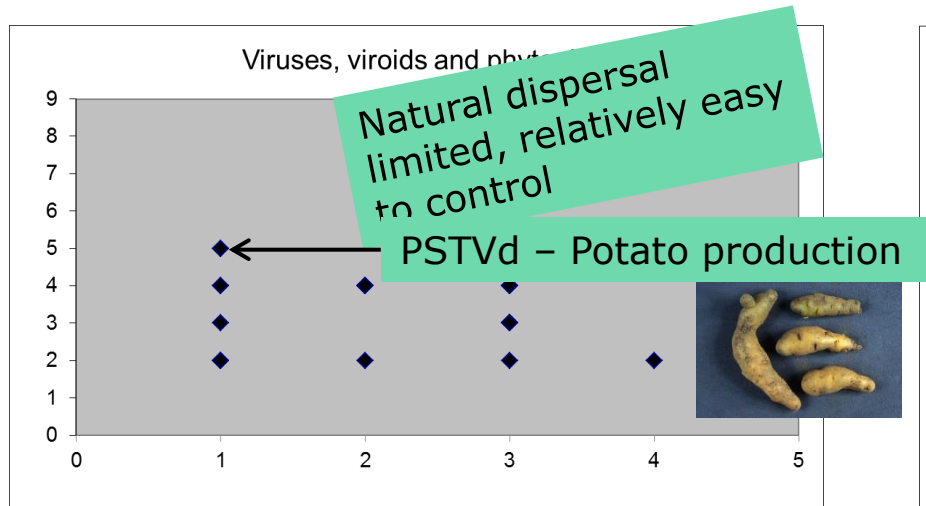
Direct impact on crop cultivation





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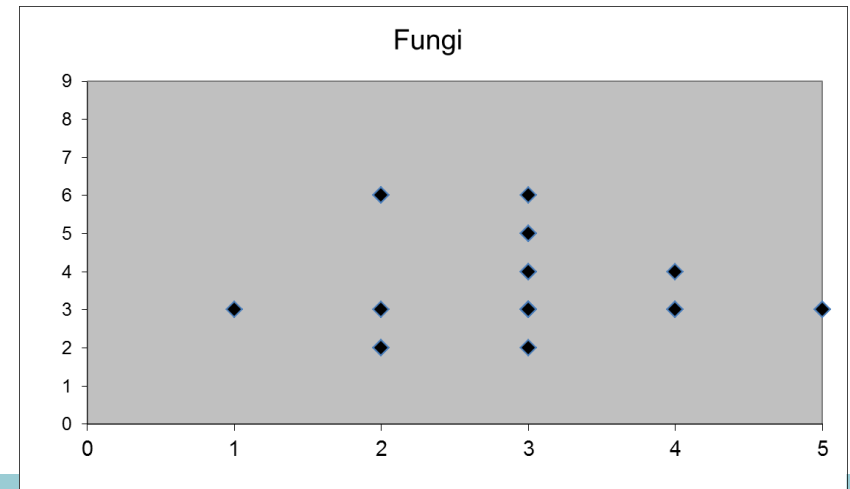
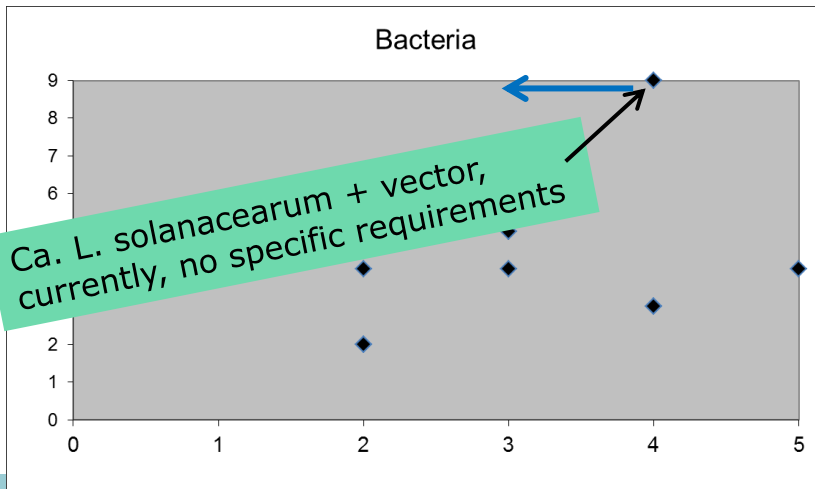
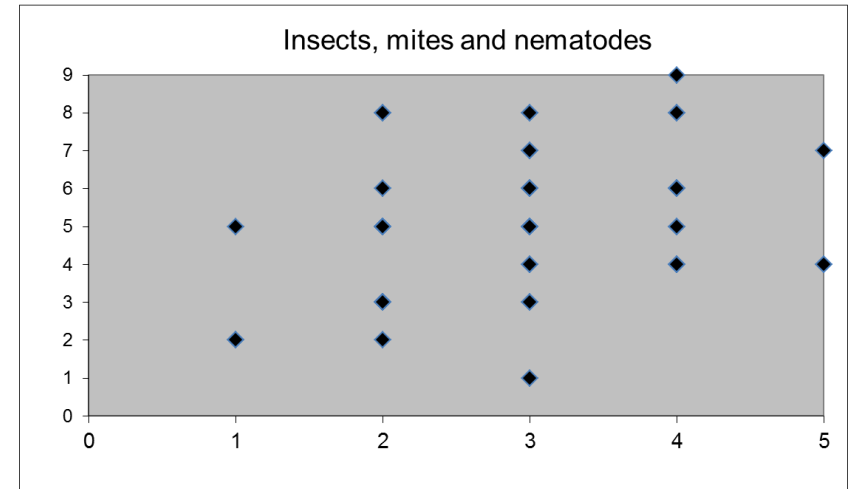
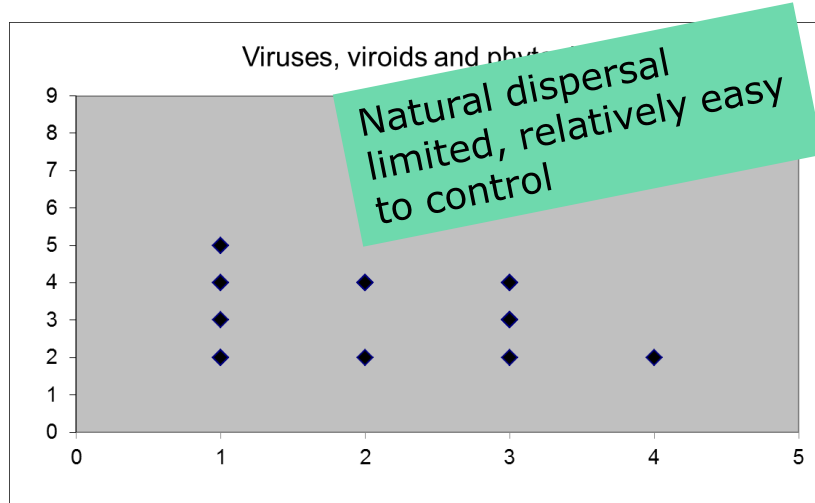
Direct impact on crop cultivation





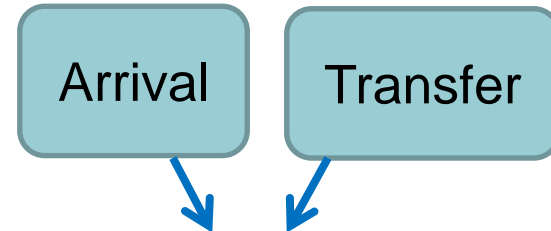
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Direct impact on crop cultivation





How useful is the model?



Pests with high likelihood of an infestation ($\min(P1, P2) \geq 3$, [1-5]):

- Had already the attention of the NPPO
- Communication with stakeholders

Pest identified with low likelihood of an infestation/outbreak ($\min(P1, P2) = 2$) but high likelihood to survive eradication measures ($P4=4$, [1-4]) and relatively high impact:

- Pests have generally less attention
- More strict measures on the pathways?



Thank you for your attention!